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eTwinning in Early Childhood Education: an effective form of technological and linguistic imprinting

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It is not “really” Christmas, till when I do not put the wooden cat with the pink ribbon under the decked out tree: I made it when I was five at pre-primary school, and the positive learning experience I had, at that time, makes me affectionately bound to it.

Early childhood education policy and care (ECEC) has experienced a surge of policy attention in EU and OECD countries over the past decade. Policy makers have recognised that equitable access to quality ECEC can strengthen the foundations of lifelong learning for all children and support the broad education and social needs of families.¹

Looking at history we can state that an understanding of the particular nature of childhood and the development of a desire to provide a relevant education has influenced our culture only slowly. It was Rousseau who played a crucial role in our cultural history: “education began with the start of life, at birth”². This is now a universally accepted truth.

Hereafter with ECEC I will refer to all arrangements providing care and education for children under compulsory school age, regardless of settings, funding, opening hours or programme content. In order to develop further our knowledge in this learning domain, we need to strengthen what we know so far by sharing information of the range of approaches and experiences adopted by different countries, along with the successes and challenges encountered. It is widely recognised that cross-national information and analysis can contribute to the improvement of policy development. The case-study I am going to present goes into this direction.

My proposal focuses on the experience carried out by “Scuola dell’Infanzia Gianni Rodari” based in Noverasco di Opera (Milan): two teachers and 60 children are protagonists of the eTwinning project “Hablamos de literatura infantil en el blog” (<http://infantiltremanes.wordpress.com/>)

This European project is twofold: children and teachers, while getting familiar with technologies, experience a new way of learning (the first) and teaching (the second) a foreign language, building up a collaborative e-learning environment.

Through images and literature, namely the comparison of ‘Antoni Tàpies’, a Spanish illustrator and an Italian one, ‘Bruno Munari’ - using computers, webcams, video-conferencing and the blog (as a tool to share and document their activities) - Spanish and Italian children (4-5 years old), together with their teachers, parents, experience collaborative learning through the use of ICT, in a European dimension. Moreover, it is interesting to see how Italian children have interacted with their school-mates from Primary school, who were their tutors in the lab.

This project has opened up to a partnership with a Jordanian school for some months, under MedTwinning project.

It is particularly relevant to focus on a case-study dealing with early childhood education collaborative learning, through ICT, for the following reason: history reveals that while traditional educational systems (colleges, university) have been contracted through the centuries with a top-down approach; primary education, and especially pre-primary one, are on the contrary, the result of a bottom-up approach. In fact, **ECEC is more addressed to educational needs, it is generally shaped to give answers to concerns which arise from practice rather than on principles.** In other words, by trying different strategies to cope with new challenges put by children and by society, new learning ways are explored: through the case-study presented will be alleged that

collaborative learning through ICT is one of the most interesting developments which European learning society has experienced so far.

Through this eTwinning experience, I will explore a meaningful example of collaborative learning during “pre-primary” age, which is recognised as an especially sensitive period in children’s development. Research has proven that ECEC, if certain conditions are met, can be extremely effective. The most effective learning programmes for ECEC - this case-study represents a case in point of these - involve “intensive early starting; child-focused centre-based education; focus on competences to develop, with a specific attention on digital ones³; together with a strong parental involvement, parent education and measure of family support”.⁴

It is important, to recognise that different views of children and purpose of ECEC can enrich the cross-national research in this field: there are not wrong or right solutions, in fact:

- the reasons for investing in ECEC policy and provision are embedded in cultural and social beliefs about young children, the role of family and government
- in many countries, the ECEC is shifting from the private to the public domain, with much attention to complementary roles of families and ECEC institutions in young children’s early development and learning
- many countries are seeking to balance views of childhood in the “here and now” with views of childhood as an investment with the future adult in mind

These diverse views have important implications for the organisation of policy and provisions in different countries.

Moreover, investing in ECEC has a twofold effect: a social and an economic one, in terms of return on investment. The economist and Nobel prize laureate Heckman (Heckman 2006) has argued that “high quality early childhood education and care provides one of the few effective policy means of increasing social economic opportunities for disadvantaged communities and, therefore, for the society as a whole”. (...) High quality pre-primary education, if provided on large scale in a sufficient “dose”, fosters the emergence of school skills in the area of language, maths, science and ICT skills: **the better equipped at start, the more effective education in school will be.** Investment in high quality pre-primary education works as “multiplier” of collective investments in the school system.”

Provided there are three major models for early education provision: a child-focused one, the home-based care services, and parent/family focused support programmes, this paper will deal with the first one. The “child-focused approach” accounts for the vast majority of pre-primary education provision, it adopts a centre-based, professional delivery strategy.

The study-case proposed is a concrete example of the child-focused approach, in which the original model has been expanded by incorporating strategies to work with parents, families and communities, in order to support and empower them, leading to a combination model, where collaborative learning and digital-linguistic competences play a major role.

In “Hablamos de literatura infantil en el blog” parents (a group of them and a grand-father, too) play an active role: “the evidence indicates that an early start, together with an intensive, multi-systemic, high quality approach that combines a child centred developmental pre-primary school with parent involvement. Parent education and family support is associated with a whole range of long term gains, both individual and societal”(Yoshikawa, 1994).

In this experience are summed up the six pedagogical principles⁵ to which pedagogical scholars normally refer, when analysing ECEC: psycholinguistic issues; didactical concepts; methodological transformation - in particular collaborative learning implications -; pedagogical principles, political and economic motives and socio-cultural ones.

Namely, in the eTwinning experience presented :

- **psychological issues:** insight in language L1 through vicinity, and L2 through ICT (eTwinning tools, language awareness and meta-linguistic one)
- **didactical concepts:** use of authentic material - for foreign language learning both through books and through ICT -, task oriented learning , exploiting ICT. In early language learning the use of ICT supports learning, which affects learning speed and learning strategies. This assumption will be fully explored in the case-study.
- **methodological transformations:** “supra-national and national” learning dynamics, through the use of ICT, embedded in day-to-day classroom management, maximise exposure to foreign language using web-tools and software, visual approach (for early language learning is paramount); repetitiveness (a child benefits most through frequent repetition of content matter).
- **Pedagogical principles:** reflection and practice in other languages trough ICT, under collaborative means; high frequency exposure; take account of learner characteristics; assess individual progress and in the meantime team learning and interaction dynamics through collaborative learning and integrative work.
- **political and economic motives and socio-cultural ones:** cater for intercultural, social, imaginative, affective and personal self/identity and the use of particular language activities, combined with ICT which suits early learning.

This case-study demonstrated what is claimed by the research: “ICT approaches, if suitably thought-through and implemented, can help younger learners in integrating their languages skills and in developing important strategies of monitoring”. (Morris 2005). eTwinning tools are means to build up collaborative learning dynamics in languages, within early childhood learning context. It will be showed that: when ICT of an appropriate sort is made available to help young learners to access, then a great range of input and interaction and feedback is made feasible. This latter conclusion might indicate a new pedagogical principle: namely that ICT (in eTwinning) will lead to greater input, interaction and feedback.

The proposed experience relies upon the EXE theory, according to which the most effective way to deliver a sound education (in different settings, from pre-school to adult education) is to focus on two dimensions: the degree on “emotional well-being” and the level of “involvement”.

In the case-study will be explored how different children are doing in a collaborative ICT setting: firstly we have to explore the degree in which children feel at ease, act spontaneously, show vitality and self-confidence. “Hablamos de literatura infantil en el blog” will show that once the need for tenderness and affection, safety and clarity and for social recognition are satisfied, emotional well-being is satisfied.

The second criterion which will be explored – involvement – is linked to developmental process and urges the adult to set up a challenging environment favouring concentrated and motivated activities, among which collaborative learning ones stand out.

In the case-study it will be showed that the crucial point in ECEC is the exploratory drive. In other words the need to get a better grip on reality, the intrinsic interest in how things and people are (even far away from the place where we live), the urge to experience and figure out.

ICT and language learning (L2) in eTwinning partnership within a pre-primary school context bring the observer to this conclusion: involvement in a collaborative learning context means that there is intense mental activity, that a child is functioning at the very limits of his/her capabilities, with an energy flow that comes from intrinsic sources.

This experience is particularly interesting because, due to these special ingredients - ICT use + language learning + early childhood context - one couldn't think of any condition more favourable to real development. If we want to have evidence of deep level learning, we cannot do without involvement.

In this way we can make learning environments and school settings more effective and strong enough to meet the challenge of education: the development of (future) adults who are self-confident and mentally healthy, curious and exploratory, expressive and communicative, imaginative and creative, full of initiatives, well-organised individually and in collaborative contexts, with developed intuitions about the social and physical world and with a feeling of belonging and connectedness - with or without ICT use - to the whole society.⁶

Enthusiastic responses of children, when teaching efforts are successful, are very empowering and give the teachers deep satisfaction both at the professional and the personal level.

To sum up: this case study stems from this assumption: adopting a child-centred developmental approach to promote children's self-regulation skills, providing a pedagogically safe and stable environment to promote secure social relationships and social competences, and combining this approach with authentic activities that guide children in exploring two important cultural domains of digital competences (ICT) and foreign languages ones, will serve the goal of equipping children with XXI century key competences, useful in the long term. In fact, the rapidly growing demand for highly skilled workers has led to a global competition for talent. While basic competencies are important for the absorption of new technologies, high-level skills are critical for the creation of new knowledge, technologies and innovation. For countries near to the technological frontier, this implies that the share of highly educated workers in the labour force is an important determinant of economic growth and social development. Starting collaborative e-learning from early childhood represents, indeed, a great advantage.

Notes

1. "Network on Early Childhood Education and Care"; Directorate for Education; OECD (15/03/08)
2. "We are born with awareness and from our birth we are affected in many ways by the things around" pg. 38 "education starts at birth" pg. 68 Emile (Paris, Garnier Flammarion, 1966)
3. Recommendation of the European Parliament and Council on key competences for lifelong learning (18/12/06)
4. "Early Childhood Education and Care in Europe: Tackling Social and Cultural Inequalities"; Eurydice (01/09)
5. "The main pedagogical principles underlying the teaching of languages to very young learners", European Commission (10/06)
6. "Network on Early Childhood Education and Care"; Directorate for Education, OECD (21-23/11/07)

eTwinning references:

- European website: www.etwinning.net
- Italian one: <http://etwinning.indire.it/>
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"Hablamos de literatura infantil en el blog": <http://infantiltremanes.wordpress.com/>

ICT in the classroom: changing and opening the learning space.

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Introduction.

The educational possibilities of ICT are endless. The question are how can we take advantage of them and what are the reasons for using them.

This paper shows some findings and proposals from a research project carried out in 2007-2008 about the participation of teachers in three telematic projects where kinder, primary and secondary schools were involved in. These findings are contrasted with theoretical ideas about the educational co-responsibility and educational integrated work (Subirats, Albaigés, 2006). Moreover, these ideas are illustrated with several experiences of educational projects with ICT in Spanish schools.

Co-responsibility and integration of social agents in education. The role of ICT.

The experiences and processes that encourage the growth of networks of citizen interaction are very important for the social cohesion and to the development of any community. Social capital is a set of connections among entities, persons and groups from a given territory that generates relations of reciprocity, trust and collective engagement in significant public issues for a specific community. Given that, education must be understood as one of those public issues and not only as a simple knowledge transmission process (Subirats, Alsinet, Riba and Ribera, 2003). Educational practice is located between several social forces, such as: parents, adults, teachers, media, government, religious and financial institutions, etc. It could be an opportunity or a handicap. Thus, education requires the involvement and collaboration of different social agents.

The social agents do not always have the same influence in education and are not always ruled by the same ethical principles. This can be a source of tensions and problems. In addition, we should take into account the spaces where influenced social agents takes place, for example: school, home, street, entertainment, jobs, etc., (Delval, 2002). This is why it is necessary an institution that makes coherent and integrated the educational of individuals. That is the main duty of school and the reason why we should provide the best conditions possible for its accomplishment.

Our research shows that it would be possible to implement this idea by means of developing educational projects from schools, from a conception similar to what Subirats et al's study (2003,

p. 147) calls “integrated educational experiences”. These experiences are defined by these authors as:

“Community-based educational interventions in which different actors in the school environment (educational authorities for personal services, local authorities, parents, businessmen, merchants, neighborhood associations, civic organizations and associations, police, judiciary, etc..) jointly with the school involved in identifying and solving problems in education is partly responsible.”

Classroom enrichment and opening through ICT

The technologies in the classroom can enrich mainly the learning opportunities and learning space. In our case study has analyzed three projects telematics. In this analysis we have observed that under an educational model which satisfies certain pedagogical principles, ICT allows the extension of the classroom ecology and development of educational co-responsibility processes.

ICT enables improved efficiency in the development of these projects, along with many more possibilities for involvement and interaction of different actors in the specific tasks developed by the students. For example, in the projects observed in the teachers’ network called Lacenet (www.lacenet.org) studied in our research we can see how the projects allow families to observe the activities that children and also participate in some with them from home. Other projects include the participation of people outside the school, such as professionals from different sectors, other schools, neighbours, etc..

For Subirats and Albaigés (2006), this integrated work between different socio-educational, besides presenting a clear training objectives and the natural development at different levels of curriculum, which must be based on some basic principles presented below. Also, we show some examples of activities that include the telematic projects that use ICT in which can be observed these principles:

- **Co-responsibility and mutual commitment:** education is conceived as a collective matter which needed that the different social actors work together. From our point of view, this implies moving from a model of one fragmented responsibility and social synergy, which are built spaces of shared responsibility.

EXAMPLE: In the telematic project Salix and the senses (<http://www.lacenet.org/sentits/>) the teachers work with the children the human senses in early childhood education. in this project, the pupils work telematically asking an expert in every sense that are collaborating with the project: a musician takes part for the ear, a cook for taste, and so on.

• **Participation and constructionism:** The participation of all actors is needed in the integrated educational work to reach consensus decisions that are not vested in a single social agent. The permanently integrated work should be characterized by the collective.

EXAMPLE: The network Lacenet (www.lacenet.org) is an association of teachers who voluntarily designing and delivering telematics projects to all schools that wish to participate. Their collective work has generated a professional and social network that typically communicates using the possibilities of the Internet.

• **Plurality and comprehensiveness:** Integrated work should be able to articulate the differences, without eliminating them, and without enhancing existing classical segmentation in education. It should seek the common ground and shared perspectives.

EXAMPLE: The Espurna project proposes activities to do in the classroom face to face or online. This project is designed to be used in classrooms priority in educational services (open classrooms, classrooms, reception, etc.). However, the project has virtual spaces and activities that can be developed by any teacher and therefore it could interact students of any type (immigrant students, students with learning disabilities, students with behaviour problems, etc). ICT makes possible this interaction.

• **Cooperation and interdependence:** The different educational agents from dynamic and interaction spaces, undertake joint actions to achieve common goals and solve problems which are understood like shared. This implies interdependence among participants in learning activities.

EXAMPLE: There are several telematics projects that promote cooperation and interdependence among participants. An example might be the "Tale traveller", which consists in creating a story collaboratively among schools (<http://interconte.wikis.org/>). Communication for the joint creation of the story is done with telematic tools, such as a Google Docs (shared document), a Wiki, etc.

• **Proactive and projection:** Job sharing requires leadership in the development of projects. The freedom of social agents to make actions is a important issue to success of the education. Their work wouldn't be as a result of external impositions. Integrated work should be perceived by them like constructive and positive process.

EXAMPLE: The people involved in educational telematic projects are outside school and usually do so altruistic. The proposals of project activities are highly motivating for them. Perceive that their participation is important. ICT help these people in contact with students, often geographically remote. The project Bitantart

(<http://www.iearn.cat/moodle/>) allows the students working on aspects of natural science during the project and remote contact with a scientific base in Antarctica.

- **Proximity, rationality and transparency:** The objectives of the integrated work should relate to everyday experience and the interests of agents involved. For this reason, joint action must be based on reality and the context in which educational intervention is made. Often, the integrated work is affected by perceptions of usefulness. In turn, it must be accompanied by information necessary to participate actively in discussions and decision making.

EXAMPLE: In addition to knowledge of technological geo-positioning tools, in the project Publicart (<http://www.iearn.cat/publicart/>) is possible to work some aspects of local knowledge and public artworks, as well as respect for public spaces. By means of this collaborative project among schools teachers can work countless aspects of the curriculum in different areas of knowledge.

There are many strategies and processes that may arise from school for the development of educational proposals that promote educational co-responsibility and work integrated of different agents in the life of the classroom will be a reality. While a important number of these strategies and processes can be implemented without the use of technology, the power of ICT in such a context is identified with the possible increase in the frequency and ease with which these interactions could give by means of technology it is possible to establish a learning stage in which these interactions with the local and global environment are gradually becoming more common to everyday life.

The analysis of the ecology of the classroom and the arrangement of the elements that constitute it and participate in the teaching-learning process would not be only in a physical environment but also should be considered the telematic means. The possibilities for interaction and communication allow making a interactions network of varying intensity among, for example, social agents, sub-community systems or people, more or less directly related to the life of the classroom. Undoubtedly it increases or changes the size and extent of the classr ecology of the classroom. The community understood as a conglomerate of individuals and groups interact (Subirats et al., 2003), can now be linked to classroom activity not only from local context, but also considering the global context which is also connected by means of the ICT use.

Teachers must now consider a range of information sources and resources, learning activities are not limited to the 4 walls of the classroom. The involvement of external resources and people becomes a natural aspect in the learning process, and so on. Undoubtedly, the learning process goes from being defined to be much more rich and complex for those involved, while it may be too much more stimulating for them.

The interaction between the classroom and the social system, as well as among all subsystems

and elements included in them, they could be produced in a multidirectional network. Our point of view, the school and teachers should become the main node of this network. They would be a node with professional authority and generating synergies from the school and specifically from the didactic activity in the classroom, pointing directly to the social environment. This allows the configuration of a classroom group connect and open to the local and the global environment, because the subsystems or elements external to the classroom that can be opened at different geographic distances and / or belong to different socio-cultural realities. The possibility of opening classrooms by means of ICT has few limitations in this regard. The language, which for example could be one of them, could be exploited as an opportunity for learning other languages. Under this approach, the organization of school time and space, which are part of the ecology of the classroom, undoubtedly change as well.

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Creation experiences of Virtual School Communities incorporating web 2.0

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The use of ICTs in classrooms is usually one of the most chaotic and problematic tasks, it is many times based on the teachers' personal experiences and on their own initiatives, they incorporate various types of tools in their teaching activities such as e-mail blogs, websites, open source LMS, Web 2.0, WebQuest, and a wide range of options, depending on what each educator does or uses frequently as a tool.

This scenario takes place in every and each classroom in which the educator has enough IT knowledge and self-confidence and feels capable to organize a teaching experience incorporating ICTs having different experiences among the several groups of students. There are some exceptions, in which the activities are institutionally organized in the Principal's office. In general, technological islands are observed, generating confusion due to a lack of homogeneity.

Widening our vision at the Educational System level, extending the limits on a regional scale, we can state that we could find differences among the realities of different schools, this makes a lot more difficult to find common aspects. Sometimes, coincidences can be detected in the use of some tools (for example LMS), but in any case these are always isolated and independent experiences.

How can a Virtual Educational Community be created?

The possibility of creating a Virtual Educational Community is not only limited to the integration of all the schools or teacher centers in a city, county, region or country, but also to the extension to private and religious organizations, so as to any institution that is interested in counting on a virtual space in their educational centers to share information, resources and educative experiences.

One of the main factors that has allowed us to implement several projects of Virtual Educational Communities has been the official decision of Educational Authorities to offer schools a totally integrated system, so that all the tools work and are administer to an equal degree.

A new system was developed then, one consisting of various modules with different functions in an integrated administrative environment in which the system administrator wouldn't find any difficulties to handle the different applications.

The system developed includes initially three functional units: a website manager, a Blog manager and a Virtual classroom manager (LMS), all three available at every school.

Furthermore, there are two very important tools: a repository of educational resources, and an interactive map of schools. (fig 1)

The flexibility of the system and its ease of use, enables to include web 2.0 elements of different types, such as YouTube or Yahoo videos, maps, photo Carrousel, dynamic and spoken avatars, which become imbued with the different web pages that make up the application.

Therefore, with a simple browser, any computer with internet access, no matter what its capacity is, can be used to navigate the different sections from the very school or from the students' or teachers' homes.

What tools does e-ducativa School offer?

- Website manager for each centre
- Blog manager for each centre
- Manager of virtual classrooms for each centre
- Repository of resources for each centre
- Interactive map of centres
- Global repository of educational resources
- Completely integrated administration



Fig. 1.

The virtual educational community consists of two layers, a common one for each school and a superior layer which integrates all the educational centers, in which the interactive map, the Global level of the repository and the syndication of the resources are located.

Fig. 2 represents three schools with their corresponding services (bottom rectangles) and their superior layer with their specific services (upper rectangles).

Components

In every school **e-ducativa OPEN** offers: website, blog, virtual classroom and repository of educational contents. Everything is integrated into the top layer of the system.



Fig. 2.

Which applications the system integrates?

The **website manager** is an application that allows each school to create, modify and maintain its own website, with the advantage that all the other schools' websites will share a graphic unit when they share the corporate identity.

The **Blog manager** integrated into the system, encourages active participation of all the educational community, commenting on posts written by teachers or educational authorities. In some projects, the use of blogs in the classroom encourages creative educational experiences.

The **virtual classroom manager** offers the possibility to use, inside and outside the classroom, the most powerful synchronous and asynchronous communication tools, as well as the educational resources that teachers either provide or get from the repository of resources.

The **repository of educational resources** is like a virtual library in which different types of materials are stored, properly catalogued according to the LOM standard. It has three storage levels aimed at teachers, schools and the whole system, therefore they are called: Personal repository, Local repository and Global repository.

The **personal repository** allows teachers to store all their educational material, so that it can be found and used without the need of any technical support information, such as CD, pendrive, etc. Internet access will be enough, and any stored resources can be used.

The **local repository** is fed with the contribution every school makes (either they purchase it or develop it), and with the material teachers upgrade from their personal repositories, properly catalogued according to LOM. The resources located in the local repository can be shared among the teachers in every school.

The **global repository** is located at a different level, it is usually under the control of the Educational Authorities, and it is fed with learning material that the administration buys, plus the contribution of the different local repositories that different schools develop, upgrading the level of the material, so when the data passes to the Global repository, teachers of all schools can make the most of it.

Furthermore, in Spain, a **Federal repository**, called **AGREGA**, has been implemented. AGREGA compiles educational contents of the different autonomous regions, so that resources for teachers all around the country are available.

Our system, thanks to a web services system and the compatibility with the LOM standard, has been able to integrate some search and import functions using this so called "national" repository, so that the teachers that are part of these virtual communities can access this material, the same way they do with the other repository levels.

Another important characteristic of the system is its capacity to Syndicate News, so that all schools receive news published at every Education Community on their websites. At the same time, news and publications from blogs or websites schools create, can be read by users in the other schools using the interactive map.

Finally, the **Interactive Map**, enables to navigate around the information of all the Education Centers that form part of the Virtual Community, being able to search for schools by county and town. Fig. 3.

Every school has access to the Interactive Map on their website, so that each teacher and student can read the news and posts published by each school.

The simplicity of use of the different tools encourages everybody to immediately accept the use of the system. Neither Teachers nor students have difficulties to use the ICTs when they change schools, since all of them use the same tools.

The administrators of each installation find their task easy thanks to the integration of all the systems in one interface, making the system management follow the same procedure with all the tools.

What is needed to install the system?

There is no unique solution, proof of this is the different projects that are already working, where various configurations were implemented. (Fig. 4)

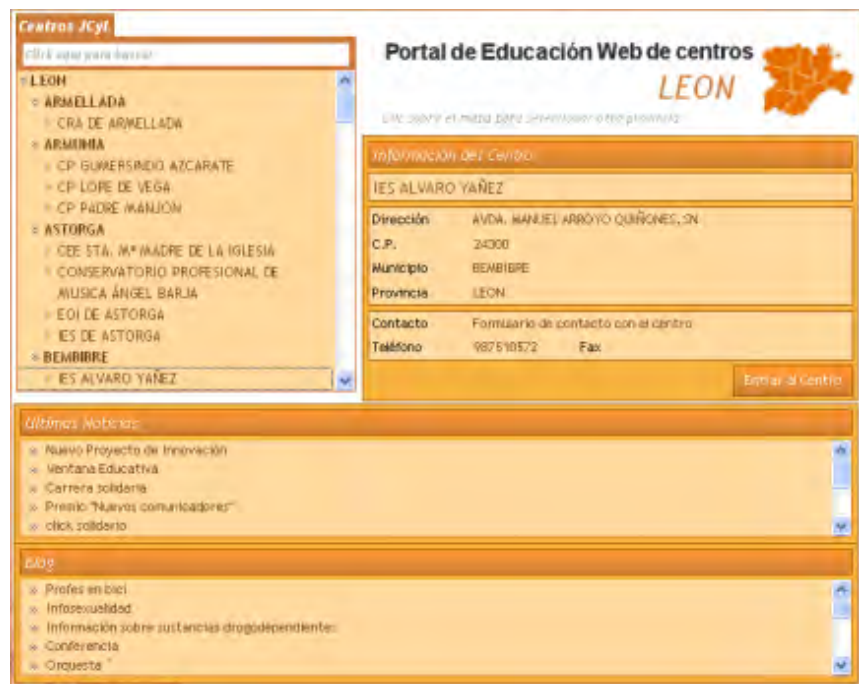


Fig. 3.

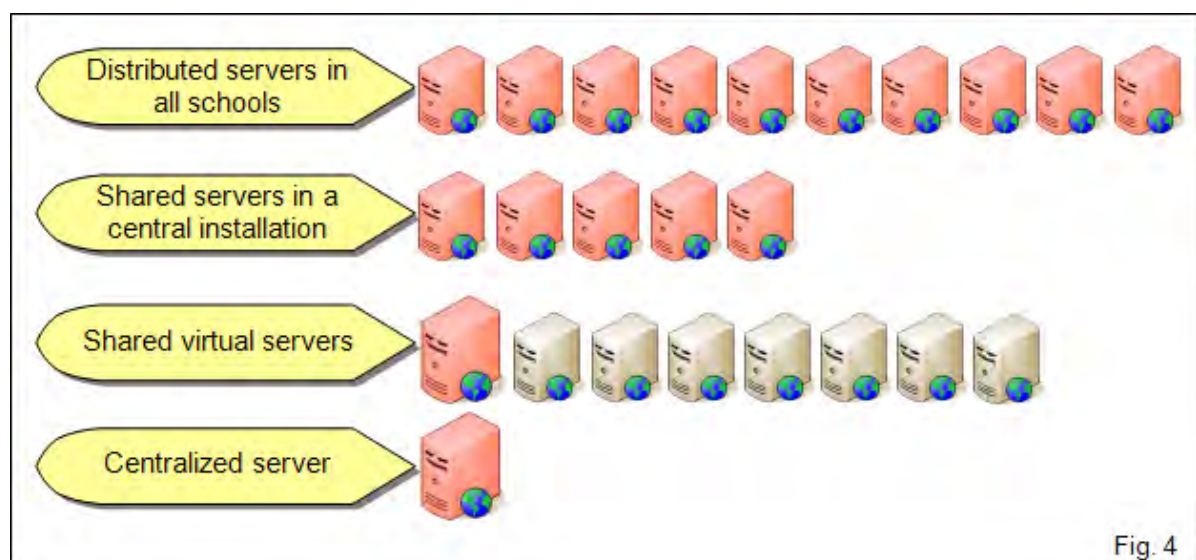


Fig. 4

The decision depends on the availability of resources and also on the methods of work used in every project, so that it is possible for the system to adapt itself to every situation, even when integrating applications with authentication system LDAP, with other applications in use in the organization.

The servers should be dimensioned according to the configuration chosen, it is possible to use both Windows and Linux, although this last one is usually recommended. For the “Client” computers no special configuration is required and it is not necessary to install neither the software nor the plug-in, so that users can access from any computer, anytime, anywhere.

Both, the installations and the updates to new versions can be done in a centralized and automatic way, so that the maintenance of the system is optimized, having no need for the intervention of the administrators of each school, reducing training requirements and concentrating the technical and human resources at the same place.

Real experiences

The platform *e-ducativa escuela web 2.0* has already been implemented in various projects, from Argentina to Russia, being Spain the country with more schools incorporated in four autonomous communities: Andalucía, Castilla y León, Aragón y Murcia. (fig. 5.)

There are more than 3.000 schools incorporated, with more than 800.000 potential students and thousands of teachers.

Obviously, after the implementation promoted by the Administration, the degree of acceptance of the teachers has been uneven. Depending to a great extent, on the capacity of dinamization of the administrator of the system in each school, we will find some extreme cases: schools that haven’t even loaded the information on their website, and educational centers that have used each tool intensely, incorporating not only teachers and students as users but also their parents as well as service staff, a real “virtual educational community”.

Among many successful cases we can find standout experiences of some lively teachers that excited about the possibilities new technologies and resources web 2.0 bring make the most enhancing their students motivation to favor enriching experiences in the teaching and learning processes.

The website administrator would have no sensitive effect in the activities held in the classroom, since it is more oriented to *inform towards the outside* about the information the educational centers want to show. However, thanks to the news syndication and the possibility to incorporate web 2.0 objects, teachers and students are encouraged to visit the website frequently to see the pictures of the latest festival, the video of the excursion to the mountains and many other pieces of information about the school daily routine, all published easily.

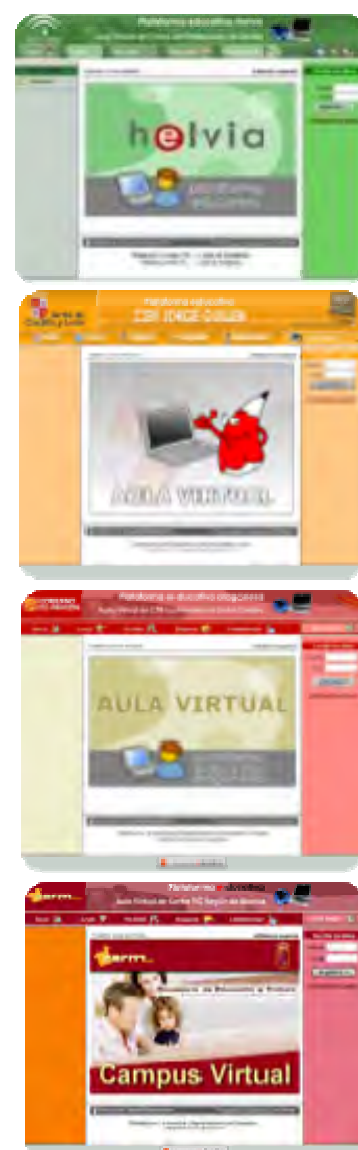


Fig. 5.

A matter of particular interest is the publications in the Blog, fomenting the active participation of the members of the school community, not only for matters of common interest, but also for more specific matters regarding different subjects

It is surprising to see how primary school students have been able to make the most of this tool thanks to the creativity of some teachers and the enthusiasm of their students.

Regarding the virtual classroom, probably the core of the system, it allows a great range of applications, both as a complement of presential classes as well as experiences totally online. Therefore, we have teachers who plan their classes and prepare their material so that their students access the virtual classroom and find the resources they need: material, links, activities and anything they find useful to become an active learner, they play the main role in the educational process.

Looking towards the future...

For the developers of this system, myself included, it's very clear that even though we have gotten a solid and finished product, we still have a great R+D task ahead. Technology associated with internet evolves permanently and staying at the forefront of technology is a great challenge.

Considering that in some of these projects the system is implemented in Open Source mode, we can foresee the creation of a community around the product that contributes with new modules and applications; in the meantime the company continues to invest in new developments, always maintaining the philosophy of having everything done the same way and the easiest way possible.

We can foresee the product growth, boosted by the implementation of new projects in different countries that are interested in it, so that in short term the proposal to carry out enriching experiences of collaborative work among students of different schools in different regions or countries can be done.

The disappearance of the spatio-temporal dimensions, thanks to technology, will benefit the educational projects that, every day more, will make way for the achievement of the best results, in the interests of education in general and students in particular.

Introducing Open Classroom 2.0 to Teachers through Immersive Learning

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Abstract

This paper addresses the challenge of engaging teachers in opening up the learning environment through the use of social software and other Web 2.0 tools. Immersive learning seems to be one of the best ways to do it. A joint European project eJump 2.0 involved eight educational institutions from ten countries. As a result of the project, three online courses for teachers were developed and pilot-tested. We are going to present the results of the follow-up survey that was carried out after completion of pilot courses and propose some guidelines for designing similar immersive learning courses for teachers.

Introduction

The concept of the open classroom is changing, partly because of the impact of Web 2.0 on technology-enhanced learning. While the Web-based Learning Management Systems (LMS) were the main drivers behind the e-learning innovation in the turn of the century, it was driving the development apart from the idea of the open classroom, open learning environment. Since 2005, the emergence of Web 2.0 has increased democracy, creativity and openness of the Web usage in general, allowing everyone to become an author, producer or publisher. It is inevitable that Web 2.0 is going to change also the way teachers and students learn with computers. Although most of the students will easily adopt the social software also for learning purposes, many teachers have troubles with it. Some of the teachers just cannot keep up with the pace of never-ending technological change; the others are feeling themselves convenient only if they can use familiar LMS where they have full control over the environment, materials and activities.

Open Classroom 2.0

Open classroom is not a new concept, already in 1980 Michael Woods wrote that open classroom contrasts with more “traditional” modes of schooling in many aspects like the teacher’s role becomes more of a non-authoritarian “catalyst” to learning and the pupil role becomes more active in a terms of the content and pacing of work, with an emphasis on self-motivation and self-discipline. At this moment concept was not so much related with technology, as it is now.

Open Classroom 2.0 can be defined as an open learning environment which consists of some Web 2.0 style technological solutions, but also embraces some of the innovative learning and teaching methods. From the technical point of view, we can talk about *social software* and *social media* tools together with *Web 2.0*, which has initiated discussions if and how it should be implemented in education. Web 2.0 has been defined by O’Reilly (2005) as the business revolution in the computer industry caused by the move to the Internet as platform and an attempt to understand the rules for success on that platform. In this paper, terms *social software* and *social media* are used as synonyms and they represent web-based software programs, which allow users to share data and interact with each other. *Social media* is a selection of tools or services, which can be described with the users’ objectives like participation, openness, conversation, community and connectedness (Mayfield, 2007). Klamma et al. (2007) have defined *social media* as the whole generation of new socially based tools and systems, which support activities in digital social networks. *Digital social networks* are social networks mainly realized by means of computer-mediated communication. It is essential to remark that most of the social media have not been developed for the educational purpose, but their characteristics strongly support those.

Different social media tools and services, including feeds and tags, enable to combine them and integrate personal learning environments, also with educational purpose.

From the technological aspects, open classroom represents the environment, which consists of social media tools selected and interrelated by learner that is the reason we may call it personal learning environment (PLE). The characteristics of it may be achieved using a combination of existing devices (laptops, mobile phones, portable media devices), applications (newsreaders, instant messaging clients, browsers, calendars) and services (social bookmarking services, weblogs, wikis) within what may be thought of as the practice of personal learning using technology (Wilson, 2006).

On the other hand, from the pedagogical aspects, learner or the group of learners and the facilitator manages open classroom, composed from social media. This kind of environment supports the learner-centered approach to learning and for that reason the environment is quite individualized compared with institutional closed learning management systems and allows developing Web 2.0 classroom for teachers and for learners. Another characteristics of that kind of learning environment is that it is dynamically changing, tools and services in it can be replaced after some time and combined together using feeds and tags, environment can be expanded according to learners' needs. The idea of the personal learning in such environment is that it will take place in different contexts and situations and will not be provided by a single learning provider (Attwell, 2006).

The PLE can be considered as second-generation network application, which is designed primarily as a personal lifelong learning environment. It extends learning beyond classroom and teacher centered model (Anderson, 2006). Still, in such open classroom2.0, there are still some issues that should be considered by the educators; learners need to be more self-directive, as the role of teacher have changed to more facilitator, who provides support; learners also might need scaffolding from the facilitators; and the social presence of there peers and facilitators is important in order to build learning communities.

Open Classroom 2.0 scenarios

Four possible scenarios for the future of Open Classroom 2.0 can be predicted:

The first possible scenario predicts a stand-by mode in the field of learning environments. We may see a pattern of co-opting, whereby the characteristics of the open learning environment is incorporated into the existing learning management systems (Moodle, Blackboard¹, etc), that will add extra features such as blogs and wikis in order to provide social software aspects in the LMS (Wilson, 2006). Many educators, including Mark Notess (2009), believe that LMS are forth saving for privacy and simplicity reasons. As there are already many innovative educators and teachers, it is not likely to happen that only LMS' will remain the main learning environment in schools and universities, which will lead us to the symbiosis of LMS and open learning environment.

The second scenario sees a period of connection, whereby LMS products start to open their services for use within the open learning environment. A number of universities, including Brighton have offered access to social software to all students and have encouraged students to use this space for recording all of their achievements, regardless of the context of learning (Attwell, 2007). But these educational organizations will remain using LMS, like Blackboard. System is integrated with student records system, personnel systems and Community@Brighton² (using Elgg software) with single sign-on, and Blackboard modules can link through to Community areas and vice versa. For some time, this scenario might be the most likely to happen, it is soft transitional phase between two directions where the development of learning environments may move. And it has its own advantage, the support of administrative issues, is strong. But this scenario contains lack of sustainability, one day the final choice, LMS or open learning environment, has been made.

The third scenario suggests that Open Classroom 2.0 will make revolution in education. LMS' will be not mainly used by the educational organizations; the educators will develop Open Classroom 2.0 for themselves. It might be also that LMS' and Open Classroom 2.0 will have parallel lives, with the last one becoming a dominant design in the space of informal learning and some types of competence-based learning, with the LMS remaining the key technology of formal educational systems (Wilson,

¹ <http://www.blackboard.com/>

² <http://community.brighton.ac.uk/>

2006). And it might also be that schools or other educational organizations develop their own official Open Classroom 2.0 and therefore provide support for teachers.

The last scenario might lead us toward to the schools, which do not provide any virtual learning environment for their students, teachers or staff. Open Classroom 2.0 should be the result of the course, not as an input. Every learner or teacher creates the environment that is needed for the tasks to be performed. For the administrative issues also every teacher has to look for the most suitable choice for him/her. This scenario will not be difficult for students, as the most of the social software is intuitive to use, this generation youngsters will find them easier to use than LMS' provided by the schools now, but probably for this scenario our educators are not ready yet. As Terry Anderson (2006) have said, although there is something quite compelling about the vision of a lifelong learning environment that is centred upon and perpetually belongs to the learner, we are some distance from being able to operationalize that vision. For the start, developing the Open Classroom 2.0 is to immerse teachers in those environments in teacher training. If teachers do not use such Open Classroom 2.0 aspects in their own learning process, it is not likely that these elements will be used in their teaching process with their students.

Building an Open Classroom 2.0 for teacher training is not an easy task. Teachers are all heterogeneous and with different needs, habits and competencies. Some teachers would like to have more collaborative work; others would like to participate in face-to-face seminars; nearly half found that open learning environment is good and the same amount found it confusing. It is complicated to find teachers, who could be ready to entirely move over to open classroom and leave the LMS behind, which provides more support in administrative and management aspects. Additionally, most of the teachers' technical preparedness is not enough to run courses in Open Classroom 2.0. Chen et al (2008) have pointed out reasons, why many of the teachers are not ready to give up using LMS and barriers that keep teachers from integrating Web2.0 into the classroom: lack of resources and support from districts, administrators, fellow teachers, and parents; the ability to protect identity online; some students may not have a clear foundation in using the Internet and Web 2.0 tools, also safety issue appeared to be the primary concern.

E-jump 2.0 project

The e-Jump 2.0 project is a European Commission Transversal Project: *Implementing e-Learning 2.0 in everyday learning processes in higher and vocational education*. The project is co-ordinated by the Estonian Information Technology Foundation (EITF). The partners are the Central and Eastern European Networking Association (CEENet); University of Turku/Centre for Extension Studies; Foundation for the Open University of Catalonia; University of East London; University of Tartu; Tallinn University; the University of Porto and the European Association of Distance Teaching Universities (EADTU).

e-Jump 2.0 aim is to promote e-Learning 2.0 and raise the competence and confidence of teachers by developing three electronic training courses for the teachers and other staff of higher and vocational education. The e-Jump 2.0 project has involved over 120 participants from East and West Europe, Central Asia, the Far East and China in the development of three courses which have focussed on new technologies of e-Learning 2.0, new assessment methods and aspects of design, implementation and evaluation. Developed courses are:

1. *New technologies in e-learning 2.0*. This course is centrally concerned with the design, development and evaluation of teaching, studying and learning processes that are supported by the use ICT and social media applications. The course content focuses on the use of Web 2.0 and in particular on the ways in which this allows users to create content in such a way that allows others to both read and write to a such a web environment. The course has utilised a range of software tools combined with a diversity of hardware devices, which have been used to promote access to learning resources within an open and flexible learning environment. Furthermore the course content has been structured around the pedagogically orientated themes of My Learning, Collaborative Learning, Mobile Learning and Multimodal Learning which has each formed one module at Advanced (Masters) level and credit rated under the European Credit Transfer System (ECTS). This course development has been led by Umeå University.

2. *New assessment methods*. This course emphasises a learner-centred view of assessment and the use of social media in assessment. It aims to create new opportunities for learning with social media and to

promote social interaction and a shift from a “knowledge-receiving” role as a student to an active and “knowledge-creating” one. The use of a wiki and process writing has aimed to make learning processes transparent and learning outputs as sustainable wiki-based articles. It is seen that assessment, rather than teaching, has a major influence on students’ learning. Assessment practices direct attention to what is important and have a powerful effect on what students do and how they do it. This course is also credit rated under ECTS and has been led by the University of Turku.

3. How to Design, Implement and Evaluate an E-Learning Project. This course focuses on the aspects of design, implementation and evaluation, which are seen as the three fundamental axes, that constitute the process of developing e-learning projects. Every action related to them has consequences in order that the final result matches the intended objectives and fulfils the stated criteria for quality and success. The main objective of the course is therefore the capacity building in concrete fields of action and decision taking. It has adopted a predominantly practical approach in which the learner and his or her active and collaborative tasks hold a fundamental role. The course is aimed at teachers in higher and vocational education, who are interested in developing or improving their skills in designing and implementing courses or learning units based on the use of virtual tools and environments offered through Web 2.0 tools and applications. In order to design, implement and run an e-learning project (program, course or unit) over a considerable amount of time with high indicators of quality, sustainability and acceptance, it is important to understand the main factors that influence in the development and the carrying out of such a project. This course is also credit rated under ECTS and has been led by the Open University of Catalonia.

After passing the above-described courses, participants have gained the theoretical knowledge, but also practical experiences and competencies, how to build their own Open Classroom 2.0 to be used in the context of primary, secondary, vocational or higher education. During the courses, teachers are invited to learn and use different software, as well as plan their own learning. Immersing teachers in such open classroom, supported by their peers, facilitators and tutors should be useful in reducing the initial fear associated to learning technology. Furthermore, participants shall feel more confident, autonomous, open to change and capable of incorporating the new technological knowledge to their practice.

Empirical study

The aim of the evaluation of the courses was to collect feedback that could help to analyze and therefore to update and enhance the courses and make them more suitable to the target group.

Methodologically design-based research was used in this study. Wang and Hannafin (2005) have defined design-based research as methodology aimed to improve educational practices through systematic, flexible, and iterative review, analysis, design, development and implementation, based upon collaboration among researchers and practitioners in real-world settings and leading to design principles or theories.

In this context, we design and implement some prototypical educational challenges on the basis of our current understanding of how open classroom can be initiated and supported within general and higher education. The empirical insights that we gain through our field research are then fed back into the next round of improvement and refinement of the overall course design. After evaluating and analyzing the first trial of the three eJump 2.0 courses, corrections will be implemented and the courses will run for the second time.

A Web-based evaluation questionnaire was prepared using an open-source system LimeSurvey³. LimeSurvey sends to each of the respondents the invitation to participate in survey with the unique access key to respondent’s e-mail address. Questionnaire was sent to 129 participants and 56 of them responded (response rate was 43%).

Questionnaire consisted of six blocks: background, online learning environment, learning resources, assignments, assessment and feedback and pedagogical design. Background information included the data about affiliation, occupation, age, gender, academic field, e-learning experience and attitude, web 2.0 experience and motivators. Five sections of the questionnaire were divided as online learning environment, learning resources, course assignments, assessment and feedback, pedagogical design and implementation. Each sectioned consisted of 8-10 statements and included 5-point Likert scale

³ <http://www.limesurvey.org/>

responses (Strongly agree, Agree, Neither disagree or agree, Disagree, Strongly disagree).

The participants of the courses were educators from Estonia, Portugal, Hungary, Finland, Spain, Sweden and United Kingdom. 63% of them were from university or other higher education institution, 9% were from secondary school, 7% were from vocational school, 5% other academic network organization, 2% business enterprise and 14% of the participants were from other field. Occupations of the participants were divided so that 55% of them were teachers, 13% educational technologist, and 11% researchers. 64% of the participants were woman and 36% were men and the average age of them was between 26-40 years.

Three Web-based e-courses were developed and subsequently pilot-tested between November 2008 and March 2009. Learning environment of the course consisted of virtual learning environments Moodle⁴ and Elgg. Moodle was used for submitting assignments and learning tasks as links to the e-portfolio software Elgg, which were used to publish learners' assignments and reports. The group discussions about certain module were held in Elgg, group page. Each of the participants had one supervisor, who supported with the technical, but also conceptual issues, and tutor, who replaced the supervisor when needed. Each of the supervisors had about 5-6 students to supervise.

Results and discussion

The intention of this research was to collect feedback to the three courses, which were developed in the eJump 2.0 project in order to improve the courses.

About 47% of the participants disagree or strongly disagree that the learning environment should remain the same in case these courses will be for teaching again. About 36% of the participants agree or strongly agree that the environment should be unchanged. 38% of the participants admitted that the environment was not easy to navigate and almost 50% of them said that they got lost in the environment. The reason for unsatisfactory might be distributed learning environment that was consisting of many systems and the participants were not used to use, as they had previous experiences mainly with closed learning environments. Only 16% of the participants had used Web 2.0 tools before quite often and 27% of them had never used them before. It would be worth to take into consideration to reorganize the learning environment of the courses. At the moment there are two central systems – learning management system Moodle and e-portfolio environment Elgg. This was rather confusing to teachers; they got easily lost and were overlapped. One possibility is to give up using Moodle and to set the tasks into Elgg also. Other possibility is to keep the Moodle and teachers should be able to enter to the course with their own tools that suit the best with their needs and skills. The facilitator could offer the selection of different technical solutions and to provide support with technical services, but teachers should do the final choice.

Nearly 70% of the students admitted that the course introduced innovative pedagogical approach and they learned what is learning 2.0 from the pedagogical perspective. About 63% of them agreed that there was sufficient flexibility in course design for ensuring the autonomy of learners. On the other hand, only 32% of the students believed that most of the course participants were truly engaged in learning. From the self-directed learning aspects, 60% of the participants found that course offered enough flexibility and self-directed learning opportunities for them ensuring the autonomy of learners, whereas about 40% of the participants desired more freedom. Teaching self-directed learning aspects to in-service teachers, is useful in order to show, how they can teach the same aspects to their own students, who should gain the competencies of self-directed learning as soon as possible.

Course assignments received also generally positive feedback. Although about 55% of the participants would have expected more collaborative assignments. Group discussions were held in group page in e-portfolio tool Elgg⁵, but other tasks were individual and that leaves the social aspect of the learning a bit behind. It would be useful to push the learners more into the activities like peer-evaluation.

Learning and teaching in Open Classroom 2.0 presumes that the students will receive all the needed tutoring, scaffolding and feedback either in technical issues or conceptual matters. Half of the learners, who participated the courses, admitted that they felt the facilitator's presence on this course, (s)he

⁴ <http://moodle.org/>

⁵ <http://www.elgg.org>

was responding quickly when needed and feedback was sufficient. 60% of them received the facilitator's feedback timely to each of their contributions. However, almost the same amount of the participants did not get the needed support and feedback or it was not sufficient for them, which might be one of the main reasons, why there was some dissatisfaction towards the course. It follows that learners need more support in the beginning of their studies and less, when they are experienced learners in online learning environment. At first they need also support in technological issues additionally to conceptual aspects and the need for help decreases with every new experience. If the support and facilitation is not active by the facilitator, the learners may feel not motivated and lose their path. Feedback in an online classroom is more important than in a face-to-face class; if not told exactly how they are doing, students have no other non-verbal cues to go on (Vrasidas & McIsaac, 2000).

Many learners need help when they first enter to the online learning with no immediate signposts or recognisable help. In most cases there are FAQ pages and help call numbers, and supposedly a tutor who can provide online support. Nevertheless, how about learners coming into the online environment at exactly the point where they can be challenged and motivated enough to press onwards, but not to the point where they quickly lose impetus and crash out of the programme, asks Steve Wheeler (2008) and emphasizes the importance of scaffolding in online learning. The value in scaffolding lies in its ability to support student's learning (Roehler & Cantlon, 1996). Giving learners feedback and providing scaffolding in order to guarantee interaction between learners and facilitators is an important aspect. Studying in web-based course and in Open Classroom 2.0 requires more motivation from learner and this study demonstrates that learners feel more motivated when they received feedback and guidance in their weblogs from facilitators. Still, students can't expect that facilitator is online all the time. Reasonable is to agree on the schedule of feedback in the beginning of the course, which would be suitable for both sides.

Gilly Salmon (2001) says, "For online learning to be successful, participants need to be supported through a structured, developmental process" and she offers her *Five Stage Model of E-learning* as a scaffold for this. According to this model, the first stage is *Access & Motivation* - at this stage activities need to provide a gentle but interesting introduction to using the technological platform and acknowledgement of the feelings surrounding using technology and meeting new people through the online environment. Second stage, *Socialization*, is for building bridges for and between participants. In stage three, *Information Exchange*, information can be exchanged and co-operative tasks can be achieved. Participants' learning requires two kinds of interaction: interaction with the course content and interaction with people. In this stage, participants are getting used to being online and they can start to work with some colleagues. By the stage four, knowledge construction, participants frequently start to recognize one of the key potentials of text-based asynchronous interaction and take control of their own knowledge construction in new ways. In this stage, facilitator should encourage group members to question theory and practice e.g. links (or lack of connection) between theory and work-based practice. Lastly, at stage 5, *Development*, participants become responsible for their own learning and that of their group. They build on the ideas acquired through the activities and apply them to their individual contexts. By now, participants will stop wondering how they can use online participation and instead become committed and creative. They also become critical and self-reflective.

The peers can offer the support through peer-assessment or collaboration also, as the Open Classroom 2.0 provides lots of possibilities for networking and communities. Learners can follow the activities their peers are performing and let others know about their activities. All the content related to a user can also be tagged with key-words, which would allow for sharing of the knowledge within each user's learning network. Addition to that, when contributing in discussion forums shaped around a particular learning area or task, learners will, again, find an opportunity to externalize their tacit knowledge and participate in collaborative learning. This leads us to the importance of social presence in online learning environment.

Short *et al* (1976) supposed that social presence represents the perception that one is communicating with people rather than with inanimate objects. This is despite being located in different places where all communication is digitally mediated. Tu (2002) has argued that social presence can be defined in terms of a combination of social relationships, communication styles, task analyses, feedback levels and measures of immediacy. Social presence is a vitally important component of any learning situation, and doubly so in electronically mediated contexts. According to Short *et al*, when social presence is low, group members feel disconnected and group dynamics suffer. Conversely, when social presence is high, members should feel more engaged and involved in group processes. The interaction of learners with each other through technology promotes their own social presence online which facilitates more

effective learning (Collins & Berge, 1996).

Terry Anderson (2006) has suggested that one of the difference, but also advantage, between open learning environment and LMS, is the social presence in the first one. Furthermore, Schaffert & Hilzensauer (2008) believe that the community and the social involvement in open learning environment is the key for learning process and the recommendations for learning opportunities, whereas LMS provides limited group work, focus' on the closed learning groups inside of it and collaboration is not primarily in the focus. In spite of the advantages of Open Classroom2.0, however, some students experience frustration and even drop out of online courses due to the lack of live interaction resulting from physical separation from the instructor and peers (Naidu, 1994).

One of the advantage of Web 2.0 and social media tools and services is the networking and social aspect, which should be exploited in learning activities. Students need a place to mix socially and learning environment or learning activities should provide this kind of facility. Only individual tasks leave the communication with peers behind. Although the Elgg environment or any other social media tool provide good possibilities for interaction and discussions, the initiative should come from a teacher/facilitator at first in order to develop the habit of collaboration and conversation between peers, but also between facilitator and learners.

Conclusion

Our experiment demonstrated that ideas and practices related to the Open Classroom 2.0 can be successfully introduced to teachers through the immersive learning. However, it is important that the sufficient amount of support and scaffolding is provided to learners; social presence is be monitored and increased by the facilitators and peers, self-directed learning aspects are be used so that teachers can see the benefits of the new learning environment in their everyday practice.

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LEARNING TO TEACH IN *SECOND LIFE*

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Abstract: The rapid evolution of ICTs in the 21st century requires highly competent and skilled workers. Distance education appears to be not only a possible but a highly viable solution to increase the competencies of those already professionally active. Virtual environments such as Moodle and Second Life with Web 2.0 tools now allow for socialisation and social presence in the process of distant learning thus facilitating cooperation, interaction and more interest on the part of the students. These new learning environments also make it possible to learn by doing as people learn how to use them as they are participating in the distance learning courses. The European Union, aware of the advantages of these pedagogical approaches, is funding projects for lifelong learning such as the MUVEnation programme. Several studies and current research lead us to conclude that these tools and Second Life, in particular, have great potential for teaching and learning as they enhance the development of socialization skills, peer and group work, critical thinking and problem solving. At the same time it is recognised that further research is required in order to overcome certain drawbacks.

1 INTRODUCTION

The constant evolution of ICTs and the demands of the 21st century made learning crucial to our knowledge and networked society. Therefore, companies and the industry are interested in skilled and competent workers as a way of enhancing their outcomes.

Lifelong learning, with continuing professional training and development, is a must in our society. As workers are very busy with both their professional and personal lives, taking a face-to-face course is almost impossible. Therefore distance education is an emergent solution with the advances in ICTs.

Virtual environments such as Moodle and Second Life can promote interaction, cooperation and collaboration between students and e-teachers as well as between peers.

One of the drawbacks of traditional distance education has been the fact that students tend to feel lonely, isolated leading to very high drop rates. These virtual environments allow new pedagogical approaches that enhance collaboration, as well as both asynchronous and synchronous interactions between participants.

The MUVEnation programme, funded by the European Commission under the Lifelong Learning Programme aims to encourage teachers to develop new pedagogical methods to increase students' motivation. It encourages the use of Web 2.0 tools such as blogs for personal reflection, wikis for

collaborative work, Flickr to share photos, Twitter for microblogging, etc. Moodle is used as the learning management system and Second Life is being explored for educational applications.

2 SECOND LIFE

Second life is a Multi-User Virtual Environment (MUVE) that allows students and teachers to collaborate actively in projects, and to exchange ideas and information in-world.

Second Life (SL) is a world that tries to reproduce the real one, including the development of rules and even its own economy. People are represented by their avatars (their 3D representations) and they communicate through chat (voice or written text), notecards, their profiles or Instant Messages (IM) . The latter are delivered if the resident is not online at the moment s/he logs in.



Figure 1 – Avatar's profile: Morgen String (author proposal)

Second life also provides educational resources, links, a wiki and a blog for educators. Linden Research (2006) [8] made an agreement with ISTE, for example, to help new people in-world and it also supports teaching in SL (Terdiman, 2004) [9]. Livingstone and Kemp (2006) [10] also studied and gathered the main features that make SL a good tool for education.

This virtual world has the potential to develop a simulation of 'real life' skills and competencies or to create new worlds (De Lucia et al, 2009) [1] rather than 'academic life', that is, it can enhance an experiential learning through activities such as simulations and role-plays.

It also promotes immersive learning as the learner can potentially experience the emotions and thoughts of someone in a simulated situation.

It is also possible to implement learning models that enhance the cognitive structures of the learner (Piaget, 2001) [2], where students can engage in an

active learning process which is student-centred (Bruner, 1960) [3] and guided by an expert or faculty mentor/tutor who interacts with the students (Vygotsky, in Galloway, 2001) [4]. This kind of learning allows an active development of competencies based on evidence as students actively construct new knowledge as they interact with other people and their environment (Jonassen, 1992) [5]. Students are supposed to produce collaboratively tangible outcomes or products (Brown, Collins & Duguid, 1989) [6] such as a building plan, a car prototype, etc, according to the nature of the knowledge that is being built. It also potentiates the creation of communities of practice where people learn by sharing. These communities can be described as groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly. (Wenger, 2000) [7]. The Iowa State University has already created the NMC Educational Community and below is their virtual representation of Wenger's Communities of Practice. (SL Island: Teaching 4 231, 155, 25).



Figure 2 – NMC Educational Community (author proposal)

Because of the great potential SL has already shown, several companies and educational institutions have established their own lands/islands in this virtual world.

2.1 Second Life for educational purposes

2.1.1 Training and Skills Development

Second Life enhances the development of skills and competencies in all the fields as is shown below.

The Thomson Netg develops professional training in ICTs, management, sales and customer support. It uses SL for synchronous classes and on-demand training through audio, video or podcasts resources. Their students can interact with technological applications and do role-play activities.



Figure 3 - Thomson Netg Training (Source: FitzGerald, & Kay) [11]

As far as the Health field is concerned, SL allows the immersion in an authentic context that enhances a deeper knowledge of situations or circumstances. For instance, the *Heart Murmur Sim* aims to provide a place for cardiac training where the participants can visit virtual patients, listen to their cardiac rhythms and make a diagnosis.

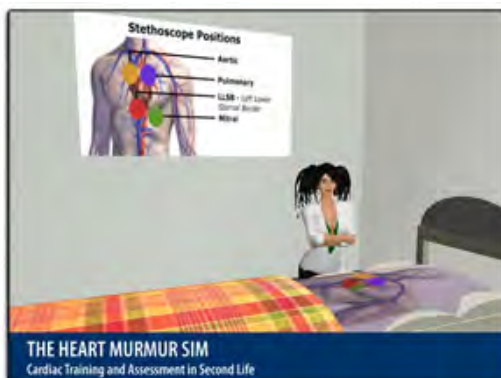


Figure 4 – Cardiac Training (Source: FitzGerald, & Kay) [11]

UC Davis Medical Center's Emergency Workers aims to prepare, train and help its workers to act in emergency situations, in a simulated context before acting in a real world crisis.

Another important work is being done by the *National Oceanographic and Atmospheric Administration*. It has created the visualization in real time of some weather phenomena such as a tsunami or the effects of melting glaciers on the ocean level.

The goals of this island are to stimulate scientific discussion and reflection upon climate issues and, at the same time, allow participants to engage in simulations that wouldn't be possible in the real world.



Figure 5 - National Oceanographic and Atmospheric Administration (NOAA) island in SL (Source: FitzGerald, & Kay) [11]

2.1.2 Training in-service and future professionals

Second Life enhances social interaction, collaboration, the awareness of social global issues, events, data visualization, simple simulations and education.

It allows for the development of a new model for distance education as well as blended learning, and new opportunities for virtual learning. Students and tutors can meet in-world, share information and resources (audio and video files, for instance), discuss projects, make presentations, and do group projects. They can also interact with other educational institutions and develop international projects.

This virtual world eases communication and sharing, key elements in the learning process. Students can make simulations where they can learn from their mistakes and develop new skills to apply in their real lives.

Several educational institutions like the Harvard University, the Leicester University, the Universidade de Aveiro, do Porto, and the Open University (UK), among others, have their own educational spaces in SL where they deliver some courses in several fields.

The Open University of Portugal has implemented a case study to obtain information about students' perceptions of social presence both in Moodle and in SL in order to design and deliver teaching and learning activities in both virtual environments.

The NMC (New Media Consortium) Campus is the most important educational institution in SL. It supports events, classes, demonstrations, art exhibits and educational experiences.

Several well-known educators such as Howard Rheingold, Henry Jenkins and Daniel Reed, have been in conferences at this campus.

The Harvard's Berkman Center for Internet and Society delivers a course to create and present Internet and Web 2.0 tools such as Wikis e blogs. The students also meet in-world at Berkman Island.

The Texas Wesleyan University has got the Genome Island in SL, which was developed by Professor Mary Anne Clark with the aim of teaching Genetics. With the help of building tools and scripting, she built laboratories where the students can participate in virtual experiences and produce data for analysis. The students can also interact with experts in Genetics to broaden their knowledge.



Figure 6 –Texas Wesleyan University Genome Island
(Source: FitzGerald, & Kay) [11]

Besides the above institutions, BBC realized the SL potential to teach foreign languages, mainly English, having created its own space at Virtlantis 116.114.21 (PG). This institution blends SL with Internet pages, supporting the learning of several issues. Virtlantis island is formed by foreign language educators and is an example of best educational practices in SL.

Also another excellent work is being developed by Jo Kay and Sean FitzGerald [11] about Second Life which can be found in their wiki Second Life in Education.

Facilitating informal learning is also one of the concerns in SL. Museums, libraries, Historical Recreations, Art and Music Literature, Machinima, Social issues debates, Politics, Civics, Economy, Commerce, Architecture, support for disabled people, virtual tourism, cultural immersion have a strong implementation in SL.

2.1.3 Pedagogical activities

According to Warburton & Perez-Garcia (2009, in Warburton, 2009) [12], Second Life has some components that can facilitate innovation in pedagogy

through extended or rich interaction, visualization and contextualization, exposure to authentic content and culture, individual and collective identity play, immersion in a 3-D environment, simulation, community presence and content production.

SL allows the implementation of distance learning models where students can engage in an active learning process which is student-centred and guided by an expert or faculty mentor/tutor that interacts with the students (Pereira et al., 2008) [13], (Morgado et al., 2008) [14].

SL ability to create a sense of belonging, a shared space, and the sharing of experiences makes it ideal to develop pedagogical activities such as discussions, debates, presentations, simulations, role play, conferences, exhibits, Treasure Hunts and virtual quests.

This way SL provides a wide range of possibilities that wouldn't be possible in the real world.

In-world you can perform a Shakespeare play for a vast audience, visit a virtual museum, plan your own house and visit it, check the space, the furniture, make adjustments... You can also visit Ancient Rome, prepare a Treasure Hunt where your students can find relevant information.

You can also visit the Sistine Chapel, enter a Van Gogh painting or simulate flights at NASA.

Real time conferences, with people – avatars from all over the world, in the same virtual room, at the same time, allow debating important topics.

Fashion students can organize a fashion show. The Management students can create a company and check the way it works with taking real risks with real money.

The presentations through white boards may be kept in the participants inventory and retrieved later on.

In conclusion, SL has a great potential for distance education, supports computer mediated cooperative and collaborative work, simulations and formal/informal learning and training. It allows each individual to develop skills and competencies, to try new ideas and to learn from the mistakes they make. It also enriches the curriculum and complements face-to-face education.

2.1.4 MUVEnation in SL

Currently learners are used to technology so it's important to integrate them in the classroom through meaningful activities that engage the students.

According to Oblinger (2003, in Martinez, 2007) [15] Student today expect technology to be a natural part of any learning environment because, it has been an integrated part of their lives. They expect technology to be a natural part of any learning environment.

Students think in terms of the activity technology enables and prefer construct their own learning,

assembling information, tools and frameworks from a variety of sources. (Educause, 2005) [15].

Therefore, I began planning a teaching module in Second Life and felt the need to be a learner first. So I joined the postgraduate course "Teaching and Learning with MUVes" inserted in the MUVEnation project.

This programme aims at developing a European peer learning program. But the fact is, people from all over the world are participating in this project, which has been very enriching as we learn from one another's experience. "The MUVEnation project's general aim is to contribute to explore, analyse, develop and evaluate within context the effectiveness of this innovative way of teaching and learning with regard to some of the problems of the educational system such as students' motivation and participation. MUVEnation is based on the so called "teachers' effect" on educational innovation and its approach is to explore the promising potential of active learning approaches integrated to MUVes by starting from the analysis of some major educational problems such as the lack of motivation and find how their integration in education can effectively foster pupils' motivation and participation."

The course was structured in Moodle where the learning activities were described. We could exchange information and clarify any question or doubt in the online discussion forums.

First, we were asked to get familiar with Web 2.0 tools and create our tools: blog, flickr, twitter, netvibes and we also set our presence at the wiki of the course. Then we created our accounts in Second Life, chose our avatars and did the orientation tasks. This task is one of the most challenging as it is the first time that we entered Second Life, completely on our own. We easily got disorientated, felt frustrated and were tempted to reject Second Life. A possible solution to overcome this situation is to set a time to meet in SL (tutors and peers) just after being on the orientation island. This way students could find someone familiar who would help to get them acquainted with the new world. Another solution is having an orientation island with the instructions in the students' mother tongue.

After the orientation tasks, we reflected upon several subjects related to education in Second Life. The activities that were the most difficult to carry out were group projects where members lived in different time zones. So we built our own groups, keeping in mind the real life place where people lived. These activities were quite rewarding and we have been able to build our own learning community in Second Life.

One of the activities was to observe some Hands-on Workshops and point out the best practices and what needed to be improved in order to develop a taxonomy of good practices.

A Hands-on Workshop is an instructional text based activity which is delivered to a small group, in a

tutor-led teaching setting where the virtual learning space can be found configured in a variety of ways. (Warburton & Perez-Garcia, 2008) [16]. According to these authors [16] the workshops in Second Life usually aim to develop specific competencies and skills in building and/or scripting in-world objects. They are delivered in written chat and usually take an hour. These workshops are delivered by non-formal learning instructors and most of them are free.

After observing some workshops and discussing best practices, we observed and agreed on a taxonomy of good practices. A specific template was built in order to register our observation. It was validated by a new panel of teachers.

Then we prepared our own workshop for our peers. Among them, two were our critical friends. Their mission was to observe our practice and point out our best practices and suggest improvements.

Therefore, the methodology was participatory observation, followed by tutor's and critical friends' feedback.

The assessment of the workshop was related to the quality of the students' learning experience and outcomes.

I chose to present a workshop about basic building in Second Life: How to use the tube (a prim) to build a table and a stool.

In spite of preparing everything in advance, there are always some problems that we can't control like some technical issues that prevent us from doing everything as planned. For instance, just a bit before the workshop, I began having trouble with my Internet connection. I kept crashing and had to opt by a mobile Internet access which quality isn't the best. Also I wasn't able to rezz a tube because my upload bandwidth was with problems. Even my voice was heard with cuts, interruptions but the notecard reader solved this problem. I didn't use text chat because I wanted to be able to look at the participants and focus on their progresses and/or problems in order to help them out. At the end of the workshop, I helped some participants getting a notecard reader and explained to them how it worked so that they could use it during their workshops.

My aim was to design, deliver an interesting and useful workshop that enhanced the participants to understand how prims work and create nice objects, like a table and a stool, just with one prim each.

To perform the task, participants would manipulate a tube, by setting different parameters, in order to create a table and a stool. Finally, participants would texture them.

First, before the workshop, I prepared the virtual setting: individual, well limited working areas; stools with a script that allowed avatars to put their hands up when they had questions; examples of the

objects that were going to be built – a table and a stool – notecards with all the instructions and a notecard reader. I asked a friend to test everything in advance to make sure that there were no problems.

Then, while delivering the workshop I began by explaining the task and giving the instructions both through chat voice and a notecard that was being shown on the notecard reader. Also at the beginning of the workshop, a folder containing several textures and a poseball for the stool was given to each participant.

At the end of the workshop, the notecard was given to all the participants.

At the end of the workshop, all the participants managed to create a table and a stool. As some still struggled with the pose ball for the stool, we met in-world to solve this issue.



Figure 7- The workshop outcomes: tables and stools
(author proposal)

In my opinion, several factors contributed to the positive outcomes:

- Previous preparation and checking (Special thanks to Jerit Weiser who tried the chairs to see if they were working properly, if the text displayed on the notecard reader was perceptible and gave his opinion on the setting).
- Using written text so that participants could visualize the instructions.
- Short and clear instructions.
- Managing the communication: hands up to ask questions.
- Few issues/topics in each session in order to avoid cognitive overload and finish the task in the specified time.

I learnt that we can overcome SL technical drawbacks. By collaborating with others we can have good results. Next time, I intend to try some collaborative work between the participants, may be pair work to start with.

One feature of MUVEnation course was the interaction between instructors and peers. It was quite motivating and helped us to get better learning outcomes. After the workshop, we were asked to describe the experience and reflect upon it. One of my tutors, Dr. Steven Warburton from King's College in London wrote *Great story - thanks Angelina. You've identified a number of useful practices that helped make the workshop a success. One of them is on managing the communication - but what do you mean by "hands up to ask questions" ... how did this work in practice?*

When I reflected about the communication and how I managed it, I didn't quite explain how I achieved "hands up" through avatars, so here is my reply:

Hi Steve,

I attended a workshop where the instructor, Massimo, used chairs that had a script that allowed participants to put hands up if they had questions. I thought it was a good idea because when you are absorbed talking, giving instructions, it is more difficult to read all the messages in the local chat. So, if you look at participants and they have their hands up, it is easier to address each at a time and let them ask for clarification. That was what happened in my workshop and it was easier to help the participants. I must thank Cvetka who kindly gave me the chair.

My peer critics were very good and motivated me to try to accomplish even better results next time.

As the workshop was delivered in Second Life, we used our SL identity, our avatars. Mine (Angelina Macedo) is Morgen String.

Observer 1 comments

Morgen prepared a very nice setting for her workshop: our working area was delimited by a carpet and a cube, to sit on. In front of us a notecard reader board and an example of the table we were going to build.

I would like to comment briefly on the setting because, although at first sight it could seem as "standard" (rows of people facing a board), it was somehow innovative and clever. Let's see how and why.

Firstly, our seats had a double function: keep us

locked in place (thus reducing lag) and allow us to rise our hands. I have to admit that almost nobody raised hands to ask questions: we are all too used to write directly in chat. In any case, since the number of the avatars in the workshop was rather small, it would have been possible to use it.

The other thing that I considered very clever and original was the use of the notecard reader. I explain: the workshop this time was delivered using voice. This is much better from the instructor point of view: no need to type, no problems with tired fingers, more flexibility, no need to stick to a notecard inside a Speakeasy (the content we "read" once it is in open chat). But voice in workshops is not good from the learner point of view: it's easy to get distracted. One has to struggle with edit window, values, arrows, textures etc (and possible incoming IM, RL small interruptions, etc.) It's very easy to miss an important passage, to forget the exact value one has to enter or to get lost in a messy inventory.

But here the Notecard reader board represented a written text one could rely on, and allowed some independence, rather necessary when the level of skills is very different.

The workshop was divided in two parts: introduction to the secrets of prim modeling and the production of a table and a stool. Both parts went on smoothly and everybody managed the two pieces of furnitures, and event to add a poseball.

Morgen was in all moment very clear in her explanations and helpful to those who had some difficulties, and I think this was the first workshop I ever attended that finished within the specified time. Very good work, Morgen

Observer 2 comments

[As I did for other workshops, I'm using the analysis grid given us by Marga]

Planning and preparation

- Spatial design and layout: Emulation of RL: participants were sitting in rows in front of a board.
- Learning objectives were clearly outlined at the very beginning of the workshop.
- The instructor's discourse was prepared in advanced
- The physical organisation of learning material: participants were given a folder (at the beginning of the workshop) and a notecard (at the end) by Morgen, individually.

- The workshop was free

Delivery of instruction

- No assessment of prior knowledge, but the workshop was advertized as being for beginners.
- Pre-pared activities to meet the knowledge requirements; Morgen gave an introduction describing the various options in the "Object tab" and asked participants to play with them for a while.
- Conversational flow was done in voice chat. There was also a board showing a summary of the instructor's words.
- Communication dynamics: Tutor -> Learner
- Free position for the teacher, constrained position for participants
- Learning materials were given to participants in two times: at the beginning and at the end. Both times, the instructor gave the items to participants individually.
- Except from the board, no media were used
- Activity was exclusively centred in SL
- Personalization of learning: the instructor used adaptive pathways of communication to come to rescue of a participant who was lagging behind the group
- Pedagogical approach: directive, focused on rules procedures, both process and result oriented

Follow up and evaluation

- The instructor provided support and feedback via voice chat, sometimes reinforcing some terms by repeating them in the local chat. Done on demand when participants had problems.
- The instructor monitored students' progress visually and asking them questions on their progress
- Quality of feedback was informative
- Assessment was informal.

Recall and transfer of learning

- Recapitulation was done at the end of the first part of the workshop, since the creation of a stool was very similar to the creation of the table.
- Participants were given a notecard at the end of the workshop, containing all the

information she had been giving during the workshop.

Personal comments

The workshop was well organized both in terms of space (each participant had enough space to work). The workshop objectives were stated at the beginning and all participants managed to achieve them by the end of the workshop. The delivery of content was well paced. The audience targeted for the audience (beginners) was right, even though Morgen also helped step-by-step a participant who was less experienced than the rest.

Here are a couple of tips I'm suggesting for a second go of the workshop:

1. I would shorten the introductory part describing the various options found in the "object tab". Discussing a couple of them and maybe demonstrate in front of the audience how they can affect a prim would suffice. Also, rather than encouraging participants to play with the various options as they wish, I would ask them to do something specific, to see how a certain option can affect the prim in question (i.e. ask them to hollow a sphere, then a cube and then compare the results) otherwise, participants have no clear idea why their object changed shape.

2. Instead of giving the material for the class to each participant individually, have a giver object that could distribute it. The distribution of the class material can otherwise take a little time and sometimes one or more participants might be skipped unintentionally (I did this mistake at the end of my own seminar: while I had a giver object for the initial folder, I'm not sure why I didn't prepare a similar object for the final notecard, which I distributed to each participant individually: not a good idea).

3. I personally prefer a workshop given in local chat, so that if I lag behind, I can easily go back a couple of lines and catch up. I understand that Morgen's board played the role of the local chat, but to focus on it, one had to leave his/her object behind and then go back to it. Also, voice chat always takes a little while to work, requiring sometimes lengthy initial tests. Actually at the beginning nobody could hear Morgen, probably due to her internet connection (indeed she crashed after a couple of minutes), and we spent some time on that. Also, one participant could not hear Morgen later, because she was a bit too far. In all occasions I saw voice being used, the same problems occurred, so it's a voice issue, not Morgen's.

4. I could not get the poseball to work; even when I

tried later, I keep ending up sitting IN the floor (as in a quicksand swamp) and not on the stool. I am really not sure why. On the other hand, the stool works fine without the poseball, so I decided not to waste time to investigate the mishap further.

Well done Morgen.

This kind of interaction enriches all the participants and contributes for the development of collaboration, critical thinking and reflection as well as for the building of the virtual learning community.

The activities which were developed in-world have proved that SL has a great potential for education as other several researchers have already described. On its island, some activities can be checked at the landmark: MUVEnation 110.121.22.

Warburton & Perez-Garcia (2008) [16] defined four key steps to deliver Hands-on Workshops. These steps are visible in the practice described:

- Planning and preparation;
- Delivery of instruction;
- Follow up and evaluation;
- Recall and transfer of learning.

Therefore, it's very important to structure the environment, reflect on our practice and build transferability. It is also very important to set the communication rules between all the participants in order to avoid disruption, and design support for students who get behind. The validation of the workshop is not a closed process; on the contrary, it is an iterative process that is built over time.

Recent research and our practices show that some design patterns¹ can be defined such as sharing experiences, for example, stories/accounts of what worked and what requires improvement (activities, setting, results, our objectives, what we achieved, what wasn't achieved, etc). Another factor is the identification of problems that are common and of the associated forces. Listing the successful solutions is another useful design pattern. Finally, sharing and discussing these patterns facilitate their refinement and the creation of a design language.

This course provided me with some insights to implement a learning project with my students to learn English as a Second Language and develop their Citizenship and themselves as global citizens. This project is going to be implemented on a private island because my students are teens, so they are not allowed in Second Life grid which is for people over 18. On this island there are several schools from all over the world where their teachers and students develop learning projects, interact and collaborate in a virtual learning community.

2.1.5 SL drawbacks

Some potential problems require reflection in order to be undertaken. According to Kovela (n.d.) [17], it takes too much time to be in SL, the content creation and its updates require a lot of space and the copyright raises some issues. Although SL system tries to protect the rights of the content builder, it is not OpenSource as it is in an outsider server. The problem comes with the possibility of losing all the data if the servers are down or if the island is destroyed.

Another problem that needs to be dealt with, is raised by content connected to intolerance, sex, commerce, fraud...

Other authors refer the need for improvement of other issues that have a strong impact in communication and interaction between avatars. For instance, avatars don't control the way they look at one another, or the facial expressions very well. The face and the eyes keep the same expression by default, though several progresses are being made in this field. The expressivity is reinforced by the paralinguistic symbols in written text.

Some technical issues must be improved such as lag and crashes and they imply people to spend more time doing a task and therefore waste time which can demotivate people and eventually lead people to reject SL.

3 CONCLUSIONS

Second Life is making an impact in the academic world as it has unique features that potentiate collaboration, sharing, decision making, critical thinking and experiential learning in the virtual learning community.

Nevertheless, educators must be aware of SL challenges when transferring their first life pedagogical approaches to their second life teaching.

Teachers need to learn how to teach in SL as Real Life teaching expertise does not guarantee SL teaching positive experiences.

Although there are some constraints that have to be overcome, it is undeniable that SL encourages people to interact and collaborate in a way that conveys a sense of presence that is not found in other media. This virtual world is growing in popularity because it provides *social networking; the ability to share rich media seamlessly; the ability to connect with friends; a feeling of presence; and a connection to the community* (Austin & Boulder 2007)[18].

So far, research demonstrates that SL has a great potential for learning which can be enhanced with the improvement of technology and communication. This needs further improvement but it has already provided evidence that SL can help to develop skills concerning socialization, peer and group work, critical thinking and problem solving.

Deutschmann (2009) [19] states that *The key element here is, according to Svensson, not the technology, the simulations or the effects per se, but the fact that SL and worlds like it allow for meetings with "real people 'playing' themselves or having alternate personas), for working collaboratively with remote participants" and, for the creation of a "place and a unified spatial interface" for such meetings.*

To sum up, we can conclude that SL has a great potential for education, being required that educators identify and select the strategies and activities that are more appropriate for face-to-face context or virtual context.

Nevertheless more research is required to make this world more accessible and easy to use so that educators can optimize these virtual worlds for the teaching and learning process.

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¹ Pattern – a problem which occurs over and over again in our environment, and then describes the core of the solution to that problem, in such a way that you can use this solution a million times over, without ever doing it the same time twice" (Christopher Alexander, 1977 in Warburton & Perez-Garcia, 2008) [16].

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Videoconferência na U.PORTO ao serviço das TIC na Educação

As Tecnologias de Informação e Comunicação (TIC) estão a revolucionar o sistema de ensino e, em especial, o ensino superior. *E-learning*, *blendend-learning*, *mobile learning* são apenas alguns dos termos mais conhecidos quando associamos as TIC à Educação. Existe um segmento que ainda não foi explorado de forma significativa: a videoconferência. A crescente internacionalização do ensino superior e a aposta na formação contínua determinaram o envolvimento da Universidade do Porto (U.PORTO) no investimento crescente nesta área.

A U.PORTO, através da sua unidade de Novas Tecnologias na Educação (NTE) do Departamento para a Universidade Digital da Reitoria, gere desde Março de 2005 o Estúdio de Videoconferência desta Universidade. Este equipamento está intimamente ligado à disseminação das tecnologias de videoconferência na U.PORTO e tem-se destacado no universo da comunidade académica desta Universidade pela sua taxa de utilização. Só nos anos de 2007 e 2008 este equipamento da U.PORTO registou um aumento de cerca de 300% na sua utilização. Foram vários os esforços desenvolvidos pela equipa de NTE que contribuíram para esta intensidade de utilização e que pretendemos dissecar nesta exposição. Destacamos a **fluidez no serviço prestado, a multifuncionalidade na utilização, a aquisição e desenvolvimento de conhecimentos e competências na área das tecnologias de videoconferência** e a **internacionalização do serviço**. O resultado extremamente positivo desta infra-estrutura contribuiu para a implementação da nova sala de Telepresença da U.PORTO (inaugurada em Julho de 2009) que vem complementar o Estúdio de Videoconferência. Com características completamente diferentes entre si, estes dois equipamentos da U.PORTO vão permitir uma optimização na oferta do serviço de videoconferência da U.PORTO.

A forte taxa de utilização desta infra-estrutura da U.PORTO está intimamente ligada à fluidez do serviço de apoio do Estúdio de Videoconferência. O utilizador deste serviço da U.PORTO não necessita de se envolver no processo tecnológico completo para a preparação de uma videoconferência. O processo de reserva deste equipamento pretende simplificar, ao máximo, a participação do utilizador na preparação de uma sessão. O utilizador apenas necessita de fornecer os contactos técnicos das instituições para onde pretende realizar as videoconferências e a partir desse momento a equipa de NTE assume a totalidade da preparação da sessão de videoconferência. Esta transparência do processo de preparação de uma videoconferência permite diminuir a “frieza” das tecnologias de videoconferência e constitui um dos pilares fundamentais para uma boa experiência por parte do utilizador. O utilizador é informado do processo de preparação da sessão e necessita apenas de se deslocar ao Estúdio de Videoconferência da U.PORTO na data e hora marcadas para a sessão. Este processo permite reter um conjunto de informações que vai proporcionar, no futuro, uma ainda maior agilização do processo no caso de o utilizador pedir a preparação de uma videoconferência idêntica. A equipa de NTE, que possui os resultados da experiência anterior, agiliza a preparação da nova sessão de videoconferência em função dessa experiência. Esta agilização e acumulação do conhecimento das experiências realizadas permite melhorar as sessões de videoconferência em cada momento e proporcionar ao utilizador a melhor experiência possível na utilização das tecnologias de videoconferência.

As características multifuncionais do Estúdio de Videoconferência da U.PORTO permitem criar vários ambientes e cenários de colaboração. A capacidade logística desta sala permite uma mudança entre vários tipos de disposições e manter em qualquer situação um

conjunto de boas condições visuais e acústicas. É possível desenhar e operacionalizar um conjunto de possíveis cenários que englobam ligações entre a sala local e uma ou várias salas remotas; permite a necessidade de efectuar apresentações ou um ensino “formal” e todo um conjunto de possibilidades onde a interactividade possa estar presente. Cenários de sala de reuniões, cenários de sala de aula com apresentação e transmissão simultânea de dados, disposição em auditório, cenários que permitam a criação de conteúdos (ex: gravação de vozes, gravação de linguagem gestual, etc), cenários que permitem a utilização de técnicas 3D em videoconferência e videodifusão, etc. Esta multifuncionalidade física é acompanhada de um conjunto de *hardware* e equipamentos que permitem uma conjugação muito variada de situações. Equipamentos esses que abrangem a tecnologia H.323 com *dual* vídeo, mesa de mistura de som, gravador de DVD, cancelador de eco, matrizes de áudio e vídeo, câmaras de vídeo PTZ, colunas 5.1, microfones wireless, quadro digital interactivo, projectores multimédia, câmara de documentos, projectores de luz, servidor de rack, etc.

Dos vários cenários implementados ao longo dos anos de existência desta infra-estrutura da U.PORTO, destacamos os cenários de âmbito pedagógico que se transformaram em projectos pedagógicos estruturados e oficiais com a duração de um período lectivo completo. Destacamos sobretudo a realização de um Mestrado em Economia e Política do Ambiente entre Faculdade de Economia da U.PORTO e o Instituto Superior de Economia e Gestão da Universidade Técnica de Lisboa, onde uma turma de vinte alunos esteve presente no Estúdio de Videoconferência da U.PORTO durante um semestre lectivo e o Professor estava em Lisboa. Podemos destacar também um projecto pedagógico que durou um ano lectivo completo entre a Faculdade de Ciências da U.PORTO, o Instituto Superior Técnico da Universidade Técnica de Lisboa e a Carnegie Mellon University (EUA). Um Professor e uma turma em Lisboa, uma turma nos EUA e um aluno no Estúdio de Videoconferência da U.PORTO proporcionaram cerca de sessenta sessões entre estes três locais.

A aquisição e desenvolvimento de conhecimentos e competências na área das tecnologias de videoconferência também contribuíram para o desempenho bastante positivo do Estúdio de Videoconferência da U.PORTO. O *know-how* que a FCCN (Fundação para a Computação Científica Nacional) desenvolveu na área das tecnologias de videoconferência tornou-se no pilar fundamental do desenvolvimento de competências por parte da equipa de NTE. A rede de conhecimento nacional estruturada e apoiada pela FCCN na área das tecnologias de videoconferência e o apoio permanente desta entidade, permitiram à equipa de NTE consolidar as suas competências. Para além disso, a própria equipa de NTE procurou desenvolver uma forte actividade de *benchmarking* internacional na área formativa das tecnologias de videoconferência procurando integrar programas de formação internacional como, por exemplo, o Internet2 Commons Site Coordinator (<http://commons.internet2.edu/sitecoordinators.html>). Intimamente associada a esta procura constante de competências na área das tecnologias de videoconferência e da própria actividade de *benchmarking* internacional está o desenvolvimento de colaborações internacionais que, muitas vezes, culminaram na realização de um conjunto de actividades, extremamente interessantes para o desenvolvimento das tecnologias de videoconferência.

Ao longo das várias actividades apoiadas pela equipa de NTE, desenvolveu-se um conjunto de variados contactos internacionais e mesmo a integração em redes de conhecimento internacionais que permitiu alargar a massa crítica nesta área. Esta componente de internacionalização assumiu-se e continua a assumir-se como um factor importante para a intensidade de utilização desta infra-estrutura da U.PORTO. Algumas das entidades que desempenharam um papel fundamental nesta componente de internacionalização foram a Internet2 Commons (<http://commons.internet2.edu>), a ViDe Net (<http://www.vide.net>), a Internet2 Arts and Humanities Initiatives (<http://www.internet2.edu/arts/>), a TERENA (Trans-

European Research and Education Networking Association, <http://www.terena.org>), o Teatro Gran Liceu de Barcelona e a REDIRIS (<http://www.liceubarcelona.com>), a The Philadelphia Orchestra (<http://www.philorch.org>), a MAGPI Educational Services e a University of Pennsylvania (<http://www.magpi.net>), o Global Consortium e Cerritos College Humanities (<http://www.cerritos.edu/jhaas/>) ou mesmo a comunidade AccessGrid e a Universidade de Manchester (<http://www.accessgrid.org>).

(Conclusão)

A forte taxa de utilização do Estúdio de Videoconferência da U.PORTO, o dinamismo implementado ao longo dos vários anos de utilização e a percepção do tipo de utilização deste equipamento da U.PORTO contribuíram para a decisão de implementação de um novo desafio tecnológico na U.PORTO ao nível do desenvolvimento das tecnologias de videoconferência: uma sala de telepresença. A nova sala de telepresença da U.PORTO (Sala Douro HD), montada igualmente na Reitoria da Universidade vai aumentar exponencialmente a oferta de um serviço de videoconferência para a comunidade académica da U.PORTO.

Esta nova infra-estrutura apresenta uma excelente posição ocular, um interface apelativo e de fácil utilização, boa qualidade de vídeo e áudio, três ecrãs LCD's de Alta-Definição, proporcionando uma grande imersividade e uma experiência revolucionária para todos os utilizadores. Com características completamente diferentes entre si, estes dois equipamentos da U.PORTO vão permitir uma optimização na oferta do serviço de videoconferência da U.PORTO. Essa optimização pode passar pelo direccionamento de um género de videoconferências para a Sala Douro HD (reuniões de júri ou reuniões até 6 pessoas) e de outro tipo de videoconferências para o Estúdio de Videoconferência da U.PORTO (videoconferências com mais de 6 pessoas, videoconferências com formatos de sala de aula, disposições em auditório, cenários de criação de conteúdos, etc).

Esta segmentação de géneros de videoconferência pode potenciar não apenas a taxa de utilização destas infra-estruturas da U.PORTO mas também criar mais espaço para potenciar a utilização pedagógica das tecnologias de videoconferência na comunidade académica desta Universidade. Perspectiva-se a possibilidade de criação de mais oportunidades de utilização, sobretudo do Estúdio de Videoconferência da U.PORTO (devido às suas características multifuncionais), para cenários pedagógicos diversificados, inovadores, estruturados e constantes ao longo dos vários anos lectivos.

Doingit – Promoção do empreendedorismo com base em software educativo

Edgar Lamas, Marco Lamas

“Em Fevereiro de 2005, a Comissão propôs um novo começo para a Estratégia de Lisboa, centrando os esforços da União Europeia em duas tarefas principais: garantir um crescimento mais forte e duradouro e criar mais e melhores empregos. A nova parceria para o crescimento e emprego põe em destaque a importância de promover uma cultura mais orientada para o Empreendedorismo e de criar um ambiente favorável às PME.” COM (2006) – Aplicar o programa comunitário de Lisboa: Promover o Empreendedorismo através do Ensino e da aprendizagem. Bruxelas 13.02.2006.

A sociedade industrial transformou-se numa sociedade da informação e mais recentemente numa sociedade do conhecimento baseada no capital humano como principal meio de produção; esta é uma das principais alterações associadas à sociedade do conhecimento; efectivamente, o factor de produção principal deixou de ser a terra, o trabalho ou o capital e passou a ser o conhecimento, conhecimento, esse reconhecido como o elemento mais importante para o desenvolvimento das instituições (Lamas, 2006). Como diz Peter Drucker (2003:pag. 20) “Em vez de capitalistas e operários, as classes da sociedade pós-capitalista são os trabalhadores do conhecimento e serviços.”

Uma nova abordagem de resposta às necessidades e de procura, por parte da sociedade de hoje, é a formação de um espírito e uma cultura empreendedora. Esta realidade é claramente demonstrada pela UNESCO na sua declaração mundial sobre o Ensino superior para o século XXI e pela União Europeia, através da Agenda de Lisboa emanada do Conselho Europeu reunido em Lisboa em 2000, que estabelece como objectivo, a atingir em 2010, transformar a Europa na mais competitiva e dinâmica economia baseada no conhecimento do mundo e, mais especificamente, através da carta europeia das pequenas empresas, que aponta o espírito empresarial como essencial para o desenvolvimento económico.

Conforme o Comunicado da Comissão Europeia COM (2006) acima citado, “A promoção do empreendedorismo entre os jovens é um elemento chave do Pacto Europeu para a juventude, adoptado pelo Conselho Europeu em Março de 2005.”

Consideramos que a inovação e o Empreendedorismo constituem a resposta a esses desafios e são, sem dúvida, os catalizadores que permitirão alcançar o desenvolvimento sustentável que se pretende, criando emprego e aumentando a competitividade e o crescimento económico e social. A Educação tem um papel fundamental na formação de competências, atitudes e cultura. A formação em Empreendedorismo é, por isso mesmo, em nossa opinião, crucial para a dinamização que se pretende do espírito e cultura empreendedores.

No caso de Portugal Quando falamos em educação e formação em empreendedorismo o cenário é ainda mais desolador, Portugal aparece segundo o mesmo estudo do GEM de 2001 em último lugar da lista dos 26 países que investem em educação e formação em empreendedorismo. O GEM aponta como principais razões para esse facto:

- Predominância de uma atitude avessa ao risco, transmitida entre gerações;
- Ausência de vocação ou experiência empreendedora dos professores;

- Sistema de ensino destituído de conteúdos e instrumentos adequados para o efeito;
- Ausência de práticas metodológicas que fomentem o empreendedorismo nos diversos graus de ensino;
- Quase inexistente ligação entre o mundo dos negócios e a escola.

Por tradição o povo português é avesso ao risco, o que significa que a atitude empreendedora, não é uma característica inata, mas que tem que ser cultivada e desenvolvida em Portugal. A realidade económica que o mundo enfrenta actualmente, e em particular Portugal, faz com que a cultura empreendedora, mais do que uma necessidade seja uma emergência. É neste campo que a formação em empreendedorismo e competências inerentes a esta característica, apoio à criação de empresas e inovação são cruciais.

A necessidade de uma aposta clara em projectos integrados de promoção do empreendedorismo é algo aceite consensualmente, é necessário desenhar e implementar projectos que contribuam eficazmente para a promoção do empreendedorismo, na Doingit acreditamos que o devemos fazer nas Escolas desde o ensino básico (1º,2º,3º ciclo), secundário e ainda ensino superior e devemos ainda fazê-lo através de projectos de índole social permitindo aos mais desfavorecidos ter acesso a oportunidades de criação do seu próprio emprego de forma isolada ou trabalhando com grupos específicos ou localizações geográficas previamente definidas.

De forma a dar resposta aos desafios patentes acima e indo ao encontro das reais necessidades dos clientes, tendo sempre como meta o desenvolvimento económico e social, nasceu este projecto que se alicerça na oferta de produtos, mais especificamente, programas de desenvolvimento de competências empreendedoras com base num conjunto de *software* educativo a ser utilizado em plataformas de aprendizagem e em quadros interactivos. A Doingit perfila-se, então, com um projecto direccionado para o sector da Educação e encerra em si um conceito inovador no cenário da promoção do Empreendedorismo em Portugal. O desenvolvimento expectável do projecto implica a utilização de internet de banda larga de nova geração que, garantindo a transmissão e utilização de conteúdos multimédia, vence assim a dispersão geográfica e promove a comunicação síncrona.

Nessa óptica, prevê-se que o acompanhamento das actividades seja efectuado, até à sua implementação com base na consultoria, em formação e assistência técnica, a partir do desenho do projecto e sua adequação do projecto ao cliente. A investigação, sempre presente, visa manter uma actualização de *best practices*, alimentando a melhoria contínua dos seus produtos e serviços. Todas as actividades da empresa, suportadas por um conjunto de ferramentas de apoio à gestão, garantem uma prestação de serviços eficaz e eficiente. Estas ferramentas constituem, assim, um meio de operacionalização do plano de comunicação e promoção dos serviços da empresa, permitindo chegar aos seus potenciais clientes de uma forma mais integrada, num aprimoramento crescente.

Como acima ficou dito, a actividade programada consiste na criação de *software* educativo, mais propriamente, programas de desenvolvimento de competências empreendedoras (conteúdos educacionais interactivos e multimédia com recurso à comunicação e mobilidade centrado no princípio da socialização); este *software* destina-se a ser utilizado em plataformas de aprendizagem e em quadros interactivos sempre suportados pela investigação. Contamos, então, com:

- *Software* educativo/pedagógico, tendo como público-alvo alunos do 1º, 2º e 3º ciclo do Ensino Básico, do Ensino Secundário, da Formação Profissional e do Ensino Superior; a finalidade é a promoção do Empreendedorismo (serão 5 pacotes de *software*);
- *Software* para ser utilizado *on-line*, em quadros interactivos em cd e em pendrive;
- 5 websites.

Estas soluções pressupõem a criação de um ambiente geral, no qual a empresa se insere com um conjunto de informações institucionais, objectivos e um catálogo organizado com uma navegação intuitiva, atractiva e inovadora para o utilizador. De modo a acompanhar a evolução tecnológica do século XXI e dadas as circunstâncias económicas actuais e o público-alvo a atingir, consideramos fundamental a criação de cinco Websites à imagem do Empreendedorismo nas vertentes do Ensino Básico e Secundário, assim como do Ensino Profissional e do Ensino Superior. Um Website institucional, abrange de forma intuitiva e interactiva os quatro níveis referidos; contamos, ainda, com uma loja on-line para fornecimento imediato (por exemplo, material didáctico), um fórum de discussão/debates e ligações a outras plataformas (por exemplo, o Moodle, o Teleformar.net, o Formare, o Dokeos), que servem de complemento e apoio aos utilizadores suportados por tutorias; esse fórum adequa-se às situações específicas que vão surgindo.

Estas aplicações salvaguardam a utilização das tecnologias móveis (telemóveis, MP3 e MP4) adequadas ao ensino e à informação aos alunos (dinamização de debates, avisos de datas de entrega de actividades, envio de resultados, notícias, mensagem rápidas, ...), através de *Podcasting*, ou seja, uma publicação na Internet de arquivos de media digital (áudio, vídeo, imagens, pps, pdf, etc ...), através de um *Feed* RSS e simples SMS, permitindo aos alunos a recepção de avisos de datas para entrega de actividades, resultados, notícias e a oferta de possibilidades de acompanharem as actualizações das aplicações multi-media. Assim, será possível o acompanhamento e/ou download automático dos conteúdos dos *Podcast* disponíveis *on-line* nas diferentes páginas da internet, como, por exemplo, lições do professor, recursos que permitirão aos alunos a aprendizagem em sala de aula ou fora dela, sem estarem sujeitos a horários ou a um local específico e pelo recurso às tecnologias que a maioria dos alunos usa no seu dia-a-dia como ferramenta de trabalho.

O desenvolvimento do *software* educativo carece do planeamento curricular, em torno do tema Empreendedorismo, e da criação de *objectos de aprendizagem* que visem cumprir os *curricula* criados. Estes *objectos de aprendizagem* consistem em diversas aplicações informáticas com conteúdos educativos, matéria ou guias de aprendizagem, e que serão o elemento didáctico no processo ensino-aprendizagem. Os *objectos de aprendizagem* estão presentes nos vários suportes identificados no projecto (*websites, plataformas, DVD, pendrives, quadros interactivos*).

Para este desenvolvimento, subcontratam-se serviços de alojamento, *design* e programação de *websites*, assim como a construção de módulos informáticos a integrar nas várias soluções. Cabe ao promotor delinear a estratégia educativa, desenvolver a componente comunicativa dos *objectos de aprendizagem* e interligar os módulos, garantindo o cumprimento dos *curricula*, por ele também, definidos.

Consideramos importante, evidenciar os pontos fortes e os pontos fracos do Doingit. Assim, como pontos fortes, elencamos:

- as áreas de saber dos recursos humanos;

- as competências, especialidades e experiências académicas e profissionais das pessoas envolvidas no projecto abrangem o Empreendedorismo, nomeadamente a gestão de empresas e coordenação de projectos (incluindo a inicialização e instalação de novas empresas em ambiente nacional e internacional);
- a Educação, a Investigação e desenvolvimento científico nas áreas implicadas no projecto (coordenação ao nível científico-pedagógico e administrativo de cursos, leccionação de disciplinas, formação profissional) e
- a área tecnológica com o desenvolvimento de conteúdos de e-learning e de sistemas web (trata-se de programação web, usabilidade, base de dados e comunicação).

Naturalmente, como em todos os projectos, reconhecemos haver também pontos fracos; o facto de ser um projecto sem precedentes leva-nos a estarmos atentos à ideia de que, embora cada componente base do desenvolvimento do projecto seja, isoladamente, uma prática já desenvolvida anteriormente, como um todo, o projecto agrega vários conceitos e tecnologias pela primeira vez, delineando-se como um projecto sem precedentes o que implicará um forte investimento do promotor em investigação e concepção de novas soluções.

A experiência e o conhecimento do mercado nacional dos promotores e da equipa, com actividades desenvolvidas ao longo dos anos, em várias empresas e sectores e o facto de se ter construído, com o tempo, com uma rede de contactos já com alguma dimensão, nomeadamente, junto do público-alvo do projecto, constitui-se uma mais valia. Um factor forte, a considerar na expansão da empresa, reside no forte e experiencial conhecimento da realidade política e social de mercados externos, como é o caso da rede de relacionamentos, nomeadamente nos PALOP (em particular Cabo Verde e Moçambique), o que permitirá uma maior penetração no mercado internacional, onde se pretende centrar esforços.

A competitividade dos produtos da empresa assenta fundamentalmente na inovação e na qualidade dos produtos e serviços associados (formação e assistência técnica e formação e preparação dos futuros gestores de projecto dos clientes), na capacidade de resposta e no cumprimento dos prazos.

Sistematizando, diremos que foram concretizadas etapas de investigação, desenvolvimento e actuação no mercado, definidas de acordo com a estratégia apresentada e com a análise e definição correspondentes aos pontos fortes e fracos, ameaças e oportunidades, nomeadamente:

- identificação da tecnologia (plataformas, sistemas, aplicações) a utilizar;
- criação de ambientes propiciadores e potenciadores de aprendizagem;
- participação em eventos comerciais e científicos;
- definição de estratégias pedagógicas e identificação de métodos e técnicas;
- desenho curricular, desenho didáctico e de suporte comunicacional de cariz pedagógico;
- descrição e desenvolvimento de objectos de aprendizagem;
- concepção e produção de manuais e guias de aprendizagem;
- criação de estratégias de aprendizagem (conteúdos programáticos, guias alternativos de aprendizagem e fichas avaliação de acordo com a caracterização do público alvo);
- selecção de componentes Web, seu potencial e compatibilidade.

É, pois, nossa intenção, proceder à apresentação da Doingit na Conferência EDEN, a partir do protótipo do Website institucional, entretanto criado, o qual, pelo seu carácter interactivo, nos permitirá pôr em evidência o que aqui tentamos transmitir e, assim, promover uma discussão que vise recolher contributos válidos para a melhoria continua do nosso projecto.

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O software social: aprender na rede

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Laboratório de Educação a Distância

I. C-learning: aprender com os outros

Tentando compreender de que modo estas novas formas de colaboração emergentes podem ser aproveitadas e desenvolvidas, Martin Owen e outros investigadores do FutureLab (06-2006) publicaram, na nova série *Open Education*, um artigo extenso sobre a inter-relação entre duas tendências fundamentais que, a seu ver, estão a dominar a área das tecnologias na educação. Por um lado, no campo da educação, a ênfase crescente para ir além da mera aquisição de conhecimento e de informação e almejar o desenvolvimento dos recursos e competências necessários para aprendermos ao longo da vida. Por outro, no campo da tecnologia, a proliferação de tecnologias que permitem criar recursos e comunidades em que os indivíduos se juntam para aprender, colaborar e construir conhecimento.

Vêem os autores, na intersecção destas duas tendências, uma possível migração entre o e-learning e aquilo que designam como c-learning. Designe-se esta nova realidade como aprendizagem em comunidade (*community learning*), aprendizagem comunicativa (*communicative learning*) ou aprendizagem colaborativa (*collaborative learning*), na base da aprendizagem reside um processo social (Owen et al., 06-2006).

Na perspectiva de Jay Lemke (2002), citado pelos autores (op. cit.), a reengenharia da educação passa por analisar as formas como aprendemos “naturalmente” num cenário contemporâneo:

- ler um livro ou navegar na web em busca de informação
- pedir a um amigo ou a um perito que nos explique algo
- experimentar coisas e tentar, a partir disso, tirar conclusões
- juntar um grupo para encontrar a resposta para algo ou para concretizar algo
- observar como os outros fazem algo e tentar depois fazê-lo nós próprios
- explorar novos territórios, sozinhos ou acompanhados
- falar com outras pessoas
- escrever, desenhar, produzir diagramas, desenhos, filmes, música, multimédia
- inventar novas coisas ou ideias por nós próprios
- comparar ideias e experiências diferentes
- perguntar porquê? como? de que outra forma?
- todas estas formas em combinações várias

De um modo ou outro, todos estes aspectos requerem um envolvimento com outras pessoas, seja através do diálogo, seja através da interacção com as formas como elas transpuseram os seus pensamentos e perspectivas para diversos *media*. Deste ponto de vista, aprender é um processo de encontros e experiências rico e diversificado pois, como refere Lemke, “it takes a village to educate a child” (Lemke 2002, citado por Owen et al., 06-2006: 11).

As ferramentas que suportam e facilitam esta comunicação e interacção num contexto social têm a designação de software social (*social software*), termo que, segundo Owen et al. (op. cit.), terá sido cunhado em 2002 por Clay Shirky, escritor e professor interessado nas implicações sociais da tecnologia da Internet, e que designa, na sua definição simples, “software that supports group interaction” (Shirky 2003, citado por Owen et al., 06-2006: 12).

Para além de nos concentrarmos nas formas de aprendizagem que estão a aparecer, resultantes do enfoque por parte de organizações e educadores na criação de conhecimento, na colaboração e na prática como objectivos fundamentais, temos também, segundo os autores (Owen et al., 06-2006) que tentar identificar de que modo a introdução de tecnologias digitais permite novas abordagens à aprendizagem e à interacção social., num momento em que os jovens estão a desenvolver novos hábitos e uma nova cultura[1].

Os autores destacam nas transformações culturais e sociais em curso algumas temáticas, em seu entender, mais relevantes, a saber:

1. O repensar da Criatividade – com os consumidores a tornarem-se, de formas bastante fáceis, produtores, esta cultura crítica de consumo e remistura atenua acentuadamente a linha entre consumo e produção.

2. O repensar da Atenção – a informação que jorra abundante e ininterruptamente de várias fontes provoca em nós um estado de dispersão mental a que Linda Stone (2005; citada Owen et al., 10-2006) chamou “atenção parcial contínua” (*continuous partial attention*). Este estado parece decorrer de uma conectividade “sempre ligada” (*always on*) e manifestar-se de diversas formas como, por exemplo, a comunicação paralela que decorre entre membros da audiência – o *back channel* – através de chat, mensagens instantâneas, blogues, etc., característica em conferências ou encontros de tecnologias, e que complementa, ao mesmo tempo, a comunicação principal do orador – o *fore channel*.

3. O repensar do Espaço – é fácil aceitar a ideia de locais virtuais de encontro na cultura da Web. Estamos, por outro lado, a caminhar para um estádio em que as tecnologias cada vez mais disseminadas acabam por sobrepor ao espaço físico um manto de realidade aumentada (*augmented reality*).

4. O repensar da Identidade – existem dois aspectos fundamentais para a questão de como a adopção de práticas digitalmente ricas pode ter um impacto na nossa percepção de identidade: a construção da identidade através do consumo e da produção de *media* digitais e a interacção entre a nossa identidade real e a nossa identidade virtual.

Em certa medida, esta noção de conciliar as nossas identidades e acções no mundo virtual e no mundo físico (utilizamos esta formulação, que nos parece mais adequada do que a usada por Owen et al., de “real”) é uma das preocupações centrais no artigo *A Nomad’s Guide to Learning and Social Software*, de Ulises Mejias (10-2005).

Reflectindo sobre o papel do software social nos novos modelos de aprendizagem e de participação na sociedade, Mejias considera que, para além de permitirem a conexão dos aprendentes a recursos e entre si de novos modos, o verdadeiro potencial destas ferramentas reside no facto de nos permitirem compreender as melhores formas de integramos as nossas experiências sociais online e offline. Para fazer jus ao seu nome, o software social deve ser capaz de conciliar e articular as práticas sociais quotidianas dos indivíduos, que incluem a interacção com pessoas online mas, também, com outras que não têm acesso a estas tecnologias.

II. A complementaridade entre o mundo físico e o mundo virtual

A relação entre as tecnologias e a aprendizagem nem sempre tem sido uma relação produtiva ou resultado em inovação. Com frequência, a adopção de novas tecnologias na educação tem-se orientado para a reprodução de velhas fórmulas e métodos, agora desenvolvidos com novas ferramentas, mas em que nada de substancial muda. Ora, o verdadeiro sentido da utilização de novas ferramentas, aquilo que torna a sua adopção um desafio interessante e fecundo, é questionar os princípios pedagógicos sobre os quais assentam os modelos educativos para provocar mudanças significativas.

De acordo com Mejias (2005), os modelos de aprendizagem baseados no software social podem facilitar a evolução daquilo a que Brown & Duguid (2000) chamavam “aprender sobre” (*learning about*) para um “aprender a ser” (*learning to be*), ou, numa formulação que o autor refere ter uma conotação mais *deleuziana*, para um “aprender como devir” (*learning as becoming*).

O software social poderia, assim, ter um impacto positivo na pedagogia, ao instilar um desejo de nos ligarmos ao mundo como um todo, e não apenas às partes sociais que existem online.

Num comentário na página onde Stephen Downes disponibiliza a sua apresentação (áudio e Slides) *Goups vs Networks* (29-09-2006), Mejias refere o artigo de Barry Wellman, de 2001, *Little Boxes, Glocalization, and Networked Individualism*, como uma boa introdução para as questões relativas às formas de socialização e ao modo como têm vindo a mudar com as tecnologias. Na verdade, o texto de Wellman constitui uma base comum interessante entre os aspectos que aqui abordámos, a propósito de Owen et al. e de Mejias. Nesse texto, Wellman (2001) reflecte sobre como as comunidades humanas evoluíram de

densely-knit “Little Boxes” (densely-knit, linking people door-to-door) to “Glocalized” [3] networks (sparsely knit but with clusters, linking households both locally and globally) to “Networked Individualism” (sparsely-knit, linking individuals with little regard to space) (do abstract).

As “pequenas caixas” são uma metáfora para as pessoas social e cognitivamente encapsuladas em grupos homogêneos alargados. Os membros das sociedades que se organizam deste modo lidam sobretudo com os seus congêneres dos grupos a que pertencem: em casa, no bairro, no trabalho ou em organizações voluntárias. É frequente estes grupos possuírem limites para a inclusão neles e uma organização estruturada e hierárquica: supervisores e empregados, pais e filhos, padres e crentes, executivos organizacionais e membros. Numa sociedade deste tipo, cada interacção acontece no seu local próprio, um grupo de cada vez.

Nas sociedades em rede (*networked societies*), por outro lado, o trabalho, a comunidade, a domesticidade evoluíram de grupos hierárquicos, densamente interligados e confinados (as “pequenas caixas”), para redes sociais. As fronteiras são mais permeáveis, as interacções mais diversificadas, as ligações distribuem-se por diversas redes, as hierarquias são mais planas e de estrutura mais complexa.

Em vez de se acomodar ao grupo daqueles que o rodeiam, o indivíduo constrói a sua própria rede pessoal. A maior parte das pessoas funciona em múltiplas comunidades parciais, à medida que lidam com redes amorfas e em constante reconfiguração de parentes, vizinhos, amigos, colegas e laços organizacionais. As suas actividades e as suas relações têm um carácter informal, não sendo estruturadas organizacionalmente.

Apenas uma pequena minoria de membros da rede estão directamente conectados uns com os outros. Não vivemos nos mesmos bairros da maior parte dos nossos amigos ou parentes, frequentemente nem sequer na mesma área metropolitana, e muitas vezes trabalhamos não com as pessoas que estão sentadas ao pé de nós no local de trabalho, mas com outras em locais distantes. É por isso que, segundo Wellman, “[t]his is a time for individuals and their networks, and not for groups” (op. cit.: 2).

O individualismo em rede (*networked individualism*) resulta da confluência do desenvolvimento tecnológico das redes de comunicações por computador e do florescimento de redes sociais. Nas palavras do autor:

Just as the flexibility of less-bounded, spatially dispersed, social networks creates demand for collaborative communication and information sharing, the rapid development of computer-communications networks nourishes societal transitions from little boxes to social networks. (op. cit.: 2)

No trabalho ou na comunidade, a conectividade “glocalizada” fornece sistemas fluidos que permitem a utilização de redes ramificadas para aceder a recursos materiais, cognitivos e outros. Os indivíduos não são já identificados como membros de um grupo único, antes podem

alternar entre diversas redes, o que lhes permite mobilizar recursos de uma rede para outra através das suas ligações. Saber como criar redes (online e offline) torna-se um recurso humano fundamental, e ter uma rede de apoio torna-se um capital social de grande relevância.

De acordo com Wellman (op. cit.), assistia-se na passagem para o terceiro milénio a uma nova transição, desta vez de uma conectividade lugar-a-lugar (que marcava o período da “glocalização”) para uma conectividade pessoa-a-pessoa. Os dispositivos móveis e as redes sem fios, entre outros elementos, tornaram as pessoas cada vez menos dependentes de um local físico específico:

Because connections are to people and not to places, the technology affords shifting of work and community ties from linking people-in-places to linking people wherever they are. It is I-alone that is reachable wherever I am: at a house, hotel, office, freeway or mall. The person has become the portal. (op. cit.: 5)

O grau de envolvimento e participação nas diversas redes varia com os momentos, os objectivos, as circunstâncias: muito activos numas, mais passivos noutras, observadores silenciosos noutras ainda. Na busca de informação através destas redes, nem sempre são os laços mais fortes (*strong ties*) que nos podem ajudar. Bem pelo contrário, até, no caso de informação nova: dado que os indivíduos com laços fortes têm maior probabilidade de se assemelhar socialmente e de conhecer as mesmas pessoas, é possível que possuam a mesma informação. A nova informação virá, presumivelmente, dos laços fracos (*weak ties*), que estão melhor conectados a outros círculos sociais mais diversos (Wellman, 2001; Siemens, 12-12-2004). Deste modo, segundo Wellman (op. cit.), é importante desenvolver ferramentas que permitam analisar relações interpessoais de confiança para identificar, localizar e receber informação dentro das organizações e entre elas.

Tal como Owen et al. (06-2006) e Mejias (10-2005), também Wellman (2001) considera ser necessário ultrapassar a falsa dicotomia entre o ciber-espço e o mundo físico. Muitas ligações operam, frequentemente, em ambas as dimensões, funcionando os contactos online como suplemento ou complemento de encontros e relações presenciais, e não como pura substituição. Muitas pessoas comunicam com os seus amigos, parentes, vizinhos ou colegas utilizando o meio online ou *offline* que está disponível e se afigura, naquela circunstância, mais conveniente ou adequado. Quanto mais fortes são os laços, mais *media* são usados (Wellman, op. cit.).

Todas estas questões apontam, de forma clara, para a necessidade de a escola se abrir a estes modos de comunicar e aprender no mundo contemporâneo, ser mais permeável ao fluxo destas interacções nas várias esferas que habitamos e tornar-se, ela própria, parte desse discurso global. Formar professores, hoje, tem que passar também por dotá-los da capacidade de serem

agentes activos nessa mudança e apoiar de forma eficaz os seus alunos no caminho da verdadeira literacia digital, que está muito para além do mero domínio técnico de ferramentas.

Notas

[1]Os autores designam esta “nova cultura” como “cibercultura”. Como procurámos demonstrar na Parte I, a cibercultura e a cultura digitais têm raízes mais distantes e mais profundas, embebidas no ADN da própria Internet e da *World Wide Web*. Para uma breve panorâmica sobre o conceito, consultar Aelan Biruar Arumpac (2006). A Research Paper on Cyberculture and Virtual Politics. *Asia Culture Forum 2006*. Disponível em

http://www.cct.go.kr/data/acf2006/aycc/aycc_0805_Aelan%20Biruar%20Arumpac.pdf

[2]Disponível em <http://www.downes.ca/cgi-bin/page.cgi?post=35885>.

[3]“*Glocalization*” is a neologism meaning the combination of intense local and extensive global interaction. (Barry Wellman, 2001: 3)

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THE USE OF INTERNET SOCIAL NETWORKS IN A PEDAGOGICAL CONTEXT: A CASE STUDY IN A BASIC PORTUGUESE SCHOOL

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Contextualization

This study takes place in a Portuguese school, situated in the outskirts of one major city Lisbon (capital), and two other mediumsize cities Sesimbra and Setúbal, in a village called Quinta do Conde. The place has been having a demographic boom due to the delocalization of home purchasing. (<http://www.chez.com/quintadoconde>). This situation leads to an overcrowded facility, of more than 900 youngsters. Escola Básica da Quinta do Conde is a school for children from kindergarten to the end of basic school (0 to 9th grade), which means that its school age population varies from 3 to 15 years old. Nevertheless, it also offers night and professional courses to students that want to continue or improve their academic skills or to those that do not want to continue their studies beyond the 9th grade.

The village in which the school lies lacks most basic infrastructures students need. For example, the Quinta do Conde's public library is very poor and the only decent one, which would be closer, is situated in Sesimbra, 20 km away. In addition, public transportation is also very scarce, preventing students from using it in a daily basis. It is not foreseeable, that the current situation is going to change dramatically, at least in the near future, due to government's policy and budget restrictions.

Despite this lack of cultural infrastructures and resources situation, many students have access to internet and computer technologies due to Portuguese govern technological program eescolas. (<http://www.eescola.net/e-iniciativas.aspx?i=2>). This program allows children and teachers to buy computers and internet connections at a special low price comparing to the average cost. Because of eescolas program, nowadays, many students now have the tools and means to access internet. Moreover, the Portuguese basic academic curricula include both activities and a specific subject concerning information technologies. (<http://www.minedu.pt/np3/816.html>; Despacho n.º 16 149/2007; <http://www.minedu.pt/np3/73.html>). This means that the majority of Portuguese students, including the Escola Básica Integrada da Quinta do Conde ones, are capable of mastering, not only internet use, but also many computer programs and social networks.

In recent years, a new and important tool as emerged on the internet, the so called social networks. The general purpose of social networks is to "establish or maintain connections with others. These sites can be oriented towards workrelated contexts (e.g., LinkedIn.com), romantic relationship initiation (the original goal of Friendster.com), connecting those with shared interests such as music or politics (e.g. MySpace.com), or the college student population (the original incarnation of Facebook.com)." (Ellison et al, 2007)

Since their introduction, there was immediate success; the cybernauts started to dedicate a great deal of their time to these networks. Consistent with a study of worldwide usage of social networking sites, done by comScore, Inc. (NASDAQ: SCOR), a leader in measuring the digital world, "during the past year, the total North American audience of social networkers has grown 9 percent compared to a much larger 25 percent growth for the world at large. The Middle EastAfrica region (up 66 percent), Europe (up 35 percent), and Latin America (up 33 percent) have each grown at wellabove average rates."(Lipsman, 2008)

One of the most famous social networks is Facebook (more than 225.000 people in Portugal net according to

Facebook online site, 5th August, 14:52). According to Hewitt et al (2006) "Facebook is an online social networking community that has become popular at academic institutions. Members can create profiles about themselves, create and join groups with other members, make "friends," and share pictures and messages, "It is similar in concept to a print yearbook, where users can place a photo of themselves on their page and include personal bits of information about their interests and hobbies. Facebook, however, is far more sophisticated than a print yearbook. It allows users to create online networks of friends and join and create groups of likeminded individuals." (Mack et al, 2007). Another common social network, very similar to Facebook, is Hi5. It is also very popular in Portugal. The company was founded in 2003 by Ramu Yalamanchi, who claims that Hi5 has over 60 million active members all around the world (Swartz, 2008)

As one can read from this chart (Lipsman, 2008), it is undeniable the growing importance of these internet tools in today's social life, even though these results do not concern all adolescents.

Worldwide Growth among Selected Social Networking Sites June 2008 vs. June 2007 Total Worldwide Audience, Age 15+ Home and Work Locations Source: comScore World Metrix			
	Total Unique Visitors (000)		
	Jun2007	Jun2008	% Change
Total Internet: Total Audience	778,310	860,514	11%
Social Networking	464,437	580,510	25%
FACEBOOK.COM	52,167	132,105	153%
MYSPACE.COM	114,147	117,582	3%
HI5.COM	28,174	56,367	100%
FRIENDSTER.COM	24,675	37,080	50%
Orkut	24,120	34,028	41%
BEBO.COM	18,200	24,017	32%
Skyrock Network	17,638	21,041	19%

Chart 1 The growth of social networking in the world

All academic members, especially professors and tutors have grown conscious of social network power. That is why many research and application of these tools is being done, at present time, in college and university campus. (Hewitt et al, 2006; Mack et al, 2007; Bugeja, 2006).

The rising question, for many scholars now is the possible application of these internet tools (social networks) in secondary and basic education, since there are already promising results at a university level.

It is known that one of the most fundamental facets of learning is the social interaction in which learning is an outcome of individuals sharing experiences. Learners perform learning tasks in formal contexts, (ex. classes), semiformal contexts (ex. lectures or seminars) and informal contexts or nonacademic settings. Of course, not all students have the same access to these contexts, which could mean a certain discrimination and that would have reflection in their academic success.

School must also prepare the young generations for the new challenges that they will face and of course the

ability to tackle new technologies is indeed very important. "Technology has added a new type of literacy to consider. Sometimes referred to as digital fluency, this type of literacy refers to the ways people become comfortable using technology as they would any other natural language. Some scholars suggest digital fluency will be another prerequisite for sociability, lifelong learning, and employment opportunities. The uses of educational technology have a twofold advantage: they can promote the types of literacy traditionally encouraged in learning, as well as the digital fluency needed to prosper in the digital age". (Huffaker, 2005)

In an attempt to diminish this possible gap between students and to improve their social relations in a nonschool context, social networks were used to try to balance this unevenness. These tools were applied to enhance not only pedagogical relations and communication skills, but also to promote the school work done by two classes, during a school year.

Chart 2 and 3, describe the classes and the disciplines where social networks were used.

GRADE	Number of students
7 th	27
8 th	22

Chart 2 Number of students of each class

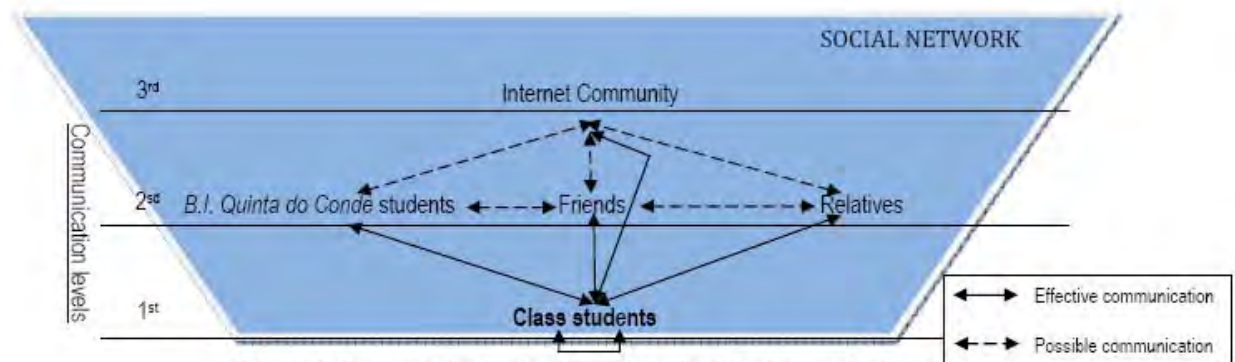
GRADE / DISCIPLINE	Natural Sciences	Project Area
7 th	X	X
8 th	X	

Chart 3 Classes which were involved in networking project.

This project was born not only from teacher's will, but also from the students willingness to show their accomplishments and to be able to interact with other Quinta do Conde students that were not aware of their work, but still could give interesting contributes. Some youngsters even singled out the importance of broadcasting their work and of receiving possible tips from students from other countries, since it would help them to improve their skills and possibly start a social network, using a nonmaternal language.

This type of communication implicated sharing (ex. scientific) knowledge, skills, aptitudes and values, therefore taking pedagogical ties to a further level: a global one.

This scheme represents the different communication agents that were involved in the development of this project.



Scheme 1- Communication levels and agents implicated in the social network.

Aims and Questions

The project intended to research and develop the communication potential of social networks in a pedagogical context, in other words, the goal was to use internet tools like Facebook and Hi5 (nonacademic setting), in a class context, with an educational purpose. The aim was to create a channel of communication, with multiple levels and possibilities, in order to enhance the students' scientific, social and communicational skills. In particular, the objective was the creation of social bonds, based in an academic

context, that were not confined to school space.

In this circumstance, three main research questions were asked: (1) Can basic school students create a page on an internet social network and manage it, in a mixed (school and free time) context? (2) How many communication levels were established? (3) Did the students improve their communication skills?

Methodology

The pedagogical method used for the students' creation of class page in both Hi5 and Facebook was the same. The teacher suggested, during a Science Natural class, the possible creation of a webpage in a social network, in which they could post their ideas about that particular subject, show the work already done or talk among themselves about the several projects they were doing for other subjects. The suggestion was immediately taken and they started organizing themselves in several groups according to different tasks they had to do, in order to create the pages. It were the students that chose the social networks they wanted to use.

The creation of the social network pages started during a regular Science Natural lesson and continued that day, in the Project Area class. The rest of the work was done by students in their free time.

Project Area is a relatively recent subject included in Portuguese curricula, whose goal is allowing students to build a project of their own, in order to develop competences such as integration of knowledge already acquired and the enhancement of cognitive and social skills. (http://www.dgidec.min-edu.pt/fichdown/livros_IIE/area_projecto_parte_2.doc).

In order to access the pages development, posts and the communication done, the teacher accessed the pages and recorded the changes weekly. It is important to notice that she never changed their content. Occasionally, she gave suggestions about possible contents and photos that could be added, in order to enrich the pages, but in the end, the final decision was done always by the students.

At the end of 3rd period, the students made an oral assessment of the project, focusing mainly in four items: general feeling, difficulties felt during its development, positive aspects (both personal and classgroup) and suggestions for its improvement.

Both classes were aware, the project was not going to be taken into consideration (at least formally) in their final marks in any of the subjects involved (Natural Sciences and Project Area). Indeed the teacher made these very clear during her presentation.

Results and Analysis

The project lasted one school period (about three months) for both classes (two) and was mastered by the same teacher.

The setting up process of these small working groups was the same in each class: one of the class students wrote, on the blackboard, the names of his/her colleagues, according to the task they wanted to do for the project. This process was quicker on the 8th grade, perhaps because, not only they were a smaller class, but also they were working together, for two years then.

These groups were flexible since some students were involved in more than one, though not many. In all of them,

someone was in charge of the group and was responsible to upload the information to the website pages. This individual changed, during the project time, probably because some students had other school tasks that were more important for their academic success.

Nevertheless, there were differences concerning the two classes' results: the younger class (7th grade) finished first the construction of both pages (Hi5 and Facebook) but both of them made and maintained them, without any time interruption.

It was also the 7th graders that had the most complete pages and the best layouts. One of the reasons could have been the greater enthusiasm that they showed during the project (it was mentioned several times in their final reflection) and the fact that some of them did not have one personal page on the social networks and saw this as an opportunity to practice for their own.

The pages (Hi5 and Facebook) contents focused on the following items (chart 4):

Contents	7 th Grade		8 th Grade	
	Hi5	Facebook	Hi5	Facebook
School description	X	X	X	X
Personal information (general)	X	X	X	
Personal photos	X	X	X	X
General information about Natural Sciences class	X			
Written projects (Natural Sciences and Project Area)	X		X (only of Natural Sciences)	
Photos from projects	X	X	X	X
Links with possible interest	X	X	X	X
Communication posts	X	X	X	X
Chats	X	X	X	

Chart 4 Table of contents developed in social networking pages.

Since the teacher only dedicated two lessons for the implementation of this project, the greatest part of the pages creation was done in their free time, especially at home, but also taking advantage of school computers. In the 7th grade, several times, the students asked other teachers permission to continue working on their internet pages. This situation was more common in the subjects of foreign languages (English, Spanish and French) and Study Class (Estudo Acompanhado). However, some Portuguese language classes' contents were also used to make the pages.

In terms of communication levels established, there were also differences between the two classes. In both of them, the 1st level of communication (between class members) was well established; however there were more posts and chats on the 7th grade pages. The 2nd level (class students and other school members, family and friends) was achieved. It is important to refer that there was much more communication with friends (not belonging to Quinta do Conde school) and students from Quinta do Conde school, than with family. This situation might be so because family is not very involved with school projects

and does not have much time or are used to chat with their offspring over the internet. The communication level was not established in the 8th grade class (any page) but was accomplished in the Facebook page of the 7th grade. In this class, some students had relatives and friends living abroad, so probably they used the page to check on their Portuguese friends and family.

The Hi5 pages had more visits, posts and chats than Facebook ones (in both cases) probably because the students had been using this social network before. Many of them, during the reflection about this project, mentioned that, for them, it was easier to use Hi5, as they knew better the protocols and tools of this social network.

In terms of improvement of communication skills, many students referred that they felt more comfortable now using facebook/Hi5 since they started to practice with the class page. Another point mentioned was the possibility of using social networks with "school" contents, as some of them were not very sure that their pages could be successful.

Chats and posts, as time went by, got more interesting in communicational terms, since the number of references to scientific concepts and mentions to their school projects increased although, some talking themes were not directly connected to school life but to more personal matters. In this case, it is possible to see the influence of their past experiences with these networks on their project behavior.

3 Another interesting result was the increased use of nonmaternal languages in posts and chats, on the web page of 7th grade class. A possible explanation for this might be that it was in this particular class, that the 1st communication level was established. From the beginning, the 7th graders wanted to reach a broader communication audience, so they chose to post information in English and Spanish.

Closer to the end of the academic year, the communication intensity diminished perhaps because the students had exams and other school projects to finish.

Conclusions and Implications

From the analysis of this experience, one can conclude that, at least some basic school students are able to use social networks, in a nonacademic context. They managed to create and maintain, without any adult supervision or work, two different social network pages, for almost three months.

All students got involved in this process, even if they did not have previous experience, because these ones were actively helped by the ones that already knew how to use them. This proves that peer learning is an active way of getting the necessary knowledge to use these internet tools.

Experience as a factor, seems to be a key issue in social networking use. The use of new social tools appears to be more straightforward for those students that had already made use of other networks. The more experience one has, more innovative can the student be, in terms of contents put on line. The more experienced students were the ones who helped the others, so a solidarity chain was set on motion, guarantying that all were involved.

This process, was usually done during classes given to develop the project and also, in the internet school room. If there was no time or place for this learning, probably not all students would have participated, moreover as some of them did not have the necessary computer.

Concerning communication levels, it can be stated that the interaction, within social network, between class students is almost immediate and effortlessly obtained. The results from 2nd level are not homogeneous, since it appears to be easier the communication between students and their friends and school fellows than with their family. Here, the

factors involved go beyond school relations and are more difficult to elucidate. The 3rd level seems to be the harder to accomplish, although it is possible especially if the students involved, already have strong connections with people beyond school walls. Those acquaintances should already be internet and social networks users. The last communication level seems to require more time to develop, as it came up last in the chats and posts. Probably, it would have appeared in both classes and developed further, if the project had continued.

According to students own opinion, their communicational abilities improved a lot, especially because they had to intervene in the activities (chats, posts) that were going on, and therefore had to use several capabilities (for example. nonmaternal language, scientific concepts) they were not used to employ in a nonschool context. The investigator confirmed this opinion as there was indeed a better performance in using languages, not only students' native language but also nonmaternal languages taught at school. In terms of scientific knowledge, there was also an increase of using natural science concepts.

The communication quality improved during the project, as the number of chats, photos and posts raised. As time was going by, not only the contents added on the pages, but also the posts and chats, reflected the students easiness in dealing with the tools. With this project, they started using them outside the common use of social networking, that some of them were already doing (personal use) and wanted to continue, next year with the same project.

To conclude, social networks can become another standard pedagogical tool in communication development if teachers and other educators are willing to propose such projects to students.

These preliminary results may assume a relevant role for social networks in school context for all students, since they can intensify and increase communication within school and with the rest of the internet sphere. Because an effective communication implicates the exchange of opinions, values and knowledge, more communication partners mean a greater improvement of these necessary communication abilities that in this case, are oriented for academic success.

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Preparing Pupils for a Changing Planet: learner empowerment and cultural competence through innovative best practice.

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1. Overview

All learning proceeds from the motivation of the learner either in the context of curiosity about the external world or in the desire to acquire a valued skill. Educational methods and techniques have, however, historically developed in response not only to learners' needs, but also to the needs of wider social, political and economic structures. These methods have also been located in the technical capacity of the time and in the power structures in which society determines access to relevant knowledge and information.

At their most basic, learning technologies focus on the tools, methods, techniques and operational modalities that envelop the learning and didactic process. Over the past few decades a complete revolution has occurred regarding not only our approach to the understanding of educational theories but also in our ability to use new and innovative methods to design and deliver learning.

This process has promoted a significant re-evaluation of the role and purpose of education and the most appropriate delivery methodologies to ensure optimum learner engagement. Education, as both process and outcome, while linked to schooling systems, is now seen as very different from schooling in structure and intent. Technologies of learning permit the delivery of knowledge, skills and attitudes in many new and innovative ways.

This paper looks specifically at a process undertaken by **Platon School** in Katerini, Greece, to address the demands of change and transformation in innovative ways. This process has been driven by the increasing inability of traditional structures to meet the learning needs of students and the inappropriateness of terminal examination curricula alone to meet the challenges of the information explosion. Platon School, in cooperation with its international collaborative network and using enhanced technologies, has been developing both a critique of and response to the changed learning demands of its pupils in Greece and the communities in which they live.

2. Rationale

Both education systems and schooling structures reflect the societies and cultures of which they are a part. They also reflect society's values, structures and processes. Traditional learning in Europe, for example, has emerged in contexts of hierarchical social stratification. Socio-economic structures and ownership of wealth often mean that access to knowledge and information is tailored to suit specific groups rather than communities as a whole. The impact of education as a privilege not a right is that often profoundly non-egalitarian systems emerge.

Even in such contexts, learning technologies are important. In terms of historical precedent, development of written records and the ability to read vastly increased the ability of learners. Memorization, music and even stained glass all could – and did – play parts in educating people.

The emergence of standardized and systematic methods of instruction (as well as mass imparting of knowledge and skills) took on a radically new dimension with modernization and globalization. It also marked the growing synchronization of teaching methodologies and the requirements for improved work performance and productivity. The knowledge explosion and information revolution of our own times is deeply marked by the experiences, structures and expectations of industrialization and its aftermath.

Community based learning is essentially about a new role for the school. It is about basing learning around where people are at in their lived experiences. In a very real way, it is about lifelong learning and an adaptable approach to learning in an internationalized and pro-active community development environment. It is also about communities defining their own learning needs and moving beyond formal schooling systems – linking with enterprise creation and the extraordinary possibilities offered by advanced information and communications technologies.

If countries and societies around the world are to start on the path to economic success, social inclusion, democratic participation and personal growth there are certain steps that need to be taken. To begin with, all members of the community will need to be made aware of the reasons why the achievement of such goals is a matter of vital importance – locally, regionally and globally.

Lifelong learning is at its most effective when applied in community contexts. It also requires an attitudinal and cultural change on the part of governments, policy makers, education providers, learners and community actors. Community based learning, particularly in its lifelong learning and adult education initiatives, requires more than government intervention or formal policy statements. Local communities, learners and their families need to be actively involved and committed.

The community is based around the need for learning in a variety of ways and levels. These encompass:

- Community development
- Social solidarity
- Environmental management and conservation
- Social inclusion measures
- Arts and culture
- Sports and leisure
- Health and well-being.

At times of significant social change communities need to be re-defined in such a way as to be meaningful to the individuals who live there. With respect to community development, individuals need to start seeing themselves differently. They need to see the importance of managing their own careers and to accept responsibility for learning across a lifespan – not just while in school.

Schools of the future will increasingly begin to act as community learning resource centres. Not bounded by defined age classifications, they will provide learning resources for the whole community. Schools will not merely prepare young people for work or further education. They will link to other agencies in the community to make learning opportunities available for all. This will include those not currently in paid employment or those beyond normally accepted working ages.

Schools can act as initiators or partners in joint community ventures in undertaking targeted community awareness and assistance projects. In times of increasing social fragmentation, schools can act as a bridge to sustained friendships and social contacts. Bound together by common learning objectives, people can develop the confidence to operate in and for the communities of which they are part.

As schools develop into dynamic and accessible learning resources, they will be in a position to stimulate original thinking and research on community needs. This is important in changing people's perceptions of education and learning – and for making learning more accessible.

Accessibility is especially important if we are to enhance social inclusion through lifelong learning by encouraging and welcoming participation of hitherto isolated or marginalized groups, the socially disadvantaged, those with disabilities, the elderly in learning activities. This will enable such groups to enjoy a sense of achievement and success and, in the process, enrich communities greatly.

The profound changes of a growingly complex world mean that a new discussion on effective learning is required. A rapid pace of technological change, profound processes of globalization, new products, new methods of work, new forms of social organization all combine to underline the need for learning that is flexible, continuous, updated, relevant and capable of deepening our critical senses. It

also is imperative, in a world of deep contradictions and conflict, that learning develops new paths to participation, social engagement and empowerment.

Learning is a continuous process of that occurs through all phases of a person's life. It is profoundly democratic insofar as it recognizes no boundaries of age or gender or condition. It adapts to the needs of the learner as much as the society in its delivery and content. It is also a key imperative for the creation of a vibrant knowledge economy and an informed citizenry – both indispensable elements of any dynamic and inclusive society.

3. The Platon Experience

Based on this understanding Platon School has embarked on a radical restructuring and strategic planning process that attempts to address the many needs of young people as they face the challenges of a changing life in Greece. The aim has been to use technology, innovation and creative methodologies to assist pupils to attain and develop:

- Greater self-knowledge
- Enhanced communication skills
- Decision-making abilities
- Personal learning goals.

The focus is on doing this in a time of change and uncertainty for young people where traditional structures and outcomes are fragmenting in front of their eyes. The school's trajectory is to equip students with meaningful skills, knowledge and attitudes that enable them to make informed decisions by learning to think in both autonomous and collaborative ways.

Platon School has evolved a methodology, philosophy and technological capacity to achieve this goal. This approach aims to think outside the traditional schooling framework in Greece. It operates internationally by collaborating with a wide range of stakeholders as well as emphasizing didactic goals and skills rather than rigid methods based on externally defined routes to knowledge acquisition.

Platon School is located in Katerini. One of the newer cities in Greece, Katerini has seen significant population growth in recent years. Since 1981, the population has increased by over 30% and now stands at around 60,000 people. Located in an agricultural zone close to Mt Olympus, Katerini relies also on tourism and light industry. The population has seen other shifts in family structure, growing urbanization and increased openness to the free movement of labour. In recent years it has witnessed significant demographic change both in numbers and multicultural aspects of the population as foreign migrant populations have arrived and increased. This is not a new phenomenon as in the 1920s significant population transfers from Asia Minor were received in the region.

The school was founded in 1997 to meet a variety of needs. Platon School is a private school funded entirely by pupils' fees. It receives no public financial support. While this places demands it also fees the school to embrace innovative approaches and technologies. The number of pupils has increased steadily, but especially in the last five years. In the 2009-10 academic year there will be more than 300 students.

The school operates at four levels:

- Kindergarten (4 - 6 year age group)
- Primary (7 – 12 age group)
- Gymnasium (13 – 15 age group)
- Lyceum (16 – 18 age group).

The Director has overall responsibility for teaching quality, standards, administration, general administration and outreach. Each of the four Departments has a Headmaster with general pedagogical responsibility. Teachers are highly trained and motivated and operate within the school philosophical tradition –

- Learner centred approaches
- Didactic excellence
- Personal growth and supported self-esteem
- Engaging learning methods supported by advanced technologies.

Platon School has experienced growth and achievement in its short existence. The key milestones include:

- 1999: Best Educational Project Award for the Lingua-e program. The school represented Greece at the closing conference of the Socrates I program in Spain (Santiago de Compostela)
- 2005: 3rd place in the National Competition on Competitiveness.
- 2007: 2nd place in the National Competition for School Choirs
- 2008: 1st place in the National Competition on Entrepreneurship.
- 2009: 1st place in the National Competition for School Choirs
- 2009: 1st place in the National Competition on Entrepreneurship – and represents Greece at international level.

Platon School has embraced the challenge and opportunity of EU projects from its beginnings. Since 1997, the school has participated in a number of projects under programs such as Comenius 1, Lingua-e, Youth, e-Twinning, Minerva, Grundtvig and IST. Participation in these projects has had a significant impact on pupils' communications skills and on the general didactic and pedagogical practices. The opportunities offered by these projects have greatly enhanced teachers' skills, exposure and experience. The school places a strong emphasis

on multilingualism and excellence in second language acquisition. Language teaching begins in Kindergarten level.

The impact of EU projects is also seen in the wide level of participation in schools' networks across Europe, student exchanges and the development of collaborative best practice at European level by using advanced technologies. Platon School is a partner in the Comenius SPEAK project (2008-10) which focuses on early childhood second language acquisition by the use of innovative teaching methods and web-supported research and practice.

Platon School is also the Lead Partner in the Minerva funded "Educonlinux" project (2006-09). The innovative and revolutionary Educonlinux project aimed to create a server-based open-source platform specifically designed to support distance learning over the internet for users. The platform supports pedagogical forms for students to learn, revise and practice from anywhere with an Internet connection, not only in the confines of the school. People from different levels of education (primary, secondary, university) can use the platform in order to prepare their on-line courses.

The above goals have existed for a long time for all educators in Europe. What makes this project different is that it is designed to reduce costs and make adoption of the learning resources easier when the Internet is used as a vehicle for distance learning. The project combines open source web based technologies with a distance learning pedagogical approach that (with a full breadth of content) to satisfy all the needs of the "distance learner".

As far as possible, the goal was planned to meet the full expectations of the classroom learner but through an alternate paradigm. This required the development of a set of values for web based distance learning that had the capacity to provide a motivating learning experience in the absence of the traditional formal classroom setting.

The Linux is free and open-source software with the potential to lower costs in schools BECTA (2005). A significant challenge is to provide the Linux software in such a way that the computers in classrooms are ready for use by students and teachers in an easy and standardized way. The administration of the server is easy, quick and not unduly dependent on expensive specialized technical skills. Because of its non-commercial heritage, Free and Open Source Software (FOSS) is not as well known in schools but because of its potential to provide improved value in the technological infrastructure based on the Linux platform, it is essential that the full potential of these solutions is explored.

The overall objective of the EDUCONLINUX project was to improve educational opportunities through server-based distance learning that sets new standards in value for money. The learning provision enabled the participation of user groups

previously disenfranchised. It improved the flexibility and effectiveness of learning for all. The specific objectives of the project were:

- Undertake a comprehensive audit of current web-based distance learning facilities within various European countries (participant countries: Greece, Cyprus, Sweden, Italy, Poland, Romania) to inform the completion of a needs analysis.
- Design and develop educational tools and strategies, pedagogical approaches and distance learning models towards a prototype system.
- Determine the level and type of human resource and technical infrastructure required to support the project.
- Develop and implement the system with associated staff and nominated user groups prior to roll out of the pilot.
- Introduce, implement, review and evaluate the pilot and produce interim report for dissemination.
- Develop and implement the full system and integrate feedback cycles, programme review and on-going evaluation.
- Design a range of support measures around personal development and support for individuals and user groups with a view to making them self-sufficient.
- Prepare sustainability and exit strategies including registration with Source forge and School forge.

In Educonlinux the key component is Moodle, a Learning Content Management System (LCMS). Moodle was designed for asynchronous E-Learning, in which facilitators and students do not have to log-in at the same time in order to participate in the course. The students can complete the assignments, discuss in forums, create and edit wikis etc. whenever they choose. Though everyone follows a certain timetable, Educonlinux asynchronous E-Learning is more flexible delivering high quality, on-time and on-demand courses.

The characteristics of asynchronous E-Learning courses in Educonlinux included:

1. Scalability: Educonlinux offers courses for primary, secondary education and universities across Europe. In addition an on-line course was developed for the Educonliux in-house partner training. With a few modifications this course can be used by every educational institute of every grade.
2. Accessibility: students and facilitators have 24/7 access to course resources. They can participate from their home, internet cafés, school networks, even from mobile devices and wireless networks.
3. Personalization: Before starting the course, teachers use tools to analyse their target audience. This gives them a clear picture about students background and needs. The variety of learning objects developed in

Educonlinux are shared among the staff and used in the courses. Teachers in Educonlinux, using the database of educational materials, are able to tailor the courses to their students needs and expectations.

4. Interactivity: long texts and assessment tests are limited in Educonlinux. The courses are more interactive. A variety of high quality web resources were selected during development and Web 2.0 tools like Wikis and Forums were used widely.
5. Reduced cost in course development: reusable learning objects in Educonlinux had a big impact on course development. Course creators developed small chunks of educational content and made them available to other developers, cutting down development time and cost.
6. Simplified in-house training: the staff in Educonlinux, course developers, teachers, administrators, were trained on-line at their leisure. This meant no more travel expenses, accommodation, meeting rooms rentals, lost work hours, etc.
7. Collaborative learning: students enjoyed working from distance and collaborating with their classmates from other schools across Europe.

As a new and relatively smaller school embarking on a strategic trajectory focused on innovation, Platon School took the decision from the outset to engage with a wide range of available EU projects. These were designed to build capacity as well as to develop the skills needed to enhance curricula that met student learning needs in the environment of change and adaptability.

These projects included a number of program development achievements and structured international learning exchanges such as:

- Comenius 1: “Young Europeans sharing work and joy” (1999 – 2001).
- Comenius 1: “Local History” (1997 – 2000).
- Comenius 1: “Migration, Minorities and Prejudices in Europe” (2000 – 2002).
- Lingua_e: “Katerini – Krefeld” (1999).
- Lingua_e: “Forty years ago ...Ten years after” (2000).
- ETwinning: “LiveGuide - Cultural Walks in Europe” (2006).
- ETwinning: “School management strategies to improve school organization and working environment” (2007).
- Youth: “ Traditions and habits in Europe” (2003).
- Youth: “Miguel Thervantes born in Greece, El Greco painted in Spain” (2004).
- Minerva: “ePhys, Towards an effective use of ICT in Science education” (2001-2004).
- Minerva: “EduconLinux, Free and Open Source Server Based on Linux for Multi-Media-Classrooms in Schools and Universities” (2006-2009).
- Comenius multilateral: “Speak: a school that speaks the language of its kids” early years second language acquisition (2008-2010)

- Science and Society: “Materials Science, University-school partnerships for the design and implementation of research-based ICT-enhanced modules on Material Properties.”

The experience of this and other EU projects has vastly increased Platon School’s capacity to develop and extend its strategic vision in association with state-of-the-art and relevant technologies. It has also enable strong staff and parental buy-in and forms the basis of the collective shared learning development which is at the heart of Platon’s structure.

4. Locating Need

The current structure of educational systems in Greece could aptly be described as:

- Conservative
- Rigid
- Inflexible
- Examination-driven
- Dated/under-resourced technologies
- Overly academic
- Resistant to innovative change.

During the period 1990 - 2000 the curriculum was largely focused on knowledge content, organized in specific subjects (literature, mathematics, physics, etc.) as the primary disciplines. There were only minimal levels of effort to even attempt interdisciplinary approaches. Since 2001 there has been a tension between multidisciplinary and interdisciplinary approaches, but the use of ICT continues to be at an extremely low level and the implementation is dominated by the thought of final examinations for entering University. Greece, like Ireland and other traditional teaching-led countries, continues to rely upon a single and complex terminal examination system on which total performance is assessed and future educational development options are solely based. Much research points to the counter-productive and authoritarian nature of such systems. They are found not to enhance, develop or recognize the wide range of skills and aptitudes that students possess beyond the purely academic ones. Innovative and analytical problem-solving skills are not prioritized in such systems.

This system has a direct impact on pupils’ communication skills as well as on pedagogical and didactical practices.

The identified challenges for the Platon School strategic planning process have therefore been to design new and innovative forms of learning where information knowledge and skill development is embedded creatively in a framework of personal growth and autonomous self-confidence. Platon School has as a matter

of policy decided to use technology and innovative methods to develop values and targets in relation to learner-centredness and pedagogical best practice.

This involved developing objectives around:

- The creation of educational electronic games to cover the needs of pupils for playing, parents for safety and education for learning in a funny and enjoyable way
- The development of an interactive electronic platform for teaching, learning and communicating
- The elaboration of key factors, pedagogical methods and tools for the school of future.

The implementation of this policy and strategic direction has been undertaken in a number of ways.

First phase

- Brainstorming with teachers about the phases and structure of the innovative learning implementation plan (4 meetings from February to April 2009)
- Debate with parents to explain and demonstrate the central learning objectives and methodological aspects and listen their opinions (May 2009)
- Dialogue with pupils, submission of their suggestions (April- May 2009)
- Final decisions on aims, activities (June 2009)

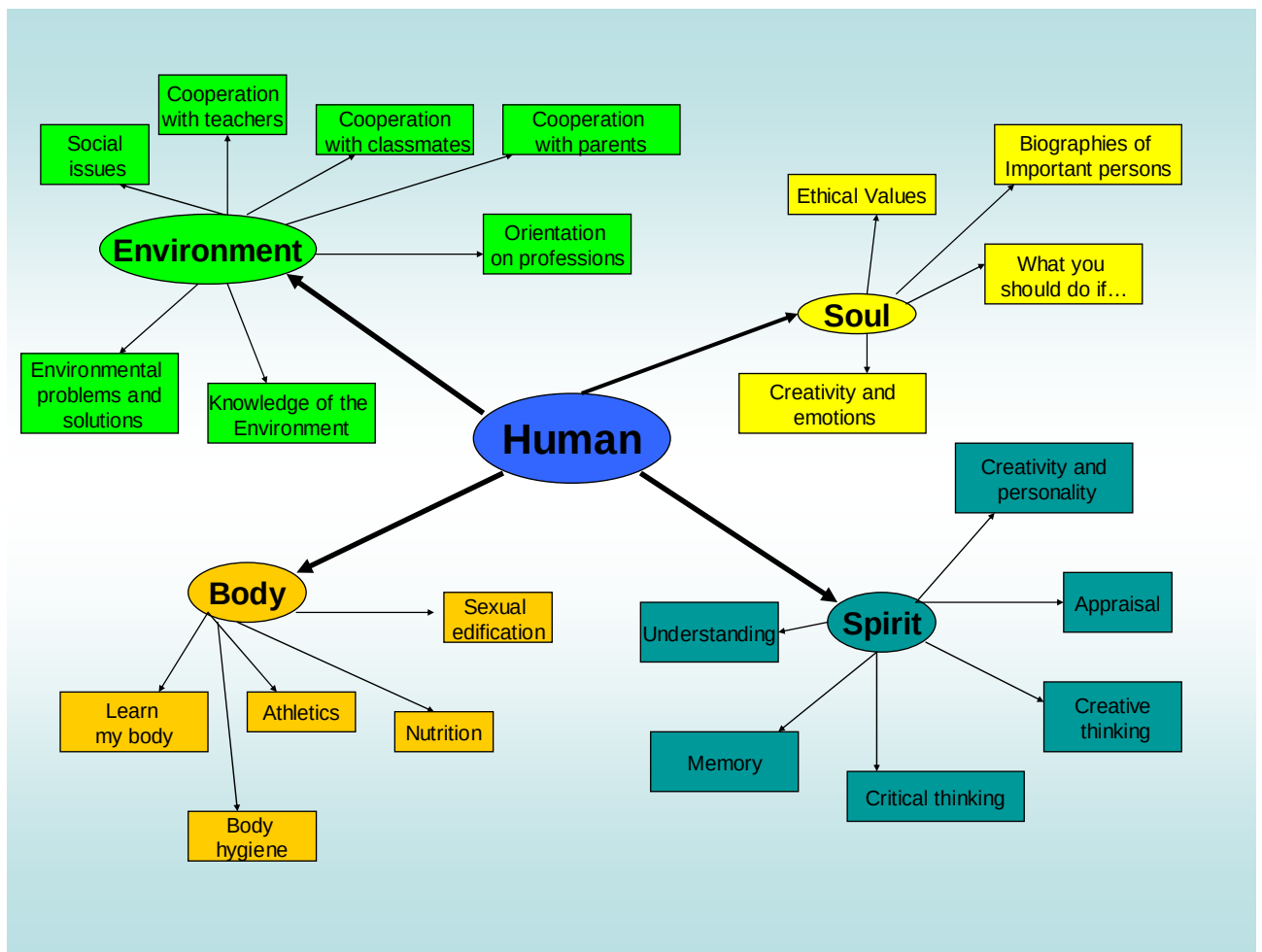
Second phase

- Meetings (principal and teachers) with parents, in personal sessions (1 - 10 September).
- Analysis of the overall scheme.
- Meetings (mentors) with pupils (14 to 18 September).
- Set personal aims, collect or suggest topics for project-works and parallel activities.

Third phase

- Application features. This is based on an innovative learner-centred matrix detailed below. It covers four dimensions of creative learning for pupils.

1. Humanistic approach (Four Dimensions)



2. Application (Modes)

The human centred learner approach is agreed between school, pupils and parents. It then proceeds to avoid traditional subject based curricula. Instead these are replaced by a set of targeted didactical aims per month - not per discipline (e.g. mathematics, literature, science).

All teachers prepare their lessons giving emphasis on activities which support mainly (but not only) the aim of the month. In parallel process, parents get simple advice and guidance per aim on how to advocate and support this effort outside formal school hours.

Month	Didactical aim	Details

October	Comprehension	Attention Realization of information Understanding of information
November	Memory	Storage of information Conservation Recall
December	Critical thinking (Convergent)	Ability to analyze Comparison Classification of information Connection of information
February	Creative thinking (Divergent)	Search and create many possible solutions Synthesis of information Transformation of information (change of use) Redefinition of information (elaboration to be more functional, attractive)
March	Appraisal	Problem solving , decision taking
April	Creativity and personality	Desire for new experiences Curiosity Independent judge Preference on challenges and complex cases Self esteem Self-defined regulation of behavior through internal or interior motives

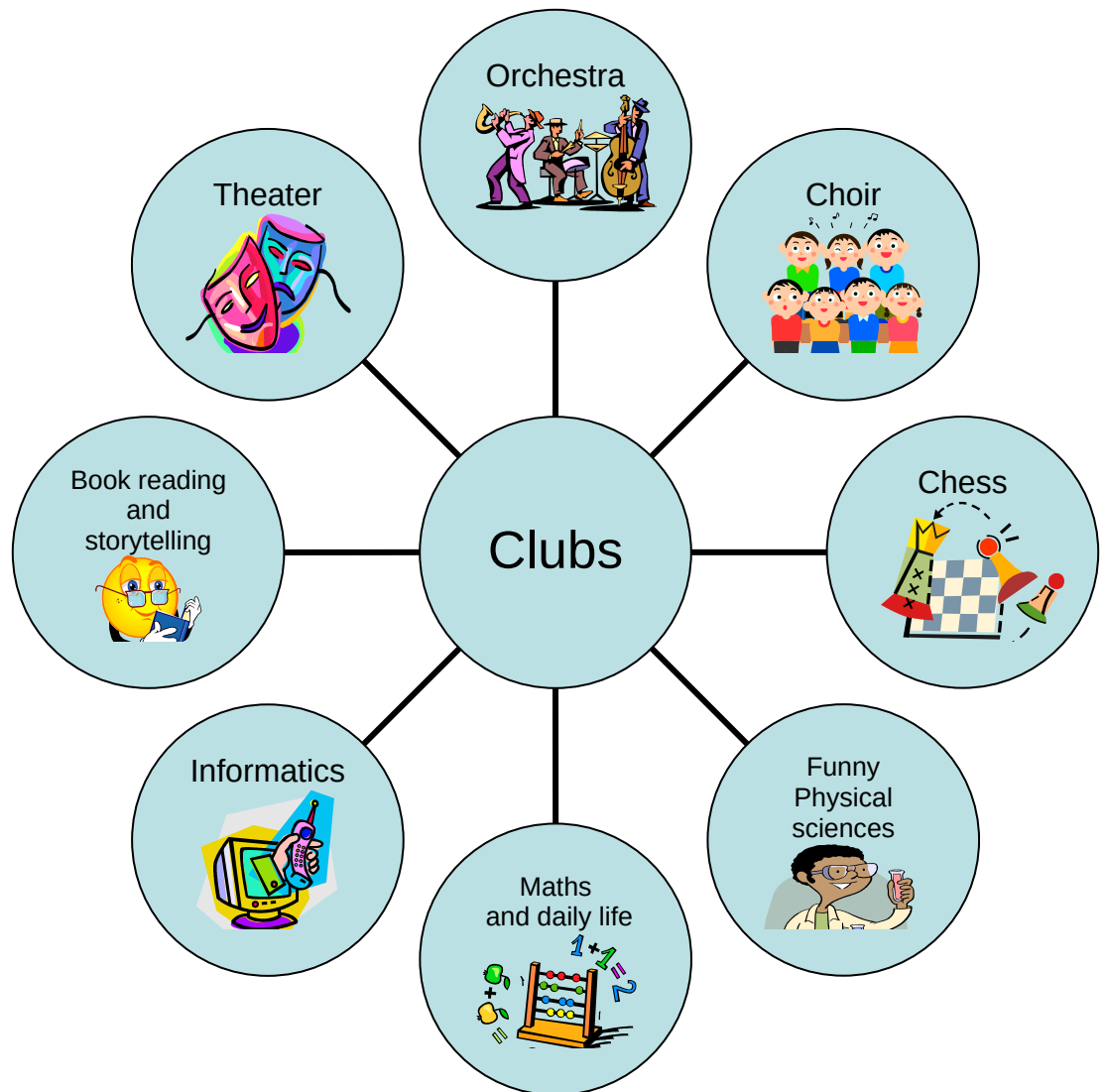
Into this system is built extra curricular support on lessons. Pupils, after their main program, can stay at school to take additional support for their tasks from teachers. The teacher's role is re-defined and is to raise pupils' thinking - not to give direct answers. The approach is based on guidance and mentoring.

Thematic units for individual or team work are developed. Pupils from each and every thematic unit (3 or 4 per semester), can select one of the topics uploaded in the work bank by the teachers or indeed suggest their own topic. Pupils work by themselves at school (during free time), at home or outdoors. Pupils design the whole work, set their aims, activities and milestones, search, select, classify material and finally present the results. In this new paradigm, the teacher's role is to provide resources, support, encouragement and to meet once per month (2 hours) with pupils to monitor their work. Students are encouraged to work collaboratively and develop presentation skills.

7th grade	8th	9th	10th
Thematic unit	Thematic unit	Thematic unit	Thematic unit

<i>First semester</i>			
Arts	Ethical values	History (alter)	Science and daily life
Hygiene Nutrition	Biography of important persons	Biography of important persons	Environmental global issue (solutions)
First aids	Knowledge of environment	Environmental regional issue (solutions)	
Learn my body	Functionality and aesthetics of house, place, person.		
<i>Second semester</i>			
Household life	History (alter)	Emergence and solution of a regional important matter	History (alter)
Road safety and behavior	Athletics	Cinema	Abuses
Safe internet	Music	Europe	Design of educational electronic game
Evaluation of TV programs	Volunteering		
<i>All year</i>			
Creativity and emotions	Creativity and emotions	Creativity and emotions	Creativity and emotions
Sexual education		Orientation on professions	Orientation on professions

In addition to the above, a system of associated clubs has been developed. These are designed to address the wider range of pupil desires and/or talents. These clubs occupy a minimum of two hours per week.



A strongly developed aspect of this approach is mentoring. This underlines much of the interaction process between pupil and teacher – as well as in many ways helping to re-define the role of the teacher. Each teacher/mentor has eight pupils. The key teacher roles and responsibilities are:

- At the beginning of the school year to inform pupils and their parents about the overall scheme, set with the pupil didactical and behavioral aims
- During the school year, to have every Friday a 15 minute discussion with the pupil (evaluation of the past week, organization of next week)
- Inform the principal and pupil's parents about his/her evolution
- At the end of the school year make the evaluation and suggestion for next year.

This entire process is designed to take Platon School to the position where it uses its resources, experience, technology and personnel to advance a radically new approach to student centred learning. Rather than merely concentrating on imparting knowledge for subsequent recall in examinations, it aims to address the needs of students comprehensively and holistically. The process entailed a series of steps to engage all stakeholders. This included:

- a. Exploration, debate and design.
- b. Teacher consultation process (February – April 2009).
- c. Parent consultation process (May 2009).
- d. Pupil consultation process (April – May 2009).
- e. Setting strategic focus (May 2009).
- f. Core issues defined.

The school defines the context of innovative applied learning strategy as:

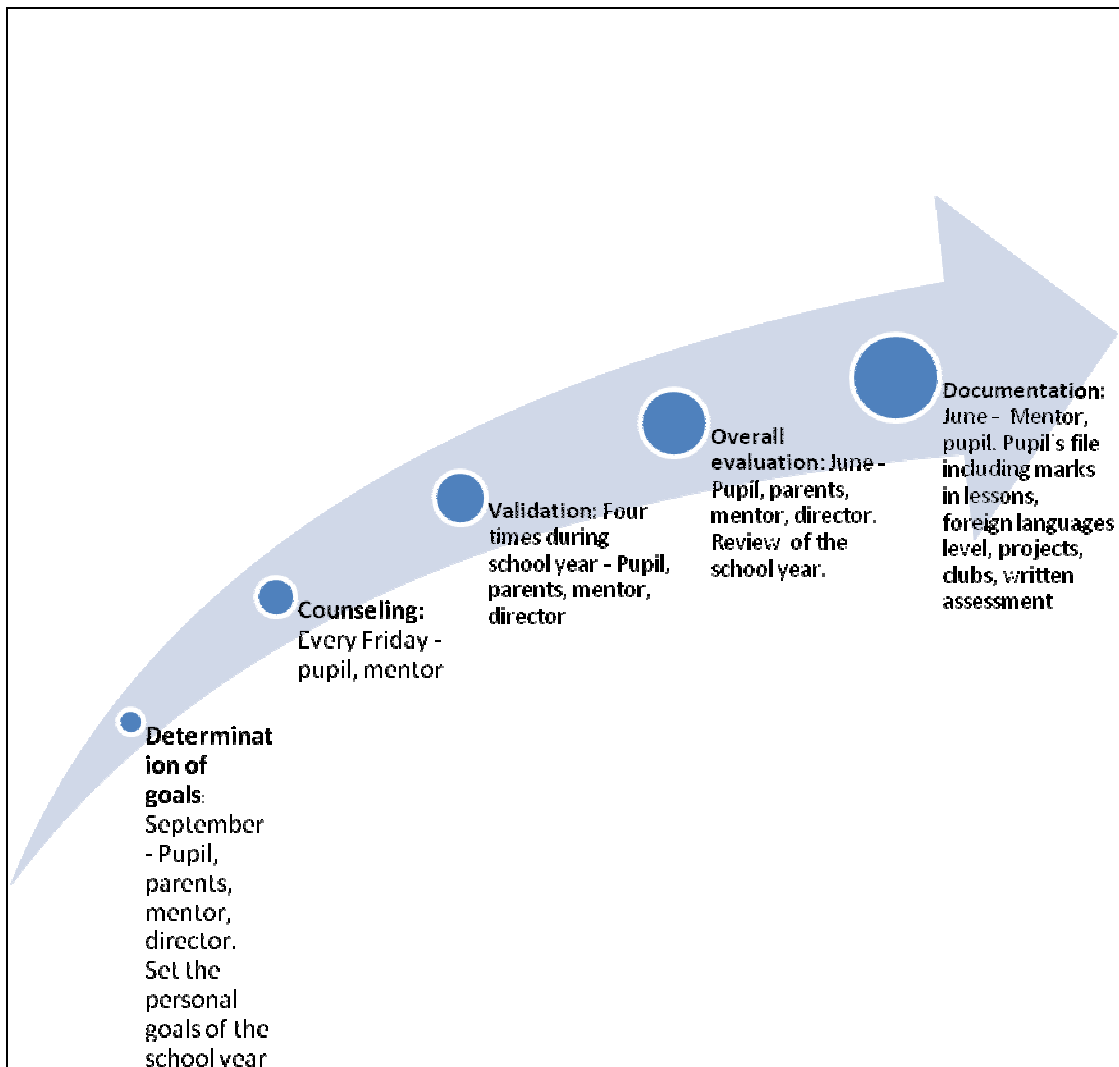
- Pupil centred.
- Competence centred.
- Person centred.
- Community centred.
- Technology as tool and networking method.
- Internationally centred.
- Process centred (Application modes: didactical aims).
- Value centred (Humanistic Approach: Four dimensions).

The key targets focus on:

- Enhanced motivation.
- Multidimensional buy-in (teachers, parents, pupils).
- Adaptability and response to change.

- Learning to learn.
- Self-confidence and communicative excellence.
- Multilingualism.
- Identity in a multicultural world.
- Clubs and mentoring.

The evaluative framework for this initiative is designed to consider the overall development of the pupil as a full person. This is more a reflective and meditative process and less a formal or bureaucratic one (questionnaires, interviews etc.). This process is pictured below.



A significant aspect of the Platon School initiative has been the parallel engagement of parents, families, communities and teaching staff in a coordinated way. Many other issues arise around added value and the relationship to a State educational system which, while unoriginal and rigid, is the legally dominant one and affects the expectations and aspirations of most Greek citizens. Fostering innovation is never easy however. The use of advanced technologies and interactive learning styles creates a powerful pole of alternative attraction. The concept is designed to stimulate debate and involvement with more traditional educational structures.

Review and dissemination are designed to be integral elements in the approach. In this aspect resources are a challenge but fruitful collaboration with allied agencies and schools in Sweden, Finland and Ireland is producing a significant resource to address this. The use of state-of-the-art technologies is central to the articulation of vision. This supplements the parallel international networking.

Potential outreach to adult learners, socially excluded and immigrants has already been identified in the longer term. Due to today's constant change and the emergence of a knowledge-based society we must continually renew our knowledge and skills. In pre-industrial times, an elementary education was sufficient for people to maintain their agricultural knowledge and skills. In the Industrial Age workers needed higher-level professional knowledge and skills taught through secondary education and repeated experience in order to maintain their income levels.

In our current information and knowledge-based society, however, innovative and appropriate education is indispensable to everyone, from scientists to farmers and fishermen, who utilize technologically sophisticated equipment, computers and networks to achieve business efficiency. A common feature of this knowledge-based society is to make our professional knowledge and skills obsolete very soon. We are constantly forced to renew our knowledge and skills to maintain our living standards, personal growth and human dignity.

The realization of tuition-free higher education is urgently needed to cope with a drastically changing economic situation caused by the global monetary crisis and unemployment issues. We have to take into account the potential of ICTs as well as rapidly developing learning science and technology to construct a new pedagogical paradigm of cost-effective instruction. While conventional teaching methods are often derived from philosophical approaches developed by eminent philosophers and educators, the new pedagogy starts from real problems faced in all educational settings, at home and at the workplace, and in our daily lives. In this sense, personal pedagogical knowledge should be communicable among learning designers.

5. Conclusions

Whatever about particular technologies or new methods, the characteristics of human learning remain driven by issues around motivation, skill acquisition, improved understanding and tangible benefit. They also relate critically to power and ability to control one's own environment, needs, expectations, relationships and rewards.

The impact of a globalized work environment and the end of classical hierarchical schooling models has massive implications. The evidence is that learning will ever more be conditioned by an intersection of interests between the world of employment and the world of education.

Educational institutions (and indeed learners as individuals) must respond to the paradigm shifts affecting all life and relationships in the 21st century. A recurring theme that has been identified here is the 'productivity of knowledge'.

If commentators are correct and business is to be more knowledge based, then education as a knowledge industry must have a vital role to play. This productivity of knowledge is powerfully strengthened by the technologies which have already had such a dramatic impact on other aspects of our lives.

This productivity of knowledge can be exemplified by indicators that include:

- Communicating the same knowledge to ever larger numbers of learners
- Increased enabling of learners to apply knowledge in their organizations
- Generating additional knowledge through pen and distance learning programmes
- Transforming the traditional lecturer into a mentor, guide and facilitator of learning who supports learners at the same time as increasing their knowledge
- Enabling a profound increase in the acquisition and generation of new knowledge.

Advanced technologies enable open and distance learning to be a powerful tool in advancing learner competence. These technologies suggest forms of delivery and assessment and research which are at first unfamiliar but, on investigation, indicate extraordinarily rich paths to improve learning and the acquisition of knowledge.

Platon School is developing a strategic vision which optimizes the use of these technologies within the context of a person centred, value enhanced learning paradigm. This paradigm locates the individual's learning progress in relation to self-autonomy, reflective learning and reference to family and community. Platon School sees this innovative approach contributing to the adaptable and creative schools needed in the future in Greece and elsewhere in Europe.

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Serious Games and Storytelling as an innovative learning tool in the European school 2.0

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Abstract

This paper describes how Serious Games can be an enriching tool for the educational sector. In addition the paper presents an innovative way of knowledge sharing and transfer between younger and older generations on the basis of Storytelling as narrative background. It describes the development approach of the project E-VITA "European life experiences" in which stories told by older generations are transformed in Serious Games for the younger ones. The project E-VITA aims at the development of a methodological framework for the creation of such games and investigates their applicability as learning tools in formal and informal learning settings. The paper suggests that Serious Games can be adopted in traditional forms of education because of the new opportunities they offer for problem- and simulation-based learning and also of the positive attitude of the younger generation towards games as learning tools.

Serious Games

"Serious Games" seems to be an inherently contradictory term. At first sight there are hardly any obvious intersections between playing and seriousness. In fact, we rather assume that one can either be serious, i.e. work or learn, or, as conceptual opposite, spend his or her leisure time to play and have fun. This view on the relation between playing and learning has begun to change in the recent years.

Especially for kids and school children a playful, hands-on approach to learning seems as the natural way of exploring the world surrounding them. In today's rapidly developing knowledge society modern information and communication technology is already integrated seamlessly in our everyday routines. The Internet, mobile phones and video games are not only commonly taken for granted as elements of our daily communication and entertainment, they can also be integrated effectively in classroom teaching situations.

Video games can be an effective tool for simulations of concrete real-world problems and scenarios. Dale (1969) points out that the ability to remember facts rises with the degree of participation on the part of the learner, i.e. the more the learner can engage in the actual learning experience the higher will be the amount of knowledge he/she will be able to remember¹. Learning is a dynamic process that demands interaction between the learner and his/her environment. Often a real-world interaction is not possible or it costs too much and virtual environments can replace that experience to a certain extend. This is where Serious Games can offer an important augmentation of the classroom experience in terms of simulating "real-life" situations in a controlled and feedback intensive setting in which learning takes place. In virtual game worlds, learners can experience concrete and realistic scenarios that would otherwise only be described by words and symbols; the experience is active instead of passive.

¹ <http://teacherworld.com/potdale.html>, retrieved 25.8.2009

And this is a form of learning that just feels natural to the younger generation who is widely familiar with the use of ICT in their everyday lives: we are talking of a generation known as “digital natives” and by means of this familiarity learning itself becomes an unobtrusive process. The use of computers at home is characterized by exploration, gaming, in-depth analysis of a certain question, learning as an incidental, non-intentional side product of becoming involved with something. Learning by playing games can be a much more motivating and immersive experience than traditional ways of learning facts in the classroom. Considering that up to 70% of learning takes place informally² it is important to make use of the naturally existing motivation in these processes.

Storytelling - an approach to intergenerational learning

Storytelling has existed since humanity has developed language. Stories and experiences have been shared in every culture and in every country, as a means of distraction, teaching, safeguarding of culture and in order to introduce values. The crucial elements of stories are their message, characters and sequencing, plot as well as point of view of the storyteller. Storytelling is distinct from conversational speech; the teller enters a performing mode through body language, delivery, and attitude.

The evolution of technology has changed the tools available to storytellers. The oral Storytelling tradition and ephemeral media turned into recorded stories in pictures or with writing. The writing made stories portable and multi-usable (different tellers). Stories were later on transformed into films. But the listener stayed passive and could only really engage, understand and apply the experiences of the narrator to a certain extent.

The current development of computer technologies is leading to an absolutely new way of Storytelling. Based on the narratives of individuals, immersive environments can be created that not only allow to experience the story, but to transform the story into a personal experience, to take an active part in it. Schäfer (2003) speaks about virtual Storytelling that is applicable in business and education, using games or other interactive media³.

The E-VITA project

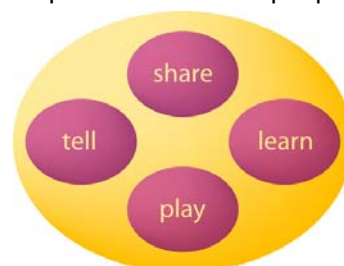
The E-VITA project tries a new approach to the development of Serious Games. Aim of the project is to develop a methodological framework for the creation of games on the basis of narratives which deliver the plot and setting for video games. In addition the chosen Storytelling approach embeds experience based knowledge into the games. In E-Vita older generations tell stories about their very personal experiences while travelling and working in Europe and the project uses these stories to transfer knowledge from one generation to another, i.e. from seniors to young people.

The E-VITA project – “European life experiences”, www.evita-project.eu – co-funded by the Education and Culture DG under the Lifelong Learning Programme - aims at developing and testing Serious Games that allow younger generations to “live” stories told by older people. In this way the complexity of the past can be experienced directly and understood while playing a game that once used to be a real story. The younger target group has initially been defined by the project consortium around 14-22 years.

The E-VITA project wants to test and investigate new ways of knowledge sharing and knowledge transfer in an intergenerational setting combining Game-Based-Learning and Storytelling techniques for the creation of different Serious Games focusing on the transfer of life experiences of older people to younger ones.

To do this a four dimensional framework has been defined to cover the different phases of the participatory design approach, namely:

TELL: Experts on knowledge transfer and management recognize that stories can be faster and more easily understood than abstract and



² Kim, K., Collins Hagedorn, M., Williamson, J., & Chapman, C. (2004). Participation in adult education and lifelong learning: U.S. Department of Education, National Center for Education Statistics. Washington, DC: Government Printing Office.

³ Schäfer, L. [2003] Storytelling in virtual environments. Springer, London

theoretical explanations. In E-VITA, the stories are providing context, they embed knowledge into a concrete gaming situation; not only do they comprise pure facts; they also provide connections and emotions. The approach is holistic; it does not focus on merely transposing factual knowledge, it targets a connected, experienced knowledge creation. Therefore, in this phase "Storytelling" concepts are used to gather stories from the older generation.

SHARE: E-VITA uses a Community of Practice approach in which community members reflect and collaboratively explore their life experiences, reasoning how their "established knowledge" can be transferred or exploited within a group, organization, or community. Effectively, this leads to the constitution of a "Community of Storytelling".

PLAY: The E-VITA project focuses on Game Based Learning (GBL) to encourage learning. Games are deeply motivating and engaging and make it possible to learn and train important skills like adaptability, self-direction, risk-taking, interactive communication, prioritizing etc. that are difficult to teach within conventional approaches. This is also the most natural and intuitive approach for the younger generation.

LEARN: The super ordinate aim of the project is to promote intergenerational learning: seniors tell the stories, younger generations play the games. They can also share impressions and knowledge in a continuous interchange thereafter. The pedagogical and technical environment will be developed to support the exchange amongst the different generations, to ensure that learning is reciprocal. This method allows younger generations to experience emotions lived by older people and thus to understand their point of view of life better, but also the reverse process may take place. Intergenerational relationships should benefit from the possibility to swap roles for once, i.e. the opportunity for younger people to step into the shoes of an older generation.

In E-VITA the principles of Game-Based-Learning and Storytelling are combined for the creation of different serious games focusing on the transfer of life experiences of older people to younger ones.

The E-VITA project promotes and investigates pedagogy-driven innovation by defining new approaches to problem-based and contextualised learning as well as knowledge transfer integrating Game Based Learning [GBL] with intergenerational learning concepts. A set of 'European cultural games' about cross-border experiences of older Europeans is being developed, allowing users to experience a past Europe of e.g. strict travelling and migration rules, different economic and monetary systems, uncertainties towards intercultural aspects in an engaging way, promoting self- reflection on the achievements of the European Integration process outside a formal instructional context.

Games as learning tool

Michael/Chen (2006)⁴ describe how gaming has created an entirely different learning style. According to them, "this learning style

- 'Aggressively ignores' the structure and format of formal instruction.
- Is built on extensive trial and error, with a 'failure is nearly free; you just push play again' mentality.
- Includes input and instruction from peers (other gamers), not authority figures.
- Emphasizes 'just in time' learning, with new skills and information picked up just before they are needed."

The general implication of learning with the help of computer games is that learners have the freedom to leave traditionally prescribed learning paths and that learning is facilitated by the motivation students have while they play. The open structure, far from rigid learning paths, which is the underlying principle of educating games based on Storytelling, can be a valuable supplement to traditional education forms. Today's knowledge society is largely grounded on network-shaped connections between pieces of information rather than linear, causal relations. In this perspective, learning with the help of non-linear stories mediated by a game playing experience can make a very important contribution to the development of media skills and competences that are essential features for the younger generation.

⁴ Michael, D. & Chen, S. (2006): Serious Games. Games that educate, train, and inform. Thompson Course Technology, p. 116

Oblinger (2006) points out that “games and play may be effective learning environments, not because they are ‘fun’ but because they are immersive, require the player to make frequent, important decisions, have clear goals, adapt to each player individually, and involve a social network”⁵. This learning approach keeps learners engaged and transforms them from passive listeners to active performers, they can express themselves freely, and profound insights for long-term thinking are triggered⁶. A game is an interactive world that a player partly creates with his/her actions and decisions, in which he/she lives his/her own experience, which is being retained and used as a possible key to decipher new situations, all according to a constructivist approach⁷. Games offer a situational framework for strategic problem-solving and “learning by doing”.

For all these reasons, when we need a learning environment where learning may sometimes also mean leaving the normal track, changing scenery and taking a fresh mental approach, an informal environment based on Serious Games may be the answer.

Serious Games should not be inflexible constructs that are imposed on learners by any authority. Rather, learners should be able to take part in the design process of the games themselves. The E-VITA project uses such a participatory design approach in which both storytellers and game players are involved in the making of the game through all stages.

Conclusions and outlook

The concept of Serious Games avails itself of young people’s openness towards new media and can help to convey knowledge in a way that feels natural and unobtrusive to them. The E-VITA project utilizes this concept for the transfer of knowledge enclosed in older Europeans’ experiences from one generation to another. Learning is a creative process and we can remember more factual and procedural knowledge when we actually do things by ourselves instead of reading or hearing about them. Wrapping knowledge in games is a consequent step in a society where access to new media is widely available and normal for even young school children. In games, they can learn while they are having fun and don’t even notice that they learn something new.

The E-VITA project concentrates on the development of a methodology for the design of Serious Games on the basis of personal stories. These stories are the background for plots and provide the narrative frame for the setting of the games. Ultimately, as concrete results of the project work, several Serious Games are being developed and tested in the target group of 14 to 22 year olds.

E-VITA has just completed the initial phase of participatory Serious Games design. Future work will focus on the design and implementation of the games involving at all stages target users and storytellers. At the end of the project the outcome will be a methodology and implementation procedure for using Serious Games as a vehicle for knowledge and information sharing.

⁵ Oblinger, D. (2006): Simulations, Games, and Learning.

<http://net.educause.edu/ir/library/pdf/ELI3004.pdf>, retrieved 26.8.2009

⁶ Pannese, L., Cassola, M., Grassi, M. (2005) Interaction with simulation tools; analysis of use cases. Graz, I-KNOW Conference.

⁷ Bocca, G. (2003) Cultura e Lavoro. Linee teoriche ed evidenze empiriche. Milano: V&P Strumenti.

geo@NET: Learning Geology with a Game

geo@NET: Aprender Geologia com um Jogo

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ABSTRACT: The main objective of this work is to motivate students to study of Earth Sciences, using Internet and computer games. It involved the preparation of several question generator models, which are used online, in the form of computer games.

Keywords: Earth Sciences Education, Internet, computer games.

RESUMO: O principal objectivo deste trabalho é motivar os alunos para o estudo das Ciências da Terra, utilizando a Internet e os jogos de computador. Para isso, foram elaborados vários modelos geradores de questões, utilizados *online* sob a forma de jogos de computador.

Palavras-chave: Educação em Ciências da Terra, Internet, jogos de computador.

INTRODUCTION

Science Education should contribute to the acquisition of both knowledge and values that are necessary to make correct decisions and to an informed citizenship (Henriques & Pedrosa, 2003; ME-DEB, 2001). However, there is a general lack of interest in the study of scientific areas, especially Earth Sciences (Carneiro *et al.*, 2004).

School results show that traditional teaching methods have not been able to motivate students to the study of sciences. As a consequence, they don't provide the construction of knowledge, capacities, values and attitudes necessary to everyday life (Henriques & Pedrosa, 2003). Therefore, it is necessary to “*innovate, creating new teaching methods, that put students in the centre of the learning process, and where teachers are mediators*” (Anjo, 2006).

Non-formal teaching methods can contribute to an increase of students' motivation to the study of Sciences and to show its importance in everyday life. This happens because these methods allow the emergency of several situations of interactivity and interdisciplinarity (Vieira *et al.*, 2005).

Between non-formal teaching methods, the use of Internet and computer games has been very successful in achieving those objectives. Although educational computer games are mainly exercises, when students are playing, their goal is to win (Gredler, 2004). Therefore these games are a good example of activities that can be used as a learning device (Abrantes, 2007) to complement other teaching methods (Alexandre & Diogo, 1990).

QUESTION GENERATOR MODELS AND PMATE PROJECT

In 1989, considering the weak school results in Mathematics, the Department of Mathematics from the University of Aveiro created “*Projecto Matemática Ensino*” (PMatE). The main purpose of PMatE is to create and/or to increase the interest for Mathematics, through the promotion of computer literacy and study habits (Miranda *et al.*, 2007).

With these objectives in mind, PMatE prepared computer software to support learning, teaching and evaluation (Anjo, 2006), based on computer games and competitions. These games are based on **question generator models (QGM)**.

QGM follow a classification by scientific and educational objectives and levels of difficulty. The main property of a QGM is its high randomness, which allows several combinations in the same QGM. Thereby, questions are always different (Silva *et al.*, 2007).

The complete preparation of a QGM involves several stages (Silva *et al.*, 2007):

- formulation of the QGM
- codification of the QGM and elaboration of the file, using specific software;
- inclusion in PMatE's database and attribution of an identification code according to scientific and specific area, theme, sub-theme, main and secondary objective, cycle of instruction, difficulty level and type of model (Miranda *et al.*, 2007)
- evaluation process, to assure its scientific correction and educational quality.

During each competition, the challenge is very simple: players must overcome all levels in the shortest time possible, correctly answering to all the questions in the screen. To do so, each player has two “lives” per level and questions are never repeated (Anjo, 2006).

The randomly generated questions are formed by an initial text and four sentences (“answers”). For each sentence, students must indicate if is true or false. Only the correct validation of each answer allows transition to the next level (Miranda *et al.*, 2007). The winner will be the player who was able to go through all levels in less time.

Currently, PMatE platform promotes several competitions (Mathematics, Biology, Physics, Portuguese and now Earth Sciences). The software, in which PMatE games are based, is only accessible on the Internet. To access the game, the user must register in PMatE's website (<http://pmate.ua.pt>), choose its profile (professor, student or user) and play in a competition (Anjo, 2006).

QUESTION GENERATOR MODELS IN EARTH SCIENCE EDUCATION. THE GEO@NET COMPETITION

In Portugal, in the initial 6 grades of Basic Instruction students have a simplified approach of Natural Sciences concepts. Earth Sciences are only compulsory in the 7th and 8th grades of Basic Instruction. In Secondary Instruction (10th, 11th and 12th grades), only students that choose scientific areas must select the course "Biology-Geology". However, this course is only mandatory in the 10th and 11th grades, and Geology is only about 1/3 of the study plan of the curriculum. In the 12th grade "Geology" is an optional subject, and is absent in most Secondary Portuguese schools (Peixoto *et al*, 2008).

The Earth Sciences curriculum in the 7th and 8th grades of Basic Instruction is very extensive (covering areas like: study of the Universe, main features of planet Earth and its subsystems, internal and external earth dynamics, geological time and evolution of Earth, etc.), but the time to study them all in detail is little (approximately 90 minutes/week).

So, if at 10th grade students choose another area (e.g. Arts or Economics), their geological knowledge is insufficient to correctly decide on problems that society faces everyday.

In order to improve Earth Sciences education, we have developed QGM models, in 15 levels, for the 7th and 8th grades of Basic Instruction (Peixoto, 2009). This project

is used in students' online competitions. Teachers can also use these games as evaluation tools (assessment tests) or as new educational strategies.

The QGM presented here, prepared for the 3rd cycle of Basic Instruction, corresponds to level 6 (study of Earth's Internal Layers - crust, mantle and core). It belongs to the area "Main features of planet Earth" and its objective is "Identification of Earth's Internal Layers". It corresponds to a difficulty grade of 3 (1- easy, 5- very difficult).

Every time the QGM is generated, the player will see figure 1 and the following text: "The figure shown here represents a model for Earth's Internal Structure. Mark each sentence with V (true) or F (false)."

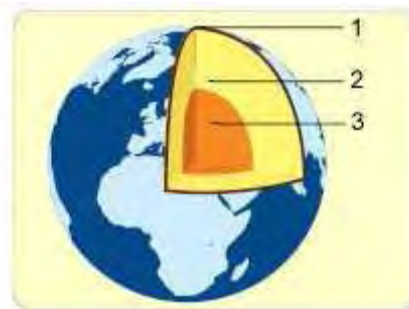


Figure 1: Earth's Internal Layers (crust, mantle, core).

This QGM has four different groups of answers (R_1 - Identification of Earth's Internal Layers; R_2 - Crust; R_3 - Mantle; R_4 - Core). Although there are many possible sentences, only 4 sentences will appear, generated randomly from the 4 major groups of answers (R_1 , R_2 , R_3 , R_4), each time the QGM is used.

Here is an example of sentences that may appear (see figure 2):

1. “Mantle is the middle layer of Earth’s Interior.” (R₃)
2. “Core isn’t the innermost layer of Earth’s Interior.” (R₄)
3. “In the figure, core is assigned with number 2.” (R₁)
4. “Crust is formed, exclusively, by metamorphic rocks.” (R₂)



Figure 2: QGM “Identification of Earth’s Internal Layers” (Peixoto, 2009).

In this example, players must signalize true answers (nr 1) and false answers (nr 2, 3 and 4). Only the correct validation of each answer allows transition to the next level of the game. The number of true and false answers is variable, and there are cases where all answers are true or all are false.

Table I: Formulation of a QGM (symbols: “ $\wedge$ ” - and; “ $\vee$ ” – or)

Group of answers	Possible sentences	True answers											
R ₂	Crust												
	<table><tr><td>is</td><td>c11</td></tr><tr><td>isn't</td><td>c12</td></tr></table> the most external layer of Earth's Interior.	is	c11	isn't	c12	c91							
	is	c11											
	isn't	c12											
	<table><tr><td>is</td><td>c21</td></tr></table> a <table><tr><td>solid</td><td>c31</td></tr><tr><td>liquid</td><td>c32</td></tr><tr><td>gaseous</td><td>c33</td></tr></table> layer.	is	c21	solid	c31	liquid	c32	gaseous	c33	c92			
is	c21												
solid	c31												
liquid	c32												
gaseous	c33												
has <table><tr><td>constant</td><td>c41</td></tr><tr><td>variable</td><td>c42</td></tr></table> thickness.	constant	c41	variable	c42	c93								
constant	c41												
variable	c42												
is formed <table><tr><td>by igneous, sedimentary and metamorphic rocks.</td><td>c61</td></tr><tr><td>exclusively by</td><td>c62</td></tr><tr><td><table><tr><td>sedimentary</td><td>c51</td></tr><tr><td>metamorphic</td><td>c52</td></tr><tr><td>igneous</td><td>c53</td></tr></table></td><td></td></tr></table> rocks.	by igneous, sedimentary and metamorphic rocks.	c61	exclusively by	c62	<table><tr><td>sedimentary</td><td>c51</td></tr><tr><td>metamorphic</td><td>c52</td></tr><tr><td>igneous</td><td>c53</td></tr></table>	sedimentary	c51	metamorphic	c52	igneous	c53		c85
by igneous, sedimentary and metamorphic rocks.	c61												
exclusively by	c62												
<table><tr><td>sedimentary</td><td>c51</td></tr><tr><td>metamorphic</td><td>c52</td></tr><tr><td>igneous</td><td>c53</td></tr></table>	sedimentary	c51	metamorphic	c52	igneous	c53							
sedimentary	c51												
metamorphic	c52												
igneous	c53												
		$c91 \wedge c11$ $\vee$ $c92 \wedge \begin{cases} c21 \wedge c31 \\ \vee \\ c22 \wedge (c32 \vee c33) \end{cases}$ $\vee$ $c93 \wedge c42$ $\vee$ $c94 \wedge c61$ $\vee$ $c95 \wedge c71$ $\vee$ $c96 \wedge c81$											

Table I shows a portion of this QGM. The 1st column indicates the group of answers (R₂), the 2nd shows all sentences possible for that group and the 3rd indicates the combinations that form a correct answer.

RESULTS AND CONCLUSIONS

The **1st edition of geo@NET competition** began with a try-out, which every user could access to. In these training games, that took place between January 15th and April 27th, were involved 2651 students and 5686 games were played (figure 3, 4, 5, 6). In the four days before the competition, were registered a high number of entries (1061 games in 4 days) and a single student played 131 times in this period.

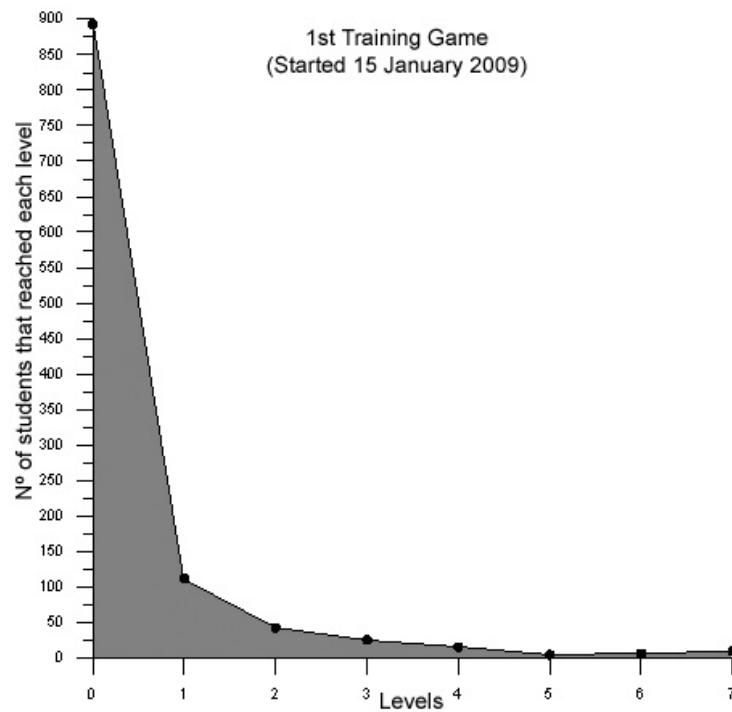


Figure 3: 1st training game.

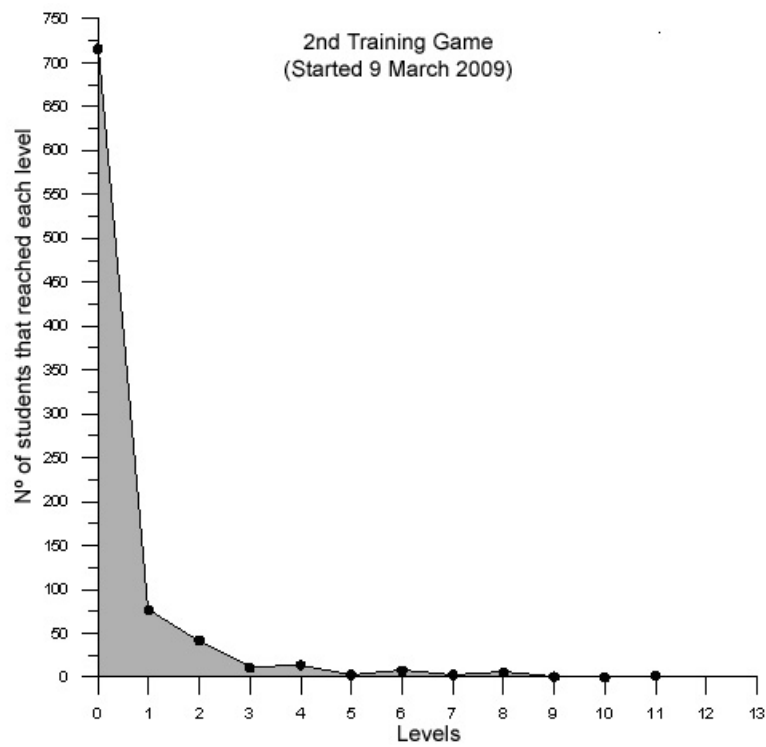


Figure 4: 2nd training game.

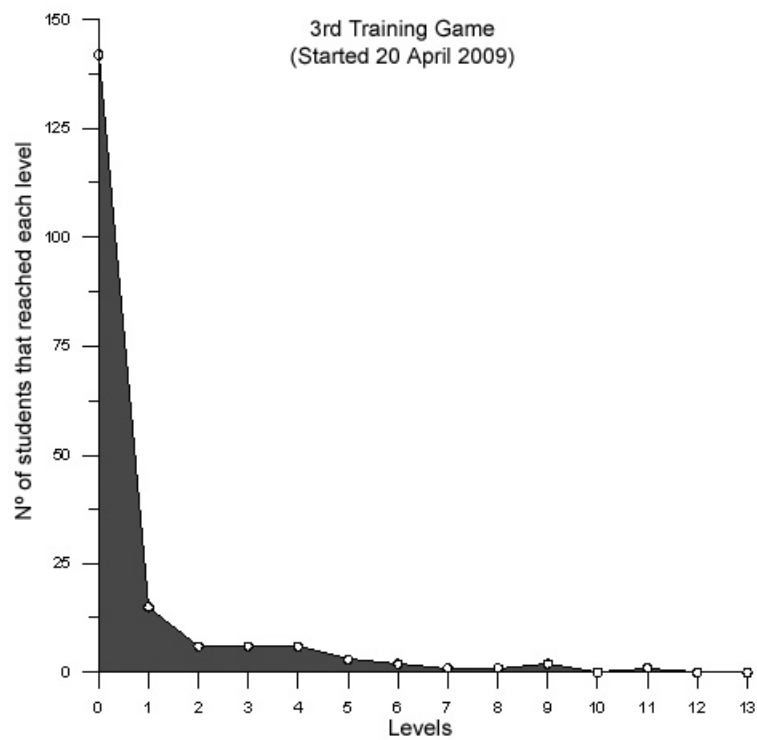


Figure 5: 3rd training game.

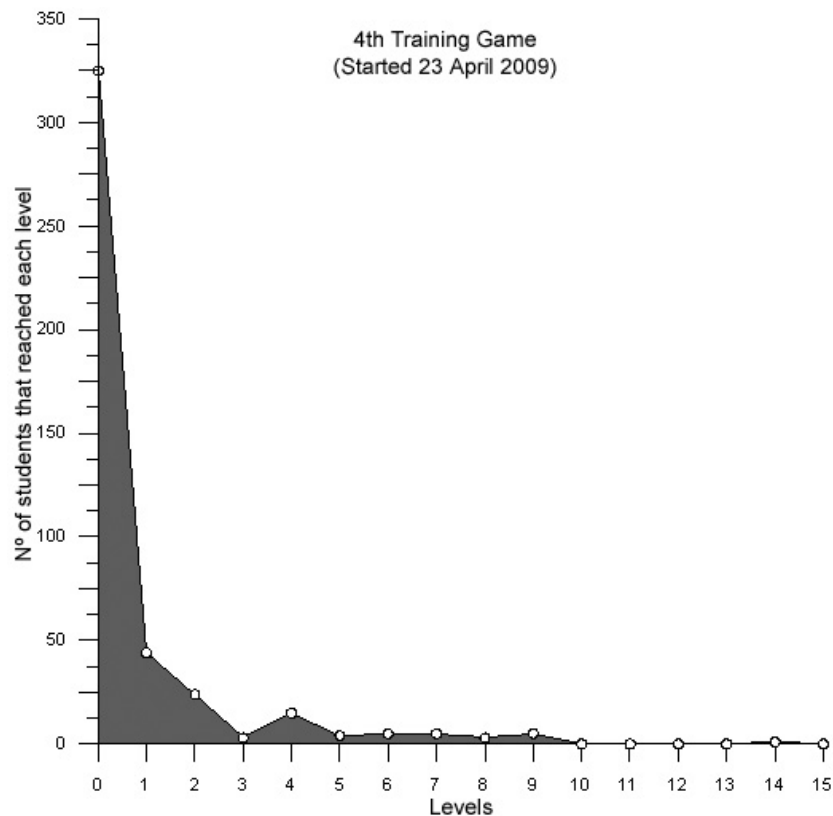


Figure 6: 4th training game.

The final geo@NET competition took place in April 28th at University of Aveiro, with the participation of students from two schools (in the try-out were involved students from twenty schools from all the country). This difference in participation can be attributed to the short period that schools had to organize all logistics necessary for the participation in this competition (one thing is to play at school or at home, another is to bring students from distant schools to the University).

However, the fact that, after the final competition took place, students continued playing, demonstrates the interest that **geo@NET** arose between students and teachers, and seems to indicate that this kind of game can contribute to the increase of students' motivation for the study of Earth Sciences.

The 20 years experience of PMatE games and competitions have demonstrated to be a good method to increase motivation for the study of this area. Since its beginning,

there has been an increase of students' mathematical abilities. So, we expect the same will happen with **geo@Net**.

The global balance of this 1st edition is very positive, showing that it can be a powerful and effective device for learning Earth Sciences. The interest demonstrated by students for **geo@NET** seems to indicate that, in the future, more students will participate in these competitions, which is a very important goal to achieve in a country like Portugal, affected by so many geological risks (volcanic and seismic risks; soil, slope and coastal erosion; etc.).

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Educação para os Média através da criação de jornais escolares em suporte digital

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Resumo

A literatura nacional e internacional refere que os jornais escolares estão entre os média mais presentes nas escolas. Porém, as escolas apostam claramente nos jornais escolares em suporte papel, considerando diferentes autores que ainda será cedo para a deriva cibernética, ou seja, para uma aposta clara na produção de jornais escolares *on-line*. No âmbito do projecto “Educação para os Média na Região de Castelo Branco”, desenvolvido em 24 agrupamentos de escolas e escolas não agrupadas, constatou-se que agrupamentos e escolas não investiam nos jornais escolares *on-line* por falta de formação e de apoio tecnológico. Nesse sentido, além de um apoio decisivo na produção de jornais escolares em suporte papel, foi desenvolvida uma plataforma de produção de jornais escolares *on-line*, que permite às escolas a produção e personalização de jornais com um envolvimento claro de alunos e professores. Este artigo apresenta a plataforma, o manual de apoio ao funcionamento dessa plataforma, bem como os resultados do primeiro ano de trabalho no terreno.

Palavras-chave: Jornais escolares, Educação para os Média, Literacia dos Media, Plataforma *on-line*.

1. A ausência da Educação para os Média nas políticas educativas

Educadores de todo o mundo têm contribuído para desenvolver a Educação para os Média e a Literacia dos Média, sobretudo ao longo das últimas duas décadas mas, na maioria dos países, os decisores políticos em termos educacionais só recentemente começaram a ganhar interesse em relação à necessidade dos cidadãos serem literatos em média (Scheuer, 2009). Os países da União Europeia não fogem a esta realidade e embora as realidades sejam diferentes entre os estados-membros, a verdade é que só a partir de 2004 a Comissão Europeia deu um contributo decisivo para a área, ao apoiar a realização do primeiro congresso europeu de Educação para os Média, em Belfast, com a consequente criação de uma rede de investigadores e docentes interessados na área (Media-educ, 2004).

Na ausência de uma política europeia e até de políticas nacionais, podem existir boas práticas, susceptíveis de serem avaliadas e replicadas, que o não são por desconhecimento. Para colmatar essa eventual possibilidade, entre Outubro e Dezembro de 2006, a União Europeia organizou uma consulta pública *on-line*, acerca de boas práticas ao nível da Educação para os Media. A esse desafio responderam 103 organizações e particulares (União Europeia, s/data). O tratamento dos dados recolhidos nessa consulta pública contribuiu para o enriquecimento do documento que a União publicou, onde era defendida a urgência da implementação da Educação para os Média.

A rede Media-educ foi substituída pela Euro Media Literacy (2006), a qual está aberta à participação de todos os interessados em Literacia dos Media. Ainda em 2006, oito instituições europeias elaboraram a Carta Europeia para uma Literacia dos Media (2006), cujo objectivo principal passa por apoiar a implementação de boas práticas de Literacia dos Media em toda a Europa. Já em 2008, foi aprovado um documento onde se refere a necessidade de definir competências que permitam avaliar o grau de literacia mediática dos

cidadãos da União Europeia, bem como o que deve ser feito para aumentar o nível dessa literacia na Europa (Parlamento Europeu, 2008).

Actualmente, grande parte da informação que nos chega diariamente é mediada, pois chega sobretudo através dos diferentes média, da rádio à televisão, dos jornais à Internet. Porém, as mensagens dos média não são uma janela para a realidade, mas sim construções da realidade (Potter, 2005), sendo o processo de construção influenciado por vários factores, desde os políticos aos económicos, mas também pelos valores e pela capacidade de interpretação de quem produz as mensagens (Jacobs, 2005). Por outro lado, a forma de consumir essa informação difere de cidadão para cidadão, distinguindo-se aqui aqueles que se preparam para o consumo inevitável de mensagens média e aqueles que não se apercebem da necessidade dessa preparação. Importa por isso, preparar todos os cidadãos para fazerem um consumo crítico das mensagens dos média. Mas, na sociedade-rede, o consumo crítico, ou seja, a capacidade de analisar as mensagens dos média com um cepticismo saudável (Thoman e Jolls, 2003), não é suficiente. Cada cidadão deve estar preparado para interagir através dos média, pelo que deve saber produzir mensagens média, razão pela qual necessita de capacidades técnicas mas também culturais (Carlsson e von Felitzen, 2006).

Esta preparação, que deve começar no berço (Gonnet, 1999) tem de ser um processo permanente (Potter, 2005) que deve ser prolongado ao longo da vida (Rivoltella, 2007). É nesse sentido que entendemos como necessária e urgente a Educação para os Média. A Educação para os Média pode ser considerada, em termos gerais, as actividades de cariz pedagógico que visam o desenvolvimento da capacidade de aceder, analisar criticamente e produzir reflexivamente mensagens mediáticas, seja através dos média tradicionais, seja através dos média digitais. O resultado da Educação para os Média será a Literacia dos Média (Buckingham, 2003), ou seja, o objectivo é que os cidadãos que desenvolvem actividades de Educação para os Média se tornem progressivamente mais literatos no que diz respeito à interacção com os média e com as suas mensagens.

No que diz respeito à preparação dos cidadãos, embora as actividades possam decorrer fora do contexto escolar, é hoje largamente aceite que a escola deve assumir um papel central na preparação dos cidadãos em matéria de literacia dos média. É certo que a escola ainda não está preparada, designadamente em termos de recursos humanos e tecnológicos (Ruivo, 2005). Existe também um fosso digital entre gerações, entre países e também entre regiões dentro de um mesmo país. Há também quem confunda Educação para os Média com a simples adição dos média à aula tradicional. Ora, a Educação para os Média implica aprender a interpretar e a produzir mensagens média, além da simples utilização dos média (Hobbs, 1998).

Por outro lado, hoje a escola está sobrecarregada com disciplinas e não haverá espaço para uma nova disciplina. Mas essa é uma falsa questão, pois a Educação para os Média deve ser desenvolvida no âmbito de várias disciplinas, numa lógica transversal, interdisciplinar, ou em espaços curriculares não disciplinares, como acontece, em Portugal, com a Área Projecto.

Tendo em atenção as questões atrás abordadas, o Parlamento Europeu (2008) considera que todos os estados-membros da União Europeia devem desenvolver uma formação em serviço na área da Educação para os Média destinada a todos os professores, de todos os tipos de escola. Além disso, defende que devem ser incorporados nos programas módulos de frequência obrigatória na área da Educação para os Média, em todos os níveis escolares. Defende ainda o desenvolvimento da Educação para os Média ao longo da vida, bem como de actividades também destinadas a pais e a pessoas mais idosas.

2. Educação para os Média através da produção de jornais escolares em papel e *on-line*

O crescimento exponencial dos meios tecnológicos de comunicação obriga a uma actualização constante dos cidadãos, para que saibam usar os novos meios. Ainda assim, os média tradicionais, como a televisão, a rádio e os jornais, ocupam uma lugar importante no ambiente comunicacional. As diferenças tendem, porém, a esbater-se, pois vivemos hoje na cultura da convergência e assistimos à convergência dos meios de comunicação, no que pode ser considerada uma fusão anunciada dos média, rumo ao pan-média (Jenkins, 2006).

Exemplos da convergência são os jornais em suporte papel e em suporte *on-line*, que continuam a co-existir, sobretudo por razões económicas, pois as empresas jornalísticas ainda não encontraram uma forma de manterem as receitas de publicidade apostando apenas no suporte digital. Mas no caso dos jornais existe ainda a questão da portabilidade da informação, que ainda é, pelo menos aparentemente, mais fácil no papel. A terceira questão é a do acesso, pois o fosso digital implica que um número significativo de pessoas não tivesse acesso à informação dos jornais se esta apenas fosse disponibilizada em suporte digital.

Esta situação verificar-se-á também nas cerca de 2000 escolas portuguesas, do 1º Ciclo ao Ensino Secundário. Grande parte das quais publica um jornal escolar em suporte papel, mas apenas uma pequena parte, inferior a 10 por cento, publica regularmente um jornal *on-line* (Gonçalves, 2007). Tendo esta realidade em conta e sabendo que a produção de mensagens média para jornais escolares é uma actividade importante em termos de Educação para os Média, consideramos que é importante fomentar a produção de jornais escolares em ambos os suportes. A questão é que a tarefa não é fácil. Apesar de existirem muitos jornais escolares, a verdade é que a grande maioria está limitada, essencialmente por três factores: *i*) a falta de preparação de professores em matéria de jornalismo; *ii*) a falta de preparação dos alunos em termos jornalísticos; *iii*) a quase inexistência de recursos pedagógicos de apoio (Tomé, 2008). Nesse sentido, dada a nossa formação estar centrada na educação, no jornalismo e na produção de recursos multimédia para fins educativos, decidimos avançar com a produção do CD-Rom “Vamos fazer jornais escolares”, o qual tem como objectivo essencial apoiar professores e alunos, dos 11 aos 16 anos, na produção de jornais escolares, em suporte papel e *on-line*. O CD-Rom foi produzido em 2005 e inclui sete unidades base que vão desde a organização de um jornal, os géneros jornalísticos, a produção do jornal, análise de jornais, o jornal *on-line*, recursos e perguntas mais frequentes. Em termos técnico, a aplicação multimédia foi criada em Macromedia Flash e inclui texto, imagens e vídeos.

Ainda em 2005, o CD-Rom foi validado com cinco especialistas, três da área do multimédia e dois da área do jornalismo. Foi depois disponibilizado em duas escolas da cidade de Castelo Branco (Portugal), tendo sido utilizado por quatro professoras de Português, em quatro turmas (duas de 6º Ano, uma de 7º e outra de 8º), num total de 104 alunos. As actividades de produção de artigos para o jornal, com recurso ao CD-Rom, foram gravadas em áudio e vídeo. Posteriormente os diálogos foram passados a protocolo escrito e analisados em Atlas.ti.

Após a análise dos dados recolhidos constatámos o seguinte: *i*) 102 em 104 alunos referiram terem gostado de trabalhar com o CD-Rom; *ii*) 99 de 104 alunos referiram que o CD-Rom os ajudou na produção de conteúdos para o jornal escolar; *iii*) na opinião das professoras, os textos dos alunos aproximaram-se do texto jornalístico; *iv*) o número de colaboradores no jornal superou, pela primeira vez os 50 elementos em cada uma das escolas; *v*) os alunos escreveram textos destinados especificamente a serem publicados no jornal escolar; *vi*) os textos em que os alunos mais se empenharam foram aqueles cujos temas tinham sido escolhidos pelos alunos ou negociados com as professoras; *vii*) as professoras apontaram o CD-Rom como inovador, destacaram a maior motivação, autonomia e sentido de responsabilidade dos alunos.

Apesar dos resultados obtidos nas duas escolas de Castelo Branco, a verdade é que o facto de professores e alunos terem acesso ao CD-Rom enquanto recurso pedagógico não teve qualquer efeito em termos da produção do jornal escolar *on-line*. Na Escola A, o jornal *on-line* não existia e também não foi criado, apesar de existirem alunos e uma professora interessada em o fazer. No final, a falta de tempo e a escassez de recursos foram apresentadas como justificações para o facto do jornal não ter sido produzido. Na Escola B já existia jornal *on-line*, mas estava desactualizado. E assim se manteve durante todo o ano lectivo em que acompanhamos as actividades nas escolas. Mais de 90 por cento dos 104 alunos referiram que não liam o jornal *on-line*, enquanto os professores referiam que também não o faziam, pois preferiam ler em papel. Adiantavam ainda que os alunos gostavam de navegar na Internet, mas que não procuravam o jornal escolar *on-line*.

3. Uma plataforma para a produção de jornais escolares em suporte digital

Os dados recolhidos ao longo de um ano permitiram identificar aspectos a melhorar no CD-Rom, o que fizemos posteriormente, tendo resultado desse processo a produção do DVD „Vamos fazer jornais escolares“. As alterações centraram-se numa profunda remodelação gráfica e na melhoria dos conteúdos. O DVD foi depois disponibilizado em 24 escolas da área educativa de Castelo Branco, as quais publicam regularmente um jornal escolar em suporte papel. Neste momento o DVD está a ser utilizado por 623 alunos e mais de 50 professores, desde Dezembro de 2008. Este trabalho decorre no âmbito do projecto de investigação „Educação para os Média no Distrito de Castelo Branco“ (2007-2010), o qual é financiado pela Fundação para a Ciência e a Tecnologia e pelo Fundo Social Europeu.

Além das alterações ao CD-Rom, constatámos que era necessário produzir um manual de apoio à utilização do DVD, o qual contextualiza também o projecto de investigação. Produzimos também um sítio Internet (www.literaciamedia.com) acerca do projecto, o qual tem versão portuguesa e inglesa. Já em termos da produção de jornais escolares *on-line*, referida na Unidade 5 do DVD, reformulámos profundamente os conteúdos. Mas dada a falta de apoio técnico nas escolas para a produção do jornal em suporte digital, decidimos avançar também com a produção de uma plataforma de produção de jornais escolares *on-line*. Essa plataforma foi produzida em 2008, tendo sido posteriormente disponibilizada às escolas aderentes ao projecto.

A plataforma de criação e dinamização de jornais escolares *on-line* (Fig. 1) tem como objectivo proporcionar a todas as escolas e agrupamentos de escolas a possibilidade de criar e dinamizar jornais escolares *on-line*. Em termos de características essenciais, a plataforma permite o seguinte:

- a) Cada escola pode criar um ou mais jornais, podendo produzir diferentes edições de cada jornal criado;
- b) Os jornais são personalizáveis em termos de título e de organização dos conteúdos, pelo que as secções e as sub-secções são definidas pelo administrador do jornal;
- c) Podem ser adicionados a notícias conteúdos em vários formatos tais como texto, imagem, áudio, vídeo, bem como ficheiros que associem um ou mais destes formatos, ou seja ficheiros multimédia;
- d) Os conteúdos de imagem, áudio, vídeo ou multimédia podem ser inseridos com qualquer tamanho definição, pois a plataforma está dotada de um sistema que permite reduzir o tamanho e a definição para níveis adaptados à disponibilização *on-line*;

- e) Os conteúdos podem ser editados por administradores da escola, administradores do jornal, professores e alunos, carecendo porém os conteúdos dos alunos de permissão superior para serem disponibilizados *on-line*;
- f) A inserção de conteúdos nos jornais só pode ser feita por utilizadores registados. Este registo é feito pelo administrador do jornal, pelo que os utilizadores só podem inserir notícias no jornal em que estão registados;
- g) Os jornais produzidos nas escolas podem ser impressos, pois a plataforma cria automaticamente uma versão pdf das edições;
- h) A plataforma está dotada de um sistema que permite a visualização das notícias dos jornais via PDA ou telemóvel com acesso à Internet.

O acesso à plataforma de produção de jornais *on-line* é feito através do endereço: <http://jornais.literaciamedia.com>. Para que professores e alunos pudessem trabalhar de forma apoiada na plataforma, inserimos no manual de apoio uma explicação do funcionamento da plataforma, bem como um conjunto de 14 fichas técnicas, designadamente: i) Criar um jornal; ii) Estruturar um jornal; iii) Criar uma edição de um jornal; iv) Estruturar a edição de um jornal; v) Criar e associar utilizadores; vi) Fazer um *upload* (carregar ficheiro); vii) Criar uma nova categoria; viii) Inserir notícia; ix) Inserir imagem associada a notícia; x) Inserir áudio ou vídeo associado a notícia; xi) Inserir vídeo do YouTube; xii) Associar notícia; xiii) Associar um conteúdo; xiv) Criar uma *newsletter*.



Figura 1 - Ecrã de entrada da plataforma de produção de jornais escolares on-line, desenvolvida no âmbito do projecto “Educação para os Média no Distrito de Castelo Branco”.

Em cada uma das escolas procedemos ao registo de, pelo menos, um professor, na plataforma, podendo este depois registar alunos e outros professores. Aquando do registo, explicámos o funcionamento da plataforma, com recurso ao manual de apoio, tendo entregue uma cópia do manual aos professores. Referimos ainda que o objectivo da plataforma é que os alunos possam produzir conteúdos para o jornal, designadamente texto e fotografias, mas também noutros suportes, como é o caso do vídeo e do áudio. A receptividade dos professores em relação a estas possibilidades foi muito positiva, embora tenham referido que as escolas não dispõem de meios técnicos para essas produções, pelo menos na maioria dos casos.

Aquando da apresentação da plataforma em cada escola, explicámos também as potencialidades da aplicação, designadamente o facto de cada jornal poder ser personalizado em termos de título, das secções e das sub-secções. Para apoiar professores e alunos foi criado um jornal exemplo, com o título Reconquista, a empresa de Comunicação Social que apoia o Projecto de investigação, ao imprimir gratuitamente os jornais escolares das escolas aderentes. Através do jornal exemplo, professores e alunos podem constatar que cada notícia publicada pode ser impressa, comentada ou enviada por correio electrónico. Já o corpo de letra pode ser aumentado, bastando accionar uma tecla que se encontra no canto superior direito. Esta é uma das funções que visa melhorar a plataforma em termos de usabilidade e acessibilidade.

4. Resultados preliminares

O trabalho de produção de jornais escolares *on-line* começou em Janeiro de 2009, pelo que ainda é cedo para avaliar o impacto da plataforma e dos outros recursos do projecto, no que diz respeito à produção de jornais escolares *on-line*. De qualquer modo, até ao momento apenas sete das 24 escolas procuraram trabalhar efectivamente na plataforma, mas apenas duas delas desenvolveram efectivamente o jornal escola *on-line*, designadamente as escolas E11 e E23. Duas outras escolas (E19 e E20), já tinham jornal escolar *on-line* e preferiram manter o formato, optando por não trabalhar com a plataforma disponibilizada. Nestas duas escolas, a edição *on-line* é actualizada com frequência. Já na escola E5 é actualizado regularmente um blogue que a escola considera o jornal *on-line*, embora, na nossa perspectiva, não possa ser considerado como tal.

No final do ano lectivo 2009/2010 contactámos os professores envolvidos no Projecto “Educação para os Média no Distrito de Castelo Branco”, tendo estes apontado um conjunto de razões para a não utilização da plataforma, apesar desta estar disponível. Duas escolas que tentaram, mas não conseguiram colocar conteúdos, apontaram como razões a dificuldade de acesso à password (E9), o facto do processo “não ser fácil”, além de terem surgido deficiências de funcionamento da plataforma e de não haver tempo (E24, E18, E16).

De facto, inicialmente surgiram algumas dificuldades com a plataforma, as quais a equipa do projecto procurou resolver e foi conseguido resolver dentro da medida do possível. Actualmente, a plataforma está em funcionamento e é possível criar jornais para cada escola. De qualquer modo, para facilitar a tarefa, é preferível as escolas partirem de um jornal já feito e alterarem as definições, em lugar de estarem a criar tudo de novo. É que a grande maioria dos professores não tem formação na área das tecnologias, pelo menos a este nível e, ainda com o apoio do manual, não conseguem dinamizar o jornal.

As escolas que conseguiram colocar conteúdos fizeram-no por diferentes razões. Numa delas (E20) foi um aluno que colocou os conteúdos recorrendo à *password* das professoras, que estas lhe cederam. Noutra escola (E11), as dificuldades iniciais foram ultrapassadas com o apoio do professor de Matemática, com formação na área das tecnologias: “Até criar o jornal houve muita confusão. Mas o facto das pessoas do projecto terem vindo à nossa escola ajudou muito, pelo que conseguimos criar o jornal” (E11). Finalmente, no terceiro caso, foi o professor de EVT, com formação na área, que conseguiu elaborar a edição do primeiro e do segundo período, recorrendo aos conteúdos do jornal em suporte papel.

Entre as escolas que não usaram a plataforma, as principais dificuldades apresentadas foram as seguintes:

- a) Falta de tempo para o fazer (E1, E2, E7, E8, E10, E13, E14, E15, E17, E21 e E22).
- b) Existência de um espaço de notícias na plataforma *Moodle* da escola (E2, E3, E12).

- c) Resistência por parte dos alunos (E4).
- d) Dificuldades com o equipamento informático (E5, E8).
- e) Existência do jornal de impresso em suporte PDF na plataforma da escola (E6).
- f) Escola já tem jornal escolar *on-line* (E19).

Perante as dificuldades invocadas, consideramos que será fundamental desenvolver acções de formação para os professores na área das tecnologias, se possível especificamente no funcionamento da plataforma, pois o manual de apoio não foi suficiente para que os docentes dinamizassem o jornal escolar *on-line*. Por outro lado, dadas as dificuldades dos docentes, para o próximo ano lectivo, todas as escolas terão acesso a um jornal *on-line* já criado e com exemplos, no qual terão apenas de alterar os nomes das secções, além de substituírem artigos, fotografias, sons e vídeos. Consideramos que essa pode ser uma mais-valia importante, pois facilita muito o trabalho aos professores, sobretudo aos que não têm qualquer formação na área das tecnologias. O nosso empenho nesta área visa ainda que os professores possam inscrever os alunos na plataforma, de modo a que estes também possam inserir conteúdos no jornal escolar *on-line*.

5. Conclusão

Apesar de ter sido criada uma plataforma expressamente para que as escolas pudessem produzir o jornal escolar digital, bem como o DVD “Vamos fazer jornais escolares” e um manual de apoio, nos primeiros dois meses verificou-se que apenas cinco escolas publicam regularmente um jornal *on-line*. Duas outras escolas já tinham jornal *on-line* e mantêm as edições *on-line* actualizadas. O jornal escolar em suporte papel continua a ser um média importante nas 24 escolas, sendo que apenas uma delas não publicou qualquer edição ao longo do ano lectivo, situação justificada, pela professora responsável, com a falta de tempo para organizar os conteúdos produzidos por alunos e professores. De qualquer modo, não está posta de lado a hipótese da escola publicar um número do jornal, recorrendo aos referidos conteúdos, no início do próximo ano lectivo. Consideramos assim que, tal como refere a literatura, será ainda cedo para a chamada deriva cibernética, pois o interesse de professores e alunos pelo jornal digital é reduzido quando comparado com o interesse pelo jornal em suporte papel. Esse desinteresse deve-se também, na nossa perspectiva, à falta de tempo e de formação na área por parte dos docentes. E se em relação à questão do tempo, pouco ou nada podemos fazer no âmbito do Projecto, em relação à segunda questão, além da formação, propomos soluções para facilitar a interacção de docentes e alunos com a plataforma de produção de jornais escolares *on-line*, no sentido de que todas as escolas aderentes possam produzir o seu jornal. Já o DVD produzido no âmbito do projecto, é um recurso pedagógico adaptado a professores e alunos do 2º e 3º Ciclos do Ensino Básico e que os ajuda na produção de conteúdos para jornais escolares. Além disso, consideramos que contribui para que os alunos devenham progressivamente consumidores críticos e produtores reflexivos de mensagens média.

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**Utilização de aplicativos Web 2.0 no apoio ao estudo da Matemática: uma experiência no
11º ano de escolaridade**

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Resumo: Nesta comunicação vamos apresentar uma experiência de utilização do podcast num site de apoio ao estudo da Matemática por duas turmas de 11º ano de escolaridade de uma escola secundária do norte de Portugal. O estudo fundamenta-se numa lógica de extensão comunicativa da sala de aula, tirando partido do potencial da ferramenta de edição de áudio Audacity para gravação e disponibilização de sessões explicativas da resolução de exercícios preparatórios para os testes de avaliação da disciplina. O site criado disponibiliza também propostas de trabalho, indicação de outros sites de apoio ao estudo bem como a indicação de ferramentas Web de cariz mais lúdico, mas é sobre o papel do podcast que esta comunicação se debruça. Para efeitos da avaliação da experiência os alunos responderam a um questionário especialmente concebido para o efeito. Os resultados mostram diferenças na utilização do site por parte dos alunos das duas turmas derivadas de diferentes condições de acesso à internet; que os conteúdos disponibilizados foram importantes para a aprendizagem; que o podcast é o recurso mais valorizado e utilizado pelos alunos no apoio ao estudo; por último, que a maioria dos alunos gostaria de utilizar estes recursos na sala de aula.

Abstract: In this paper we describe a pedagogical experiment using the podcasting technology. The podcasts are hosted on a website which was designed to serve as reference for two 11th grade math classes in a secondary school in the north of Portugal. This study is based on a logic of communicative extension of the classroom, taking advantage of the potential of the Audacity audio editing tool to record and to make episodes available for students to listen to the resolution of exercises and prepare themselves for the evaluation tests. The website suggests assignments for students and offers hyperlinks to other websites as well as references to web 2.0 tools that students can play with. Nevertheless, it's about the importance of podcasting technology in the website that this paper is about. To evaluate this experience, students answered a questionnaire. The results show the following: the way students use the website differs from one student to the other because of access to an internet connection; the contents made available for students to study were important for the learning process; podcasts is

considered the most valuable and used resource by students and that the majority would like to use them in class.

Introdução

As Tecnologias de Informação e Comunicação (TIC) têm produzido profundas alterações ao nível da Sociedade em geral e, muito em particular, ao nível da Escola e dos alunos. De facto, os estudantes encaram hoje o computador e a internet como algo que faz parte integrante da sua vida diária, tendo a escola de admitir que, se a Web é tão útil fora da sala de aula, teremos de a “importar” para dentro dela, sob pena de provocarmos um desfazamento cada vez maior entre o mundo académico e o mundo profissional (D'Eça, 1998).

Consciente desta realidade, o Governo Português tem vindo a manifestar uma preocupação crescente com a questão da integração curricular das tecnologias de informação criando, em Setembro de 2007, o Plano Tecnológico da Educação (ME, 2007). Nesse documento pode ler-se que o caminho para a sociedade do conhecimento impõe uma alteração dos métodos tradicionais de ensino e de aprendizagem e um investimento na disponibilização de ferramentas, conteúdos e materiais pedagógicos adequados para um alargamento dos espaços de comunicação, interacção e aprendizagem.

De facto, com o surgimento, em 2004, da nova geração de aplicativos Web 2.0, abriram-se as portas para a implementação de metodologias e estratégias inovadoras capazes de “revolucionar” os processos de ensino e aprendizagem (Sampaio & Coutinho, 2008; Barroso & Coutinho, 2009; Coutinho & Bottentuit Junior, 2008; Bottentuit Junior & Coutinho, 2008). As tecnologias Web 2.0 facilitam não só o acesso a uma grande diversidade de fontes de informação mas, sobretudo, possibilitam a criação e partilha de conteúdos online entre todos os utilizadores da imensa rede global (Coutinho, 2008). Neste contexto, professores e alunos das nossas escolas podem contar hoje com uma série de ferramentas e recursos de fácil utilização, que não necessitam de instalação nem manutenção e que possibilitam novas formas de comunicação, expressão e interacção bem como o enriquecimento das práticas pedagógicas com actividades como sejam: o trabalho cooperativo e colaborativo, o estímulo à escrita, a maior facilidade de armazenamento de dados, a criação de páginas online, a gravação áudio online, a criação de comunidades de prática, entre muitas outras. Para além de serem gratuitas estas ferramentas permitem que o conhecimento produzido seja publicado e partilhado com toda a comunidade académica.

Nesta comunicação vamos apresentar uma experiência de utilização do podcast num site, criado com a ferramenta GoogleSites, e destinado a dar apoio ao estudo da Matemática, em regime de complemento ao ensino presencial, a alunos de duas turmas do 11º.ano de escolaridade. De facto, a extensão do programa da disciplina de Matemática do referido ano de escolaridade não permite ao professor um efectivo desenvolvimento de actividades de consolidação dos conteúdos abordados em sala de aula. Este foi o ponto de partida para a ideia de criar um site de apoio à disciplina capaz de disponibilizar aos alunos materiais

complementares às tarefas desenvolvidas nas sessões presenciais, numa lógica de extensão comunicativa da sala de aula. Para efeitos da avaliação da experiência foi realizado um survey exploratório que teve como objectivo principal auscultar o feedback dos alunos sobre a funcionalidade do site e, sobretudo, dos podcasts nele disponibilizados para apoio ao estudo e preparação dos alunos para o teste intermédio realizado a nível nacional.

Podcast

No Google encontramos 132.000.000¹ referências à palavra *podcast*, o que atesta a respeito da sua popularidade, tendo sido, inclusivamente, considerada a palavra do ano em 2005². Actualmente existem diversos sites que disponibilizam esta tecnologia de transmissão de informação. De acordo com a Wikipédia, um *Podcast*, “é uma forma de publicação de arquivos de média digital (áudio, vídeo, foto, pps, etc...) pela Internet, através de um Feed RSS que, mediante subscrição, permite aos utilizadores acompanhar a sua actualização” (Wikipédia, 2008)³. Actualmente, os podcasts utilizam a tecnologia *streaming*, reduzindo substancialmente o tempo de espera para *download* ao permitir que o utilizador vá ouvindo a informação à medida que vai sendo descarregada para o seu computador, tornando a comunicação menos assíncrona.

A palavra *podcasting* resulta da junção das palavras iPod (célebre aparelho mp3 da Apple) e *Broadcasting* (transmissão de informação rádio ou TV). A este conceito estão associados termos específicos: *podcast* é o local onde os ficheiros áudio estão alojados e disponíveis para carregamento na forma de episódios; *podcasting* é o acto de gravar ou divulgar os ficheiros na Web; e *podcaster* o autor dos ficheiros áudio (Bottentuit Junior & Coutinho, 2007).

Segundo a Wikipédia, o conceito do *Podcast* é atribuído ao ex vídeo-jockey do canal de música americano MTV Adam Curry, que criou o primeiro agregador de *podcasts* usando applescript (linguagem de computador interpretada que age sobre a interface do sistema operacional da Apple) disponibilizando o código na Internet, para que outros programadores o ajudassem. Dave Winer incluiu o enclosure, um elemento na especificação RSS 2.0, o que possibilitou a real utilização do conceito de podcast. A utilização de Feeds RSS, para distribuir o conteúdo de forma automática, é a grande diferença do Podcasting em relação aos audioblogs, vlogs (videoblog) e flogs (fotoblog) (Podcasting - Wikipédia, 2009).

Um marco na massificação do *podcasting* foi o lançamento da versão 4.9 do leitor de música digital iTunes, da Apple. Este veio ampliar o suporte aos *podcasts*, incluindo uma secção na sua loja de música online dedicada ao serviço e também uma actualização para o

¹ Segundo pesquisa realizada em 18/01/2009

² Em 2005, Podcast foi considerada a “palavra do ano”, pelo dicionário “New Oxford American Dictionary”. Informação disponível em <http://ocasionalidades.blogspot.com/2005/12/podcast-foi-eleita-palavra-do-ano.html> e <http://ciberia.aeiou.pt/gen.pl?p=stories&op=view&fokey=id.stories/3915> consultados em 18/01/2009

³ Conforme consultado em <http://pt.wikipedia.org/wiki/Podcast>, a 18/01/2009

iPod que adiciona a categoria "Podcasts" ao menu "Music", fazendo o carregamento automático dos *podcasts* que o utilizador subscreve.

Este formato de transmissão de conteúdos é muito recente e as suas possibilidades de aplicação têm vindo a alterar a forma como é visto. É hoje muito utilizado por diversas pessoas e empresas no mundo para divulgar notícias e programação, assim como algumas universidades que começam a disponibilizar aulas neste formato. No entanto, pesquisando pela Internet, constatamos que a sua utilização surge ainda muito associada a disponibilização de programação musical, não estivesse a sua génese no iPod.

Relativamente à popularidade do *podcast*, Chen (2007), citado por Junior e Coutinho (2008), explica-a pelo facto de: 1) permitir que qualquer um com um microfone, computador e ligação à Internet publique os seus arquivos áudio; 2) os arquivos do *podcast* podem ser automaticamente descarregados de/para um dispositivo móvel e ser ouvidos quando e onde seja mais conveniente; 3) ser gratuito; 4) os utilizadores não precisam de pagar para descarregar os ficheiros áudio.

Numa era de crescente globalização, recursos como o *podcast*, surgem como alternativas para os professores do século XXI. Em 2004, o termo Web 2.0 surgia como forma de acompanhar a mudança de paradigma da Internet vigente até então. O utilizador deixava de estar confinado a um papel passivo como simples leitor de informação. Com a nova geração Web cada um pode participar activamente como editor de informação. Ferramentas de edição de informação como *blogs*, *wikis*, *podcasts*, *Google tools*, entre outros, possibilitam que cada um possa contribuir para o conhecimento online que aumenta rapidamente. Surgem as teorias de aprendizagem da era digital, como o Conectivismo proposto por George Siemens (Carvalho, 2007). De acordo com Bottentuit Junior e Coutinho (2007), estas ferramentas podem ser usadas no processo de ensino e aprendizagem, na modalidade a distância (*e-learning*) ou como complemento ao ensino presencial (*b-learning*), opinião que partilhamos totalmente. O *podcast* é uma dessas ferramentas, permitindo que o aluno/formando descarregue a informação colocada online pelo docente/formador, sejam aulas, documentários e entrevistas, entre outros formatos áudio (*idem*, *ibidem*). Os ficheiros descarregados para aparelhos móveis como telemóveis, aparelhos de mp3 podem ser executados quantas vezes as desejadas o que constitui uma grande vantagem para a aprendizagem.

Encontram-se hoje disponíveis online, inúmeras ferramentas gratuitas que possibilitam a gravação e edição de episódios de *podcast*. Estas englobam-se em três categorias: 1) gravação e edição de áudio, 2) gravação e edição de vídeo e áudio e, 3) gravação de áudio online e disponibilização gratuita na Web (Bottentuit Junior & Coutinho, 2007). Relativamente à primeira categoria, salientamos aqui a utilização da ferramenta *audacity*⁴. Esta ferramenta é gratuita e permite a edição e gravação de áudio para ser posteriormente adicionado a um *podcast*. No entanto também podem ser utilizados os recursos disponíveis nos computadores mais modernos, como o gravador de áudio. Uma das questões importantes na gravação de episódios para um *podcast* diz respeito ao tamanho do ficheiro, podendo dificultar o *upload* por

⁴ Disponível em <http://audacity.sourceforge.net>

parte do criador e o consequente download por parte do utilizador. Para responder a esta questão encontram-se disponíveis ferramentas de edição que permitem a compressão do ficheiro. Para disponibilizar na Web os ficheiros áudio teremos de recorrer a ferramentas como o podomatic⁵. Este obriga a uma inscrição, sem qualquer custo para o utilizador, de forma a personalizar o seu perfil e editar e disponibilizar na Web os seus ficheiros. Este *podcast* permite também a criação de uma rede social na qual os utilizadores podem comunicar entre si através de mensagens.

As potencialidades da tecnologia podcast ainda não estão devidamente exploradas, no entanto os estudos já realizados advogam a favor do seu enorme potencial (Bottentuit Junior e Coutinho, 2008; Moura e Carvalho, 2006; Coutinho, 2008), muitas. Para que estas possam ser realmente exploradas é necessário ter atenção a aspectos técnicos e pedagógicos como a gravação do episódio, a introdução, o conteúdo e a conclusão, como advertem Bottentuit Junior e Coutinho (2008) numa reflexão que culmina com a apresentação de um conjunto de recomendações gerais que podem ajudar professores e alunos a desenvolver *podcasts* de melhor qualidade.

Metodologia

O estudo realizado foi de tipo *survey*, descritivo e exploratório, já que, tal como refere Coutinho (2005), o objectivo do investigador é recolher dados que permitam descrever da melhor maneira possível comportamentos, atitudes, valores e situações. O *survey* é um dos métodos mais amplamente utilizados na pesquisa educativa e aplica-se a situações sobre as quais não há ainda muita investigação prévia, mas é importante suscitar um conjunto de discursos individuais, orais ou escritos, para que possam ser interpretados pelo investigador (Ghiglione e Matalon, 1997). No caso concreto do estudo que vamos apresentar, o instrumento para a recolha de dados foi um questionário, especialmente concebido para o efeito, que foi alvo de validação de conteúdo por dois peritos na área da Tecnologia Educativa.

Descrição do estudo

O programa da disciplina de Matemática A do 11º ano é muito extenso e a necessidade de cumpri-lo na íntegra não permite que o professor desenvolva actividades de consolidação dos conteúdos abordados na aula. Da necessidade de efectuar essa consolidação surgiu a ideia de criar um site de apoio ao estudo individual onde fossem disponibilizados materiais complementares às actividades desenvolvidas nas sessões presenciais, que seriam explorados em casa, numa lógica de extensão comunicativa da sala de aula.

O site foi desenvolvido no aplicativo Google Sites. A escolha deste espaço Web 2.0 prende-se com o facto de ser gratuito e de utilização intuitiva e por possibilitar o acesso a todos os utilizadores, em oposição à plataforma Moodle, utilizada na maioria das escolas portuguesas, que é fechada.

⁵ Disponível em www.podomatic.com



Figura 1 – Página inicial do site⁶ actual

Na fase de concepção e tendo como mote a proximidade do 2º teste de avaliação do 1º Período, o site era constituído por apenas 4 páginas: a Página de abertura, Preparação para o 2º teste, Laboratório de Matemática e Só para divertir. Na página de Preparação para o 2º teste a docente disponibilizou a resolução de um conjunto de 18 exercícios (em formato doc) que considerava importantes e não conseguiu resolver nas aulas e respectiva explicação em *podcast* (em formato mp3). Porquê incluir uma explicação áudio? A resolução escrita do exercício não seria suficiente? Na opinião da professora, a explicação áudio acrescenta informação à explicação escrita, ou seja, existem informações que o professor diz mas não escreve na resolução de um exercício de Matemática. Deste modo, quando o aluno ouve o *podcast* é como se estivesse a ouvir o professor na sala de aula, com acesso a detalhadas explicações.

No final do 1º Período, para sentir o impacto do site de apoio ao estudo, a docente pediu aos alunos que respondessem, em formato aberto, às seguintes questões:

Qual a tua opinião sobre os materiais disponibilizados no site?

Qual gostaste mais?

Gostarias de voltar a usar este tipo de materiais?

A primeira reacção dos alunos ao site foi bastante positiva. Os alunos sentiram-se mais orientados e apoiados, havendo uma preferência notória pelos *podcasts*, não só por serem uma novidade para eles, mas também por possibilitarem o esclarecimento de algumas dúvidas (ou apenas a consolidação de um conceito ou procedimento), na medida em que reproduziam as explicações que ouviam na aula de exercícios que, não sendo iguais, tinham a mesma tipologia.

Eis algumas opiniões expressas pelos alunos:

“O que mais gostei foi da matéria explicada por voz!”

“Gostei sobretudo dos *podcasts*. Era como se estivesse na aula com a vantagem que podia ouvir as explicações muitas vezes sem que a professora se cansasse.”

⁶ URL do site: <http://sites.google.com/site/rutelopesmat/>

“O que mais gostei foi da resolução dos exercícios em podcast, porque não existem na resolução dos meus exercícios.”

“O site ajudou-me a estudar. Tive mais noção da maneira mais correcta de resolver os exercícios.”

“O que mais gostei foi de alguns exercícios terem explicação.”

“O site ajudou bastante no estudo. Acho que a professora deveria continuar a colocar material no site, pois é uma boa fonte para os alunos. O que mais gostei foi daqueles ficheiros em que a professora está a falar, a explicar os exercícios. É como se tivéssemos mesmo na sala de aula.”

“O site ajudou-me bastante a estudar, uma vez que permitiu esclarecer todas as dúvidas que tinha. As resoluções em podcast são bastante engraçadas e ajudam muito. Foi uma ideia porreira!”

As respostas foram tão motivadoras que a docente decidiu continuar o projecto. A preparação para o teste intermédio (um teste nacional realizado simultaneamente por todos os alunos de 11º ano) foi o mote para o prosseguimento do projecto. Foram disponibilizados mais materiais no site, nomeadamente a resolução dos testes intermédios de anos anteriores e a explicação em *podcast* do teste mais recente (figura 1).



Figura 2 – Página do site

O site, apesar de estar aberto a toda a comunidade educativa tinha como destinatários os discentes de 2 turmas do 11º ano de Matemática A, cada uma constituída por 29 alunos. Após a realização do teste intermédio, foi-lhes solicitado que respondessem a um questionário que tinha como objectivos:

- Averiguar se os alunos acederam ao site e de que forma o utilizaram.
- Averiguar a motivação sentida ao longo da experiência.

- Auscultar a opinião dos alunos acerca dos recursos disponibilizados no site e respectiva implicação na compreensão dos conteúdos da disciplina.
- Auscultar a opinião dos alunos quanto a uma possível utilização do site na sala de aula.

Do questionário constavam 11 questões, 8 fechadas e 3 semi-abertas (questões 6, 7 e 11 onde se pedia uma justificação para a resposta dada). A primeira parte foi reservada à identificação dos alunos; nas duas questões seguintes pretendia-se saber quantos alunos tinham acedido ao site e averiguar os motivos de uma eventual não acedência; as perguntas 3, 4 e 5 eram relativas à organização, estrutura e agradabilidade do site; as questões 6 e 7 tinham como objectivo verificar os conteúdos que os alunos mais gostaram e se estes facilitaram ou não a compreensão das matérias leccionadas nas aulas. A questão 9 pretendia averiguar se a utilização do site teria despertado, nos alunos, um maior interesse pelos conteúdos disciplinares. As últimas perguntas foram dedicadas a auscultar a opinião dos alunos sobre uma possível utilização do site na sala de aula.

Resultados

Como já foi referido anteriormente, o estudo iniciou-se com duas turmas do 11º ano, cada uma constituída por 29 alunos. Na turma A, dos 28 alunos que responderam ao questionário apenas metade acedeu ao site. Na turma B respondeu a totalidade dos 29 alunos e desse conjunto, apenas 2 disseram não ter acedido ao site.

Consideramos importante fazer uma breve referência aos motivos que estão na origem da não visita ou pouca exploração do site. Na turma A, dos 14 alunos que não visitaram o site, 6 (43%) não têm Internet em casa, 3 (21%) estavam temporariamente sem acesso à mesma e os restantes (36%) referiram que não tiveram tempo. Na turma B, todos os alunos têm Internet em casa e nenhum deles referiu problemas no acesso à rede. Para efeitos do estudo empírico decidimos apenas considerar a opinião dos alunos que, para além de terem visitado o site, tinham efectivamente explorado os recursos que este disponibilizava. Concluímos assim que, na turma A, o número de alunos que o tinha feito era de apenas 10 e na turma B era de 21, o que no total perfazia um total de 31 alunos. Devido ao facto de se tratar de um número reduzido (equivalente ao número de alunos de uma turma apenas), descartámos a hipótese de fazer um estudo comparativo entre as turmas e optámos por fazer o estudo com base nas opiniões recolhidas junto do conjunto dos 31 alunos que usaram o site.

É de salientar o facto de o estudo ter decorrido no início do 2º Período, pouco tempo após a criação do site de apoio ao estudo, o que contribuiu para apenas 31 discentes serem incluídos no mesmo. Embora alguns alunos precisem de tempo para se adaptarem a novos métodos de trabalho, a verdade é que, no terceiro período, a quase totalidade dos alunos consultava regularmente o site (com maior frequência na semana em que realizavam teste). Acreditamos mesmo que, se o questionário tivesse sido aplicado no final do ano lectivo, o número de utilizadores do site seria certamente muito superior aos 31 alunos que foram incluídos no estudo.

Um dos aspectos que nos interessava particularmente era auscultar a opinião dos alunos relativamente à importância atribuída à disponibilização dos conteúdos no site de apoio ao estudo e preparação para o teste intermédio de Matemática. Como se pode verificar pela análise do gráfico 1, a esmagadora maioria dos alunos considera que os conteúdos disponibilizados no site facilitaram a compreensão dos conteúdos curriculares.

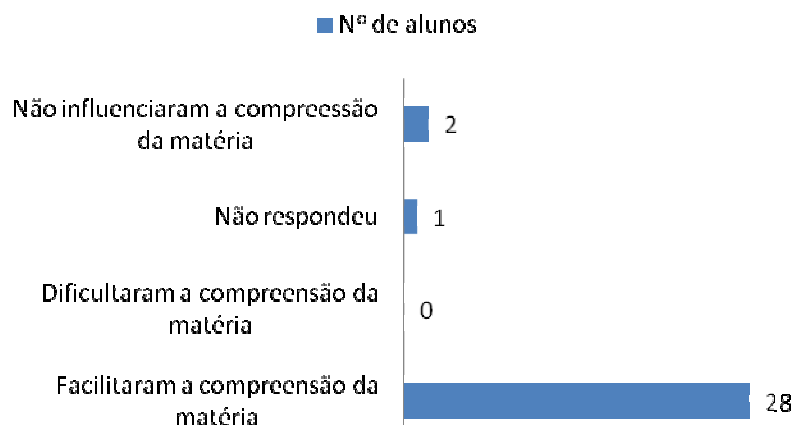


Gráfico 1 – Sobre os conteúdos disponibilizados no site

Apenas 2 alunos referiram que a consulta do site não facilitou a compreensão dos conteúdos. Um destes alunos teve um aproveitamento excelente e o outro mediano, mas com grandes capacidades ao nível do raciocínio lógico-abstracto. Parece-nos relevante referir que os alunos com maiores dificuldades na aquisição e aplicação de conceitos matemáticos foram os que responderam que os conteúdos disponibilizados no site facilitaram a compreensão da matéria. Na justificação das respostas é já possível antever a preferência dos alunos pelos *podcasts*, uma vez que frequentemente fazem referência aos mesmos. Passamos a transcrever algumas opiniões obtidas:

“Julgo que o site ajuda bastante, como, por exemplo, no caso do último teste, em que a audição dos *podcasts*, passo a passo é bastante explícita.”

“Facilitaram, pois tem uma explicação mais pormenorizada de todos os exercícios e com a explicação em *podcast*, ainda melhor!”

“Existiam alguns exercícios que não compreendi na aula e no site estavam bem explicados em *podcast* e por escrito”

“Sim, porque posso ouvir várias vezes a explicação dos exercícios.”

“Facilitaram, porque por vezes não conseguimos apanhar a matéria toda nas aulas e podemos ir lá e ouvir a professora a explicar os exercícios.”

“Porque os *podcasts* ajudaram-me a superar muitas das minhas dificuldades.”

“Algumas explicações/resoluções de exercícios que se fazem na aula não nos ficam na memória. Ao aceder ao site, ouvindo e revendo a resolução dos exercícios, o estudo é facilitado.”

“Em estudos anteriores, quando eu tinha dificuldades ou pequenos aspectos falhavam tinha de abandonar a resolução do exercício. Com a explicação em *podcast* essa dificuldade foi suprimida, facilitando o estudo e consequente compreensão da matéria.”

Quanto às preferências dos alunos pelos recursos disponibilizados no site, podemos dizer que os resultados foram os esperados, ou seja, corresponderam à nossa expectativa que os alunos seriam mais receptivos à resolução dos exercícios com apoio do *podcast*, tal como se pode verificar pela análise do gráfico 2.



Gráfico 2 – Sobre a componente que os alunos mais gostaram de utilizar no site

Nesta questão pedia-se também aos alunos que justificassem a sua opinião. De uma maneira geral, os alunos referiram que os *podcasts* foram de grande utilidade no sentido de completarem a explicação escrita disponibilizada na versão texto da resolução dos exercícios. Um dos alunos referiu mesmo que “os *podcasts* revelaram-se uma ferramenta de grande utilidade”, outro disse que “as explicações eram bastante esclarecedoras”. Outros, mais entusiastas, disseram mesmo: “É do melhor!”, “É fixe!”.

No que diz respeito à frequência de utilização de cada uma das componentes do site, os resultados constam do gráfico 3 abaixo representado. Aparentemente as respostas obtidas não acompanham as preferências mencionadas na questão anterior, uma vez que o número de alunos que utilizou mais de 5 vezes a resolução de exercícios em Word acompanhada pela explicação no *podcast* (18 alunos), é igual ao número de alunos que utilizou apenas a resolução em Word. O ocorrido poder-se-á explicar pelo facto do aluno necessitar do documento em Word para acompanhar a sua explicação no *podcast* e, também, pelo facto de os alunos gostarem de ter várias janelas abertas em simultâneo ao invés de imprimirem o documento Word em papel.

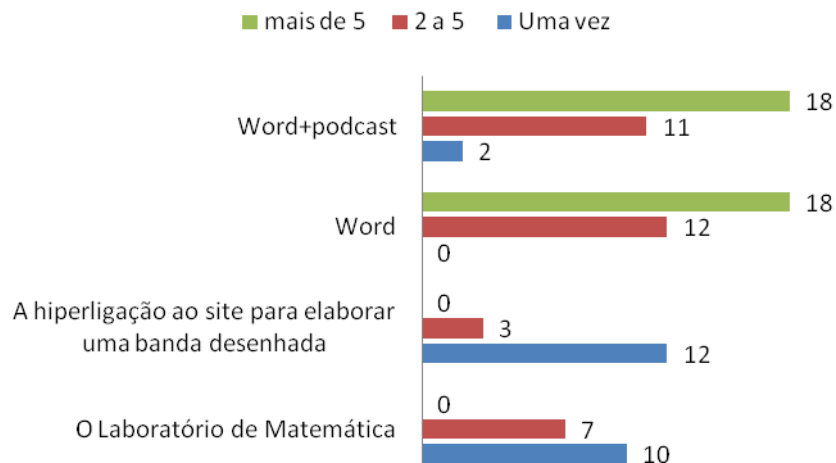


Gráfico 3 – Frequência de utilização dos recursos do site

Sobre a motivação sentida ao longo da experiência, os resultados foram positivos, dado que a maioria dos alunos referiu que se interessou mais pelo estudo dos conteúdos da disciplina. No entanto as nossas expectativas eram maiores já que não esperávamos que 9 alunos (29%) referissem que não se sentiram mais motivados ao utilizarem o site como apoio ao estudo.

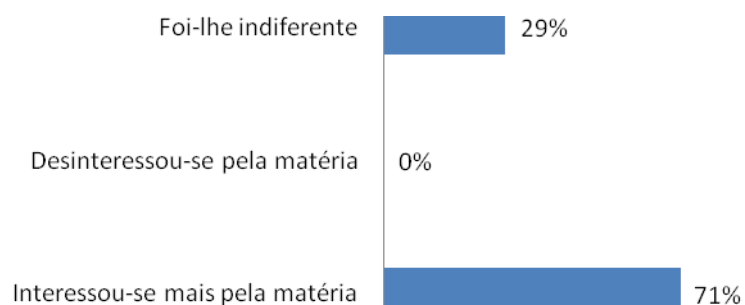


Gráfico 4 – Motivação sentida ao longo da experiência

As duas últimas questões tinham como objectivo auscultar a opinião dos alunos quanto a uma possível utilização do site na sala de aula. Acreditávamos que para responder a estas perguntas não era necessário conhecer inteiramente o site e, por conseguinte, responderam a esta questão todos os alunos de ambas as turmas. Os resultados por turma podem ser visualizados na tabela 1 abaixo representada.

Sobre a possível utilização do site na sala de aula	A		B	
	Nº de alunos	Percentagem	Nº de alunos	Percentagem
Tornaria as aulas mais interessantes	23	82%	23	79%
Prefiro não utilizar o site nas aulas	2	7%	2	7%
Era-me indiferente	3	11%	4	14%
Total	28	100%	29	100%

Tabela 1 – Opinião dos alunos sobre a possibilidade de usar o site em sala de aula

Os resultados conjuntos estão disponíveis no gráfico abaixo. Como se pode verificar, a esmagadora maioria dos alunos gostaria de utilizar o site com os *podcasts* nas aulas e pensa que essa utilização tornaria as aulas mais interessantes.

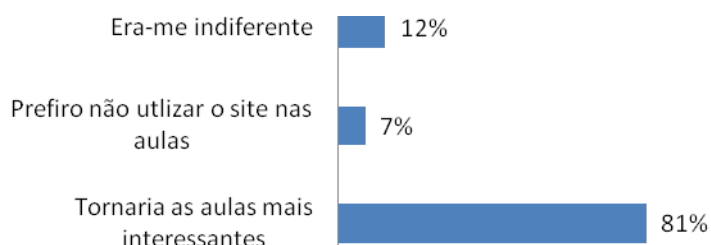


Gráfico 5 – Sobre a possível utilização do site nas aulas

A última questão solicitava aos alunos que indicassem os benefícios de uma eventual utilização do site em contexto de sala de aula (ver gráfico 6). O primeiro dado a registar é que as respostas não diferem muito de uma turma para a outra. De salientar que a maioria dos alunos acredita que a utilização do site facilitaria a compreensão dos conteúdos curriculares funcionando como apoio à actividade do professor. A maioria parece desvalorizar o desenvolvimento da autonomia, talvez por ainda darem pouca importância a este parâmetro.

Sobre a possível utilização do site na sala de aula	A		B	
	Nº de alunos	Percentagem	Nº de alunos	Percentagem
Não respondeu	0	0%	1	3%
Não deve ser utilizado	1	4%	0	0%
Era-me indiferente	2	7%	3	10%
Facilitaria a compreensão da matéria	23	79%	16	55%
Seria um apoio à actividade do professor	23	79%	19	66%
Facilitaria a autonomia dos alunos	13	45%	11	38%

Tabela 2 – Sobre a possível utilização do site na aula

A questão seguinte era aberta e solicitava aos alunos uma justificação da opinião dada na questão fechada. A análise das suas respostas vem de encontro ao que já foi referido anteriormente. É feita especial menção à importância dos *podcasts* e frequentemente é referido que a utilização do site aumentaria a motivação e o interesse pelas aulas, assim como facilitaria a aprendizagem. Passamos a transcrever algumas das repostas dadas pelos alunos:

“O suporte digital facilita a aprendizagem e capta mais a atenção”

“Os alunos estariam mais entusiasmados na matéria”

“A gente vinha para a aula pensando que não era apenas mais uma, pois tinha métodos diferentes de aprendizagem”

“As explicações em *podcast* seriam uma vantagem”

“Poderíamos ouvir as vezes necessárias até perceber a matéria”

“Aulas com novas tecnologias são mais interessantes!”.

De referir ainda que nas respostas à questão aberta, alguns alunos mencionam a autonomia, dizendo, por exemplo, que “Podíamos fazer os exercícios sozinhos” e “Aprendíamos por nós mesmos”.

Considerações finais

Os resultados obtidos neste pequeno estudo permitiram aferir algumas das vantagens da utilização de aplicativos Web 2.0 no processo de ensino e aprendizagem da Matemática e suscitaram um conjunto de reflexões que queremos partilhar com outros professores no sentido de os motivar para o desenvolvimento de experiências que complementem o trabalho aqui apresentado.

De facto, se é verdade que a utilização de ferramentas Web 2.0 em particular dos *podcasts* tem sido reportada em áreas curriculares específicas como as línguas estrangeiras (Chinnery, 2006; Moura e Carvalho, 2006; Oliveira e Cardoso, 2009) ou Educação Musical (Mota e Coutinho, 2009), no caso concreto do ensino da Matemática a realidade é bem distinta. Nesse sentido, no nosso estudo, podemos verificar que a utilização de um site onde foram disponibilizados ficheiros áudio com explicação da resolução de exercícios de Matemática apoiou os alunos no estudo para o teste de avaliação funcionando como uma extensão do espaço da sala de aula presencial. No entanto, a utilização dos ficheiros áudio foi sempre complementada com uma resolução escrita (em doc) dos exercícios. Seria, portanto, interessante e oportuno que, em investigação futura, fossem utilizados *vodcasts* (vídeo + áudio) na resolução destes e de outros exercícios, e aferir da sua eficácia na compreensão dos conceitos abordados.

De salientar ainda que o site não apresentava um fórum ou espaço próprio para colocar eventuais dúvidas e/ou comentários. No entanto, esta lacuna foi suplantada pela comunicação via e-mail entre a professora e os alunos.

Para estimular o acesso ao site, a professora foi disponibilizando no mesmo os resultados dos mini-testes realizados. Apesar do curto espaço de tempo em que decorreu a experiência, verificámos uma evolução na forma de encarar a utilização de um site no apoio à

disciplina de Matemática. Inicialmente encarado com alguma estranheza, no final eram vários os alunos que indagavam acerca dos próximos conteúdos a disponibilizar *online*, fazendo crer que se o estudo se tivesse prolongado no tempo os resultados seriam ainda mais positivos.

Preconizada pela era tecnológica, é possível assistir a uma mudança nos padrões de comunicação entre professores e alunos, dentro e fora da sala de aula. A utilização das TIC confere então aos percursos educativos uma maior variedade de metodologias, recursos, estratégias e valências. A curiosidade e expectativa com que os alunos encaram a comunicação através das TIC são muito significativas e devem ser aproveitadas pelo professor (UNESCO, 1998, Silva & Silva, 2005 Ramos, 2007). Da mesma forma, Miranda e colaboradores (2001) enaltecem que as TIC possibilitam que os processos de ensino e aprendizagem sejam feitos de novos modos, permitindo que coisas semelhantes sejam feitas de forma diferente, ou que se implementem actividades inteiramente diferentes daquelas que se desenvolvem sem o uso da tecnologia. Mercado (2002) e Moderno (1992) referem que as novas tecnologias por si só não são suficientes, o que muda é a capacidade de se apropriar delas integrando-as em ambientes de ensino-aprendizagem capazes de criar uma situação educativa. Uma ideia completada por Bidarra (2005), quando salienta que a evolução é longa e o acesso a um novo modo de comunicação é sempre difícil e trabalhoso.

O nosso estudo pretendeu mostrar como os aplicativos da Web 2.0 permitem ajudar os professores a motivar e ajudar os alunos a estudar Matemática em casa, numa lógica de extensão da sala de aula, bem como a intensificar e diversificar a comunicação professor/aluno, fortalecendo a relação existente entre ambos. Esperamos que o nosso trabalho sirva de inspiração a outros professores que, tal como nós, trabalham constantemente no sentido de promover recursos educativos diversificados que vão de encontro à forma como os alunos se relacionam com o mundo cada vez mais tecnológico e menos assente no papel e caneta.

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Sharing Resources, Knowledge and Experience for Technology Enhanced Learning: edu-sharing

Abstract

This paper presents a comprehensive overview of *edu-sharing*, a distributed learning object repository, which has been designed, developed and implemented by CampusContent, a research and development project at the FernUniversität in Hagen committed to developing an advanced infrastructure for content sharing in technology enhanced learning. The *edu-sharing system* allows not only for sharing resources and learning arrangements between heterogeneous learning management and authoring systems, but also facilitates collaboration amongst educators within trusted communities of practice.

1 Introduction

Not long before the advent of technologies and applications of the so called Web 2.0 and its adoption for reformist approaches towards technology enhanced learning, the concept of learning objects aimed at facilitating exchange and reuse of educational resources, pedagogical knowledge and practical teaching experience (cf. Carey & Hanley, 2008). Europe has seen a number of successfully implemented learning object repositories and content sharing networks, like ARIADNE (Alliance of Remote Instructional Authoring and Distribution Networks for Europe) or MELT (Metadata Ecology for Learning and Teaching). However, there are still certain limitations and weaknesses of current approaches to content sharing for technology enhanced learning. Apart from issues of quality assurance, reliable metadata, interoperability between platforms and licensing, there is still need for research and development on the integration of reusable content and scenarios into the everyday practice of teaching and learning.

In the following, we give some background information on CampusContent, a research and development project addressing these issues, at first. At second, we present educational foundations that influence the work. At third, we outline our technical approach. At fourth, a conclusion sums up the key benefits of our approach.

2 Project Background

CampusContent aims at linking content and people in order to support sharing, joint development and reuse of learning material and pedagogical knowledge. From March 2005 to July 2009, CampusContent was financially supported as a competence centre

for research information (Leistungszentrum für Forschungsinformation) by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation).

As an academic project, CampusContent started from the perspective of higher education, especially driven by the notion of web-based distance education. As the development evolved towards an integrated portal for the use of networked learning objects repositories, several educational institutions, ranging from schools to vocational education providers, aspired to integrate the methods and technology developed in CampusContent in their infrastructure for technology enhanced learning. Especially local and regional school networks committed to technology enhanced learning at different types and ages of schooling issued a strong demand for content sharing technology that is able to accommodate a range of learning management systems and authoring tools. To take this wider use of project outcomes into account, we decided to open up a portal named *edu-sharing*, which is currently pilot-tested by selected universities and schools. Several academic institutions and their service organisations intend to set up own instances of the *edu-sharing* portal. Distributed instances of the portal can, however, be transparently connected through web services to a distributed sharing infrastructure.

In order to provide for dissemination, evolution and sustainability, the CampusContent team is launching a formal association for all partners involved in development, implementation and use of *edu-sharing*. This association, based in Germany, allows different stakeholders to coordinate their demands and efforts in an *edu-sharing* community. While user groups like educational institutions, teaching staff and content providers can negotiate and define their demands for further developments, maintenance or customization, commercial developers are able to provide solutions on the basis of shared costs.

3 Educational Foundations

The concept of learning objects arose at the end of the last century. The idea of building educational content from smaller building blocks was inspired by design principles of object-oriented programming, like encapsulation, cohesion and polymorphism (cf. Boyle, 2003; Wiley, 2001), and thus should lead to a more systematic approach in instructional design. Other authors favour the idea of bricolage (cf. Caron, Derycke, & Le Pallec, 2005) for the activity of educators in the design and implementation of teaching, as well as for the activity of learners in open learning environments (cf. Brown, 2008). Thus, a learning experience may emerge on the basis of retrieved and adapted bits and pieces, and learning objects are subject to spontaneous and versatile use depending on practical conditions and circumstances. Meanwhile, following the notion of universal access to educational resources using web technology, institutions and networks form a movement dedicated to Open Educational Resources (OER). This movement started from local or national initiatives and has grown onto a transnational or a global level (cf. Baraniuk, 2008).

Nevertheless, its impact on educational practise is still modest. As main inhibitors a lack of business models is stated, especially for sustainability beyond funding within research projects and for the coexistence of open and commercial content, as well as missing models and routines of training, motivating and rewarding scholars and teachers for their contribution to open accessible educational content (cf. Geser, 2007, pp. 64–70). And still, there are pedagogical issues emerging with the notion of exchanging and reusing course materials.

Above all, granting access to educational resources is a major technical challenge, since the selection of appropriate educational content for a specific learning context depends on a variety of parameters, which are semantically rich and thus are not adequately met by metadata (if there are any metadata provided at all). Hence, in order to find appropriate content, employing context information of intended or previous use instead of

metadata appears to be more promising (cf. Cardinaels, Meire, & Duval, 2005). Here, three different sources for gathering context information can be differentiated: At first, the usage of educational resources in learning scenarios gives information for further use. At second, social software facilitates communities of educators to assess and recommend educational resources. At third, the formalized description of a learning experience rather than the provision of learning material alone allows for the transfer of pedagogical know-how.

4 Technical Approach

In order to overcome the limitations and difficulties of earlier approaches towards the reuse of learning resources, CampusContent investigated different methods of connecting and contextualizing reusable resources with teaching practice and learning processes. Research focused on the everyday practice of teaching staff, on software engineering principles and expertise as well as on systematic approaches for the design of technology enhanced learning experiences. These investigations led to the integration of technologies for the exchange and reuse of learning materials and educational scenarios in two directions: At first, social networking and collaboration software was build on top of the network of learning objects repositories, developing the edu-sharing system from a content and document management system to a work space for the joint development of course materials and learning experiences. At second, the edu-sharing system was integrated into learning management systems, allowing for a seamless interaction with reusable resources from within the learning platform for both teaching staff and learners. Figure 1 illustrates the main components of edu-sharing.

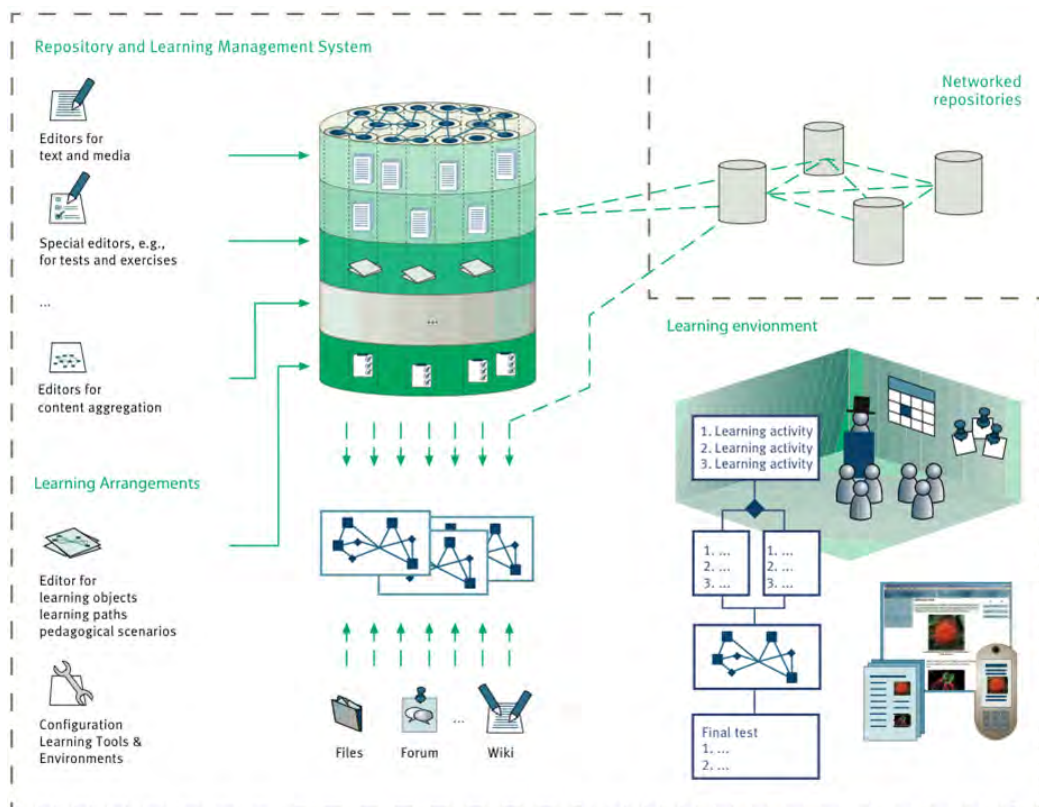


Figure 1 – edu-sharing components

As a federated system, the edu-sharing system is based upon the open source enterprise content and document management system Alfresco (the grey components shown in Figure 2 below). Open standards, such as WebDAV, JSR 168 (portlet specification), JSR 170 (content repository interface standard) and web services, support Alfresco's

expandability and ease of integration. At present, core functionalities of edu-sharing are available (green components in Figure 1) on the overlying architectural level, which comprise search, browsing and render services. The render service allows previewing and displaying various file and content formats. Various integrated open source authoring tools and reference learning management systems (at present Moodle and meta-coon) rely on these services. On the top-level, a community area as well as an integrated information and help system are located. Single educational institutions as well as school or academic networks may provide an own edu-sharing web portal or integrate the access to the edu-sharing work space via their organizational web portal.

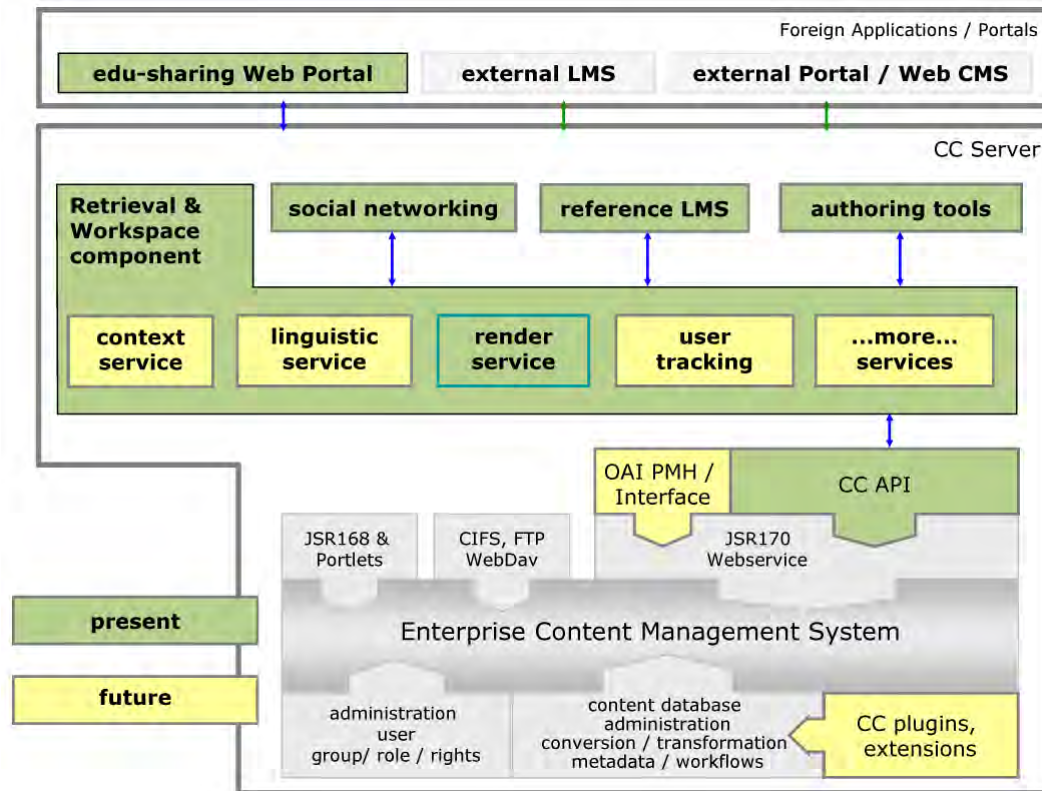


Figure 2 – edu-sharing architecture

Further components in the architecture will be available at a later development stage (yellow components in Figure 2). The integration of advanced social software will provide useful community functions, e.g. recommendation, shared annotation as well as collaborative filtering and evaluation. Context services will make possible the derivation of metadata for learning materials from the work context and profiles of the authors. Linguistic services will exploit lexical relationships between concepts, such as synonymy, subordination and others, to find matches when search terms are not matching metadata maintained in the repository. Services for user tracking will collect usage data for content objects both during their creation process and during the real learning process. The exchange of metadata with heterogeneous repositories will be enabled through the Protocol for Metadata Harvesting of the Open Archives Initiative (OAI PMH). For these advancements, partners of the edu-sharing community coordinate their activities within a formal association, while the inclusion of additional partners for the purpose of integrating other digital learning tools is actively being sought (cf. Krämer & Zobel, 2008).

All components were selected or designed for an open source solution, as well as open standards were used for enabling the integration of further systems. This allows educational institutions and service providers for education to set up networked instances of the edu-sharing system.

5 Conclusion: Key Benefits of edu-sharing

With edu-sharing, CampusContent seeks to connect reusable resources with teaching practice and learning processes in order to overcome the limitations and difficulties of earlier approaches towards learning objects. The vision behind the project is to modify current teaching and learning practices through exchange and reuse of educational resources, pedagogical knowledge and practical teaching experience. In order to accomplish this, the edu-sharing architecture adds the following benefits to current approaches towards learning object repositories:

1. In order to provide context information for educational resources, edu-sharing allows for *exchange of educational scenarios in addition to the reuse of learning materials*. This is inspired by the standard IMS Learning Design, which facilitates the formalized description of learning scenarios (cf. Koper & Tattersall, 2005). However, since edu-sharing aims to connect to the everyday practice of educators, the integration of wide-spread course management systems (like Moodle or metacoon) and the possibility to store, exchange and render course structures edited in these systems or in an inbuilt editor for educational scenarios appears to achieve higher impact on educational practice.
2. The edu-sharing network becomes an attractive *work bench for the joint creation of course material and course outlines*, since its web portal facilitates personalized access as well as collaboration in communities of practice among scholars and teachers. Single users as well as work group can upload, create, edit and store learning materials and educational scenarios in the repository prior to release and publication.
3. Since users are expected to group according to disciplines, joint projects or specific interests, edu-sharing addresses *domain specific communities of teaching*. These communities allow for peer review, commitment, reputation building and mutual trust. They also provide an essential source for gathering context information.
4. The architecture of edu-sharing assembles *an integrated work environment for educators*. In addition the web portal with work space and community features, educators can access the networked repository seamlessly via the course management system in use. Since for Moodle and metacoon a reference implementation is already available, developers of other platforms are invited to provide interfaces to the edu-sharing network. This integration into the everyday practice of educators is supplemented by the integration of authoring systems, like a QTI-compatible offline editor or an OpenOffice-based editor for SCORM-compatible content, together with an inbuilt information and help system, concerning both technical issues and pedagogical fundamentals.
5. Licensing of content as well as user data tracking place *high demands on information security management* in the edu-sharing network. Originally, open content licenses such as Creative Commons were favoured for the learning contents. However, user surveys revealed that there is the need for other forms of licensing as well, especially for restricted access to proprietary content. The federated architecture allows not only for secure and seamless access via single sign-on for the educators. Educators can provide access for learners to objects in the repository from a course management system on the basis of an institutional license as well, without transmitting personal data of learners to the repository.

A variety of portals and repositories aim to facilitate cross-institutional collaboration in education and simplify the educator's task by providing an organised collection of content and instructional design practices. In this paper we suggested a few distinguishing

features of the edu-sharing architecture. Networking with other learning content repositories is one of the primary objectives on the agenda of the project CampusContent, once the technology is fully operational implemented.

6 Acknowledgments

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BLENDED LEARNING APPROACH FOR PHOTOGRAPHY COURSE FOCUSED ON PUBLIC SPACE AND ARCHITECTURE

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ABSTRACT

This paper confronts some of the results obtained in the case study - CCRE digital platform for collaborative learning, public participation, architecture and arts study - with the study conducted during the present academic year of 2009 – 2010 in the Faculty of Architecture of Porto University (FAUP) of a blended learning approach integrating the CCRE website for teaching CFM - 5th Year, 1st Semester Post-graduate course in Photography of Public Space and Architecture.

The results, besides other things, highlighted that the learning process that rises from the creative use of an open collaborative platform as CCRE with a blended learning approach strengthens the teacher's capacity to work as a team and helps to open the university to its city and people. This technology worked, in fact, as a real catalyst for approaching the students and teachers towards photography and the emergent problems of their city, public spaces and proposed design.

KEYWORDS

Collaborative blended learning, photography, public space.

1. INTRODUCTION

Centre for Spatial Communication and Representation (CCRE) is a research group that belongs to the I&D ¹of FAUP and has been responsible for diverse research activities focused on using Digital Media Technologies on the web for collaborative work and for communicating public spaces, as well as any proposed design for them.

¹ I&D: Research Centre

The internet platforms of this research group constitute the main medium where a set of different collaborative studies take place. Having been exploring the potential of these platforms for teaching different subjects in the Architecture course of U. Porto since 2007, we are also interested in extending the use of CCRE and *Espaço F-FAUP* platforms to other Art and Design courses. CCRE research group wants to make an important contribution for simultaneously opening university to society and its city, exploring several digital media, especially photography, for informing the general public more effectively about their city spaces. This means communicating different perspectives of diverse public spaces, showing the richness and variety of characteristics that assist them, as well as communicating new ideas or design that is anticipated for those places.

Accordingly, this research group has been involved since its creation in applying blended learning approaches for teaching CAAD², as well as Photography of Public Spaces and Architecture³, which is the focus of this paper, and for promoting and supporting other actions related to public participation events, seminars and diverse workshops⁴ (Neto, Vieira, Pereira & Ribeiro, 2008).

In fact, we believe jointly with other authors (Healey, 1997; Healey, 2005; McAllister & Wanna, 2001) that contemporary planning theories are evolving towards a planning process that strongly integrates communication and debate. Moreover, the term “public space” is understood as being capable of a broader definition that includes artistic, architectural, technological, geographical, mental, and ideological dimensions. We also posit that public urban space is very much the event of assembly in the sense that Panu Lehtovuori explains “...the experiential, particular weak places come together, suspending their potential conflicts and thereby opening a horizon of political discourse and of a community.” (Lehtovuori, 2005). Thus, these spaces have a great potential for being significantly linked and serve as a spatial net for social interaction strengthening in this way the community relations.

Accordingly, we endorse a participatory perspective that believes that there are multiple public interests, meaning a society-centred view of government and the capacity to let pluralism live (Dredge, 2009) and that it is possible to have a place for the subjective rationalities of individual citizens within the planning and design process. Our understanding of “public space” as a public forum⁵ is guided by the ethical text and actions of Habermas’ theories of communication (Habermas, 1998) that constitute a significant body of work for the normative self-understanding of modernity⁶ and posits a critical theory that presents a broad and integrated analysis of the development of modern economic, political and social structures (Reed, Darryl, 1995). We also endorse several other authors that study the cultures of cyberspace, technology, the Internet, the information society and the potential and changes that web systems brought to the public *Agora* as Manuel Castells and Donna Haraway (Bell, 2006), W. Mitchel (Mitchel, 2003) or Malgorzata Hanzl (Hanzl, 2007). We support the idea that through a communicative action it is possible to evolve a discourse and rationality capable of arriving at more universal norms and in this way guarantee a more democratic public space. Nevertheless, for this space to be genuine, people have to feel the need to participate in a rational discourse where all are fully aware of the other’s perspectives and interpretations.

² Computer Aided Architectura Design

³ See http://web.ccre.arq.up.pt/projectos/show.php?projecto_id=584

⁴ Porto Redux ou (re)habitar a cidade: http://web.ccre.arq.up.pt/projectos/show.php?projecto_id=296

⁵ *Porto Redux ou (re)habitar a cidade* is an example of how it is possible to create a public forum in the city. Several public participation events that integrated seminars discussing the city, heritage and architecture themes were held in an abandoned space. An architectural workshop was also organized for promoting new design ideas for an important eighteen century market (<http://portoredux.blogspot.com/>)

⁶ For the normative self-understanding of modernity, Christianity has functioned as more than just a precursor or catalyst. Universalistic egalitarianism, from which sprang the ideals of freedom and a collective life in solidarity, the autonomous conduct of life and emancipation, the individual morality of conscience, human rights and democracy, is the direct legacy of the Judaic ethic of justice and the Christian ethic of love. This legacy, substantially unchanged, has been the object of a continual critical reappropriation and reinterpretation. Up to this very day there is no alternative to it. And in light of the current challenges of a post-national constellation, we must draw sustenance now, as in the past, from this substance. Everything else is idle postmodern talk. - Jürgen Habermas, *Religion and Rationality: Essays on Reason, God, and Modernity*, edited by Eduardo Mendieta, MIT Press, 2002, p149

Within this context, our goal was to use photography jointly with the collaborative platform in Internet as a way to strongly involve students in creating visual narratives for appraisal, analysis and perception of certain public spaces and architecture. Thus the plan was to adopt a blended learning approach and a pedagogical strategy that could secure, first, more flexibility for students and teachers to communicate and work without the constraints of traditional classes as are timetables and space location and, second, that could strengthened the relation between teacher and student and supported the use of photography as an instrument of inquiry and critical analysis of city public space and architecture (Neto, 2008). All this pedagogical work with students, jointly with the critical visual narrative exercises completed by them, gave significant information and knowledge about many of present public space problems that imperil our city and encouraged students to participate actively in many of the events and actions that were organized with the objective of opening university to the city⁷ (Neto, Vieira, Pereira & Ribeiro, 2008).

We believe that, in this way, we are contributing for a more democratic and responsible society, enriching awareness and giving space to many new ideas and positive critic in relation to how the city and its public spaces are lived, transformed and designed (Neto, 2005), and simultaneously making students and teachers part of this process.

Within this context, and building on top of the results obtained in last academic year (Neto, 2008), it was important to continue adopting the same set of teaching methods and communication techniques, as well as exploring the collaborative software of CCRE, which allowed the course to evolve in a design studio atmosphere. This meant, first maintaining what proved to work in last academic year and second to answer the problems that were encountered, based on the feedback and interaction that was established with students. Accordingly, we reinforced the strategies that encouraged students to be active participants of the learning process, an idea supported by many authors (Shao, 1997; Broadfoot, 2003; Salman, 2008) and in line with the learning, reflection and change theory of Donald Schon (Schon, 1988), taking advantage simultaneously of the Web 2.0 potentialities, in our case the CCRE platform, for collaborative work. This had as result, besides other things, to create a learning environment that encouraged students to exchange ideas and that made them adopt an active role in the learning process.

A very important strategy for obtaining the students active participation and engagement in the course was to use the online component of the platform for allowing them to complete a set of critical analysis and exercises focused on photography that, because of class time limitations, would not have been possible to achieve otherwise. Thus the Internet platform did not replace the traditional face to face interaction between teacher and student and, on the contrary, helped to strengthen their relation and achieve a higher visual literacy making possible to integrate an important theoretical layer, using various online individual and collaborative activities.

The theoretical and empirical bases of this photography course had as goal:

- to give students theoretical and practical knowledge about photography and its use in interactive collaborative platforms in Internet;
- to give students analytical instruments that allow them to create critical visual narratives about our cities` public spaces and architecture;
- to point out specific attributes of photography image;
- to make students explore creatively photography and digital tools;
- to make them understand the potential of using CCRE website as a collaborative platform.

2. OBJECTIVES

The global objective, as can be inferred in former introduction, was to continue exploring the collaborative platform CCRE for supporting a photography course in a design studio environment. We wanted, through this course, to make students and teachers closer to the emergent problems of their city and to encourage a way of teaching that allowed the creation of a community of inquiry.

⁷ See <http://espacoffaup.blogspot.com/>; Porto Redux ou (re)habitar a cidade: http://web.ccre.arq.up.pt/projectos/show.php?projecto_id=296

Photographic images are very much used to illustrate the character of certain places or of the people that inhabit them with the objective of confirming a certain point of view or opinion. Nevertheless, photography can also be a powerful research instrument that allows discovering new perspectives about places and people. Accordingly, the aim of this course is to make students explore, question and problematize the potential of digital photography and internet for representing, communicating and questioning urban reality. Thus, the students' visual narratives must be created in such a way that they simultaneously (i) communicate the problems and characteristics that define the character of diverse city places and (ii) give new perspectives about those public places and of how people live, perceive and understand them.

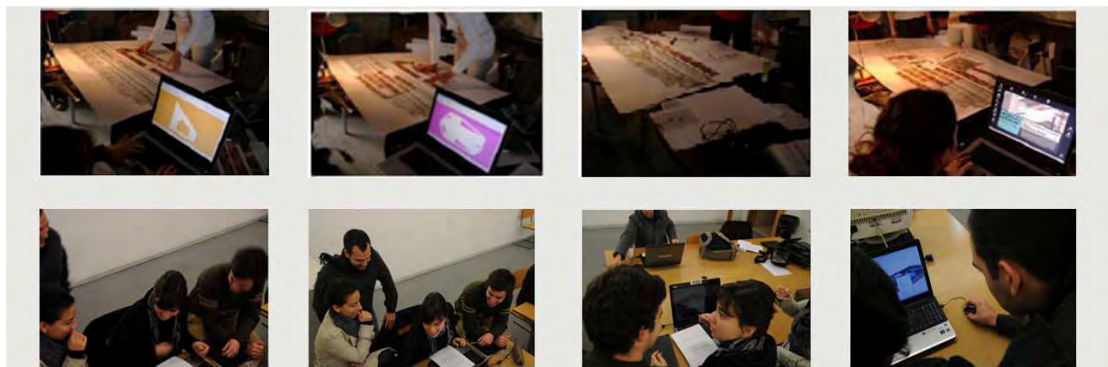
The following list of objectives was marked to achieve:

- Encourage critical awareness in students and make them question the potential of photography images supported by a collaborative platform in Internet for communicating public spaces in new ways and perceiving the richness and complexity of city life;
- Promote exercises which lead to a critical awareness of the learning process and the students' empirical work;
- Allow the exchange of ideas and provide significant autonomy for students to develop their empirical work, encouraging the additional contact of students with teacher beyond classes;
- Facilitate the publishing of stimulating didactic material, the exchange of ideas and interactive tasks, and make students participate in real live events as seminars, conferences and workshops, where image and sound are used to confront the city space and architecture with its problems and potentials, giving simultaneously rise to new ideas for its public spaces renewal;
- Facilitate the access to different types of information and create a global and specific bibliography with some interactive capabilities.

3. STRATEGY AND MODEL

The pedagogical strategy and adopted methodology have as fundamental pillars, as was already mentioned, the learning process of photography in a design studio environment that takes advantage of the Web 2.0 potentialities for collaborative work. This means: (i)encouraging and facilitating the communication and exchange of ideas between teacher and students through classes, public events related with the city transformation, as well as by using the collaborative platform of CCRE⁸; (ii)making possible for students to have an active role in the whole pedagogical process so that their interest for the course's content is sharpened, group work and interaction are promoted and their autonomy and responsibility towards developing and finalizing their empirical work is strengthened.

Figure 1. Interaction with students in classes and architecture competition workshop

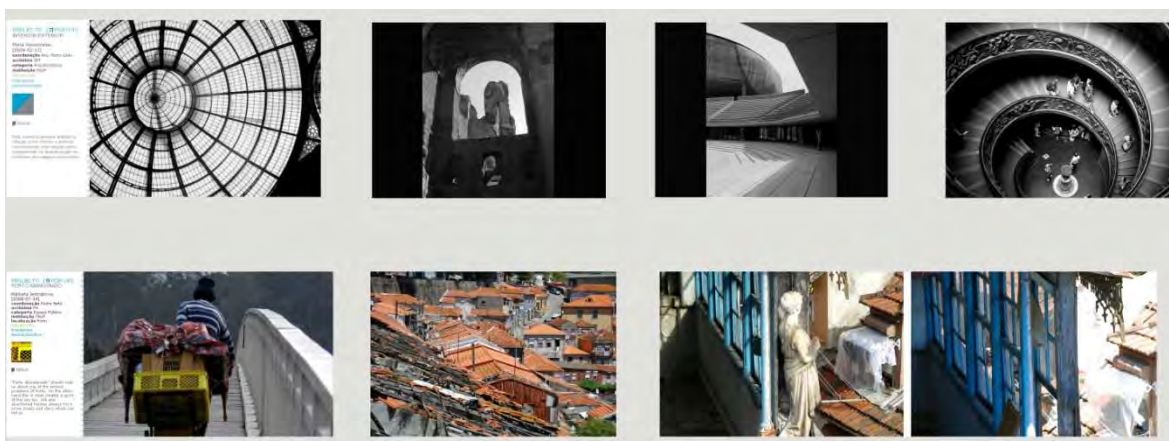


⁸ See http://web.ccre.arq.up.pt/projectos/show.php?projecto_id=296

Accordingly, in a first stage, the aspects related with the structure and function of the CFM course – objectives, methodology, program, bibliography and online course library – were described to the students. Some tutoring was given to students on how to use CCRE collaborative platform. The sequential hierarchy structure of some of the course's content, as well as other type of information, were accessible online through several links and it was explained how the students should upload, download and manipulate several type of information and how to place their photography images in CCRE.

In this way the students were led to use the collaborative platform for accessing the didactic materials and theoretical content of the course. All this facilitated the linking of all those different but integrated domains. At the end of the course, students had to present an interactive portfolio, in CCRE platform, which enclosed the group's and the individual's visual narratives⁹.

Figure 2. Interactive portfolio with visual narratives of students in collaborative platform CCRE



4. TYPE OF DIGITAL MATERIAL AND LEARNING TOOLS

Different types of digital material, kept on the CCRE server, were employed to support theoretical and practical classes. It was also recognised the importance of using diverse links redirecting students to different information sources related with photography practice and theory, besides the courses' traditional bibliography and library resources. An important operator was the making of an online content library *LINKS* in CCRE. This was so because it allowed for students to research content pages and sites very related with the course as well as other information and links which were new.

It was our intention to explore the collaborative platform in order to reach the following objectives:

- Allow asynchronous communication (individually or in group) between teacher and student beyond the classes' time. For this purpose the email was used;
- Create a place in the platform where each student would write an abstract about the group's work and his collaboration. For that purpose the Forum tool was used.
- Create a place within the platform encouraging the exchange of ideas and informal assessment of group works from students. For that purpose we employed the Forum tool, especially the one linked to each project. This allowed students to comment informally indicating which work they thought more interesting, and write what they thought to be important.
- Create an operator that could help the students and the public to navigate through the CCRE website. This was done using *Ajuda*.

⁹ See http://web.ccre.arq.up.pt/projectos/show.php?projecto_id=87

- It was important, besides other things, to understand if the CCRE platform had, in fact, influenced positively the students learning process and if they had a positive opinion about its use in classes.

5. RESULTS

Google statistics: use of CCRE platform from September 2008 - February 2009

The sites' mean in terms of number of visits each day: 44

Total visits to the site: 6.369

Number of visited pages - 104.959

Total number of unique visitors 2.141

The mean of number of visited pages: 16,48

Mean for time spent on the CCRE site: 00:10:02

Percentage of rejections: 27,26%

Percentage of new visits: 31,83%

In general terms, it was found that the CCRE website page with more visits was *Projectos* (57,8% that corresponds to 60 617 visits, being 12460 just for visualization purposes and the rest for editing the projects), which indicates that the published communication projects really caught the users' interest. The forum section *Forum* was third in respect to the number of visits and this also tells us that the platform had a reasonable performance as a collaborative tool (Table 1).

Table 2. Visited pages – Google Analytics

Projectos	Forum	Main	Tópicos	Notícias	Links	Each of others pages
60 617	10.697	7 033	7 034	4 697	2 903	<1000

The great affluence to the news, section *Notícias* (the forth most visited page) indicates that this information is of significant interest to most users.

The frequency of returning visitors to the platform gives us information about the participation level of the users and of how the platform content was able to interest them during that time. Looking at the results obtained within a period of (5 months) we can see that the returning visits of users are very recent, which indicate that people keep interested in using the CCRE platform and keep coming back each week to visit it.

It was found that the majority of people visited 20 or more pages of the CCRE platform suggesting that users interact reasonably well with it. Most users access the platform directly from its URL, but other websites are also used to access CCRE, which indicates that the platform was convincingly successful in collaborative work with other groups and institutions. It was also seen that 37% of the visits to CCRE are coming from the U. Porto which indicates that the platform was reasonably accepted by its academic community.

Finally, it was seen that users normally access the site through a direct URL, which indicates a significant familiarity with CCRE website. Nevertheless, we also registered visits coming from different websites, which denotes the collaborative activity of CCRE with other groups and institutions.

6. CONCLUSION

It was clear from this semester experience with students of CFM that the new generation knows well and is familiarised with technology because they were all very keen and quick in exploring and using the CCRE platform. This supports the idea that the learning process through a collaborative website, when used efficiently, strengthens our capacities for working as a team and functions as a real catalyser for a new relation and interaction teacher/student(s).

The positive way that this academic year evolved, without the problems that were present on last academic year, when we first started to use the collaborative platform CCRE (Neto, 2008), shows, besides other things, that it is possible to adopt with success a blended learning approach in a Design Studio environment with these technologies with the objective of creating a significant community of inquiry, not forgetting the importance of face to face interaction of students and teachers (Broadfoot, 2003).

It was possible, through the use of CCRE website, to develop a learning strategy that:

(a) *facilitated the learning process* – this is so, mainly because when we inquired the students about the significance of the set of exercises that were asked for them to complete during the semester, they ranked those as very important. They also thought that the fact of these exercises being accessible through CCRE platform had meant a greater freedom in relation to how they managed their working time;

(b) *motivated the students to work* – this is so because, looking at the amount of work done by each group when completing the set of exercises along the semester and comparing it with the work of other students of CFM of last academic year, we see that their present productivity is much higher;

(c) *promoted communication and interaction between students and teachers* - this is so, mainly because when we inquired students about the influence of the CCRE platform for a higher interaction and closer communication between teacher and students they were with the impression that CCRE had played an important role for strengthening their communication with the teacher. This meant that the CCRE online structure, allowing students to have a greater autonomy, flexibility and responsibility in the learning process, was in fact well integrated and used interactively both by students and teachers;

Other important related information coming from talking with students at the end of semester was the fact that most of them agreed that consulting and accessing the didactic material of the course was encouraged by the use of the CCRE collaborative website and that its structure and interactive possibilities had helped them.

It is important to say that the use of the CCRE collaborative website also helped to achieve a significant blend between the learning objectives and the pedagogical methods. This meant, for example, that CCRE gave the students the necessary tools for using photography as an analytical and critical instrument and for communicating and representing their final visual narratives interactively. It also meant that it helped students to evolve in group work and to communicate between them and the teacher more efficiently, as was already described.

It is also relevant to point out that technologies should always be analysed critically having in mind the scientific and pedagogical objectives of the course and not the other way round. If this does not happen, the risk of falling into a kind of technological tyranny is higher. We believe that, in our case, this did not happen and that important steps were given in order to develop a community of inquiry in a Design Studio atmosphere for a photography course within a blended learning process. This meant, besides other things:

- encouraging and facilitating communication and exchange of ideas between students and teachers through the platform and in classes;
- making it possible for the student to have an active role in the learning process, encouraging them to develop group projects and to debate ideas;
- monitoring the visual narratives and exercises - communication projects -, helping to integrate in a critical way the technical component and the artistic, as well as the practice with the theory: analysing critically the works with students, analysing the work of other authors and thinking on the best ways for achieving the objectives of each communication exercise and final visual narrative.

It seems clear that the pedagogical model behind the subject matter of the CFM course and the learning modes adopted are distant from the traditional ways of teaching and more linked to the idea of making students an active part of that process and on strategies to foster student-to-student and student-to-teacher interaction within a blended learning approach. In fact, there was a significant concern in trying to explore and use an interactive learning process focused on the groups, encouraging critical analysis and feedback and leading students to gain autonomy and play an active role in the learning process. All this is not new because there are many examples of photography and other media courses in many institutions that show us how the creative work of students is enriched if the right conditions for communication and interaction between the principle players of the learning process – students and teachers - are achieved (Neuckermans, 1999).

To finalize, we draw attention to the pedagogical process that was adopted, characterised by two important vectors: (i) higher motivation and (ii) higher participation. This meant that the learning processes efficiency are also the result of the rich cognitive and emotional context created and that to reach this context

the use of an interactive platform as CCRE within a blended learning strategy can make a difference and help the learning process efficiency.

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From static web presence to dynamic e-social reputation: an on-line evaluation tool for education professionals

Aims of project

The new eTTCampus 2.0 (<http://www.ettcampus.org>) project aims at consolidating the European Virtual Campus created in a previous project for teachers and trainers as a reference of new ICT trends and tools in education. In particular to define and test an evaluation process for the e-social reputation of teachers and trainers performance as a new tool for their portfolio of competencies.

Definitions of e-social reputation

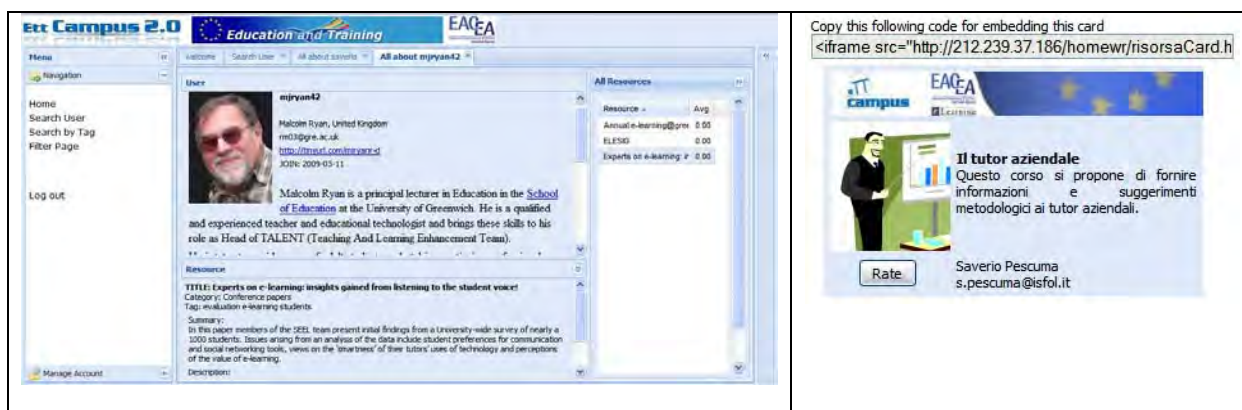
To develop an e-social reputation, a web user must first develop a web presence. We define a web presence as: an intentional and socially constructed professional and personal profile that is developed dynamically and intentionally through the support of web technology. We define e-social reputation as: a socially constructed judgement made on an individual's or group's professional standing, based upon specific features of their web-based profile, including their contributions to the interests of the online community.

Why do you need an e-social reputation?

Teachers, trainers, researchers and learners in the 21st century are making increasing use of the web to meet both social and professional needs. Recently, when searching for goods and services, it has become relatively common place to use 'reviews' and 'ratings' before making a decision to purchase. Increased consumerism, especially in higher education, combined with greater web visibility of the providers suggests that it may be time for education professionals to consider their on-line presence and reputation in the worldwide community. As providers of research outputs, managers of projects, authors of articles, presenters at conferences, facilitators of workshops and subject specialists, academics are well placed to use our e-social reputation tool to enable users to rate this wide range of products and services. Using the tool allows academics and trainers to develop a series of cards that can be used to evaluate their outputs and generate an e-social reputation.

Creating your e-social reputation and rating cards

Once registered, users are able to create a profile and then separate cards for each product or service they provide which can be rated and the e-social reputation is established.



The image shows two side-by-side screenshots from the eTTCampus 2.0 website. The left screenshot displays a user profile for 'mjryan42', identified as Malcolm Ryan, a principal lecturer in Education at the University of Greenwich. It includes a photo, contact information, and a list of resources. The right screenshot shows a rating card for 'Il tutor aziendale' by Saverio Pescuma, with a 'Rate' button and an embed code: `<iframe src="http://212.239.37.186/homewr/risorsaCard.h" data-bbox="615 525 885 655`

To begin the process visit, <http://www.ettcampus.org/eSocial.php> from the tags at top of screen choose "web reputation site". From the links on the left choose "web reputation" site then "register" and complete the registration form. Log in with your User name and password and follow navigation on left hand side. Once created, ratings cards may be used in a wide range of web based applications such as Ning, Linked In, Netvibes, My Space, etc.

Aims of the demonstration

To provide delegates with an overview of the e-social reputation tool, an output of the eTTCampus V2.0 project. To raise awareness to the potential of the tool for evaluating products and services, in particular contributions to the EDEN conference.

Network learning: New solutions for all?

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Abstract

The Internet, in general, and eLearning content, in particular, are greatly based on visual materials: written text and image. Whereas written texts are reasonably accessible to all, even to visually impaired learners, who may use a Braille line or screen reader to access them, images very often go “unseen” to many.

Images, which can be still or moving, play different roles in learning content. Some are decorative and serve only to make a particular webpage or content more attractive to sighted users. Some are redundant to the written content, and serve to reinforce the message. Others, however, are important and contain vital information, which may be explanatory in nature or even integrated in an activity.

Sight impaired students need to access these images in equal terms to their sighted colleagues. This they can only do if images have been provided with appropriate tags that can be read by their assistive technology.

Keywords

WEB content, accessibility and inclusion, images description, e-learning visually impaired learners.

Introduction

People working on the development of online courses don't often get the opportunity to think about accessibility issues, a matter that should deserve special attention at a time when life-long learning, equal opportunities and inclusion have become central issues in education at large and in online learning in particular. However, there are guidelines and standards for accessibility that help programmers and Web designers to make sites and tools accessible in terms of usability and legibility. In Portugal the government measures, such as the Resolução do Conselho de Ministros N° 155/2007 refers the Web Content Accessibility Guidelines (WCAG) version 1.0 from W3C international consortium. But these guidelines, even in the new version (WCAG 2.0), mainly focused on technological issues (Francisco, 2008)[Fr08].

Tagging images is a complex matter. There are different tags available, offering various levels of information for each image. Writing such tags requires content knowledge and tag writing techniques. It is often found that the teachers, who know the subject matter and the reason why they are using certain images, do not master tag writing skills, whilst webpage designers might know how to go about implementing title attributes -

alt-text and *longdesc* - but might not know the scientific and pedagogical context in which the images are being used.

In the educational context, the consistent use of Web Content Accessibility Guidelines (WCAG) might not be sufficient to guarantee truly effective image tagging. The context in which the image appears, its educational function, the subject matter, the image type, the intended addressees and the nature of the content in which it is found will determine the type of tags, the language to be used and the amount of information to be provided (Francisco & Neves, 2007)[Fr07].

Content solutions for all

Advantages of online education for blind students: naturally breaks down some of the barriers blind students find in regular educational environments. If we are to take into consideration the four types of barriers that Carvalho (2001:86)[Ca01] identifies: acceptance, communication, space, learning, online courses overcome them with its essence. The first, acceptance, is guaranteed in the equal opportunity principal that underlies all distance learning. The distance factor also favours individuality and allows blind students to easily integrate without exposing themselves in their vulnerability and/or blindness. Space is also conquered in the online context. Attending classes no longer means having to travel through geographical space. Mobility, one of the greatest hindrances that come with blindness is totally overcome. Blind students can work from home or from environments they feel comfortable in. This is bound to contribute towards greater comfort and therefore better learning conditions. Another reason for considering online education potentially inclusive is the fact that contents can be varied in form and format. The design of inclusive e-contents that are easily “read” by assistive technology will guarantee that blind students are given real access to the learning opportunities that are provided to their sighted peers.

If we are to take the latest data on Internet Usage Statistics made available by the Internet World Stats (www.internetworldstats.com/ststs.htm) on the growing use of the Internet at a global level, we may easily foresee its relevance in a society that is aging and becoming more prone to disability conditions.

Graphical User Interfaces have become more complex and even though WEB pages have become more accessible to sighted users (more images and interaction is now available) it has become more difficult to use by blind and low sighted users. Interfaces are manipulated directly (mouse shifts) and mainly graphic.

To quote Brunet et al (2005:446)[Br05] “the graphical user interface (GUI) is the dominant human-computer interaction paradigm in today’s IT environment. The expressiveness of the GUI is so rich, and the medium is so vision-oriented, that extraordinary efforts are required to translate this UI paradigm into other modalities.”

Reading through accessibility guidelines such as those proposed by the World Wide Web Consortium (W3C/WAI), namely the widely acknowledged Web Content Accessibility Guidelines (WCAG) in their latest December 2008 (WCAG2.0)[Ww08] version, one finds reference to what is called “conforming alternate versions”. This concept envisages the need to provide “all of the same information and functionality in the same human language”. The provision of HTML attributes for images in web content, - so that assistive computer technology such as screen readers can find written versions of the visual content to be read to blind web users by voice synthesizers -, is compatible with this guideline that builds upon what the WCAG1.0 [Ww99] version called the principle of “graceful transformation”. Conforming alternative versions and graceful transformation in the sphere of HTML attributes may read as “adequate linguistic equivalents for visual information”. Even though web accessibility guidelines in general (cf. [UM08] for an extensive list) are assertive about the inclusion of *alt-text* and *longdesc* attributes, they

are less prolific with guidance on the content of such attributes. This, in itself, is a problem worth addressing: what kind of information should be included in *alt-text* and in *longdesc* attributes. The main difference between these two attributes appears to be in length. *Alt-text* (alternative text) attributes are limited to about 80 characters forcing longer descriptions to be taken into *longdesc* (long description) attributes.

WCAG2.0 envisages the need for “a text equivalent for every non-text element (e.g., via “alt”, “longdesc”, or in element content). This includes: images, graphical representations of text (including symbols), image map regions, animations (e.g., animated GIFs), applets and programmatic objects, ASCII art, frames, scripts, images used as list bullets, spacers, graphical buttons, sounds (played with or without user interaction), stand-alone audio files, audio tracks of video, and video”. Each of these image types will call for descriptive approaches which encompass specific issues and demand for equally different solutions.

According to Diéguez [Di97], in the educational context, images are used with specific functions: sometimes they serve as motivation; other times as a substitute for an intangible reality; it sometimes serves as a catalyst that reorganises reality; at times it takes on an informative or an explicatory role; it is often a learning facilitator or serves as evidence of the written text; often too, it is used for strictly aesthetic effect. Online courses are by nature highly charged visually and instructional designers often introduce images in their courseware to stimulate students’ interest and to promote enjoyable learning experiences. However, not many learning content providers are aware of the importance of providing alternative texts for potentially blind students and when they are confronted with the actual need to cater for students with special needs, they are often at a loss because they do not know how to provide “conforming alternate versions” for the images that are to be placed in their Virtual Learning Environments (VLE). With all this in mind, the problem to be addressed in this project lies within the sphere of online education and may be synthesised in one main question which opens up to two sub-questions. The main question is: “What parameters are to be used when writing HTML attributes for images in VLEs?” The stemming questions are: “Should an image always be described in the same way regardless of its context(s) or should it be given different descriptions according to the context in which it is being used?” and “is it possible to establish common patterns or parameters which are applicable to the description of images of a particular type?”

At the outset there is no certain reply to any of the questions but there are two working hypothesis: (1) every image is made up by minimal signifying elements that can be objectively synthesised. These elements remain the same regardless of the context in which the image is to be used and its (educational) function. This “verbal image print” is appropriate for alt-text attributes. (2) Parameters can be found for detailed description of images of similar types and similar educational functions. These parameters will contribute towards truly useful *longdesc* attributes.

Research on Web accessibility issues is most often approached from a technical perspective and most of the publications to be found on the issue of image descriptions in web contexts are mainly on the technical aspects of making them available to blind users. Projects such as those promoted by IBM - IBM alphaworks services and accessibility Works carried out within the IBM Web Adaptation Technology programme and Virtual Worlds User Interface for the Blind [IB08] -, are directed towards the enhancement of reception conditions (usability) and in making tagging possible in virtual environments such as in second life virtual environments. Other approaches, such as those presented by Roth et al. [Ro98] go as far as “pixelising” information about image components but these are not memes that may be used in the actual attributes to be presented to blind Web users. Research on building digital image banks is also known. The Jakarta Project: Image Tag library [Ja04] proposed a tagged image bank, but here too emphasis is placed on form rather than on content. It is clear that there is a gap to

be bridged that lies in the sphere of language and the pragmatic conveyance of meaning. This transfer lies in the sphere of intersemiotic translation [Ja00] in which meaning travels between codes. In the case of image descriptions, visual messages need to be conveyed through words. The issues that underlie this linguistic transfer have been extensively addressed by scholars working in Audiovisual Translation, namely by members of the Transmedia Research Group (www.transmediaresearchgroup.com) who have published in the sphere of accessibility to the moving image and have studied the intricacies of audio description. Here again, audio description is different in nature and the constraints are quite diverse to those pertaining to still images. It is within museum studies that the most significant progress has been made in the sphere of describing still images and in finding metadata to categorise their content. This project, which is directed mainly towards images used in the context of online education and for the purpose of making online images available to blind students, draws directly from work carried out in that field, among which that by Shatford Layne et al. [Sh02], in which categorization parameters for works of art are already proposed; and finds inspiration in the work carried out by TASI (www.tasi.ac.uk) and the Paul Getty Research Institute (www.getty.edu/research/) in their use of metadata for image categorisation and description.

Final reflection

Despite the barriers that network learning can provide to students with visual impairment, it's possible to make content and tools available for all users. To guarantee accessibility, different content formats meeting specific student needs should be set up. The strategies used for the production of accessible content can and should be implemented in the most traditional online learning. In fact, in formal learning it is possible to establish rules to produce accessible contents namely applying image description techniques, navigation structure of tools and content, and rules of communication that make possible autonomy and access for all. However, in networked informal learning, using Web 2.0 tools, there is much less institutional control over the process that guarantee content and tool the accessibility.

Web 2.0 tools and open content are leading to new ways of learning and communicating in educational contexts. A special feature of these new learning solutions is the individual management of virtual environments, such as the Personal Learning Environment (PLE) allowing students to manage their own spaces, traditionally managed by the institution. Thus, accessibility rules and techniques applied by institutions should also be taken by all students, open source software developers and social network contributors.

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SAPO Campus: a social media platform and PLE for Higher Education

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³ Your data ☺

1. Abstract

Recent research has demonstrated that the educational use of social media platforms has the potential to promote an effective development of communication, sharing and collaboration skills by learning communities' members, contributing to more relevant learning experiences.

The SAPO Campus project is being developed at labs.sapo/ua, a R&D laboratory located at the University of Aveiro (UA). This facility is financially and technologically supported by Portugal Telecom (PT)/SAPO and scientifically managed by PT and UA research staff.

The overall goal of SAPO Campus project is to develop, launch and assess an integrated Web 2.0 services platform – based in SAPO core technologies – in order to ease and to support these services use in Higher Education contexts.

SAPO campus platform offers a set of services and tools that, based in our experience, can represent a significant improvement in what the educational and focused use of these tools in Higher Education Institutions (HEI) is concerned.

Keywords: Web2.0; Learning; PLE; Social Media; Higher Education

2. General framework (*Josie: your main contribution would be around here ☺*)

The emergence of Web 2.0 social media tools and applications and the renewed vision of the Web as a communication and sharing platform represent a major breakthrough in what technology use is concerned. From a conceptual perspective social media tools and applications most important feature is closely related with user empowerment and responsibility, allowing the involvement in wider participative knowledge creation networks where information, data and knowledge are continuously negotiated, shared and discussed.

This educational openness approach is also labelled as “chmod 777 education”. The “chmod 777 education” approach advocates the full openness of educational tools and contexts, allowing students, teachers, and the larger learning community to enroll in collective knowledge construction activities, without restrictions, different or minor roles or closed fences, purporting learning as an intrinsic communal and social activity [1].

The wider use of blogs, wikis, social bookmarking and social networking tools and applications in everyday activities along with a new vision about learning processes and the nature of knowledge and of its shared construction process has decisively contributed to a major shift in what education, learning, teaching methods and technology itself is concerned. The emergence of a set of paramount concepts such as openness, participation, collaboration and networking also raises new questions in what concerns technological availability and support in educational institutions.

Acknowledging that there is not such a thing as a neutral use of technology in education, educational institutions tend to adopt technological solutions that reflect a certain view of education and of teaching and learning processes. In the late 90's HEI largely adopted Virtual Learning Environments (VLE) as technological solutions to support learning processes. These tools were seen as a good choice to answer educational growing needs in terms of management, content-delivery, (a)synchronous communication and time and place distribution features. However the parallel evolution of technology, of its patterns of use and of how learning processes were understood lead to an increasing movement towards the adoption of Web 2.0 social media tools and applications that allow HEI the implementation of core educational concepts such as openness, collaboration and sharing along with a progressive freedom to build Personal Learning Environments (PLE) that reflect educational agents' evolving learning needs.

3. SAPO Campus platform

The SAPO Campus platform development is guided by a two-folded key-concept that purports a clear distinction between institutional core services and the integrated platform logic that mainly serves community members. This distinction aims to guarantee that the institution will make these services available to its community, keeping untouched Web 2.0 key concepts such as openness and presence flexibility. On the other hand the platform offers different aggregation services specially designed for educational contexts.



Fig. 1 SAPO Campus two-folded key-concept.

Figure 1 presents the core concept of SAPO Campus services and its relationships with other entities, namely the HEI, its users and all other Internet users. By adopting the SAPO Campus platform the HEI will be able to offer a set of high quality core services prepared for large-scale usage scenarios. Represented in the light green circle is the actual offer of SAPO Campus core services: blogs, video sharing, photo sharing, social bookmarking, wikis, social networking and Instant Messaging (IM).

The large dark green line on Figure 1 represents the top-level aggregation services specially designed for educational contexts. Grounded in the project coordination team previous experience in lecturing course subjects supported with Web 2.0 services it was clear that providing a platform only based in core services would not be enough to fulfill major requests from HEI different publics.

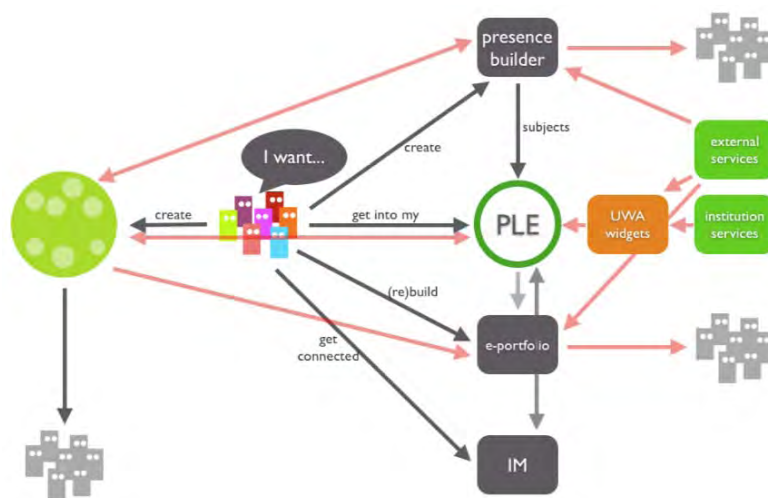


Fig. 2 SAPO Campus entities and services.

Figure 2 represents the main services supported by the SAPO Campus platform. Authenticated users on the platform are able to execute the following main actions: create accounts on core services, create new presences, get into their PLE, (re)build data to set an e-portfolio and get connected with the PLE and other users using the IM tool. External services and contents could be integrated in SAPO Campus through UWA in the PLE or directly into presences and e-portfolios. A short explanation of the top-level services and tools will be presented in the next topics.

3.1 Presence builder

SAPO Campus core services architecture indirectly promotes a distribution of User Generated Content (UGC) across different spaces. The aggregation of different media type contents in a unique space related to a

specific domain (the user, a course subject, a group of people, a department, ...), if only supported by SAPO Campus core services, would only be possible through manual construction and update of a blog or a wiki page.

SAPO Campus Presence builder tool allows users to create customizable pages of aggregated contents, following a base model closely related with services like iGoogle and Friendfeed. Taking advantage from the neat integration with the platform core services the Presence builder tool also integrates top-level mechanisms for the creation of core service accounts.

Another important functionality allows teachers to build presences that can be identified as related to a course subject and makes them closely connected with institutional academic services. With this integration teachers have the opportunity to access student related information and set different user roles for each service associated with the presence.

3.2 Personal Learning Environment and e-Portfolio

Personal Learning Environments are a key concept in today's discussion about Technology Enhanced Learning. SAPO Campus is intended to promote the effective use of an institutionally-supported PLE, providing the community with an open environment where users have the ability to select and organize their sources, tools, learning contexts and communities. The PLE provided by SAPO Campus is based on the Universal Widget API (UWA) from Netvibes and allows the integration of a large number of widgets provided by external services or even the development of new widgets by the community or the institution. With this strategy it is assured that the institution is not able to frame which tools and sources the user can actually use. This open architecture based on internal and external widgets is a key point in order to assure that main PLE concepts are not overridden by the institutional support approach.

SAPO Campus PLE is also closely integrated with the Presence builder tool. For presences identified as related to course subjects the aggregated content of the presence is automatically integrated in a specific area of students and teachers PLE.

Also integrated with the PLE environment is the e-Portfolio builder tool that allows users to build different e-portfolio spaces based on the content they have generated on core services or even on external services.

3.3 Instant Messenger with aggregation services

SAPO Campus provides an institution-supported Instant Messaging desktop application for authenticated users. Besides normal functions of IM tools, SAPO Campus IM tool provides automatic groups association depending on their learning contexts. Teachers are also able to define a schedule of availability for a group of students related to a course subject.

Besides the synchronous communication system, SAPO Campus IM also promotes the ubiquity of the user with the platform through a live communication channel with the user's PLE. Users are able to receive information from their PLE in the IM tool and are also able to put new contents on their previously created accounts on core services through the IM tool.

3.4 Other tools and services

Along with the services and tools presented before, the SAPO Campus platform also provides a tool for supporting the assessment of online participation. This tool is based in the idea that this kind of assessment should take place continuously and should be open to teachers and students participation. Another key issue answered with this tool is the visualization of the collected data in order to provide students with a mechanism of formative assessment based on tag cloud representation.

4. Demonstration session structure

In this demonstration session we will start with a brief overview of social media platforms and PLE use in HEI and present and discuss key-concepts underlying the SAPO Campus platform, the achieved solution regarding the architectural structure and the services being developed. We will also provide a short description for each aggregation service with a focus in its expected impact in educational contexts.

Finally we are particularly interested on arguing with the audience the solutions we found during the development process, which consisted on conceptualizing and making an institutionally-supported PLE available, including online participation assessment tools, presence and e-portfolios construction.

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Anatomia de Aplicações Digitais e Locais Virtuais de Conteúdos Educativos: Geração N-Gen

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A Geração Millenials e a utilização das TIC 2.0 - Anatomia de Aplicações e Locais Digitais, Mundos Virtuais, um desafio para a Educação na Era Digital.

RESUMO:

A mudança substancial da Educação na era digital, considerando as novas gerações que frequentam as escolas: os aprendentes nativos digitais, *N-Gen* e o uso das TIC 2.0. (Aplicações Digitais, Mundos Virtuais, 3D). Motivação, divertimento, criatividade digital: uma competição de ideias bem sucedida na era da nova geração *Millenials*. (Howe, William, 2008)

Este artigo visa analisar o uso e a qualidade das TIC 2.0 utilizadas no ensino/aprendizagem, como recurso educativo, o potencial que estas representam, e caracterizar, ao mesmo tempo, estratégias da sua aplicação, baseada na observação dos utilizadores/ *Millenials-Gen*. (Tapscott, 2008) e a sua interação em diferentes contextos ou situações, sala de aula e extensão de sala de aula (aprendizagem informal).

Pretende-se verificar até que ponto estes tipos de recursos digitais permitem desenvolver competências, promover a interactividade, criar novas expectativas no trabalho prático, dinamizar o trabalho cooperativo e colaborativo a nível da língua materna, língua estrangeira, e Cidadania, de modo a diminuir a magistralidade das aulas e promover o gosto pelas mesmas junto dos alunos.

Em conclusão, recomenda-se a alteração de “atitude” no processo ensino e aprendizagem, perante um novo leque de recursos educativos digitais que despertam o total interesse dos nativos digitais.

Palavras-chave: Educação, atitude, competências, talento, criatividade, aplicações digitais, locais virtuais, nativos digitais, geração Internet, ensino e aprendizagem, avaliação, comunidades de prática.

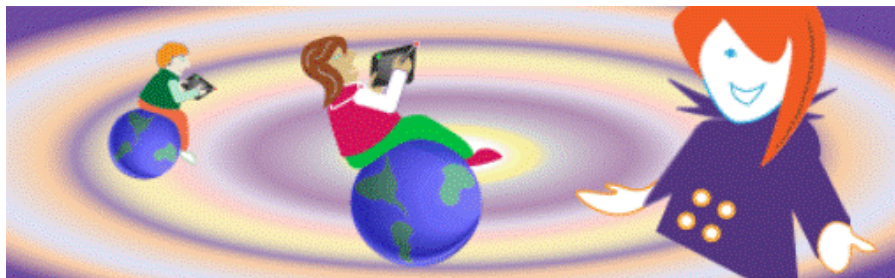


Figura 1 *The New learning generation*, [elearningeuropa.info papers](http://elearningeuropa.info/papers)

<http://www.elearningpapers.eu/index.php?page=home>

Nas sociedades digitais, crianças e adolescentes cresceram num mundo em que as tecnologias digitais estão presentes.

Atualmente, os nossos alunos são essencialmente ‘*native speaker*’, Prensky, 2001 1): da linguagem digital dos computadores, vídeo jogos, telemóveis, ipods e Internet (*Facebook*, *Hi5*, *Live Messenger*, outros). Toda uma nova geração que vive conectada.

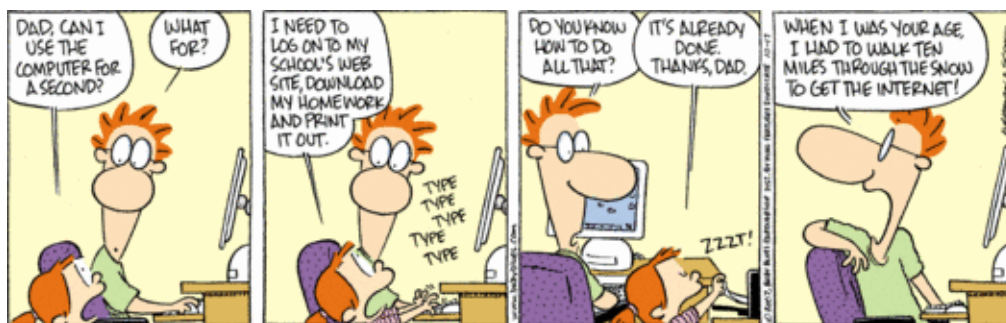


Figura 2 <http://jdorman.wikispaces.com/digitalnatives>

Pelo contrário, nós professores não nascemos no mundo virtual, mas em determinado momento das nossas vidas, ficámos fascinados por ele e adoptámos muitos aspectos da Web 2.0. Pertencemos portanto à chamada era pré-digital.

Porém quando sou apontada como ‘*digital immigrant*’ Prensky, 2001 2), já que utilizadora das TIC 2.0, eu me questiono: na verdade, eu não cresci com as Tecnologias. Eu assisti ao seu crescimento e acompanhei o seu desenvolvimento passo a passo, ficando aos poucos mais e mais fascinada, já que pertenci e fiz activamente parte da 2ª geração de EaD – teledifusão ou telescola (1975-1985). Pertença portanto a uma 3ª categoria: os “*digital pioneers*”. Aprendi a manipular e a experimentar as tecnologias, à medida que estas foram aparecendo.

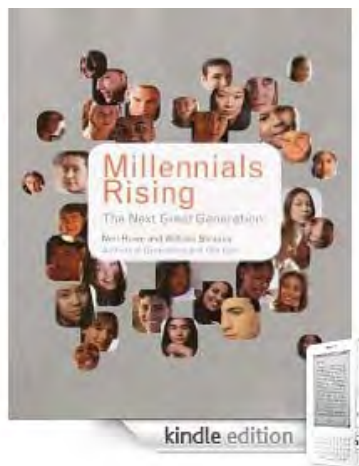


http://kathyschrock.net/blog/uploaded_images/digital_teacher-738956

<http://kathyschrock.net/blog/2008/10/digital-natives-digital-immigrants-and.html>

Aí se deram os primeiros passos no campo da experimentação: os alunos eram já membros de uma comunidade de aprendizagem dinâmica, onde lhes era permitida a hipótese de discussão e análise crítica de ideias, valores e perspectivas, Keegan, 1993 3)

Hoje, mais do que nunca, a Educação não se rege pelos limites do professor/professora, livros de textos ou referências dos livros da biblioteca escolar. Não se pode limitar tão pouco aos interesses dos aprendentes. Carew, 2003 4)



Neil Howe/William Strauss

Figura 3 http://www.amazon.com/Millennials-Rising-Great-Generation-ebook/dp/B001QA4S06/ref=pd_sim_kinc_3

O aparecimento de aprendentes nativos digitais tem enormes implicações para a Educação. Os *N-Geners* aprendem, jogam, comunicam, trabalham/estudam e criam comunidades.

Don Tapscott, 2008 5) chama-lhes a «geração mais inteligente» “...*These kids’ brains are actually wired differently,*” Tapscott said. “*Their IQs are up by all the measures we have. This is the smartest generation ever. They are highly motivated and bring with them a new kind of culture. They bring a new model of work and collaboration into the workforce that is better, results in higher performance and better innovation.*”

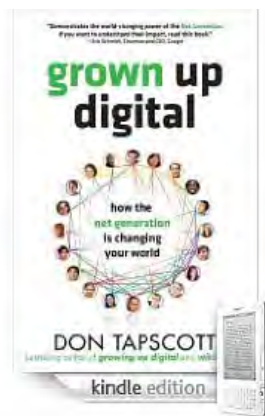


Figura 4 <http://www.amazon.com>

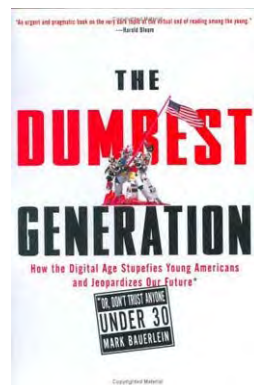


Figura 5 <http://www.dumbestgeneration.com>

Mark Bauerlein, 2008 6) apelida-os de «geração mais idiota»: “*Teenagers are too distracted by computers and social networking, which are crowding out materials like history and civics.*”

Então, qual a metodologia para cativar esta ‘N-Gen? A alteração radical da atitude dos professores. Estes têm que aprender rapidamente a comunicar na linguagem e estilo dos seus alunos.

Isto não quer dizer mudar o significado do que é importante ou os bons aspectos das capacidades a desenvolver.

Desafio? Lutar para motivar uma população escolar 100% digital que fala inteiramente uma nova linguagem.

E a estratégia? A aprendizagem e ensino fundamentada na «atitude». Os utilizadores/alunos/professores que se familiarizam com as funções que oferecem as TIC 2.0 convertem-se então em agentes de troca de informação. Estaremos assim perante uma nova geração de professores, facilitadores que tutorizam essa informação.

«How the Net Generation can be the most innovative, collaborative, and productive cohort, if given the proper working environment...» (Tapscott, 2008 5)

O professor/tutor não ensina. Se ensinasse, sabe-se lá o que os *N-Gen* aprenderiam. Ensinar está fora de questão. O principal papel ou função do e-professor/*aka* facilitador é cativá-los, entusiasamá-los e apresentar ou considerar aspectos/conceitos que os nativos digitais nunca tenham desenvolvido antes. Trabalha-se para criar cidadãos numa sociedade global.



Conexão/Conectados

Figura 6 <http://campus.porto.ucp.pt/Paginas/default.aspx>

Palavra-chave? Web 2.0. A fórmula? «Puzzle dos nove pontos»: reinventar, pensar diferente, questionar, mudar a sua perspectiva, criar, inovar, pensar lateral, pensar fora da caixa (computador)



Kindle Amazon 6

Twitter.com

blogspots.com

Figura 7 http://www.amazon.com/s/ref=nb_ss_kinh?url=search-alias%3Delectronics&field-keywords=kindle&x=18&y=13

Aplicações educativas dos mundos virtuais e locais virtuais são uma excelente possibilidade de aprendizagem, motivando assim os nativos digitais a adquirir competências de uma maneira criativa, inovadora e rápida, bem ao ritmo dos *N-Geners*.

Os nativos digitais ou geração *Millenials*, (Howe 7) captam a informação com grande rapidez, gostam de processos virtuais e multi-tarefas, preferem gráficos e esquemas aos textos, funcionam melhor quando em rede, actuam em função da gratificação ou pequena recompensa, preferem os jogos ao trabalho sério. Os nativos digitais trabalham muito mais quando se entusiasmam com os seus próprios projectos.



Figura 8 <http://freedomforip.org/wp-content/uploads/2008/09/digital-natives.png>

Enfrentamos então os novos WWW: *Whatever, Whenever, Wherever*, Tom March, 2005 8): oferecendo-nos os que queremos, onde e quando quisermos - o que pode levar a uma extensão da nossa já realçada- tecnologia na vida contemporânea. Dorman 9)

A Internet e as TIC 2.0 passaram a ser utilizadas com muita frequência pela net-geração na escola, em sala de aula e fora da escola, em rede, em casa, num conceito completamente novo: os *mush-ups*.

Mash-ups são aplicações web que combinam os dados de mais de uma fonte numa só ferramenta integrada. Martinez, 2009 10). Sintetizando: conceitos/ competências, estratégias/ processos e TICs.

O ano 2009 foi considerado pelo Conselho Europeu o ano da Criatividade e Inovação. Então, há que imaginar, criar, inovar.

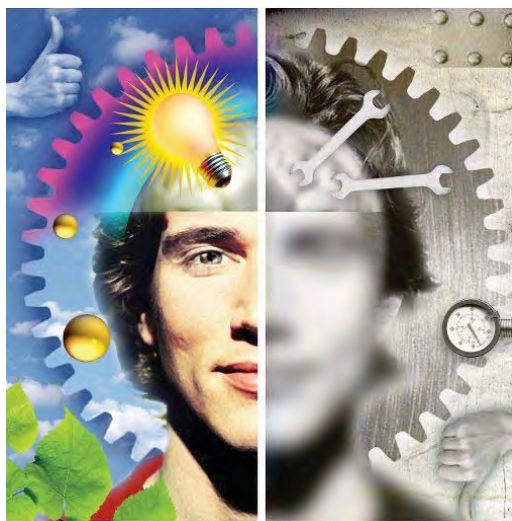


Figura 9

<http://www.europarl.europa.eu/sides/getDoc.do?language=EN&type=IM-PRESS&reference=20090106STO4548>

Criar, misturar, reinventar, é fórmula ideal para levar a uma nova aplicação que cativará sem dúvida a atenção dos aprendentes *N-Geners* que são multifuncionais e adoram desafios.



Figura 10 <http://blogdaformacao.wordpress.com/2008/08/29/ambiente-pessoal-de-aprendizagem-na-web-20/>

No entanto, é essencial analisar os recursos digitais (aplicações digitais e locais virtuais) usados em Educação. Seria impensável de outro modo!

O objectivo da avaliação é observar os nativos digitais ou geração *Millenials* na sala de aula e na extensão de sala de aula (conceito *mush-ups*) para compreender as suas expectativas e atitudes perante os «novos métodos de ensino/aprendizagem», usando os recursos digitais.

O importante não é avaliar as aplicações ou locais digitais (essa a parte preliminar do utilizador/professor), mas o que o utilizador/aluno faz, como reage individualmente ou em grupo, perante as expectativas que o norteiam ao ser confrontado com um novo recurso. Os nativos digitais adoram ser apanhados de surpresa. Reagem com excitação e ultrapassam muitas vezes as metas do que lhes apresentamos.

Algumas questões se colocam desde logo: até que ponto as TIC 2.0 vão de encontro às necessidades do perfil de uma determinada turma.

A um nível mais específico, pretende-se melhorar o aproveitamento e o sucesso educativo dos alunos, bem como a sua proficiência na língua materna, na língua estrangeira, bem como na sua formação cívica.

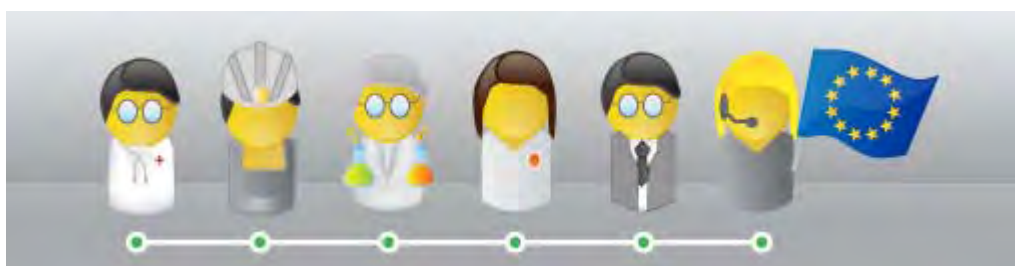


Figura 11 *New Citizens*, elearningeuropa.info papers

<http://www.elearningpapers.eu/index.php?page=home>

Há padrões de qualidade a aferir previamente: dimensão linguística, dimensão pedagógica, dimensão das atitudes e dos valores.

As TIC 2.0 (no conceito *mush-ups*) devem apresentar os seguintes requisitos: identidade, autonomia, qualidade científica e pedagógica, criatividade, de modo a encorajar 'innovative mindsets'. Kirah, 2008 11)

2. MATERIAIS E MÉTODOS:

A avaliação das Aplicações Digitais e Locais Virtuais tem duas fases importantes: avaliação descritiva (professora/avaliadora) e avaliação em contexto (professora e alunos, em sala de aula e extensão de sala de aula - em rede). Ramos, 2008 12)

Os principais critérios de avaliação descritiva devem ter em atenção as seguintes dimensões: técnica, linguística, pedagógica e cívica. E factor crucial para esta nova geração. A imagem!



Figura 12 <http://www.glasbergen.com>

O impacto das aplicações digitais e locais virtuais nas competências e expectativas do ensino e aprendizagem, a evolução dos valores sociais e os estilos de vida são questões muito importantes.

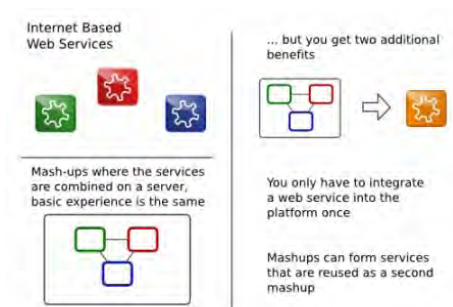
Qualidade não é um bem estável adquirido no que concerne os recursos digitais educativos. Evolui na relação entre aprendente e recurso educativo. Deste modo, a qualidade deve ser considerada, observada e avaliada em contexto actualizado. Ehlers, 2009 13)

A ideia de Aplicações Digitais e Locais Virtuais em Educação reconhece que o processo ensino/ aprendizagem é constante e procura providenciar qualidade para apoiar o ensino e aprendizagem nas escolas.

Os objectivos educativos serão atingidos quando os aprendentes/estudantes usam os recursos digitais na sala de aula e em extensão de sala de aula (PLE, LMS, *mush-ups*).



Web 2.0



Mush-up

Figuras 13 e 14

<http://www.google.com/images>

A e-professora, depois de pré-visionar e avaliar a aplicação digital e/ou local virtual, deve utilizá-los em contexto, isto quer dizer, em sala de aula, observando os seus alunos e a maneira como interagem com os recursos digitais apresentados.

A aplicação digital ou local virtual seleccionados deve ser o mais apropriado possível, em função dos objectivos educativos e das limitações.

Será experienciado em diferentes contextos e situações e não deve ser proveniente de um único factor de aprendizagem

Ligado a estes aspectos, o reconhecimento crescente da importância do ensino informal e do papel do indivíduo/aprendente na organização do seu conhecimento.



Figura 15 YouTube

<http://news.yahoo.com/photos>



Figura 16 Podcasts

www.google.pt/images

Os consumidores/aprendentes tornam-se produtores, através da criação e partilha. A implicação é o potencial para uma nova ecologia de recursos 'abertos', ambientes educativos, aplicações digitais, ferramentas, locais virtuais e multimédia, através dos quais os nativos digitais se tornam produtores de recursos de ensino e aprendizagem com o tutorado da e-professora. Atwell, 2007 14)

Os modernos projectos baseados na Educação requerem que os alunos trabalhem e interajam com as aplicações digitais e locais virtuais na sala de aula e na extensão de sala de aula (em casa).

Percorrer caminhos pela primeira vez é, muitas vezes, parte integrante destes projectos e traz grandes benefícios aos alunos/aprendentes, permitindo-lhes que se engajem precocemente em ambientes do mundo real. Hansen, Bouvin, 2009 15)

Diferentes experiências levam a diferentes estruturas cerebrais. É muito provável que os cérebros dos nossos alunos tenham mudado fisicamente – e são diferentes dos nossos - como resultado do modo como cresceram. E isso prova-se no dia-a-dia dentro de uma sala de aula, através das suas constantes e sempre diferentes actuações. Dr. Berry 16)

Há ainda a salientar que ambientes interculturais e colaborativos aprendizagem os desafia a enfrentar experiências novas e reais e lhes permite desenvolver uma mentalidade/mente global, não só fisicamente mas também no ciberespaço. Kirah, 2008 11)

CONCLUSÕES E RECOMENDAÇÕES:

A escola tem mais impacto quando os *N-Geners* podem relacioná-la com o seu mundo real. Ao facilitar-lhes relevantes e actuais contextos educativos, o processo ensino e aprendizagem passará de conceptualmente académico para um mundo em que os nativos digitais poderão conectar a aprendizagem formal com a informal, e deste modo com as suas vidas e seus interesses.



Figura 17 <http://publicschoolintelligentsia.com>

Recursos educativos digitais (aplicações digitais e locais virtuais) podem ser um caminho eficiente que ajudará a ultrapassar a lacuna entre aprendizagem formal e aprendizagem informal. Schuller, OECD, 2007 17)

A utilização dos mundos virtuais no ensino é uma ferramenta social muito promissora. São muitas as aplicações, desde a possibilidade de leccionar aulas, realizar conferências, e outras simulações.

Assisti há poucos dias a uma conferência na *pool* da SL de uma entidade virtual portuguesa e fiquei fascinada. Estou certa que esta questão geraria uma verdadeira revolução na motivação para os currículos por parte dos *N-Gen*.



Figura 18 Second Life

<http://secondlife.com>



Figura 19 avatar GSouto

<http://www.meez.com>

O mundo virtual *Second Life* (SL) tem sido a grande estrela. O seu promotor teve a preocupação de dar destaque à Educação, criando condições especiais para que universidades, escolas, bibliotecas, museus, institutos e editores científicos investissem na presença, adquirindo terrenos virtuais (ilhas).

Os utilizadores comunicam entre si pela criação de *avatars* o que muito entusiasma os nativos digitais abaixo dos 16 anos.

Problemas no entanto se colocam: a idade dos nossos alunos (10-15 anos), o elevado custo de tais ambientes, o pouco tempo disponibilizado aos professores para criar ambientes pedagógicos de qualidade que passaria pela criação de equipas especializadas tutorizadas.

Não há dúvida que o factor da defesa dos adolescentes da busca incessante feita pelos predadores do ciberespaço é de principal relevância.



Figura 20 SL

Novos conceitos de ensino e aprendizagem já passam por aplicações virtuais como a videoconferência, o podcasting e as aplicações gráficas 3D de realidade virtual. O que é de facto uma novidade é a possibilidade de integrar todos estes recursos num só (*mush-ups*).

Ambientes virtuais, *networks* sociais, comunidades colaborativas, blogues, wikis, aplicações digitais em mundos virtuais, podcasts, telemóveis, Internet 3-D, são algumas das potencialidades da ‘web interactiva e colaborativa’

que os e-professores/ *aka*-facilitadores usam para melhorar os resultados dos alunos e combater a exclusão e o insucesso escolares.

Adicionalmente às aprendizagens dos currículos escolares, os *Millennials* necessitam saber aplicar as competências seguindo as premissas de Carew, 2003, 4): pensar criticamente, aplicar os conhecimentos a novas situações, analisar informação, compreender novas ideias, comunicar, colaborar, resolver problemas, e tomar decisões.

A ênfase do processo educativo indica não ser possível certificar com qualidade aplicações digitais e locais virtuais sem que esse processo de avaliação tenha lugar em contexto e será sempre uma co-produção entre os aprendentes e o ambiente de aprendizagem

Esta participação activa de utilizadores/aprendentes terá um papel muito importante na futura qualidade de desenvolvimento de sistemas. Ehlers, 2009 13)

O feed-back do e-professor ou e-facilitador deve ser aceite em todos os momentos, mas não deve ser aceite como uma mais valia.

O papel do utilizador/aluno, a pré-avaliação do e-tutor, o espaço sala de aula, o ambiente escolar, o contexto do dia-a-dia fora da escola são factores cruciais como feed-back para a avaliação ou qualificação das Aplicações Digitais e Mundos Virtuais na Educação

Serão os recursos digitais educativos, aplicações digitais, mundos virtuais, o futuro do ensino e aprendizagem da geração “wires”? Com toda a certeza!

Estudos, investigações, experiências, simulações têm demonstrado que as novas gerações - *Millennials* - se entregam com empenho aos ambientes virtuais, alcançando uma compreensão conceptual e ética na compreensão dos currículos escolares. Olsen, 2006 18)

Não são muitos os professores que utilizam os recursos digitais e/ou locais virtuais em contexto de sala de aula, mas é inegável que estes oferecem uma vivacidade aos currículos escolares que motivam a aprendizagem dos alunos, dando-lhes diferentes competências: social, intelectual, espaço-temporal (reflexos) e concentração. O ideal para interagir com pedagogia tradicional.

Ao aceitarmos a “Geração Lap“, poderemos aproximar-nos muito mais dos nativos digitais. As crianças e adolescentes são autênticas autoridades no mundo das TIC 2.0 – vivamos com isso e aprendamos com eles.

If you understand the Net Generation, you will understand the future.' And as my son often reminds me, the future is now."

Don Tapscott, 2008

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ESTUDANTE ONLINE: QUE COMPETÊNCIAS?

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Tendo por cenário o Mestrado em Supervisão Pedagógica, oferecido pelo Departamento de Educação e Ensino a Distância da Universidade Aberta, o grupo de estudantes da edição de 2009-2011 desenvolveu uma investigação sobre as competências a exigir e a desenvolver por aqueles que querem aprender na modalidade *online*. Numa relação directa com esta problemática, estabeleceram princípios e delinearam questões frente a competências necessárias por aqueles que ensinam *online*. Pretendem, apenas, contribuir para a reflexão em torno de competências esperadas para a concretização do ensino e aprendizagem *online*.

Palavras-chave: ensino-aprendizagem *online*; estudante *online*; competência.

Introdução

A nova sociedade tecnológica apresenta enormes desafios ao nível da formação. Vários factores contribuíram para que, apesar de não constituir uma novidade no âmbito da formação, a educação a distância se tenha vindo, paulatinamente, a constituir como um regime de ensino cada vez mais importante, permitindo que o processo de ensino-aprendizagem ultrapassasse todas as condicionantes temporais e físicas. A necessidade de aquisição de novos conhecimentos e a rápida desactualização dos adquiridos, em princípio de carreira, mudaram as concepções tradicionais de ensino-aprendizagem.

O incremento do uso do computador aliado ao advento e à generalização da Internet transformaram o ensino a distância, facilitando o acesso, de quase todos, ao conhecimento e à formação, tornando-o interactivo e promotor das aprendizagens ao longo da vida, desenvolvendo a autonomia e o aprender a aprender.

Também, segundo a Comissão Interministerial para o Emprego (CIME) , Formação a Distância caracteriza-se pelo "Método de formação com reduzida ou nula intervenção presencial do formador e que utiliza materiais didácticos diversos em suporte escrito, áudio, vídeo, informático ou multimédia, ou numa combinação destes, com vista não só à aquisição de conhecimentos como também à avaliação do progresso do formando".

Em sentido lato, Educação a Distância (EaD) refere-se a qualquer regime de educação em que o professor e o aluno se encontrem em locais geograficamente afastados e a distância entre professor e aluno é mediada por materiais impressos e meios

electrónicos, tal como encontramos na definição apresentada por Portway e Lane (1994) «O termo Educação a Distância engloba todas as situações de ensino e de aprendizagem nas quais o instrutor se encontra geograficamente separado dos seus alunos, necessitando, por isso, de recorrer a materiais impressos e electrónicos para disponibilizar/distribuir os conteúdos dos programas junto dos destinatários». Esta interligação entre todas as partes foi evoluindo ao longo dos tempos, e, com a utilização da tecnologia, deu origem a diferentes modalidades de ensino a distância. Hoje, tornou-se frequente o uso de uma plataforma electrónica, responsável por ambientes virtuais, onde são disponibilizados conteúdos de forma estruturada, onde se criam contextos e se contratualizam actividades e onde se encontram uma série de ferramentas de comunicação, que possibilitam a colaboração e a construção da aprendizagem em rede entre todos os agentes intervenientes, denominadas plataformas de *e-learning*. Entende-se por *e-learning* o uso da tecnologia em rede para desenhar, seleccionar, gerir e ampliar a aprendizagem.

A educação a distância é distinta do auto-estudo, uma vez que implica uma organização de ensino apetrechada de “métodos, técnicas e recursos, previamente seleccionados, com vista à prossecução dos objectivos de um sistema, de um plano ou de uma acção de formação...”, e que também tem a finalidade de “criar e desenvolver no indivíduo aptidões, conhecimentos, competências, atitudes e um comportamento que visa o desenvolvimento global da sua personalidade, a sua integração na sociedade e o seu empenhamento na transformação progressiva dessa sociedade”, conforme refere o estudo do CIME .

A educação presencial caracteriza-se, de imediato, pela partilha de um mesmo espaço físico onde um indivíduo (professor/formador) transmite conhecimento a um grupo de outros indivíduos (alunos/formandos), estabelecendo-se uma interacção pessoal, num espaço formal e previamente definido, podendo ser a sala de aula. O diálogo proporcionado é feito, predominantemente, na linguagem oral, fluida e há sempre um tempo de escuta: os diferentes interlocutores interagem, escutando-se, mas perdendo parte da informação que não é retida. A interacção é, sempre, feita no momento, com comentários, perguntas e dúvidas, estabelecendo-se relações baseadas nas emoções provocadas pela entoação de voz, pelo olhar, pelos gestos, tornando-se mais "espontânea" e, por vezes, mais estimulante.

Já referimos que a educação a distância pode ser realizada através de uma plataforma de *e-learning*, sendo desencadeada pelas pessoas (professores/formadores e

alunos/formandos) que a procuram independentemente do lugar do mundo onde estejam, encontrando-se numa sala de aula virtual. O diálogo proporcionado é feito na linguagem escrita o que implica outro grau de atenção, exigindo mais tempo. Escutar, aqui, é ler. Ler os textos e as mensagens de todos os envolvidos no processo. Tudo o que se escreve permanece para poder ser lido e relido, pensado, reflectido, reestruturando o pensamento sobre os mais variados assuntos, formulando novas reflexões. A interacção pode ser estabelecida no momento ou diferida, fazendo com que a análise seja um produto efectivamente construído. A partilha do conhecimento em grupo enriquece as interacções entre os estudantes, fomentando-as. Cada indivíduo é levado a construir o seu conhecimento, constituindo-se o professor como um orientador e mediador.

Relativamente à EaD, nesta fase digital, podemos distinguir algumas modalidades: o *e-learning* em total ambiente virtual; o *b-learning* como modalidade de ensino/educação misto que combina as sessões presenciais com as sessões *online* síncronas e/ou assíncronas e o *m-learning* como modalidade de ensino/educação interactiva a distância. Este último constitui-se como uma modalidade de educação a distância cujas práticas estão centradas na selecção, organização e disponibilização de recursos didácticos hipermediáticos, aproveitando o potencial de interactividade das TIC. Moran (2003) define educação *online* como “o conjunto de acções de ensino/aprendizagem desenvolvidas por meio de meios telemáticos, como a Internet, a videoconferência e a teleconferência”. É frequente incluir todas estas modalidades na designação *online*.

Harasim (2000) considera que a educação *online* assenta em três princípios: princípio da colaboração, princípio do acesso e princípio da construção sobre o conhecimento. Podemos, então, afirmar que a modalidade *online* permite a interacção do conhecimento e, embora seja um acto individual, poderá privilegiar modelos que se centram no trabalho colaborativo, tornando-se o aluno/formando um sujeito activo, quer na pesquisa, quer na partilha de conteúdos, quer na construção do seu próprio conhecimento.

Situados nesta realidade, emerge uma multiplicidade de questões, surgindo algumas em total novidade. Destacamos aquelas que se dirigem a perfis para quem estuda e para quem ensina em ambientes virtuais. Neste estudo, demos particular atenção ‘a quem estuda’ objecto de uma investigação que contextualiza o título da nossa comunicação – “Estudante online: que competências?” e a cujo processo se impõe uma referência.

Reflectiremos, num primeiro ponto, acerca do conceito de competência visando operacionalizá-lo para, num segundo ponto, identificarmos um conjunto de competências básicas do estudante *online*. Dedicaremos o ponto três a uma análise crítica das competências identificadas e, finalmente, apresentaremos uma curta reflexão sobre alguns enunciados que confrontam “competências do estudante na modalidade de aprendizagem online” com as “competências do professor na modalidade de ensino online”.

Aspectos operacionais

No contexto já referido, tendo como objectivo central a integração dos alunos num ambiente de ensino-aprendizagem virtual, foi orientada uma investigação com a finalidade de conhecer e desenvolver competências de um estudante que pretende aprender dentro da modalidade *online*. Foi antecedida por um estudo sobre o significado de “educação a distância” e suas diferentes modalidades. Esta investigação organizou-se na aplicação da metodologia do trabalho em grupo, cuja constituição foi da responsabilidade do professor, com escolha aleatória dos diferentes membros. Cada grupo teve como primeira tarefa a designação de um(a) coordenador(a). Seguiu-se a pesquisa orientada pela questão “Que competências deve ter o estudante *online*? Uma terceira tarefa correspondeu à elaboração de um documento, com os resultados dessa pesquisa. Cada grupo disponibilizou o seu documento para a turma, provocando um conjunto de comentários significativos.

A Internet foi considerada como a principal ferramenta, permitindo o recurso aos motores de busca típicos: *Google* (www.google.pt; www.google.fr), *Yahoo* (<http://www.yahoo.com>) e *Altavista* (<http://pt.altavista.com/>). Utilizaram-se, como referentes, os conceitos de *estudante online*, *perfil do estudante online*, *competências*, *competências do estudante do mestrado em supervisão pedagógica* e *skills*. Progressivamente, os estudantes partilharam, através de um Fórum, os endereços relevantes reunidos nas pesquisas individuais, promovendo-se assim a construção de uma visão comum do tema em desenvolvimento.

O *site* da Universidade Aberta foi aquele que ofereceu melhor resposta, possibilitando a pesquisa em *links* directamente relacionados com o Curso de Mestrado em Supervisão Pedagógica.

1. Operacionalização do conceito de competência.

A identificação de competências impõe que se passe pela clarificação do conceito de ‘competência’, assumindo-o como o alicerce sobre o qual se contrói um ou mais perfis de ‘estudante online’.

Perrenoud (1985) define competência como “um saber em uso”. Por sua vez, Roldão (2003, p. 20), considera que “Existe competência (ou competências) quando, perante uma situação, se é capaz de mobilizar adequadamente diversos conhecimentos prévios, seleccioná-los e integrá-los adequadamente perante aquela situação. (...) “A competência não exclui, mas exige a apropriação sólida e ampla de conteúdos, organizados numa síntese integradora, apropriada pelo sujeito, de modo a permitir-lhe «convocar» esse conhecimento face às diferentes situações e contextos. A competência implica a capacidade de ajustar os saberes a cada situação – por isso eles têm de estar consolidados, integrados e [ser] portadores de mobilidade” (Roldão, 2003, p.24). Para Tanguy e Ropé (1997) competência será um “conjunto de conhecimentos, qualidades, capacidades e aptidões que habilitam para a discussão, a consulta, a decisão de tudo o que concerne a um ofício, supondo conhecimentos teóricos fundamentados, acompanhados das qualidades e da capacidade que permitem executar as decisões sugeridas”.

Gaspar (2003, pág. 67), reportando-se ao ensino a distância, refere que “O ensino a distância, em regime *online*, centra-se essencialmente no aluno como pessoa e pode implementar metodologias que valorizam aquilo que Matias Alves (1998) designa de “competências mais mobilizadoras”: a capacidade de iniciativa, a cooperação, o trabalho em equipa, a comunicação e o saber aprender. Associa o que Steedman (1998) identifica como quatro domínios de competências a desenvolver em qualquer modalidade de ensino, dentro do sistema de educação formal: resolução de problemas, capacidades de comunicação, conhecimento e compreensão dos mecanismos sociais e capacidade de auto-avaliação e de auto-responsabilização pelo próprio desenvolvimento”.

Entendemos por competência, a capacidade de mobilizar os conhecimentos adquiridos ajustando-os a contextos.

Depois desta incursão, estávamos prontos para nos debruçarmos sobre as competências que qualquer candidato a estudante *online* precisa de possuir quando embarca nessa aventura.

Sim, uma grande aventura, porque a Educação a Distância ao ser mediada pela tecnologia (meio essencial que possibilita a comunicação entre professor e estudantes, separados geográfica e temporalmente numa abordagem de um-para-um, um-para-muitos, muitos-para-muitos), estabelece papéis distintos para o professor e para o estudante. O primeiro orienta e guia, o segundo mostra-se activo, autónomo e responsável pela gestão do seu processo de aprendizagem, constituindo-se numa caminhada conjunta rumo à aprendizagem.

2. Competências essenciais à aprendizagem a distância, em sala virtual.

Se há competências comuns a todos os estudantes seja qual for a modalidade de ensino em que se enquadre, ao estudante online exige-se-lhe o que Alves, já referido, “designa de “competências mais mobilizadoras”: a capacidade de iniciativa, a cooperação, o trabalho em equipa, a comunicação e o saber aprender”.

As TIC têm evidenciado, na Educação a Distância, o que deveria ser o cerne de qualquer processo de educação: a interacção e a interlocução entre todos os que estão envolvidos no processo ensino-aprendizagem.

Esta nova tendência no campo da Educação, em que o aluno se projecta, permite a discussão de assuntos de maneira (in)formal, aumentando o interesse por inúmeras questões, levando à pesquisa, à transmissão da informação, ao pensamento em conjunto (e não de conjunto), à partilha de conhecimento, à reflexão. Todo este intercâmbio desenrola-se a grande velocidade que, bem utilizado, promoverá a autonomia e proporcionará o desenvolvimento pessoal e profissional.

Expor pensamentos e ideias e receber comentários sobre eles promove a construção do conhecimento num ambiente de aprendizagem colaborativa, possível através de uma sala virtual o que implica contextos (ou condições) tecnológicas adequadas.

Ultrapassada a questão dos recursos tecnológicos essenciais à modalidade de educação online, dos quais destacamos um computador com Internet, e-mail e permissão para downloads, bem como o acesso a periféricos como uma impressora e um *scan*, e ainda a dispositivos de armazenamento como as *pen* podemos definir como primeiro conjunto de Competências Tecnológicas: em que é necessário saber utilizar um browser, pesquisar na Internet através dos motores de busca, utilizar o correio electrónico, utilizar um processador de texto e demais software, e saber criar ficheiros de segurança informática.

O papel de qualquer estudante é aprender, para tal é necessário motivação e capacidade para analisar informação relacionada com as matérias em estudo. No caso da EaD *online*, o processo de ensino-aprendizagem torna-se mais complexo, assumindo um perfil de exigência característico, marcado pelo isolamento que o estudante experimenta face ao ecrã do computador, faltando o contacto face a face, com colegas e professores, característico da educação presencial. É neste contexto que identificamos um segundo conjunto de competências, que denominamos Competências Pessoais. Aqui destacamos a auto-motivação, a autoconfiança, o espírito de iniciativa, o desejo de aprender, o sentido de organização, o elevado sentido de responsabilidade, capacidade de pesquisa, selecção da informação, análise, reflexão e espírito crítico, em que a auto-disciplina marca o nível de autonomia no estudo.

Relacionadas com estas competências pessoais que não são exclusivas do estudante *online* mas que são essenciais nesta modalidade de ensino, identificamos o terceiro conjunto de competências, as Competências Comunicacionais, em que a linguagem escrita é o tipo de comunicação por excelência, exigindo-se que seja uma escrita correcta, clara e sintética; que reflita uma participação activa, construtiva, dialogante e empática, revelando poder de argumentação e negociação.

Assim sendo, o estudante *online* está sempre em relação, uma relação virtual, pelo que necessita de desenvolver um quarto conjunto de competências, as Competências Sociais/Relacionais. Estas incidem ao nível da iniciativa, da participação cordial, da entreajuda, do debate e da colaboração em grupo, ultrapassando as próprias limitações, em que o esforço de adaptação e interacção entre o próprio estudante, os colegas (o grupo) e o(s) professor(es) marcam a dinâmica da aprendizagem. Pressupõem que cada um identifique o seu ritmo e o seu estilo de aprendizagem (conta-se com uma reflexão sobre si próprio), e respeite o ritmo e estilo dos colegas/grupo. Promove-se, assim, a reflexão sobre as experiências e vivências, torna-se o que nos parece fulcral para o sucesso dos trabalhos/actividades a desenvolver e consequentemente para o sucesso da aprendizagem através da construção do conhecimento.

Na modalidade de educação *online*, com a aplicação de modelos de aprendizagem colaborativa, de acordo com o que já foi referido, evidencia-se: (i) a necessidade de clarificar o pensamento, através de estudo, pesquisa e reflexão; (ii) a importância em expressar o pensamento com rapidez, em articulação com o pensamento dos outros participantes; (iii) a coordenação e integração da colaboração em fóruns colectivos; (iv) o esforço pela síntese; (v) a produção de conhecimento validado por todos e (vi) o

imperativo em revelar que o conhecimento foi apropriado e se reflecte em competências desenvolvidas. Perante estes enunciados, parece ainda emergir um quinto conjunto de competências, são as Competências de Planificação. Destas, destacamos a capacidade de gestão do tempo, numa distribuição pelo tempo necessário ao estudo individual e do tempo necessário à partilha do conhecimento, a capacidade de avaliação das expectativas e de previsão do tempo necessário para realizar as actividades, a capacidade de gestão da flexibilidade e definição de prioridades para cumprir os prazos, de modo a garantir o cumprimento de todas as tarefas em tempo útil.

Em síntese, podemos estruturar estas competências básicas do estudante *online* segundo os quatro saberes que identificamos com os quatro pilares da Educação apontados “Relatório para a UNESCO da Comissão Internacional sobre Educação para o século XXI”: O Saber-Conhecer, em que o estudante *online* revela conhecimentos de si próprio, das suas capacidades e limitações, e conhecimentos técnicos e científicos ao nível da utilização das tecnologias e dos conteúdos temáticos. O Saber-Fazer, em que o estudante *online* revela conhecimentos de planificação e exploração de recursos, colocando-os ao seu serviço. O Saber-Conviver, em que o estudante *online* revela capacidade para estabelecer relações de partilha e interacção dialogantes. E o Saber-Ser, em que o estudante *online* revela conhecimento de si ao nível do psico-afectivo, dos sentimentos, da motivação e da auto-estima.

No quadro que a seguir se apresenta, tentámos explicitar a relação entre as competências que estruturam o perfil do estudante *online* e os “pilares da educação”, definidos no “Relatório para a UNESCO da Comissão Internacional sobre Educação para o século XXI”.

Os quatro pilares da educação	Competências do estudante <i>online</i>
Aprender a conhecer	Capacidade em utilizar as novas tecnologias (computador; pesquisa na internet; correio electrónico). Capacidade de aprender a aprender (exercitar a memória, a atenção e o pensamento).
Aprender a fazer	Capacidade em pesquisar e seleccionar informação. Capacidade de planificar. Capacidade de explorar os recursos disponíveis.
Aprender a viver juntos/aprender a conviver com os outros	Capacidade para estabelecer relações de partilha e interacção dialogantes; Compreensão do outro; Percepção das interdependências em projectos comuns; Capacidade de gerir conflitos - no respeito pelos valores do pluralismo, da compreensão mútua e do bem-estar comum.
Aprender a ser	Conhecimento de si ao nível do psico-afectivo, dos sentimentos, da motivação e da auto-estima; Capacidade de autonomia, de discernimento e de responsabilidade pessoal.

Poderemos avançar que esta relação permite admitir que estamos perante um novo paradigma educacional, tendência que se tem afirmado ao longo da última década. Entendemos que este paradigma assenta em dois princípios determinantes: (i) a educação focaliza-se na aprendizagem e (ii) a aprendizagem pode realizar-se com a flexibilidade do tempo e a utilização de espaços virtuais. Estes princípios, em nosso entender, têm o seu fundamento na realização do indivíduo, pela conjugação da perspectiva pessoal com a social que sobreleva a relação directa da aquisição do conhecimento com o desenvolvimento de competências e a aprendizagem construída em partilha o que pressupõe a colaboração.

3. Análise crítica de competências para um estudante online

O estudante virtual tem obrigatoriamente que ajustar a sua postura a este novo contexto de aprendizagem virtual, desenvolvendo características de modo a não sentir-se um *outsider*. A comunicação e a interacção são de modo distinto relativamente à educação presencial (talvez a única tipologia conhecida pela grande maioria daqueles que chegam a esta modalidade de ensinar e aprender). O estudante *online* tem que perceber as interacções dos colegas, tal como as suas de uma forma completamente nova. A assincronia da comunicação condiciona a percepção da própria aprendizagem; alguns estudantes começam por se transformarem em espectadores por alguns receios ou inibições que os invadem e, assim, criam uma primeira dificuldade: acompanhar o ritmo do grupo. A interacção ao ser desencadeada pelos estudantes, em tempo diferente, não obedece a um ritmo específico e ordenado, o que pode trazer dificuldade acrescida por um lado, mas também a possibilidade de maior reflexão, pois as contribuições de cada estudante, sendo desfasadas no tempo, permitem uma reflexão mais consistente em relação à que o ambiente presencial permite.

Sublinhamos que a aprendizagem *online* é uma aprendizagem auto-dirigida e colaborativa, assente nos paradigmas construtivista e socioconstrutivista, em que o estudante é autónomo e activo, pois uma das finalidades é que se torne membro de uma comunidade virtual de aprendizagem, colocando as suas capacidades individuais ao serviço do grupo.

A educação presencial pode, muitas vezes, ser inibidora de uma interacção livre, franca, aberta, autêntica entre alunos/alunos e alunos/professores. Nem sempre é fácil intervir em presença, logo, o acesso directo às reacções e expressões do Outro pode funcionar como elemento dissuasor e inibidor da participação para intervenientes mais

introvertidos, ao passo que a aula virtual reunirá para muitos as condições ideais para uma interacção mais fluida, despreocupada e espontânea, estando ausente “o perigo” do falar em público. Assim, aquilo que para muitos críticos deste tipo de educação é uma desvantagem (a principal, mesmo) acaba por ser uma mais-valia na óptica do utilizador.

O estudante *online*, em modelos de aprendizagem colaborativa, deverá estar altamente motivado e ser responsável pela sua aprendizagem, negociando com o(s) professor(es) os objectivos de aprendizagem através de um “contrato de aprendizagem” para cada unidade curricular. Consciente das suas necessidades, fraquezas e competências, deverá encontrar no(s) professor(es) os facilitadores e os orientadores dessa mesma aprendizagem, na esperança de receberem um *feedback* regular com críticas construtivas, comentários e sugestões. Desta forma, o estudante sentir-se-á encorajado pelo(s) professor(es) que reforça(m), nele, atitudes e propósitos positivos.

A busca da construção do conhecimento, através da partilha, do respeito pelos ritmos pessoais e pela entreajuda, ajudam ao crescimento pessoal e colectivo. Impulsionados, uns pelos outros, parece ser um factor de contexto que facilita o crescimento intelectual individual e colectivo. Segundo Afonso (2001) participar na construção do conhecimento, aceitando o estilo de aprendizagem de cada um, fará crescer um sentimento de pertença e de responsabilidade característico do espírito de equipa, indispensável para a construção de uma comunidade de aprendizagem, que constitui o ambiente intelectual, social, cultural e psicológico, que facilita e sustenta a aprendizagem enquanto promove a interacção, a colaboração e a construção de presença entre os membros.

Considerações finais

A educação a distância representou sempre um desafio ao professor no que diz respeito às abordagens pedagógicas, concretizadas no processo de ensino-aprendizagem. Neste sentido, foi-se desenvolvendo uma pedagogia própria do ensino a distância que, mais recentemente, tem vindo a usufruir das potencialidades disponíveis com o uso do computador aliado à generalização da internet. As novas tecnologias de aprendizagem, como os ambientes de aprendizagem virtuais, proporcionam a arquitectura necessária ao suporte de grupos e comunidades no ciberespaço. Deste modo, professores e estudantes, vivendo em diversos espaços geográficos e provindo de diferentes culturas, podem desenvolver um forte sentido de pertença a uma comunidade de aprendizagem.

Neste contexto, os desafios do *e-learning*, sobretudo na aplicação de modelos pedagógicos que assentam na aprendizagem colaborativa, colocam os professores perante a (re)avaliação das suas práticas e a reconstrução do significado de ensino e aprendizagem. Os professores são desafiados a perspectivar os estudantes como agentes da sua própria aprendizagem, pressupondo o desenvolvimento de um ensino centrado no estudante. Cabe ao professor um papel de mediador no processo de aprendizagem onde a orientação e o apoio aos estudantes são essenciais, tal como a promoção da auto-gestão, quer do tempo a disponibilizar quer do estudo e da reflexão a realizar. Parece-nos que, neste contexto, o professor tem um papel fundamental na consecução dos objectivos para a aprendizagem. É suposto que surjam muitas dúvidas, algumas, serão, talvez, muito inquietantes... Estas dúvidas têm resultado num conjunto de interrogações que vão construindo um “inquérito” a cuja resposta se espera construir uma matriz que permita o desenho do(s) perfil(is) do professor *online*.

O que significa, então, ensinar neste tempo de *e-learning*? Quais as competências do professor *online*? É possível delinear um conjunto de competências para o professor *online*, tal como se enunciou para o estudante *online*? Quando se fala em estudante e professor *online* não se introduz uma ideia demasiado generalizada, tendo em conta que, para alguns teóricos, vários modelos de aprendizagem poderão ser considerados dentro da modalidade *online*? A aprendizagem para os estudantes que frequentam estudos oferecidos em modalidade *online* não poderá estar fragilizada quando os professores que os acompanham não desenvolveram competências adequadas a esta modalidade de ensino-aprendizagem?

Estas são algumas das questões importantes que entendemos merecerem reflexão quando se investiga o processo de ensino e aprendizagem num novo contexto – o contexto virtual. É do nosso interesse desencadear a investigação com esta componente, em paralelo com a continuidade da investigação, a propósito das “competências do estudante online”.

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¹ A base deste estudo foi objecto de trabalho de uma turma do Mestrado em Supervisão Pedagógica, constituída por: Alice Cruz; Ana Paulo; Ana Avillez; Andreia Moreira; Berta Bemhaja; Conceição Alençõo; Fátima Santos; Felícia Figueiredo; Fernanda Jerónimo; Filomena Batalha; Filomena Lopes; Firmo Ferreira; Glória Santos; Ilda Bicacro; Isabel Silva; Isabel Ruivo; José Raimundo; Julieta Cordas; Manuela Pereira; Manuela Dâmaso; Margarida Silva; Natália Viseu; Olga Sousa; Paulo Dias; Preciosa Costa; Rita Baptista; Serafina Cabral.

Portefólios Digitais na Universidade do Porto: modelo de implementação

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Resumo – A Universidade do Porto implementou um projecto para a utilização de portefólios digitais entre a sua comunidade académica. A ideia do projecto centra-se em utilizar o e-portefólio como um instrumento de avaliação das aprendizagens dos estudantes, assim como demonstrar a importância deste trabalho reflexivo na sua vida académica e profissional. O desenvolvimento de um portefólio digital permite que os estudantes construam/organizem uma colecção estruturada de conhecimentos, habilidades e competências, sendo actualmente um recurso facilitador do seu processo de transição entre a vida académica e profissional.

Palavras-chave – e-portefólio, avaliação, competências

Abstract- The University of Porto implemented a project to use e-portfolios among its academic community. The main idea of this project was to use the e-portfolio as an assessment tool of the student learning journey and also to show the importance of this reflective work in their academic and professional life. The development of a digital portfolio enabled the students to construct a structured collection of their knowledge, skills and competencies, nowadays the e-portfolio is a resource that makes the process of transition between the academic and professional life easier

Index Terms — e-portfolio, assessment, competencies

I. Introdução

A Universidade do Porto (U.PORTO) através da sua unidade de Novas Tecnologias na Educação, procurando dar resposta a solicitações de docentes ou institucionais, coordena projectos inovadores relacionados com o e-learning.

A aposta forte em áreas de inovação procura promover a crescente flexibilidade da formação, respondendo de forma mais eficaz ao crescimento da mobilidade profissional dos estudantes da U.PORTO.

Com esta mudança de atitude pretende-se criar condições para aumentar a empregabilidade e diversificar as opções profissionais dos estudantes, apostando também na aprendizagem ao longo da vida (*lifelong learning*). Ser inovador é melhorar a qualidade da formação, implementando estratégias que acrescentem valor ao processo de ensino-aprendizagem, procurando sempre a melhoria da qualidade pedagógica.

II. Descrição do projecto

Neste contexto, foi lançado um projecto que visa a utilização de portefólios digitais junto da comunidade académica da U.PORTO e que tem por missão incentivar o uso desta ferramenta de ensino-aprendizagem na promoção da autonomia, da interactividade e da

integração de vários elementos, numa perspectiva de inter e multidisciplinaridade.

Os objectivos que dão corpo a este projecto enumeram-se de seguida:

- Identificar, validar e implementar novas metodologias e abordagens de ensino e aprendizagem;
- Aumentar a consciência dos professores relativamente às suas técnicas de ensino habituais, confrontando-os com diferentes abordagens que estimulam a reflexão;
- Aumentar as competências dos professores no uso das TIC (Tecnologias de Informação e Comunicação) e portefólios digitais em contexto de ensino e aprendizagem;
- Proporcionar aos professores a identificação das vantagens específicas dos portefólios digitais;
- Partilhar experiências de utilização de portefólios digitais;
- Encorajar o debate em torno do uso dos portefólios digitais em diferentes contextos educativos;
- Estimular os estudantes a aprender por si e cooperativamente fora do contexto do ensino curricular, preparando-os para a vida profissional e para a aprendizagem ao longo da vida;
- Perceber/conhecer/percepcionar o desenvolvimento do estudante (cognitivo, metacognitivo e afectivo) através da colecção organizada e devidamente planeada de trabalhos produzidos;
- Permitir aos estudantes a aquisição de maior maturidade e profissionalismo, capacidades de gestão e liderança e de reflexão sobre a prática.

Os portefólios permitem repensar estratégias de ensino-aprendizagem e de avaliação, colocando a tónica na construção e desenvolvimento de um trabalho de matriz reflexiva.

III Envolvimento da comunidade académica

Os docentes que aderiram ao desafio de experimentar o uso de portefólios digitais nas suas aulas, pensaram a sua utilização enquanto ferramenta pedagógica, que permite a utilização de uma metodologia diferenciada e diversificada de monitorização e avaliação do processo de ensino e aprendizagem.

Este é um projecto em curso que envolve docentes e estudantes de várias unidades orgânicas. Usando este método de trabalho, os estudantes desenvolvem capacidades de aprendizagem reflectida e contextualizada, e têm oportunidade de mostrar aos docentes os resultados de um percurso de aprendizagem, e não apenas o resultado final desse percurso. Privilegia-se uma aprendizagem mais reflexiva, em que os estudantes se habituem a rever crítica, consciente e sistematicamente o seu trabalho, analisando o que foi feito, a sua evolução e o que ainda falta fazer.

Regra geral, os docentes da Universidade do Porto utilizam os portefólios digitais em contexto de unidade curricular, para que os estudantes apresentem os seus trabalhos e relatórios.

As formas de abordagem do portefólio junto das turmas é diversa, no entanto, é um dado adquirido que os estudantes preparam melhor os seus trabalhos e investem mais na qualidade do produto final, quando sabem que este vai ver divulgado e está sujeito a avaliação, quer por parte do docente, quer por parte dos colegas da turma. Cria-se na turma uma espécie de “competição” positiva, que muitas vezes permite ao estudante desenvolver outras competências, nomeadamente artísticas e afectivas, além das que serão avaliadas.

O portefólio foi usado pela maioria dos docentes como uma colecção organizada de evidências de aprendizagens, contextualizadas e organizadas pelos estudantes durante um determinado período de tempo. O portefólio é, no fundo, uma fotografia dos progressos, das aprendizagens, das necessidades e das experiências do estudante. Apresenta-se como o

resultado de processos e produtos que ilustram aspectos destacados pelo currículo, pelo professor e pelo estudante. Além dos trabalhos desenvolvidos, o estudante partilha, muitas vezes, experiências pessoais, destaca a criatividade e afectividade que incute a cada trabalho. Há ainda portefólios que são apenas repositórios de documentos, desvirtuando o conceito de portefólio como uma colecção reflexiva de trabalhos. É junto destes docentes que vamos procurar intervir, no sentido de utilizarem os portefólios de forma mais eficaz e mais participada.

IV Implementação

Os docentes sentem-se bastante confortáveis ao participar num projecto desta natureza, bastante flexível, uma vez que não foram impostas condições, nenhum *software* ou estrutura rígida foi pensada, só foram dadas sugestões de possíveis estruturas de organização, alguns exemplos, bibliografia e apoio personalizado para que pudessem implementar o projecto junto dos seus estudantes.

Pelo facto da maioria dos estudantes não ser tecnicamente qualificada, os professores decidiram recomendar o desenvolvimento de e-portefólios em ferramentas simples e acessíveis, como editores de HTML (FrontPage, Dreamweaver) ou editores de texto (Microsoft Word, Microsoft Publisher).

Este desafio permitiu ainda aos professores repensar as metodologias de ensino e estratégias pedagógicas, bem como aumentar as suas competências na utilização das TIC (Tecnologias de Informação e Comunicação). Isto aconteceu porque ao longo do processo de construção do e-portefólio tiveram sempre um papel activo e importante na orientação e tutoria dos estudantes, e também porque precisavam de ter o "know-how" para compreender e avaliar os trabalhos produzidos.

O método de avaliação (critérios) foi provavelmente um dos temas mais difíceis de explicar aos estudantes. Resultante da discussão professor/estudante(s), na maioria dos casos, a classificação final atribuída ao e-portefólio foi baseada na aplicação das seguintes características: presença de todos os elementos acordados; organização, selecção e sistematização dos conteúdos; capacidade de investigação e síntese e reflexão sobre a aprendizagem (conteúdo, auto-avaliação e hetero-avaliação).

Esta ferramenta pedagógica, pela sua especificidade, apresenta assim um conjunto de características que revelam a sua adequação a uma nova filosofia de formação, que tem em conta e procura respeitar a singularidade de cada um, dos seus contextos e condições de vida, das suas culturas, dos seus saberes e "não saberes" e, sobretudo, a confiança nas suas possibilidades de se superar, podendo para isso contar com o apoio do professor ou de colegas.

Nesta perspectiva, o portefólio caracteriza-se por ser um processo/produto pessoal, autêntico e singular; partilhado (com o professor e/ou com o grupo); reflecte aquilo que o estudante já sabe e também aquilo que ainda não sabe; evidencia as culturas, as linguagens, as vivências e a reflexão do seu autor e está aberto à transformação (enquanto possibilidade de mudança, de inovação e de transformação dos saberes, das pessoas, das situações, das comunidades).

O recurso aos portefólios digitais como ferramenta pedagógica de ensino-aprendizagem pretende criar uma outra ideia de sala de aula: local de aprendizagens que se vão construindo, ao ritmo de cada um, em que se pensa e reflecte cada novo passo a dar/registar e se valorizam experiências e saberes de cada estudante.

V Conclusões

Vive-se no ensino superior uma fase de implementação do Processo de Bolonha e suas reformas, em que os sistemas educativos foram reestruturados e os currículos foram

reorganizadas mostrando a necessidade de harmonizar e estruturar os modelos de formação. Neste contexto, o uso de e-portefólios pode ser uma das respostas possíveis a este desafio.

A utilização desta abordagem não é muito simples e exige planeamento rigoroso, organização e uma análise sistemática do trabalho dos estudantes.

O objectivo é criar uma ideia diferente da sala de aula, tendo em conta determinados pressupostos:

1. A aprendizagem é um processo activo e contínuo;
2. Os estudantes podem aprender ao seu próprio ritmo;
3. Pensar, reflectir e registar percursos de aprendizagem;
4. Valorizar competências e conhecimentos de cada estudante
5. Os alunos não aprendem só com a sua experiência, mas aprendem principalmente quando reflectem sobre a experiência.

No futuro, queremos testar algum *software* de *open-source* que permite facilmente a criação de e-portefólios, organizar workshops para professores e estudantes e colaborar com outras instituições de ensino superior, organizando seminários para partilhar informações, boas práticas e troca de experiências, que resultem em novas propostas de implementação e disseminação dos e-portefólios.

Os voos na Escola

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Como surgiu a idéia do projeto?

Os blogues colaborativos Voo-BPF, <http://voobpf.blogspot.com> e Voo Supersónico <http://www.nonio.uminho.pt/voosupersonico> nasceram de interacções iniciadas a partir da criação, em 2002, do site Netescrit@ (<http://www.nonio.uminho.pt/netescrita>), desenvolvido com o Apoio do Centro de Competência da Universidade do Minho, e que pretende contribuir para o desenvolvimento, entre outras, das competências de leitura e de escrita de alunos do ensino básico.

Posteriormente a este projecto, no ano de 2004, foi iniciado o blogue Netescrita, <http://netescrita.blogspot.com>, que tem o objectivo de divulgar trabalhos escritos e de ilustração de alunos de diversas escolas que assim o desejem. Este lançamento na blogosfera permitiu o estabelecimento de interacções, por via do sistema de comentários, que nasceram e se desenvolveram, principalmente com professores brasileiros, provavelmente devido ao sentimento de proximidade existente, e que deverá ser cada vez mais incrementado, entre comunidades falantes da língua portuguesa.

Desta interacção nasceu, no ano lectivo de 2007/08, a ideia de construir um blogue colaborativo em torno da obra *Seis Tombos e um Pulinho*, do autor brasileiro Cláudio Fragata. Considerámos que esta obra, tendo como centro de desenvolvimento a vida e obra de Alberto Santos-Dumont, faria todo o sentido que escolas brasileiras e francesas se associassem à iniciativa.

Abordado o autor, este manifestou-se totalmente disponível para colaborar em tudo aquilo que lhe fosse possível.

Contactámos então professoras brasileiras que se mostraram desejosas de colaborar. Terá sido por coincidência, acaso do destino, ou qualquer outra razão que, em Setembro de 2007, recebemos uma mensagem de Isabel da Costa, professora de

Língua Portuguesa na Secção Portuguesa do Liceu Internacional de Saint Germain-en-Laye, demonstrando interesse em colaborar no supra-citado projecto Netescrit@.

Estando por essa altura em fase de “germinação” o projecto a desenvolver em torno da obra de Cláudio Fragata, eis que uma outra ideia nos surgiu, a de convidar a professora da escola francesa a, além de participar no já referido projecto, se envolver no trabalho colaborativo a desenvolver, pois se Santos-Dumont vivera em Paris... faria todo o sentido adicionar um terceiro vértice e criar um triângulo.

Os passageiros (alunos) e a tripulação (as professoras) do Brasil, de Portugal e de França iriam voar, comandados pelo autor Cláudio Fragata que, por sua vez, tinha como co-piloto Alberto Santos-Dumont e esse voo, de um homem brasileiro, falante de língua portuguesa, que viveu em França, poderia apenas ser designado como foi: Voo-BPF.

Os motores estavam ligados, o combustível era, e é, inesgotável, a vontade inabalável e as “mãos foram lançadas à obra”, que é o mesmo que dizer “as asas foram dadas à imaginação”.

Em Julho de 2008, uma das professoras brasileiras solicitou à professora portuguesa (uma vez que esta é a autora dos projectos mencionados) autorização para candidatar este projecto ao concurso Educador Inovador da Microsoft Brasil.

A candidatura foi elaborada conjuntamente e o projecto obteve o primeiro lugar na Categoria Colaboração na final nacional decorrida em São Paulo em Agosto de 2008.

Em Setembro desse mesmo ano, na final regional, decorrida na Guatemala, o projecto voltou a arrecadar o primeiro lugar, e voou para Hong Kong, para a final mundial, em Novembro. Aí obteve o 3.º lugar na categoria Innovation and Collaboration.

Este reconhecimento mundial deu, a alunos e professores, a auto-confiança necessária ao prosseguimento de trabalhos de índole colaborativa pelo que, em Setembro de 2008 se deu início ao Voo Supersónico, <http://www.nonio.uminho.pr/voosupersonico>.

Com este projecto damos continuidade à rede de aprendizagem e partilha criada por via do já referido trabalho iniciado em 2002, o site Netescrit@.

Por ele e com ele temos vindo a promover e implementar a leitura, a escrita, a partilha de conhecimentos, a construção de conteúdos, o desenvolvimento de literacia

digital, a infoinclusão, a aproximação de comunidades falantes de Língua Portuguesa, a interacção entre essas comunidades, a integração de autores de literatura infanto-juvenil no dia-a-dia dos alunos das escolas participantes.

Este novo voo, agora em volta das aventuras de uma galinha, a galinha Galatéia, heroína da obra de Cláudio Fragata, *O Voo Supersónico da galinha Galatéia*, tem-nos permitido voar, não apenas rumo à Lua em busca, juntamente com a Galatéia, não de galos da Lua, mas da realização de sonhos.

Construímos uma astronave, ou melhor, uma webnave, na qual partilhamos as nossas aprendizagens, as nossas descobertas, as nossa aventuras.

Quais são os objectivos?

- Criar de uma comunidade de aprendizagem em rede.
- Estabelecer de um intercâmbio cultural entre escolas do Brasil, Portugal e França.
- Desenvolver das competências de leitura e de escrita.
- Ler obras de diversos autores portugueses e brasileiros.
- Produzir trabalhos de escrita, de desenho, de áudio, de vídeo, de fotografia, para publicação no blogue.
- Comunicar, interagir, publicar, registar actividades utilizando uma ferramenta de trabalho colaborativo, no âmbito da web 2.0.
- Desenvolver a literacia digital.
- Promover a infoinclusão.
- Proporcionar momentos de convívio e de trabalho através do MSN e do Skype.
- Conhecer as diferenças de idioma, de situação geográfica de cultura.
- Participar em encontros, através da ferramenta FlashMeeting, da Open University, entre os participantes dos 3 países envolvidos.

Quantas escolas e alunos ele abrange?

O Voo Supersónico, actualmente, conta com a participação de duas escolas em Portugal, uma em França, duas no Brasil estando no entanto sempre em aberto a possibilidade de mais escolas fazerem parte dele.

Por que nos dois projectos foram utilizados livros do escritor brasileiro Cláudio Fragata?

O autor, com quem contactámos para que aderisse ao projecto Netescrit@, mostrou-se muito aberto a toda e qualquer colaboração.

Além disso enviou-nos o seu livro *Seis tombos e um pulinho*, cuja leitura nos agradou de sobremaneira e nos incutiu a vontade de, em torno dele, criar um projecto que envolvesse novamente alunos de escolas portuguesas, brasileiras e francesas (com alunos luso descendentes ou falantes de língua portuguesa).

Por outro lado a disponibilidade do autor em colaborar activamente no trabalho, interagindo com os alunos e os professores envolvidos, quer respondendo a todas as solicitações via email, quer participando nos encontros que promovemos na “weblândia” através da ferramenta FlashMeeting, mostrou-nos que muita da motivação dos alunos reside também nesse facto pelo que faria todo o sentido dar continuidade a um trabalho com outra obra do mesmo autor.

Além disso, tendo o projecto “dado a volta do mundo”, faria sentido rumar a qualquer outro lado, pois, como diz Toquinho “o futuro é uma astronave que queremos pilotar...” além de que, como diz António Gedeão “o sonho comanda a vida, e sempre que o homem sonha, o Mundo pula e avança, como bola colorida, entre as mãos de uma criança”!

E por que não voar até à Lua?

Cláudio Fragata não escreveu sobre uma galinha que voou até à Lua para encontrar o galo da Lua por quem se apaixonara?

Não se comemora neste ano de 2009 o ano internacional da astronomia?

E quantas outras obras, de outros autores portugueses, brasileiros... e não só, alunos e professores trabalharam pela interdisciplinaridade e intertextualidade que se pode, e deve, promover?

Trindade Coelho, João Pedro Mésseder, António Gedeão, Toquinho, Adriana Calcanhoto, George Bizet...

Conclusões

Não tendo ainda concluído o estudo científico que nos permitirá afirmar que este tipo de trabalhos melhora as aprendizagens, podemos afirmar que o entusiasmo foi uma constante no desenvolvimento de todo o processo.

As interacções ocorridas e mensuráveis são as ocorridas nos encontros via FlashMeeting, email e sistema de comentários dos blogues.

Quanto a estas últimas elas encontram-se actualmente e no que diz respeito ao projecto colaborativo em curso, o Voo Supersónico, conta com:

Publicações – 62
Páginas – 6
Categorias – 16
Apresentação – 10
Ciências – 3
Concurso – 1
Culinária – 4
Escolas – 2
Família – 3
Galateia – 2
História – 1
Língua Portuguesa – 8
Literatura – 8
Matemática – 1
Novidades – 6
Perguntas e respostas – 1
Teatro – 1
Viagem – 1
Visitas - 2
Comentários – 333

Apraz-nos ainda registar que os resultados obtidos pela turma de sexto ano de escolaridade que colaborou nos dois projectos colaborativos, na Prova de Aferição de Língua Portuguesa realizada a nível nacional no presente ano lectivo, 2008/09, foram os melhores a nível da escola E. B. 2, 3 Dr. Carlos Pinto Ferreira. Este resultado,

aliado ao sucesso obtido pela turma, leva-nos a concluir que o trabalho colaborativo e interdisciplinar é um dos factores determinantes do sucesso educativo.

Melhor do que qualquer resposta que possa ser dar, transcrevem-se opiniões dos alunos:

Compreendemos e conhecemos as diferenças e as semelhanças entre o português de Portugal e o português do Brasil.

Conhecemos autores portugueses e brasileiros.

Conhecemos colegas e professores de outras escolas, de outros países e de outros continentes.

Aprendemos a usar ferramentas como o Word, o Picture Manager, o Paint, o Power Point , o Photo-Story, o Messenger, o correio electrónico...

Conhecemos outras invenções de Santos-Dumont, para além dos aviões.

Aprendemos a ser mais curiosos e a partilhar o que aprendemos com os outros.

Aprendemos a não desistir e a lutar pelos nossos sonhos.

Conhecemos os locais onde Santos-Dumont levantou, caiu, levantou, voltou a cair e a levantar, em Paris.

Aprendemos a ser mais responsáveis porque os nossos trabalhos podem ser vistos em qualquer parte do mundo.

No final do ano fizemos uma videoconferência, a que chamámos VIDEOVOO, onde nos encontrámos todos: os professores, os alunos, o autor, o editor, um senhor do CRIE, a vereadora da cultura da Câmara Municipal de Vila do Conde, outras pessoas de outras escolas, e até o Senhor Ministro da Cultura falou connosco..., foi no dia 30 de Maio de 2008.

Depois do primeiro encontro na Weblândia, tivemos outros com alunos das escolas participantes, com um senhor americano chamado Les Foltos, e que é consultor da Microsoft Corporation.

Tudo o que fizemos, está publicado no blog.

Foi e continua a ser uma experiência emocionante e é divertido voar neste voo.

Aprendemos muitas coisas novas.

E aprendemos tantas coisas que algumas nem somos capazes de explicar por palavras...

Estamos orgulhosos por o nosso trabalho ter ganho um concurso e ser conhecido por muitas pessoas!

Agora, em Fevereiro, encontrámo-nos todos, outra vez, na weblândia (como diz a nossa professora), para apresentar o nosso trabalho do Voo-BPF e levantar um bocadinho do véu sobre o próximo voo, o Voo Supersónico. Assistiram, aqui na escola, os nossos pais, professores da escola, representantes da Câmara Municipal de Vila do Conde, o Senhor Ministro da Cultura e estiveram também connosco os colegas do Brasil e de França, os que já voaram connosco e vão continuar a voar!

Dificultades para la integración de las TIC en las aulas escolares

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1. Planteamiento y objetivos del proyecto de investigación

En los momentos actuales, en que ya se llevan desarrollando desde hace algunos años proyectos de innovación en los centros en base al uso e integración de las TIC en la práctica educativa, resulta necesario evaluar con un carácter sistemático las experiencias que se vienen desarrollando, identificando los puntos fuertes y débiles de dichos procesos y sugiriendo pautas de mejora con el fin de optimizar el esfuerzo realizado y contribuir al logro de la eficiencia-eficacia en los centros, indicador indiscutible de calidad educativa. En este contexto, pusimos en marcha un proyecto de investigación¹, financiado por la Junta de Castilla y León (2006-09), con los siguientes objetivos:

- 1) Identificar los cambios e innovaciones generados por el uso pedagógico de las TIC en centros educativos de Infantil/Primaria de las provincias de Ávila, Palencia, Salamanca y Zamora.
- 2) Seleccionar un centro, caracterizado como innovador, en cada una de las provincias citadas. En estos centros se describirán los cambios habidos en su organización, prácticas pedagógicas y resultados de aprendizaje que han determinado la caracterización del centro como innovador.
- 3) Realizar el seguimiento del proceso innovador durante un curso escolar. A lo largo de dicho curso se realizará un seguimiento evaluativo del proceso innovador al final del cual se elaborará un informe para cada centro que recoja los puntos fuertes y débiles que presenta la actividad de innovación en base al uso de las TIC y las sugerencias de mejora. Esta evaluación se realizará con referencias internas (los profesores de los centros) y externas (miembros del equipo de investigación).
- 4) Valorar la metodología didáctica con uso de las TIC para favorecer la motivación, interacción... como facilitadores de aprendizaje.
- 5) Valorar la calidad del proceso innovador basado en TIC en los centros seleccionados, con referencia a la consecución de los objetivos escolares (conocimientos, habilidades y actitudes).

¹ Proyecto de Investigación: “Evaluación de procesos de innovación escolar basados en el uso de las TIC desarrollados en la Comunidad de Castilla y León”. Director del Proyecto: Francisco Javier Tejedor Tejedor. Junta de Castilla y León. REFERENCIA: SA059A06 [2006 – 2009].

El estudio de la integración de las TIC en el marco de los centros educativos, dando prioridad a las variables organizativas y metodológicas, es una línea de trabajo asumida y consolidada, tanto a nivel nacional como internacional, ya que la innovación escolar no se puede estudiar de forma descontextualizada y el uso de las tecnologías se entiende como un elemento más del desarrollo curricular (Condie y otros, 2002; Anderson, 2002; Barquin, 2004; Scrimshaw, 2004; Comisión Europea, 2004; Marchesi y otros, 2005; Area, 2005; Tejedor y García-Valcárcel, 2006; Fernández y Álvarez, 2009; Tilve, Gewerc y Álvarez, 2009).

2. Concreción metodológica del proyecto

Consideramos que la consecución de los objetivos propuestos puede verse favorecida con la adopción de una *metodología de corte cualitativa*, que posteriormente se completa con análisis cuantitativos al incorporar diversidad de estrategias de obtención de información. Concretamente adoptaremos la metodología del “estudio de casos múltiple”, fijándose en cuatro los centros innovadores sobre los que realizar la experiencia evaluativa del proceso innovador seguido. La naturaleza básicamente cualitativa de la metodología propuesta nos permitirá profundizar en el conocimiento de las dimensiones implícitas en los procesos innovadores, tratando de complementar la perspectiva de los directivos, profesores y alumnos del centro con la de los padres de los alumnos y la de los investigadores externos.

La *selección de la muestra* para el estudio de los cuatro casos se realizó a través de un proceso de tres fases: Revisión de todos los centros de las provincias castellano-leonesas seleccionadas para detectar su implicación en procesos de innovación; contacto con los centros innovadores que cumplieran las condiciones establecidas; selección definitiva de los cuatro centros en que se realizará la investigación.

Las variables a estudio se definen agrupándolas en cuatro dimensiones básicas y una quinta de carácter transversal:

- 1) *Organización del centro*: Modelo de gestión del centro; experiencias de innovación: origen y fases; apoyo de la administración educativa al proceso innovador; disponibilidad de hardware (ordenadores, conexiones,...); tipo de software utilizado; organización de espacios y tiempos de aprendizaje; tiempo dedicado a la planificación y desarrollo de la estrategia innovadora; relaciones con la comunidad educativa.
- 2) *Profesorado*: Formación de los docentes en TIC.; concepciones pedagógicas de los profesores; participación en proyectos colaborativos.
- 3) *Enseñanza (metodología didáctica)*: Material didáctico elaborado y utilizado; estrategias de enseñanza; facilitadores de aprendizaje (motivación, interacción).
- 4) *Aprendizaje de los alumnos*: Características de los estudiantes; productos educativos (conocimientos, habilidades y actitudes)

- 5) *Dificultades* para la puesta en marcha de los procesos de incorporación de las TIC en la acción educativa de los centros escolares.

Los instrumentos a utilizar en la medida de las variables o indicadores incorporados a la investigación son de naturaleza básicamente cualitativa (entrevistas, cuestionarios, guías de observación, diarios, reuniones grupales, informes,...). Para la obtención de datos relacionados con los productos educativos de aprendizaje se utilizarán como instrumentos básicos los informes académicos de evaluación de los profesores, junto a las fichas de valoración de logros del profesor con respecto a cada uno de los alumnos, elaboradas expresamente en el marco de esta investigación.

El análisis de datos responderá a las exigencias de valoración de los considerandos propuestos, ajustándonos en todo momento a la naturaleza de las variables medidas y de los instrumentos utilizados. El análisis tendrá carácter cualitativo (cambios en la organización del centro, concepciones del profesorado, revisión de metodologías didácticas...) y cuantitativo (análisis de facilitadores de aprendizaje y de productos educativos). Señalamos a continuación los instrumentos utilizados y la información recogida:

- Entrevista al equipo directivo de los centros participantes en nuestro proyecto: 4 registros.
- Primera y segunda entrevista realizada a los grupos de profesores: 8 entrevistas, con un total de 50 profesores participantes.
- Guía de actividades realizadas en las aulas por los profesores implicados en los procesos de innovación con TIC: 299 registros semanales
- Ficha personalizadas de informes de los profesores implicados respecto a cada uno de sus alumnos: 276 registros
- Calificaciones personalizadas de los alumnos implicados : 276 registros
- Opiniones de los padres cuyos hijos participan en procesos de innovación basados en TIC: 241 registros
- Opiniones de los alumnos implicados en procesos de innovación basados en TIC: 230 registros
- Opiniones valorativas de los profesores implicados sobre las prácticas de innovación llevadas a cabo: 24 registros.

3. Resultados

En este artículo únicamente comentaremos los resultados referidos a la variable transversal “dificultades para la integración de las TIC”, centrándonos en el análisis y valoración de las principales dificultades encontradas en el proceso de innovación llevado a cabo en los centros para integrar las TIC en el desarrollo curricular y algunas posibles orientaciones para afrontar las debilidades y dificultades localizadas.

- a) Centro urbano “Gran Capitán” (Salamanca)

Desde el punto de vista del equipo directivo, la puesta en marcha de proyectos de innovación no va acompañada de presupuestos económicos suficientes para que el centro pueda desarrollarlos en condiciones adecuadas.

Se observa poco interés del profesorado por la formación ofrecida desde la Administración educativa. Aunque hay muchos cursos de formación en el CFIE (Centro de Formación e Innovación Educativa), dicha formación no es suficiente y los docentes reclaman programas de formación en el propio centro para poder incorporar y motivar a un mayor número de profesores. Se lamentan de que la formación que necesitan es realizada habitualmente a costa de su tiempo libre. Consideran, igualmente, que hay poca disponibilidad y tiempo para ir actualizando programas, supervisando, etc.

La centralización de recursos es otra dificultad. Se pierde mucho tiempo en la búsqueda de éstos y en el traslado de los alumnos al aula de informática, así como en la división de grupos para poder ir a dicha aula. Manifiestan y critican que se lleva al alumno al aula de informática y no, como reclaman, el ordenador al aula de una clase “normal”.

Otra dificultad destacable ha sido el aprendizaje de las herramientas informáticas por parte de los alumnos, sobre todo entre aquellos que no disponen de ordenador e Internet en sus casas. Se observa, pues, que la desigualdad social en la disposición de recursos tecnológicos a nivel familiar, puede incidir en el rendimiento académico inicialmente.

b) Centro de Educación Infantil “Corazón de María” (Palencia)

La dificultad principal que se apunta en este centro, según indica la coordinadora TIC (profesora encargada de liderar los proyectos con tecnologías digitales), es la adaptación de las tecnologías a tu aula en función de tus ideas de educadora; es un ensayo y error continuo, pensando si una cosa conviene o no, si es preferible ponerlo aquí o allí, etc.

En segundo lugar se señala la dificultad de no tener el material organizado, no tener una estructura para aplicar las tecnologías en la programación de aula, de una forma práctica y sencilla, lo que implica perder el tiempo por parte del profesor y de los alumnos. En este sentido la coordinadora TIC muestra un cierto grado de frustración por no haber conseguido elaborar más material (trabajando un grupo de profesores) para luego dárselo a las profesoras y que éstas lo pudieran adaptar a su clase.

“No puedes pedir a los profesores más tiempo para hacer los materiales, eso lo puede hacer quién está lanzando un proyecto, que dedica mucho tiempo, pero al profesorado no lo puedes quemar... Los profesores necesitan un material ya hecho, que pueda ser remodelado, adaptado...” (Entrevista coordinadora TIC).

Una de las dificultades que se ha ido planteando también, aunque con un carácter más transitorio, puesto que se ha ido solucionando paulatinamente, ha sido la

necesidad de adaptación de los equipos tecnológicos a las características de los niños pequeños:

“Ahora nos vamos a encontrar con algunos problemas de la pizarra para que los niños lleguen a todos los botones...” (Entrevista coordinadora TIC).

En síntesis, las principales dificultades señaladas, tanto por el equipo directivo y coordinadora como por las profesoras, serían: La escasez de recursos y dificultades para conseguirlos; falta de tiempo de las profesoras para la formación y el diseño de materiales; falta de compromiso de algunos centros con los que se hacen proyectos de innovación en colaboración; aparición de nuevos focos de interés (en estos momentos el bilingüismo) y nuevas tecnologías (pizarras digitales...) que van dejando atrás otros recursos.

Las estrategias de solución no son fáciles, ni siquiera, en algunos casos, posibles, ya que hay una serie de limitaciones que hay que asumir en la tarea docente (tiempos y horarios establecidos, espacios, recursos...) pero si se puede hacer incidencia en la búsqueda y selección de buenos colaboradores que se impliquen realmente en el proyecto a desarrollar y asimismo habría que valorar la aportación de los nuevos recursos a la eficacia de la práctica educativa antes de embarcarse en nuevas aventuras, con objeto de no dispersarse en una excesiva cantidad de herramientas y actividades, que en algunos casos puedan ser irrelevantes.

c) Centros rurales: Burganes (Zamora) y los Regajales (Ávila)

En el desarrollo de los proyectos han surgido diferentes tipos de dificultades, algunas de tipo técnico, relativas a una disposición concreta de los equipos en el aula para poder utilizar, por ejemplo, la red Wi-Fi del centro:

“Los ordenadores en mi aula no están dispuestos donde a mi me gustaría que estuvieran, sino donde me ha obligado la intensidad del Wi-Fi...Seguimos preguntándonos por qué esto no tiene una conectividad adecuada a las instalaciones que tiene. Y eso que hablamos de la red interna, no hablamos de Internet, que ahí si tenemos un problema grave, y es que la conexión satélite no da la suficiente velocidad...” (Entrevista al profesorado)

Otro de los aspectos a destacar es el movimiento continuo del profesorado mediante los concursos de traslados que hace que todos los años se incorpore profesorado nuevo de forma provisional por un periodo de tiempo muy corto y luego abandona el centro. A este profesorado hay que formarle, en el desarrollo de competencias TIC cuando no dispone de ellas y se le invita a participar en el desarrollo de los proyectos de innovación que esté desarrollando el centro. Recibe la formación por dos vías: por un lado desde el Centro de Formación comarcal (CFIE) y por otro lado mediante la realización de seminarios de trabajo en el propio centro, coordinados desde el CFIE y el Equipo Directivo. Este problema es realmente importante. Nos preguntamos ¿qué porcentaje de profesores se mantiene año tras año en el centro, aproximadamente?

“Bueno, depende. Todos los años hay concurso nacional y otro regional, el último año en el concurso regional nos cambiaron 8 de 19. Por otra parte, las aulas de secundaria son habilitadas. Estos niños deberían ir a clase a la capital de la comarca pero sus padres se movilizaron para que sus hijos continuaran en Burganes e hicieran el primer ciclo de secundaria aquí. Como son aulas habilitadas, el profesorado no es definitivo y eso quiere decir que 2 ó 3 personas son siempre movibles, no son definitivos..” (Entrevista al profesorado).

Otro de los problemas que indica el profesorado es la gran cantidad de tiempo que requiere la participación en los proyectos de innovación, tiempo que se debería contemplar en los horarios académicos del profesorado, permitiendo horas con dedicación específica al proyecto. En este sentido es una demanda a las instituciones educativas la necesidad de disponer de tiempo para la planificación, implementación y desarrollo de proyectos de innovación con TIC; si se contempla este tiempo dentro de su carga de trabajo diario se facilitaría en gran medida la motivación del profesorado respecto a la participación en los proyectos. Si el profesor tiene que dedicar su tiempo de ocio o su tiempo familiar al proyecto va a estar menos interesado en participar.

“Para sacar adelante los proyectos necesitamos dedicar mucho tiempo... Hasta ahora nos han aprobado los horarios, hemos hablado con la Inspección, con la Dirección Provincial, indicándoles que tenemos un proyecto, que debe salir adelante, que necesita dedicación y tiempo... Tienes que tener un tiempo dentro de tu jornada de trabajo dedicado exclusivamente a preparar tu trabajo con las TIC; si te fijan una hora, no haces nada. Si quiero preparar alguna cosa para los chicos: una presentación, un programa, un vídeo de apoyo, eso en una hora no se hace; necesitas dedicar el día entero a ello, y un día tras otro... Como no dispones del tiempo, acabas haciéndolo en casa...” (Entrevista al profesorado).

Otro problema importante respecto al tiempo necesario para incorporar las TIC en los procesos ordinarios de enseñanza-aprendizaje está relacionado con la propia estructura curricular. Es una paradoja, pero el uso de las TIC, al menos inicialmente, impone un ritmo más lento en el desarrollo curricular:

“Normalmente la utilización de los medios en el aula, requiere tiempo también, con lo cual el desarrollo de las unidades didácticas es más lento... Dices, tengo 13 temas que explicar, si un tema me lleva dos semanas, y uso los medios informáticos y el desarrollo de ese tema me lleva tres semanas en lugar de dos, pues tengo que recuperar ese tiempo de alguna forma...” (Entrevista al profesorado).

El profesorado es consciente de los apoyos que recibe en la realización de los proyectos, tanto a nivel formativo desde el Centro de Formación de la zona, como a nivel técnico por parte de la propia Consejería de Educación, pero consideran que se debería extender más este apoyo, para un mejor desarrollo de los proyectos. En concreto, respecto al desarrollo del proyecto piloto Red.es en el centro, el profesorado considera que el esfuerzo para sacarlo adelante ha recaído directamente en el

profesorado de los centros; se han dado apoyos de tipo técnico pero ha faltado asesoramiento didáctico y, sobre todo, una información adecuada sobre los resultados obtenidos a lo largo de estos años en los que se ha desarrollado el proyecto. Consideran que desde la propia Administración educativa debería haberse realizado una evaluación profunda de la experiencia innovadora desarrollada, con amplia difusión de los resultados y con propuestas de mejora.

Uno de los problemas importantes que ha aparecido en el proceso de incorporación de las TIC es la configuración de los equipos que han llegado a los centros... El hecho de no haber informado al profesorado de los centros sobre la configuración de los equipos y las limitaciones inherentes respecto al software instalado hizo que muchos profesores encontraran errores de funcionamiento de los equipos, situaciones de inseguridad al trabajar con los mismos y un cierto rechazo a trabajar con los equipos entregados por Red.es, al no ofrecerles seguridad.

“Nos hemos encontrado con unos ordenadores que venían montados desde los organismos autonómicos y con importantes limitaciones de uso: los ordenadores se colgaban por culpa de los programas que no estaban bien instalados o que tenían incompatibilidades de funcionamiento; todo ello nos hizo perder mucho tiempo en las aulas y nos causó una cierta desesperación a lo largo del primer año del proyecto, cuando más hubiéramos necesitado ayuda y ánimo...” (Entrevista al profesorado)

Finalmente, se vive como problema el diferente grado de competencias en TIC que tienen los profesores, tanto en el uso de programas informáticos como en la utilización de software de ayuda para la realización de actividades vinculadas al currículo de las diferentes áreas. Parece necesario programar el desarrollo de actividades formativas para el profesorado, fundamentalmente para el que se acaba de incorporar al centro, para que pueda participar en los proyectos de innovación educativa. Debe destacarse la cooperación de todo el profesorado del centro para apoyar a los compañeros que más dificultades tenían en la elaboración y planificación de las tareas. Además la formación del profesorado también es necesaria como mecanismo de “autodefensa” ante el alumno, que cada vez disponen de mayor nivel de competencia en el manejo de los ordenadores, aunque no esté dirigido al uso didáctico de los mismos para favorecer su aprendizaje. Consideramos imprescindible la adecuada formación del profesorado como requisito necesario para afrontar con éxito cualquier proceso de innovación. Formación pensada con estructura permanente, dinámica y ajustada a los usos didácticos de las propuestas tecnológicas actuales.

d) A pesar de las dificultades, los resultados de aprendizaje son positivos

La descripción minuciosa de los problemas hallados en los centros educativos para el uso e integración de las tecnologías digitales no supone más que añadir valor a los docentes, que superando en gran medida muchas de las dificultades a través de una excelente actitud y un gran esfuerzo personal y sentido del buen hacer

profesional, van superando y sorteando las dificultades para llevar a cabo procesos de innovación en los centros que repercuten beneficiosamente en la formación de los alumnos, tal como es percibido por los profesores.

Como muestra de esta afirmación, se presentan en la tabla 1 las opiniones de los profesores sobre las mejoras que supone el uso de las TIC en la actividad docente.

Tabla 1: Opinión de los profesores sobre las mejoras que supone el uso de las TIC en la actividad docente

Ítems del cuestionario	Categorías de respuesta	Frecuencia N = 276	% (1)
Provincia en que se sitúa el Colegio	Salamanca	95	34,4
	Palencia	85	30,8
	Zamora	51	18,5
	Ávila	45	16,3
Mejora las actitudes hacia el estudio de los alumnos	Poco	24	8,7
	Algo	135	48,9
	Mucho	114	41,3
Mejora la socialización de los alumnos	Poco	33	12
	Algo	118	42,8
	Mucho	107	38,8
Mejora la motivación de los alumnos	Poco	7	2,5
	Algo	90	32,6
	Mucho	172	62,3
Mejora la satisfacción de los alumnos	Poco	4	1,4
	Algo	158	57,2
	Mucho	113	40,9
El uso de las TIC mejora el proceso de enseñanza-aprendizaje especialmente en el área...	Todas	78	28,3
	Conocimiento Medio	21	7,6
	Matemáticas	28	10,1
	Idioma	28	10,1
	Varias	121	43,8
¿Por qué?	Facilita actividades	52	18,8
	Más puntos de vista	37	13,4
	Fotografías	13	4,7
	Escucha pronunciación	28	10,1
	Motivación	21	7,6
	Varias razones	55	19,9
Habilidades que se ven favorecidas por el uso de las TIC	Varias	226	81,9
	Búsqueda información	16	5,8
	Autoevaluación	13	4,7
	Atención	5	1,8
	Socialización	5	1,8

¿Por qué?	Motivación	36	13
	Búsqueda información	32	11,6
	Rapidez	13	4,7
	Varias	36	13
	Trabajo en grupos	5	1,8
	Ordenar actividades	27	9,8
Consecuencias	Negativas	28	10,1
	Positivas	203	73,6
	Positivas y negativas	21	7,6
¿Por qué?	Motivación	111	40,2
	Aislamiento	17	6,2
	Nerviosismo	11	4
	Compensa diferencias	38	13,8

- (1) En cada una de las variables analizadas el porcentaje faltante hasta 100 de la suma de los porcentajes de las categorías de respuesta debe atribuirse a la categoría “no contesta”

En la tabla 2 presentamos, en base a las notas reales obtenidas en las distintas áreas por los alumnos participantes en el proceso de innovación en los distintos centros, los porcentajes de aprobados por áreas de conocimiento o asignaturas. Incluimos también una breve referencia a los logros obtenidos por los alumnos de Educación infantil, tomando en consideración los objetivos marcados en cada curso y su forma de evaluación, con referencia a su grado de consecución: total, parcial o nula (tabla 3). Se puede observar que la mayoría de estos alumnos consiguen el desarrollo de las competencias y objetivos marcados.

En términos generales podemos observar (aunque esta afirmación requeriría un contraste riguroso debido a la no incorporación al diseño evaluativo de un grupo de control) que el colectivo de alumno presenta un rendimiento medio notoriamente satisfactorio, más alto que el promedio de rendimiento estándar para el conjunto de alumnos de prácticas escolares normalizadas (no inmersos en procesos de integración de TIC).

Tabla 2: Porcentajes de aprobados por áreas

Área	% de aprobados
Lengua	72,9
Inglés	76,5
Matemáticas	78,8
Ciencias Sociales	80,8
Francés	80,8
Conocimiento del Medio y Ciencias Naturales	81,2
Música	91,3
Religión	93,7
Educación Física	100
Tecnología	100
Plástica	100

Tabla 3: Competencias conseguidas por los alumnos de Educación Infantil

Interpretación de las notas de infantil
a) Competencias conseguidas El 96,5% de los alumnos consigue 50 o más de las 80 competencias programadas El 49,4% de los alumnos consigue 60 o más de las 80 competencias programadas El 20% de los alumnos consigue 70 o más de las 80 competencias programadas
b) Competencias conseguidas parcialmente (en proceso de consecución) El 52% de los alumnos han conseguido parcialmente alguna de las 80 competencias
c) Competencias no conseguidas El 14% de los alumnos terminan el curso sin haber conseguido alguna de las 80 competencias

4. Conclusiones y propuestas de mejora

Las dificultades encontradas en los centros para la adecuada integración de las tecnologías digitales se refieren principalmente a carencias de infraestructura, deficiencias en la formación del profesorado, escasez de tiempo para planificar el trabajo y elaborar o seleccionar los recursos adecuados y la falta de un seguimiento y evaluación rigurosa para afianzar los proyectos de innovación y proporcionar seguridad al profesorado que no sabe si camina en la dirección adecuada. A pesar de estas limitaciones los alumnos trabajan de forma satisfactoria en estos ambientes de innovación e implementación de las tecnologías en el proceso de enseñanza-aprendizaje, consiguiendo los objetivos de aprendizaje y aumentando su motivación y satisfacción con la tarea escolar.

Por lo tanto y con carácter general para el conjunto de los centros, podemos proponer como pautas para mejorar los procesos de integración de las TIC en la acción docente ordinaria de los centros los siguientes considerandos:

- dotación adecuada de infraestructuras en los centros, dotando ordenadores en las aulas ordinarias y buenas conexiones a Internet
- optimizar la distribución de espacios en los centros cara a favorecer un mejor uso de los recursos disponibles
- introducir en la jornada laboral tiempos dedicados a la planificación del trabajo con TIC (selección y evaluación de recursos, diseño de materiales, replanteamiento de metodologías, etc.)
- ofrecer la formación necesaria al profesorado para sentirse seguro en el uso de la tecnología digital y ligada a los procesos de innovación en los centros y el trabajo colaborativo de los docentes
- favorecer la estabilidad del profesorado en los centros en los que se lleven a cabo experiencias integrales de incorporación de las TIC
- integrar en las plantillas docentes la figura del “coordinador de TIC” para impulsar los procesos de innovación y realizar el seguimiento de los mismos
- esforzarse colectivamente por analizar la repercusión que el uso adecuado de las TIC puede suponer en la mejora del rendimiento, en todas sus diversas facetas: contenidos, competencias, actitudes...

Tanto los resultados obtenidos como las orientaciones propuestas están en la línea de otros trabajos e investigaciones que han determinado en diferentes contextos las dificultades que este cambio tecnológico está suponiendo para los centros y profesores y que, asimismo, destacan la importancia de la formación de los docentes y las implicaciones de sus concepciones sobre el aprendizaje y la enseñanza, para que la innovación se produzca en los términos deseados (CEO FORUM, 2001; ISTE, 2002; Windschitl y Sahl, 2002; Gargallo y otros, 2003; BECTA, 2004, Tejedor y García-Valcárcel, 2006; De Pablos, 2007; Hargreaves, Earl y Ryan, 2008; Decortis y Lentini, 2009; Markkula y Sinko, 2009).

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Ideas prácticas para la utilización de las TIC en las aulas

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INTRODUCCIÓN

¿Cómo y por qué deberíamos utilizar las TIC como instrumentos de innovación educativa en las aulas? Responder a esta pregunta es una tarea en la que se haya inmersa actualmente toda la comunidad educativa. No obstante, tratando de dar respuestas se puede observar como la escuela, a pesar de los esfuerzos de toda la comunidad educativa, no está aportando las soluciones más adecuadas a las necesidades, intereses, demandas, etc., de la sociedad en la que se encuentra inmersa. Este hecho no implica que las instituciones educativas deban obedecer ciegamente a las exigencias del entorno, pero si se debe volver al diálogo entre los diferentes estamentos que conforman cualquier cultura, siendo la escuela uno de los más importantes, surgiendo de éste un modelo de sociedad consensuado, acordado y razonado por todos.

Por otro lado las TIC debido a sus grandes potencialidades y facilidades tanto técnicas como pedagógicas, hacen posible un estilo de enseñanza-aprendizaje constructivista-significativo, el cual se viene planteando desde diversas reformas educativas y marcos teóricos, pero que por diversas causas, como falta de medios, de consenso, inadecuada planificación, no se ha llevado a cabo. De este modo los profesionales de la educación han seguido reproduciendo roles educativos arcaicos que van en contra de esta filosofía de enseñanza-aprendizaje, suponiendo las TIC una nueva oportunidad para aplicar de una vez por todas la filosofía que subyace a esta manera de enseñar. No hay que entender que las TIC nos van a hacer el trabajo más fácil y más llevadero, sino que nos van a dar la oportunidad de replantear aquellos puntos que fallan en el sistema educativo y los diferentes estratos que lo conforman.

Sin embargo no debemos pensar en las TIC como una gran revolución, aunque en cierta medida todas las innovaciones lo son, que van a hacer desaparecer todo lo existente hasta ahora, ya sean prácticas educativas adecuadas o inadecuadas, o concebirlas como instrumentos que van a suplir a los profesores. Hay que dudar de estos planteamientos en la medida que cualquier medio, instrumento, sea cual sea, es solo eso, un ser inerte que sin la manipulación, la mediación de personas preparadas, puede ser que sean utilizados pero no de un modo adecuado.

La integración plena de estos medios en el currículum y en la filosofía de los centros buscando promover el conocimiento y propiciar el aprendizaje de una manera adecuada, suponen una serie de cambios en distintos aspectos. En este texto se exponen una serie de ideas prácticas pretendiendo que ayuden a los profesores en ese cambio que supone el uso de las TIC en las aulas.

PLANTEAMIENTO

Se pretende por tanto en la presente comunicación ofrecer una serie de ideas, lo más prácticas posibles, que permitan a los profesionales de la educación, sobre todo aquellos que se quieren iniciar en un uso pedagógico de las TIC, utilizar de una manera adecuada los recursos disponibles en la red, u otros que se puedan recopilar. En definitiva se busca dar una serie de ideas claves para que ese interés que se tiene por usar las TIC se transforme en acción pedagógica.

Estas ideas forman parte del libro electrónico que lleva por título **“Guías didácticas para un uso significativo de las TIC en las asignaturas de lengua y matemáticas (Tercer Ciclo de Primaria)”¹**.

Tal y como se indica en el libro “se trata de un trabajo de investigación con una orientación eminentemente práctica, centrada en la selección y evaluación de recursos digitales de calidad para dos áreas fundamentales del currículum de Primaria”.

El objetivo principal de dicha investigación fue “elaborar una Guía didáctica de las asignaturas de Lengua y Matemáticas de Tercer Ciclo de Primaria con objeto de hacer un uso significativo de las TIC por parte de los maestro y alumnos de esta etapa educativa”.

En cuanto a los resultados y logros conseguidos en dicha investigación se pueden destacar:

- Relación de bloques de contenidos, competencias disciplinares y competencias en TIC.
- Elaboración de una Guía de evaluación de recursos didácticos.
- Elaboración de la Base de datos para la descripción y evaluación de los recursos y la presentación de la información relativa a las actividades y metodologías propuestas para el uso de los recursos digitales en el aula, con dos modalidades para Lengua y Matemáticas.

- Colaboración con docentes de Primaria, buscando que maestros/as del nivel de Primaria puedan evaluar y aportar recursos digitales, aportando la perspectiva del trabajo en el aula y el contacto directo con los alumnos de esta etapa educativa.
- Revisión y selección de recursos tecnológicos y propuesta de uso y actividades para los diferentes bloques de contenidos de las dos áreas.
- Formulación de orientaciones pedagógicas para la integración de las TIC en la práctica escolar.

Quedémonos por tanto, como ya se había señalado al principio de la presente comunicación, con este último punto, señalando que se ha “tratado de realizar una revisión de la bibliografía disponible en este momento sobre como afrontar el cambio a la escuela digital por parte del profesorado, presentando una síntesis de las ideas más relevantes y prácticas para orientar este cambio”

Estas ideas se refieren sobre todo al ámbito de uso de los ordenadores (y sus respectivos periféricos como pueden ser impresora, altavoces, micrófono, scanner, webcam, PDI, etc.), concebidos éstos como máquinas multimedia en las que pueden converger las funcionalidades que nos ofrecen otros aparatos (televisores, video, reproductores de audio, etc.), y en los que se pueden desarrollar todos los recursos descritos en la guía citada anteriormente. De esta manera los ordenadores hoy en día nos permiten trabajar con diferentes fuentes de datos y medios disponiendo de sonido, imagen, video, texto, etc. No obstante estas ideas de uso se pueden extrapolar a otros recursos que en cualquier momento queramos utilizar, como pueden ser, cámaras de fotos, móviles, mp3, videoconsolas, etc.

Son muchas las recomendaciones de uso que se hacen sobre las TIC, resultando quizás excesivamente teóricas o sugiriendo profundas reflexiones sobre los modelos pedagógicos empleados u otros ámbitos de la pedagogía, cuestiones quizás un poco inconexas con el día a día del docente. Las que aquí se presentan intentan no seguir esa línea, tratándose de exponer sobre todo aquellas ideas, sugerencias, que los profesores ponen en práctica en sus aulas. Hay que tener en cuenta que tienen un carácter general pues se desconocen las características y circunstancias de cada enseñante y centro de enseñanza. No obstante, antes es importante llevar a cabo una extensa reflexión, sobre lo que queremos y lo que estamos haciendo nutriéndonos de los supuestos teóricos enunciados anteriormente. En este sentido se expone un pequeño resumen de lo que Area (2007) denomina “decálogo para planificar buenas prácticas docentes con tecnologías”:

1. Las TIC deben ser un medio que ayude a mejorar los procesos de enseñanza-aprendizaje, no convertirse en un fin en sí mismas. En este sentido dichos procesos no serán mejorados ni enriquecidos por el simple uso y presencia de las mismas.
2. No importa tanto el uso y utilización de las TIC sino en que método de enseñanza se enmarca este proceso, alcanzándose diferentes resultados según sea este. En cualquier caso se debe buscar que el alumno aprenda mediante la manipulación y uso variado de las tecnologías disponibles.
3. Las TIC deben ser un recurso tanto para el aprendizaje de las materias curriculares como el desarrollo de la competencia digital y de la información, debiéndose explicitar los objetivos y contenidos de ambos. Aparte del trabajo intelectual (búsqueda, consulta y elaboración de información) se debe buscar que los alumnos utilicen las TIC como herramientas de inserción social, las cuales pueden potenciar el desarrollo de actitudes colaborativas.
4. A la hora de usar las TIC hay que tener planificados el tiempo, las tareas o actividades, los agrupamientos de los estudiantes, el proceso de trabajo, evitando la improvisación, pues este uso no puede ser algo paralelo al proceso de enseñanza habitual, estando integradas y siendo coherentes con los objetivos y contenidos curriculares que se están enseñando.

Teniendo en cuenta estos principios se exponen a continuación una serie de ideas prácticas, que ayuden, como ya se ha comentado, al docente a poner en marcha toda la formación e información que ha recibido y recibe de diferentes fuentes.

Partiendo de que lo ideal es la presencia, con la mayor cantidad y calidad posible, de los ordenadores en las aulas ordinarias, para conseguir así una integración real e invisible de estos medios en el currículo, las siguientes ideas van dirigidas a cómo usar estos ordenadores en este contexto.

Por otro lado se ha pretendido dividir y clasificar estas orientaciones según diferentes aspectos: aspectos organizativos, aspectos técnicos y aspectos didácticos. Por otro lado estas recomendaciones deben estar regidas por dos postulados fundamentales:

- Aunque sea paradójico, si crees que estos nuevos recursos tecnológicos no van a mejorar tu práctica docente o has comprobado que no lo hace, no las utilices (como harías con cualquier otro recurso). Si no dispones de la motivación adecuada, será difícil poner en marcha los recursos e ideas ofrecidos en el presente

libro, ya que podrán surgir dificultades a las que tendrás que enfrentarte con espíritu de superación.

- Al igual que con otros recursos se debe evitar la improvisación. Hay que planificar actividades, agrupamientos, proceso de trabajo, tiempos, espacios, evaluación. Las TICs no son recursos mágicos, requieren si cabe más preparación que los tradicionales, lo cual sin embargo, posteriormente se verá reflejado en una mayor fluidez de uso, mayor motivación y en un mejor aprovechamiento didáctico.

Pasemos pues a continuación a detallar las tres dimensiones señaladas anteriormente.

Aspectos organizativos

- 1- Si es posible, poner uno o dos alumnos por ordenador. Cuando el número es mayor ninguno de los alumnos utiliza “realmente” el ordenador, produciéndose discusiones por ver quién es el primero en usarlo, o no siendo utilizado por aquellos alumnos que tienen menos destreza con ellos.
- 2- Organizar parejas de trabajo heterogéneas, es decir no poner “los que más saben con los que más saben” y “los que menos con los que menos”, no sólo en relación a nivel de uso de los ordenadores sino también a nivel curricular. Esto nos puede ahorrar tiempo a la hora de tener que resolver constantemente problemas “técnicos” y porque no, pedagógicos. No obstante no hacer parejas con grandes diferencias de nivel, evitando de esta manera que sea siempre el mismo alumno el que interactúa con el ordenador.
- 3- Intentar que los alumnos usen siempre los mismos ordenadores haciéndose responsables de los mismos, notificando incidencias que se produzcan, intentando que los cuiden como si fueran suyos. Hay que acostumbrarles desde el principio a respetar el material y a recoger al finalizar.
- 4- Si contamos con el apoyo suficiente de otros colegas, coordinador TIC etc., se puede hacer el desdoble de la clase, de tal manera que un grupo de la clase trabaje con los ordenadores mientras el otro se trabaja con otros recursos, pudiendo programar así actividades más específicas y que requieren de un menor número de alumnos.
- 5- Es mejor disponer los ordenadores de tal manera que podamos controlar a los alumnos de un vistazo, a la vez que nosotros estamos visibles para ellos. No colocaremos a los alumnos contra la pared, de tal manera que no se vean, dejando suficiente espacio para que podamos desplazarnos adecuadamente.
- 6- Los alumnos deben de disponer del suficiente espacio entre cada equipo, para utilizar adecuadamente el ordenador y el teclado, así como un espacio adicional para realizar otras tareas.

- 7- Intentar no compartir la zona destinada a los ordenadores con otros usos (biblioteca, almacenamiento de otros materiales, etc.), de tal manera que los alumnos no se vean constantemente interrumpidos.
- 8- Disponer de una adecuada iluminación. Utilizaremos preferiblemente la natural tratando de evitar que las pantallas no se vean a causa del reflejo.
- 9- Proporcionar una correcta ventilación a la sala. Tal cantidad de quipos funcionando a la vez produce un gran calor que no solo mermará el funcionamiento de los ordenadores sino también el rendimiento de los alumnos.
- 10- Organizar muy bien los tiempos de uso de los ordenadores, de tal manera que no se haga un uso espontáneo y no planificado de los mismos.

Aspectos técnicos

- 1- Perder el miedo al uso del ordenador. Manejándolo con cuidado el ordenador no se estropea, y si se estropea no pasa nada porque también se estropean otros aparatos presentes en nuestra vida cotidiana (lavadora, frigorífico, televisor, móvil, etc.) y se arreglan.
- 2- Intentar contar con un material básico aparte del ordenador e Internet: escáner, cámara de fotos digital, impresora, proyector, etc.
- 3- Debemos conocer los aspectos básicos de funcionamiento de los aparatos que vayamos a utilizar. No hace falta convertirse en técnicos ni comprender el funcionamiento interno de estos. Por ejemplo no sabemos cómo está hecha una lavadora ni cómo funcionan sus componentes pero si sabemos utilizarla.
- 4- Hay que acostumbrarse a utilizar toda la tecnología que tenemos a nuestro alrededor en nuestra vida cotidiana. La única forma de saber cómo utilizar técnicamente los aparatos, y acostumbrarnos a su uso cotidiano, es intentarlos usar en cualquier ocasión. Todo vale, desde sacar el máximo provecho a nuestro móvil hasta programar el DVD.
- 5- Del mismo modo hay que intentar utilizar la gran cantidad de servicios que nos ofrece Internet: sacar unos billetes de avión, planificar un viaje, pedir una reserva en un hotel, matricularse en una universidad, consultar una dirección postal o buscar un número telefónico; consultar un diccionario, realizar una traducción, comprar un libro o un archivo musical, leer un periódico o un libro, trámites administrativos, etc.
- 6- Intentar conocer ciertas aplicaciones básicas: editor de presentaciones, generador de páginas web, entorno de e-learning, procesador de textos, gestión de cuentas de correo, chats, foros, etc.
- 7- En el aula hay que estar seguros de que todo funciona perfectamente, (Internet, monitores, teclados, etc.) no dejando nada al azar, realizando estas comprobaciones con anterioridad al uso de los aparatos. Pedir ayuda a quien se requiera: compañeros, técnico, coordinador TIC, etc.

- 8- Para que los alumnos actúen de manera más autónoma organizar bien la ventana del escritorio de los ordenadores de forma que puedan pulsar sobre iconos de acceso directo al inicio de un programa (Word, Paint,...), a una actividad concreta, o a algunas página de Internet que hayamos escogido.
- 9- No hay que mitificar las averías y problemas. Si surge alguno que no sabes resolver, una vez encontrada la solución, anótala. La próxima vez que te ocurra, sabrás resolverlo.
- 10- No angustiarnos ni obsesionarnos con el hecho de que los alumnos utilicen el ordenador como una extensión más de su cuerpo. Ellos son los llamados “nativos digitales” y nosotros los “inmigrantes”. Nunca antes habíamos estado en esta situación (que los alumnos sepan más que nosotros), pero debemos utilizarla en nuestro beneficio, aprendiendo de ellos, para que podamos devolver a los alumnos un adecuado aprovechamiento pedagógico de estos recursos (algo en lo que si estamos formados y en lo que contamos con más experiencia).

Aspectos pedagógicos

- 1- Si aún no tienes confianza, pide a alguien que te acompañe en tus primeras sesiones, el Coordinador TIC, un compañero, etc. No tengas miedo a compartir con tus compañeros lo que haces, tus prácticas y experiencias, o a preguntarles lo que hacen ellos. Muchas de las dificultades técnicas en las que puedas encontrar problemas si son compartidas son resueltas con mayor rapidez dejando más tiempo a los aspectos pedagógicos.
- 2- Pedir a aquellos padres de alumnos que tienen ordenadores en su casa que los usen con sus hijos. Les podemos proporcionar pautas, recursos, orientaciones, etc.
- 3- No obsesionarse con querer utilizarlo todo desde el principio. Tampoco hace falta que elabore uno mismo sus propios recursos. En la web encontrarás multitud de recursos elaborados por profesores, como algunos de los expuestos en el presente libro. Tampoco hay que estar continuamente buscando programas y aplicaciones nuevas intentando rentabilizar los que ya tiene el centro. Eso sí, deben ser evaluados para saber si te van a ayudar, adecuándolos y complementándolos con otros materiales. Poco a poco irás haciéndote con una buena colección de recursos informáticos.
- 4- Debemos conocer a fondo el software o actividad concreta que vayamos a utilizar, antes de que los alumnos empiecen a usarlos. Muchos de estos contienen guías pedagógicas con objetivos, contenidos, metodología, etc., que nos ayudarán en la planificación de la sesión. No tener prisa, no ir de cualquier manera, explorando a fondo los programas y qué contenidos trabajan, practicando antes de usarlos con los alumnos.
- 5- Dar pautas, explicar bien lo que se quiere, establecer objetivos de aprendizaje claros, estructurar el orden y la secuencia con la que se va a realizar toda la

actividad, planificar el número de sesiones y cómo se van a organizar, asegurar que los estudiantes elaboren un producto concreto con los conocimientos adquiridos, etc., como se haría con cualquier material, no dejando al alumno abandonado ante el recurso y que se las apañe él solo.

- 6- Al principio preparar actividades concretas y de corta duración. Una sesión de 20-30 minutos puede ser suficiente. Más adelante se irán complicando las actividades en cuanto duración y contenido.
- 7- Después de haber realizado la actividad realizar alguna anotación en torno a qué hemos hecho, aspectos interesantes, modificaciones para el próximo día o sesión, problemas que han surgido, comentarios, etc. La utilización de un diario de clase que permita ir reflexionando sobre el uso y resultados de prácticas con TIC puede ser un recurso de autoformación de gran interés.
- 8- En las primeras sesiones no importa perder tiempo al principio para aclarar aspectos en torno a: ordenador (encender, apagar, tapar, cuidar, etc.), discos (posición correcta al introducirlos, qué se puede hacer y qué no, introducir y sacar, etc.), teclear correctamente, uso del ratón, etc.
- 9- No pretender que los alumnos estén callados y quietos. Estos recursos son “interactivos” y les piden a los alumnos respuestas y acciones, los cuales están deseosos de contarle a su compañero sus progresos. Debemos encauzar esta acción del alumno en beneficio de la clase. Por ello no podemos convertir los ordenadores en otras pantallas de texto, pidiendo a los alumnos que solamente lean lo que aparece en ellas. Esto crea aburrimiento y frustración en el alumno que sabe de lo que es capaz de hacer con estos recursos.
- 10- No convertir el uso de estos recursos en premios que se dan al finalizar la semana, normalizando su uso lo más posible. No hay que utilizar los ordenadores del aula ordinaria sin un propósito curricular claro. Hay que integrar el trabajo con ordenadores dentro de la programación del curso y de los contenidos a trabajar en él, encuadrando su uso siempre que se pueda, dentro de una actividad más amplia: actividades previas, actividades propias del contenido a tratar y actividades posteriores.

Tratando de aplicar todas las recomendaciones expuestas anteriormente, se presentan a continuación una serie de **actividades genéricas de enseñanza-aprendizaje** que los profesores y alumnos podrían realizar utilizando las TIC:

- Explicación de clase apoyada con una presentación PowerPoint.
- Ejercicios preparados con herramientas tipo HotPotatoes o JClic.
- Trabajos tradicionales presentados digitalmente a través de procesador de textos, presentaciones multimedia, etc.
- Uso de buscadores y enciclopedias en línea (Internet como fuente general de información).

- Creación de material multimedia: audio, vídeos, podcast, animaciones.
- Creación de webs, blogs, wikis y otras formas de publicación de contenido en Internet.
- Realización de trabajos colaborativos no presenciales usando herramientas como el correo electrónico, chat, videoconferencia, wikis, blogs, transferencia de ficheros, plataforma on-line del centro
- Uso de webquests.
- Juegos de ordenador, juegos on line.
- Creación de un wiki sobre un tema.
- Participación en proyectos internacionales de intercambio de información y comunicación a través de la red.
- Creación de páginas y *sitios Web*.
- Uso de pizarras digitales.

El listado anterior puede ser tan amplio y variado como queramos, por lo que trataremos de escoger y realizar aquellas actividades, experiencias que más se adapten a nuestras circunstancias personales y profesionales, así como a las de los alumnos y a las del centro donde estamos inmersos. Area (2007) nos presenta una clasificación que describe tres grandes tipos de actividades a desarrollar en el aula:

- 1- Actividades simples que son puntuales y complementarias de otras actividades desarrolladas en la clase:
 - Participación en Chat: conversación en directo.
 - Participación en foro de debate.
 - Búsquedas de información y datos en la Red.
 - Elaboración de presentaciones multimedia.
 - Exposiciones con pizarra digital interactiva.
 - Redacción y archivo de documentos (textuales o multimedia).
 - Realización de ejercicios (crucigramas, puzzles, sopa de letras, colorear, completar frases, etc.).
 - Contestar test y/o cuestionarios on line.
 - Visualizar vídeos, cuentos interactivos o leer textos.
- 2- Actividades complejas que implican más tiempo, mayor organización y que requieren activar en el alumnado variadas habilidades y competencias cognitivas
 - Círculos de aprendizaje entre estudiantes de distintas clases.
 - Proyectos colaborativos en la Red entre escuelas.
 - Elaboración de videoclips.
 - Elaboración de trabajos en formato WEB.
 - WebQuest y cazas del tesoro.
 - Correspondencia escolar entre clases distantes.

- 3- Actividades desarrolladas en entornos virtuales que exigen el dominio de la capacidad de expresión y comunicación a través de recursos tecnológicos más complejos.
- Desarrollar actividades de tutoría electrónica.
 - Realizar una videoconferencia.
 - Elaborar y actualizar un blog, diario o bitácora de los alumnos.
 - Participar en WIKIS: elaboración colaborativa de trabajos a través de Internet.
 - Desarrollar un curso formativo de eLEARNING: Educación a Distancia a través de Internet mediante Aulas Virtuales.
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Los Centros rurales agrupados, impulsores de metodologías de trabajo innovadoras integrando las Tecnologías de la Información y la Comunicación en centros de Educación Infantil y Primaria de Castilla y León¹.

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1.- Introducción.

En las siguientes líneas se expondrán las estrategias tecnológicas y Didácticas del Centro Rural Agrupado (CRA) Valle de Valverde, de Zamora, en Castilla y León, el proceso seguido en la evolución de la integración de las tecnologías de la información y la Comunicación en las enseñanzas obligatorias.

Se expondrán brevemente las principales metodologías actualmente empleadas en el centro que permiten la adquisición del conocimiento al alumnado, y facilitan el acceso a la información y el aprendizaje permanente y a lo largo de la vida al alumnado.

Se analizarán las características y roles del profesorado actual, en la escuela del S. XXI, realizando una referencia a una serie de buenas prácticas a desarrollar con la ayuda de las Tecnologías de la Información y la Comunicación, en el ámbito de la enseñanza obligatoria.

2.- Fases de evolución tecnológica: desde el MS-2 al Web 2.0.

Se observa la constante integración de las TIC durante prácticamente los últimos veinte años; en cada momento en función de los recursos y la tecnología disponible el profesorado del centro se ha involucrado en proyectos de innovación relacionados con la incorporación de las tecnologías en la enseñanza, desde los primeros programas basados en el sistema operativo MS-2 hasta actualmente la utilización de Internet y de la Pizarra Digital Interactiva.

¹ Proyecto de Investigación: “Evaluación de procesos de innovación escolar basados en el uso de las TIC desarrollados en la Comunidad de Castilla y León”. Director del Proyecto: Francisco Javier Tejedor Tejedor. Junta de Castilla y León. REFERENCIA: SA059A06 [2006 – 2009].

Las fases han estado relacionadas con los diferentes programas de innovación e integración de las TIC, planteados tanto a nivel estatal como desde la propia comunidad autónoma.

- *Fase 1. Curso 1991-1992.* Incorporación de ordenadores en el Centro. El CFIE de Benavente facilita al centro una serie de ordenadores portátiles; no vinculados directamente a ningún proyecto “oficial”, sino a impulsar un cambio en la metodología de enseñanza en el centro. Responde a un acuerdo impulsado tanto por el Director de la antigua escuela Comarcal de Burganes (posteriormente convertida en cabecera del CRA) y el equipo Directivo del CFIE de Benavente. En cierta manera, supone el plantear este centro como un centro piloto en la comarca, en el uso de las TIC.
- *Fase 2.- Desde 1991 hasta el año 1997, Proyecto Atenea.* El centro se acoge a este programa que permite recibir una dotación de ordenadores, recibir software especializado para uso en el aula de Educación Infantil y Primaria.
- *Fase 3. Desde 1998 a 2003. Aldea Digital.* Dirigido a potenciar el uso de Internet en los centros educativos. En ese momento, 1998 es cuando se produce el cambio de funcionamiento del centro de Burganes, que pasa de ser una comarcal a cabecera del nuevo CRA que se constituye: CRA Valle de Valverde. Este proyecto posibilita que todas las escuelas dispongan de acceso a la red Internet, aunque se trata de un acceso de poca posibilidad de transferencia de información, no es un acceso de banda ancha.
- *Fase 4.- Centro piloto Red.es. De 2003 a 2007.* Centro adscrito a la Red de Centros Educativos Avanzados en el uso de las TIC. Este proyecto permite nuevas dotaciones de ordenadores, destacando los 21 portátiles destinados para el uso directo del profesorado, la incorporación de cañones de proyección en todas las aulas de todas las escuelas pertenecientes al CRA y la dotación de una pizarra digital interactiva (Del Río Alonso, 2005).
- *Fase 5.- Centro avanzado Red.es. De 2007 a 2009.* Una vez finalizado el proyecto de centros piloto, a los tres años de desarrollo de dicho proyecto, los centros piloto se transforman en centros avanzados. El centro mantiene la dotación de infraestructuras tecnológicas facilitadas en la fase anterior
- *Fase 6.- Centro AMERA, desde 2009.* Centro colaborador de la Consejería de la Junta de Castilla y León en la evaluación catalogación de software educativo para las etapas de Educación Infantil y Primaria.

3.- Estrategias para la adecuada integración curricular de las Tecnologías de la Información y la Comunicación en los Centros Rurales Agrupados.

3.1.- Crear grupos de trabajo que asuman diferentes funciones en el Centro Rural Agrupado vinculadas con la integración de las TIC

Con el objetivo de evitar que sean las mismas personas las que asuman la mayoría de las funciones relacionadas con la integración de las TIC, y se disponga esta integración más desde una perspectiva de proyecto de centro y no como unas propuestas personales de una serie de profesores y profesoras del centro, conviene que se establezcan diferentes grupos en los centros que asuman diferentes funciones (Llopis, 2009b).

Dependiendo de la implicación del profesorado en los proyectos y el nivel de competencia del profesorado tanto desde el ámbito tecnológico como pedagógico, referido a la correcta integración de las TIC en las programaciones de aula.

- *Grupo de formación:* constituido por el conjunto de profesores y profesoras que buscan información referida a los cursos y recursos tecnológicos que se pueden emplear en la enseñanza obligatoria; informarse sobre los mecanismos y procesos necesarios para la solicitud de ayudas para la formación del profesorado, preferentemente dentro de los propios centros educativos o en los Centros de Formación del Profesorado e Innovación Educativa próximos. En este momento también hay que destacar las posibilidades de la formación on-line, combinando con la formación presencial en los centros educativos.
- *Grupo de mantenimiento:* grupo responsable de la elaboración de normas sobre el uso adecuado del hardware y software del centro y del cumplimiento de las normas por toda la comunidad educativa del centro. Responsables de la comunicación de las averías de los aparatos tecnológicos, a la dirección de los centros con el objetivo de informar con la mayor rapidez a las empresas encargadas del mantenimiento tecnológico; durante el periodo de garantía de los aparatos, la comunicación a las respectivas empresas de averías.
- *Grupo de elaboración y creación de recursos digitales educativos:* se encargarían de la localización en la red de diferentes recursos tecnológicos, objetos de aprendizaje ya creados para ser utilizados en el aula, la creación de nuevos materiales específicos para los procesos de enseñanza –aprendizaje a implementar en los centros educativos.
- *Grupo de comunicación:* se relacionaría con las diversas entidades vinculadas a la gestión y educación en los centros y empresas de ámbito tecnológico (Consejerías de Educación, Direcciones Provinciales de Educación, empresas

tecnológicas proveedoras de software o hardware,..., Centros de Formación e Innovación Educativa para el profesorado) con el objetivo de difundir las experiencias de buenas prácticas educativas realizadas por el centro, la evaluación de materiales educativos, la evaluación de las posibilidades tecnológicas de los diferentes recursos que dispone el centro en función de su uso por ciclos y niveles. Podrían utilizarse diferentes medios de difusión: páginas web de los centros, uso de blogs, utilización de podcats, uso de videocast, etc.)

3.2.- Disponer de conexiones de banda ancha del centro con la red Internet, fomentar el uso de redes WI-FI dentro de los centros para facilitar el acceso desde cualquier aula y lugar del centro, sin necesidad de extender e instalar redes de fibra óptica por las dependencias del centro.

Para poder disponer de una red Wi-Fi con unas prestaciones adecuadas de transferencia de información, en todos los lugares, será necesario el ubicar en diferentes puntos estratégicos de los centros routers comunicados por fibra óptica con el router central o Switch que regule el tráfico entre las diferentes redes y la conexión exterior del centro a Internet (Educ@ con TIC, 2009).

3.3.- Planificar procesos de formación que vinculen a todo el claustro del centro, que permita conocer los recursos y estrategias didácticas adoptadas desde el claustro para la integración curricular en el aula.

El claustro de los centros debería actuar de forma coordinada por el equipo directivo y por los tutores para el desarrollo adecuado de los proyectos de integración de las TIC en las aulas, vinculado a la labor de los tutores en las aulas y los procesos de enseñanza y aprendizaje del alumnado en las diferentes disciplinas (Red.es, 2008).

3.4.- Conviene que cada aula cuente con al menos un ordenador fijo en el aula, que disponga de conexión a Internet, e impresora y la posibilidad de incorporar un cañón de proyección. Si fuera posible, convendría disponer de una pizarra digital interactiva en el aula.

Se han de planificar en los ejercicios presupuestarios de los centros una partida destinada a la compra de dispositivos tecnológicos digitales (ordenador, impresora, pizarra digital, monitores, etc,...) así como disponer de un presupuesto para las renovaciones y actualizaciones del material disponible en los centros, y su reparación (Llopis, 2009b).

En la medida de lo posible, conviene el adoptar la estrategia de utilizar software libre en los centros, para no tener que disponer de partidas presupuestarias referidas a la compra de software comercial, si las prestaciones son similares entre ambos (Red.es, 2008).

3.5.- Conviene que el centro disponga de una adecuada web que facilite la interactividad a los potenciales usuarios: padres, alumnado y profesorado del centro.

La web del centro debería facilitar a los padres los documentos administrativos e informativos relacionados con el proyecto del centro, la gestión administrativa, información sobre la organización docente (Llopis, 2009b).

En el momento actual de difusión de aplicaciones sociales relacionadas con la web 2.0, que facilitan la participación y comunicación de los potenciales usuarios, a la web del centro se podrían añadir aplicaciones como Blogs, uso de foros y utilización de encuestas para tener presentes las opiniones de los padres, o alumnado, mediante el uso de estas aplicaciones. Convendría disponer de los sistemas adecuados de registro, para que aunque se facilite el acceso de lectura de forma universal a cualquier tipo de usuario, sólo tengan la posibilidad de escritura los alumnos, los padres o tutores legales realmente vinculados con el centro (Red.es, 2008).



Imagen 1.- Web del CRA Valle de Valverde. <http://cravalledevalverde.es>

3.6.- Planificación e implementación de nuevas estrategias metodológicas y organizativas en el centro, dirigidas a la mejora de los procesos de enseñanza – aprendizaje.

La integración de las Tecnologías de la Información y la Comunicación (TIC), no puede realizarse de forma anecdótica, o referida a la exhibición de diferentes tecnologías en el centro; al contrario se han de planificar estrategias didácticas de utilización de las TIC para la efectiva integración en el currículo escolar, en cada una de las etapas y niveles educativos (Educ@ con TIC, 2009).

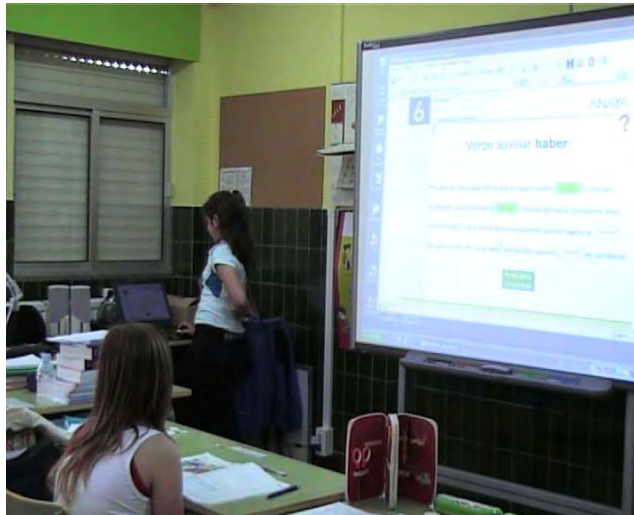


Imagen 2.- Trabajo integrando las TIC en el aula

Conviene que la integración de las TIC se realice en los centros de una forma gradual y escalonada: las primeras actividades que integren las TIC han de ser similares a las actividades realizadas sin la necesidad de utilización de Tecnologías digitales, actividades de las realizadas utilizando recursos como el encerado o pizarra tradicional y el cuaderno de papel del alumnado, pasando a realizar estas actividades con la integración curricular de las TIC en una pizarra digital interactiva, por ejemplo. Posteriormente en la medida que tanto el profesorado como el alumnado van adquiriendo competencias tanto de tipo tecnológico para el manejo de la “cacharrería” como de tipo pedagógico, para la efectiva integración en el currículo, el siguiente paso estaría encaminado a la integración de herramientas web 2.0 en el aula: diseño de actividades colaborativas que incorporan la utilización de las TIC. La incorporación de actividades relacionadas con el uso de blogs, de wikis, webquest o cazas del tesoro (Del Río Alonso, s/f) podrían ser unos ejemplos orientados hacia la escuela 2.0, del siglo XXI (Red.es, 2008).

En este sentido, para una adecuada progresión de competencias digitales tanto orientadas hacia el profesorado como el alumnado en la integración de las TIC en el currículo del aula, convendría establecer diferentes niveles, en función de las competencias tanto tecnológicas como didácticas a implementar en el aula. Para que sirva de referencia al profesorado, en cada nivel convendría hacer referencia a las actividades que podrían desarrollarse, que garantizaría el logro de un determinado nivel (Educ@ con TIC, 2009).

El arreglo técnico de los dispositivos electrónicos en el aula, no constituye parte de la competencia tecnológica del profesorado, sino de un especialista técnico en mantenimiento de los equipos; que sirva de apoyo al profesorado. Los costes asociados con este mantenimiento técnico, no los debería afrontar directamente el

centro, sino la administración educativa, es decir la Consejería de Educación de la Comunidad Autónoma donde esté ubicado el centro (Red.es, 2008).

3.7.- Planificación del horario de desarrollo de actividades con TIC.

Cada vez es más frecuente encontrarnos en las aulas de enseñanza obligatoria con un ordenador multimedia con conexión a Internet en el aula; en determinadas aulas ya se han incorporado un cañón, pero excepto en los centros piloto de Red.es, en España, y concretamente en nuestra comunidad autónoma de Castilla y León, en los centros de Educación Infantil y Primaria existe un cañón de proyección, e incluso en muchos no hay.

Desde el curso 2007 – 2008, en todos los centros públicos de Castilla y León se ha incorporado una pizarra digital interactiva, con su correspondiente cañón de proyección. En aquellos centros de la capital o insertados en núcleos rurales de elevada población, la pizarra y el cañón están a disposición de todo el profesorado y alumnado del centro. En nuestro caso particular, Centros Rurales Agrupados, constituidos por el conjunto de cinco escuelas localizadas en los municipios de: Burganes de Valverde, Bretocino, Frieria, Olmillos y Púbrica de Valverde, la opción adoptada referida a la instalación de la pizarra digital es en el centro mayor, denominado “Cabecera del C.R.A.” que es dónde se ubica el equipo directivo y donde se realizan las reuniones de coordinación organizativa y académica durante el curso escolar. Esta situación supone una discriminación, ya que las escuelas pequeñas no pueden disponer de la pizarra, y en muchos casos tampoco de cañón de proyección, sí suelen disponer de ordenador u ordenadores en el aula.

En consecuencia, estas escuelas pueden integrar las tecnologías web 2.0 sin relativa dificultad, participando en blogs, cazas del tesoro, realización de webQuest, o servicios orientados a favorecer la comunicación: desde el correo electrónico hasta el uso de la videoconferencia, servicios en los cuales el CRA del Valle de Valverde ha sido pionero en su utilización e implementación como recurso educativo, tanto para favorecer la comunicación entre el profesorado y alumnado de sus cinco escuelas como para poder participar con intercambios de actividades con otros centros tanto de nuestra Comunidad Autónoma de Castilla y León, por ejemplo con el C.R.A. Burgo Ranero (León) o con centros de otras Comunidades Autónomas, aunque no puedan utilizar otros recursos tecnológicos (Del Río Alonso, 2002).

Actualmente, la gran limitación para algunas de estas actividades es el ancho de banda disponible en los centros, las conexiones a Internet son realizadas vía satélite, al no disponer de infraestructuras de red de fibra óptica, ni tan siquiera de redes de líneas telefónicas de alta velocidad, lo cual condiciona el tipo de actividades a realizar, y la conveniencia de no realizar simultáneamente por todos los profesores del centro el

uso de actividades que consuman un ancho elevado de banda, como sería el caso de las videoconferencias. Sin embargo, la utilización de blogs, o realización de actividades colaborativas utilizando las wikis, no presentarían apenas dificultad (Del Río Alonso, 2002).

3.8.- Trabajo colaborativo del profesorado.

Teniendo presente los diferentes niveles de competencias tecnológicas y pedagógicas del profesorado, conviene elaborar estrategias dirigidas a garantizar la ayuda al profesorado con menores competencias por el profesorado con niveles mayores de competencias, fundamentalmente cuando las actividades web 2.0 son implementadas por primera vez con el alumnado. Las actividades a desarrollar conviene que estén enmarcadas en los niveles de competencias en los que el profesorado se sitúa, para poder efectuar una transición cómoda entre niveles. El garantizar el éxito en cada actividad por el profesorado es fundamental para que éste mantenga su nivel de motivación e interés por la innovación, teniendo presente que estos procesos de innovación tienen un coste elevado de tiempo y esfuerzo por el profesorado; hay que diseñar estrategias didácticas de apoyo y ayuda enfocadas a mantener la llama del interés y motivación del profesorado, en los procesos de innovación curricular con TIC (Red.es, 2008).

La utilización de espacios compartidos, bien mediante la utilización de blogs, como en aulas virtuales disponibles desde los espacios web de los centros, que la Consejería de Educación de la Junta de Castilla y León ha puesto a disposición de los centros educativos no universitarios, pueden constituir herramientas de uso sencillo para esta actividad. Además como estos recursos son gestionados por los propios profesores del centro, son ellos los que determinan si estos espacios están a disposición de la red internet, de forma similar a si utilizaran gestores de blogs como Blogger o Wordpress, o quedan relegados al uso privado, dentro de la web del centro.

El disponer de espacios virtuales para el planteamiento de dudas, consideramos que es un aspecto importante a destacar, que se complementa perfectamente con la resolución de dudas de forma presencial; pero por las características de los Centros Rurales Agrupados, de estar el profesorado del centro (en este centro 20 profesores) distribuidos trabajando por 5 escuelas diferentes (la mayoría están en el centro de cabecera), las reuniones de coordinación académica y organizativa realizadas semanalmente no permiten este tipo de consultas. Por el contrario, el planteamiento de dudas en foros, donde el profesorado responde en aquellos “huecos” de su horario escolar, puede facilitar la resolución de pequeñas dudas por el profesorado.

3.9.- Permitir a todo el profesorado y alumnado del centro disponer de las mismas oportunidades de utilización de los recursos tecnológicos.

Tal como se ha indicado anteriormente, como consecuencia de la propia organización interna de los Centros Rurales Agrupados, la estrategia adoptada con la integración de recursos tecnológicos a los centros es que se incorporen en el centro donde mayor número de alumnado existe y consecuentemente de profesorado. De esta forma, todas las pizarras digitales interactivas que se han incorporado en el curso 2007 – 2008 o en el 2008 – 2009 a los centros se han colocado sobre la pared del “Centro Cabecera del CRA”, quedando sólo disponibles para otras escuelas, durante los días de convivencia conjunta de la totalidad de las escuelas, donde los alumnos prefieren realizar otras actividades que las específicamente académicas en ese periodo.

Las dotaciones a este tipo de centros, deberían estar orientadas por opciones que permitan la posibilidad de un transporte de forma sencilla y en los propios vehículos del profesorado itinerante por el CRA, no de transportes especiales, y que puedan ir rotando de forma periódica por las diferentes escuelas. En este sentido, sistemas de pizarras digitales interactivas del tipo como e-Bean, que permiten un fácil transporte, al ser una caja de dimensiones reducidas y poco peso, que se pueden incorporar sobre las pizarras blancas, o sobre una superficie blanca, permiten la movilidad de las mismas entre las diferentes escuelas, frente a las pizarras tipo Smart o Promethean que se han de fijar a la pared, o en su defecto incorporar en carrito móvil para poder moverla dentro del centro, pero requiere de transportes especiales para llevarlas a otros centros.

Que todos los materiales tecnológicos adquiridos por el centro, puedan ser utilizados en cualquiera de las escuelas que integran el CRA (Red.es, 2008).

3.10.- Dedicar espacios de tiempo concretos en las programaciones de aula, orientados a la adquisición de competencias tecnológicas referidas tanto al ordenador como a las aplicaciones de trabajo escolar básicas con el objetivo de mejorar el desarrollo curricular utilizando las TIC.

Los ordenadores personales además de llegar a los centros, han llegado a los hogares, a las familias; sin embargo, todavía en estos momentos el nivel de incorporación de los hogares en zonas urbanas es superior al de zonas rurales; la propia cultura e intereses inmediatos de los padres e incluso la ocupación de los tiempos de ocio por los alumnos, constituye un factor importante que diferencia a los niños de zonas rurales, muchos no disponen de ordenador.

Es importante que desde el centro se facilite el uso y manejo del ordenador: que aprendan a escribir, a buscar información en Internet, a utilizar una serie de programas

básicos referidos a las diferentes áreas de conocimiento. Al inicio estos tiempos de trabajo con el ordenador parecen disminuir el tiempo dedicado al proceso de enseñanza aprendizaje, pero a lo largo del curso académico, la inversión de tiempo dedicado a la adquisición de una competencia tecnológica básica por el alumnado, permitirá realizar otra serie de tareas con mayor rapidez.

Otro aspecto que consideramos de gran importancia en el trabajo en los Centros Rurales Agrupados, es que la posibilidad de disponer de recursos bibliográficos, libros de consulta, suelen ser inferiores a los niños de la ciudad, donde las bibliotecas suelen ser más grandes, existen mayores posibilidades de acceder a la prensa o a publicaciones periódicas tanto nacionales como extranjeras. Con la incorporación de Internet a los centros, se rompen estas barreras, los niños del entorno rural pueden acceder de idéntica forma a las versiones digitales de los periódicos y revistas tanto nacionales como internacionales.

La consulta de enciclopedias, dentro de la filosofía 2.0, como la Wikipedia o incluso las versiones on-line de las enciclopedias de Micronet para el alumnado de Infantil y Primaria, o de la Encarta, para el alumnado de Secundaria, que la Junta de Castilla y León pone a través del Escritorio Virtual, tanto del profesorado como del alumnado de los centros, pueden ser un referente, de gran ayuda para la localización y documentación de los trabajos del alumnado, sin la necesidad de realizar inversiones en la compra de enciclopedias por los padres.

Las bibliotecas digitales, tanto iniciativas como la Biblioteca Virtual Cervantes, o actualmente las iniciativas de Google Books para digitalizar los fondos bibliográficos, disponibles en las bibliotecas, de forma conjunta con la posibilidad de acceder a versiones electrónicas desde los portales de las Consejerías de Educación de la práctica totalidad de Comunidades Autónomas en España, hacen que independientemente dónde se encuentre el alumnado, puede acceder a los libros de referencia para la lectura y trabajo en el aula.

Todas las estrategias didácticas desarrolladas dentro de los centros con el alumnado orientadas al aprovechamiento didáctico de los diferentes recursos puestos a disposición del alumnado en Internet, tanto de acceso abierto, como sitios privados, de uso educativo promovidos por muchas de las Comunidades Autónomas orientados al alumnado hacen que el potencial de recursos que pueda disponer el alumnado sea importante. Este aspecto constituye un factor importante para que los propios padres analicen la potencialidad que ofrece el ordenador en el hogar para los procesos de enseñanza-aprendizaje de sus hijos, y de esta forma también los padres se irán interesando en las posibilidades que esta herramienta les pueden brindar para su trabajo u ocio.

Además del tiempo de trabajo en el aula durante las clases, iniciativas como las desarrolladas en el CRA Valle de Valverde, en el Colegio de Burganes, de incorporar en la biblioteca del centro, aquellos ordenadores más antiguos, que resultan menos útiles dentro del aula, y aprovechar los tiempos libres del alumnado entre las clases de la mañana, la tarde y el periodo de la comida facilitando el acceso a la biblioteca al alumnado, fundamentalmente en los crudos días de invierno (en Zamora suelen ser muchos días), de esta forma el alumnado puede disponer de acceso gratuito a Internet, y poder avanzar en sus tareas para el día siguiente.

Destacamos al respecto, las iniciativas desarrolladas en este centro, CRA Valle de Valverde, de clases de alfabetización digital orientadas a los padres, clases impartidas en horario extraescolar; orientadas al desarrollo de unas competencias básicas mínimas para los padres; para que puedan utilizar los ordenadores en tareas sencillas y conocer qué es lo que está haciendo sus hijos con el ordenador: tareas de trabajo escolar u ocio digital.

La utilización de las herramientas básicas del ordenador y una serie de programas informáticos de referencia a nivel de usuario constituyen el pilar fundamental para garantizar el éxito en las actividades curriculares planteadas.

4.- Conclusiones y perspectivas de futuro

El Centro Rural Agrupado Valle de Valverde, de Zamora, lleva durante los últimos veinte años integrando las TIC en el currículo de la enseñanza obligatoria; el profesorado ha desarrollando las competencias necesarias mediante un proceso de aprendizaje permanente para preparar a los alumnos del siglo XXI, de un entorno rural, para el desenvolvimiento adecuado en la Sociedad de la Información, adquiriendo las competencias digitales necesarias.

Consideramos que para el futuro se han de incrementar las acciones de cooperación transfronterizas, entre España y Portugal, concretamente este mismo año la Junta de Castilla y León y ha propuesto el desarrollo del proyecto ATICA² que propone un intercambio de experiencias TIC entre centros educativos de España y Portugal dentro del Programa de Cooperación Transfronteriza (POCTEP). Otro aspecto a destacar será el plantear los sistemas de certificación TIC orientado a la evaluación de centros

² El proyecto ATICA tiene como finalidad: "*propiciar el intercambio de experiencias en el ámbito educativo entre las provincias de Ávila, León, Salamanca, Valladolid y Zamora y las Regiones Norte y Centro de Portugal, que enriquezca la práctica docente, utilizando las Tecnologías de la Información y la Comunicación al servicio de la educación*" (BOCyL).

educativos³; mediante esta evaluación, los centros obtener el grado de "excelencia" en la aplicación de las tecnologías de la información y la comunicación (Llopis, 2009a).

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³ La Junta de Castilla y León ha puesto en marcha el **Plan Director de las TIC**, cuyo objetivo es "la mejora integral de la calidad del sistema educativo, orientado a la plena integración curricular de las TIC en el modelo educativo de la Comunidad..." La finalidad es el conceder varios niveles de certificación y reconocer así la labor de los centros, tomándolos como referentes destacados en la integración, aplicación, fomento, desarrollo e innovación de las TIC. Para dicha certificación se tomarán como parámetros aspectos como las infraestructuras, la formación, la gestión, comunicaciones y acción social, que los centros que así lo soliciten tendrán que demostrar documental y presencialmente, a través de una comisión de acreditación y que tendrá una caducidad de dos años (Llopis, 2009a).

Decálogo elaborado por la constelación Volans (C.R.A. Oleana de Valencia, C.R.A. Valle de Valverde de Zamora, C.R.A. Burgo Ranero de León, C.R.A. Los Romerales de Cuenca, C.R.A. Cinca Cinqueta de Huesca y C.R.A. Ana de Austria de Valladolid.

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Teaching biodiversity with innovative identification e-tools

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Abstract

In this paper innovative ways for inquiry-based pedagogy in the field of Biology teaching are presented. The discussion is centred around the products and results of the project KeyToNature, an European e-Content Plus project focusing on the development, testing and evaluation of innovative e-tools for teaching and experiencing Biodiversity as a way to involve students from different grades in the exiting process of identifying organisms and by doing so getting interested in key sciences.

Science education - a need in Europe

Many recent publications at national and European level have focused on the declining interest of young persons in the key sciences. Many projects and actions have been undertaken to change this situation, but a reversed trend cannot be stated as of yet. The European Union as well as national governments are still very concerned about the topic, because young academics in the key sciences are particularly needed to ensure a leading position for Europe in the knowledge-based 21st century economy.

According to members of the expert group “High level Group on Science Education” chaired by Michel Rocard [1], the main reason for the decline of interest in the key sciences is the way science education is being taught at school. The group suggests to focus its pedagogy for science education on inquiry-based methods. Inquiry-based approaches for science education focus on student-constructed learning instead of teacher-transmitted information. Inquiry-based curricula and teaching techniques have emerged as a combination of several theories such as “constructivism”[2], “Bloom's taxonomy of learning” [3] or “multiple intelligences” [4]. In simple terms, this is a learning process or strategy rather than any specific set of lessons. These experiential methods are more suitable because a) they increase student motivation and attainment levels, b) they engage a student's multiple intelligences and are therefore effective for all students, also for the weakest and the strongest, c) they stimulate teacher motivation just as much, d) they mirror the stages of Bloom's learning phases, which lead to a more complete cognition by building on previous knowledge, e) they do not exclude traditional deductive teaching methods – it is even advisable to combine these different methods in order to accommodate different preferences and mindsets of different students, and finally because f) student collaboration underpins the assimilation of knowledge.

Teaching biodiversity, using innovative approaches

Within the knowledge domain of Biology, one of the key sciences carrying a leading role for a prosperous future on Earth, providing better understanding of the diversity of organisms on Earth, the main characteristics and surviving strategies of organisms etc., is considered crucial in the educational sector. The study of biodiversity and the identification of organisms in particular, is part of the educational curriculum in all primary and secondary schools all over Europe. Every school activity on biodiversity involves the process of identifying organisms.

This process is very suitable to use in a renewed pedagogical approach to science education that is based on an enquiry-based learning context: starting by outlining the problem, i.e. identifying organisms and their main characteristics, moving to more complex questions related to the ecosystems of the animals identified. During the identification process all phases of an inquiry-based learning approach can be followed: identification is an active, explorative activity in which students are encouraged to discover principles for themselves and thus become less passive as learners. The identification of organisms helps to provide learning environments that support open, active, and in many cases collaborative learning approaches. Groups of students can plan a certain identification approach, work together on the identification of certain individuals, discuss and revise assumptions and results, and present results to others. In addition, identification often takes place in the context of field trips. The field identification of organisms presents a unique set of visual learning, visual thinking and visual communication requirements. Being able to identify their knowledge of images to think and communicate is extremely important for school children. Identification allows students to practice necessary visual skills and to explore visual approaches to problem-solving within the identification of the organism knowledge domain. Visual learning can be defined as “the acquisition and construction of knowledge as a result of interaction with visual phenomena”[5]

A new approach to identification keys

Identification usually takes place with the support of identification books that use so-called dichotomous keys for identification, and cover a large number of organisms and geographical areas, e.g. wild flowers[6] in Portugal. Other books, targeting the scientific community, use classical identification keys in which biological information follows the taxonomic scheme: they first lead to families, then to genera, and finally to species. These scientific keys cannot be used by non-professionals and obviously not for classroom activities. Additionally, traditional and scientific identification keys provide more information than needed to identify a certain organism. We can summarise that traditional identification keys are too overloaded with information, the amount of organisms that can be identified as well as technical terms, and therefore cannot be used at school.

As a consequence, there might be an abysmal difference between the amount of information requested by a classical key, and what would suffice to name an organism [1]. Technical jargon and the taxonomic arrangement of keys are major obstacles to the identification of organisms for a non-specialised audience.

In the last few years, new technologies have brought about a true revolution in the field of biological identification. In a multi-dimensional way, computer-based programs can use a wealth of morphological-anatomical data, plus the distributional-ecological information usually hidden in the large ocean of scientific literature. Identification keys are now available on the Web in a great diversity of formats, contents, and query interfaces (dichotomous, polytomous, multi-access or multi-entry). They can derive from a paper-printed counterpart or have been created ex novo from original data [7].

Thanks to an optimised hierarchy of identification characters and the extensive use of pictures and other resources, the new identification tools are more user-friendly than the classical paper-printed keys, and very flexible to use in the classroom[7].

Biodiversity teaching and KeyToNature

KeyToNature (<http://www.keytonature.eu>) is a three-year European project approved within the framework of the e-Contentplus Programme. It centres around the development of

innovative tools for the identification of organisms and on their implementation into the world of education, with the purpose of promoting the teaching and learning of biodiversity.

The long-term goal is to enhance the knowledge of biodiversity at all educational levels in an innovative way. The **KeyToNature objectives** for educational contexts can be outlined as follows:

- Promoting the understanding of biodiversity
- Promoting the use of identification keys in education
- Increasing access and easing the use of digital identification tools in all participating countries;
- Developing and giving access to e-learning tools that support the use of identification keys in education;
- Giving examples of good practice in teaching biodiversity;
- Promoting community-building amongst biologists, technicians and educational specialists with the purpose of exchanging information on biodiversity teaching practices and necessary developments.
- Designing identification tools according to the needs of the different educational levels and learning cultures.

The KeyToNature Learning Resources

KeyToNature is developing targeted products and solutions based on existing identification tools to support innovative pedagogical approaches in biodiversity teaching and in science in general. The main products are:

1. Flexible and customised **identification e-tools** are being developed according to the needs, interests and preferences of the target groups, namely primary, secondary and tertiary education. A database including all available identification keys can be searched on the project website. The identification tool modules consist of:
 - Interactive pathways for the identification of organisms (flora, fauna, fungi, etc.) guiding the users in their discovery process with rich textual and media support (hundreds of thousands of high quality digital photos),
 - Thousands of hyper-textual documents linked to identification pathways with textual information and images (photos and drawing) for each step necessary to identify an organisms,
 - Ecological-distributional information and organism descriptions, info on taxonomy, ecology, protection status, common names, uses etc.
2. Collaborative environments to support the work and exchange student-to-student, teacher-to-student and teacher-to-teacher.
3. Additional information and teaching materials (wiki-based) to support different classroom activities. These materials are being developed by teachers who are already using KeyToNature identification tools in their teaching activities.

It is essential to point out that the KeyToNature tools are being developed to meet the needs of the three main target groups, which have to be analysed separately.

Primary school children

In the scope of primary schools, the KeyToNature e-tools have to cope with demanding pedagogy- and usability-related requirements. More than for the identification of species, the tools are being designed to support general pedagogical aims such as:

- Improvement of cognition.
- Generation of problem-solving abilities.
- Development of teamwork abilities.
- Improvement of knowledge of biodiversity
- Improvement of social skills.
- Reinforcement of self-esteem, activation of emotions
- Satisfying the high level of curiosity of children

The KeyToNature keys dedicated to primary school children can be characterised as follows:

- They are small-scale, i.e. they include a small set of species to identify
- No technical terms, i.e. the language and information provided must respect the age of the children and avoid excessive demands.
- As many pictures as possible

From a usability point of view, the e-tools are as easy to use as possible, respecting the needs of young children (e.g. single choice menus). Navigation, look and feel need to appeal to this age group. Positive feedback needs to be given to different actions (also on errors). Most tools have already implemented a help function.

Secondary school children

For the target group of secondary school children, the general pedagogical requirements are similar to the ones of primary school children described above, but the pedagogical objectives are different. The acquisition of knowledge in the biodiversity domain enters the foreground. The identification process receives more focus, knowledge on identification processes and procedures as well as on different aspects such as taxonomy of the species, bio-indication, socialisation, habitats, etc. become increasingly important in the teaching process. Therefore tools that are appropriate for secondary schools deliver more detailed and complex information, and help children to explore it.

Usability aspects also need to address the needs of the target group. Look and feel, navigation, feedback, language etc. have to meet the needs and tastes of teenagers. Motivation is an extremely important aspect, too; especially young teenagers are difficult to motivate to become involved in activities to do with the identification of organisms. Electronically-based identification tools are a way to promote motivation amongst the generation of digital natives.

Conclusions and outlook

At the end of its second year KeyToNature has gathered a tremendous amount of data related on the effectiveness of its e-tools to promote novelty in pedagogical approaches in the Biodiversity knowledge domain. The project will continue to create and adapt flexible identification e-tools to response to users and classroom requirements in order to improve interest to key sciences education.

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Building the Next-Generation Educational Portal for Estonian Schools

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Introduction

Koolielu (www.koolielu.ee) is the main educational portal for teachers in Estonia. Users can read school-related news, browse course and job advertisements, search and download learning materials and participate in discussions. The content is available for all users but the main target group is teachers from primary and secondary schools. The first version of the portal was launched in 1999. Koolielu portal is administrated by the Tiger Leap Foundation – an agency responsible for ICT development in Estonian schools with the financial support from the Estonian Ministry of Education and Research.

In the beginning of the year 2009 the development of new version of the Koolielu educational portal started. Previous version of the portal was based on Web 1.0 paradigm – it was so called reader oriented. The way in which the users act in the Internet is changed and we felt a need for a new educational portal. Next version of the portal is based on Web 2.0 ideology – it is writer oriented, has social software functionalities and is connected with networks for changing the learning content. The goal is to make portal attractive for the new users and also increase the range of the content creators and the amount of learning materials.

The new version of the Koolielu portal is developed by the Centre for Educational Technology (<http://htk.tlu.ee/htk/in-english/>), which is the R&D unit within the Institute of Informatics in Tallinn University. The portal contains six sections:

1. News – aggregated from various online sources,
2. Advertisements – course offerings and job search,
3. Tools – links to the online or downloadable educational applications,
4. Subjects – repository of learning materials,
5. Discussions – traditional online forum,
6. Communities – every user can initiate an ad-hoc community which will get automatically a dedicated collaboration space, forum and other collaboration tools.

Authenticated user has an additional section – “My dashboard” where user can construct his/her own personal working space using dashboard widgets.

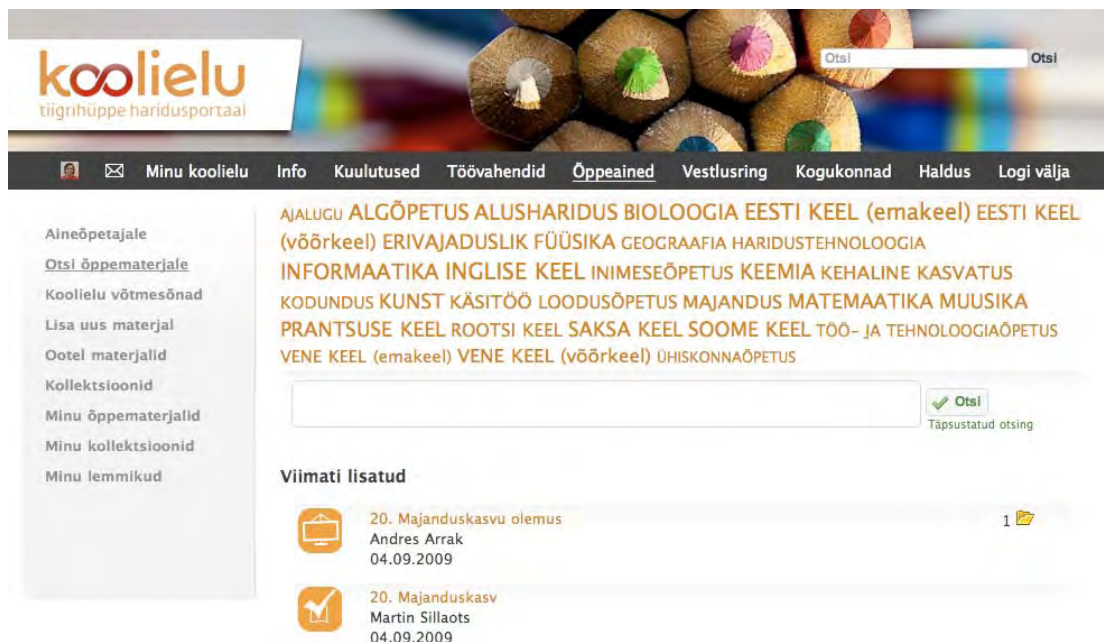


Figure 1: Educational portal Koolielu learning content section. The tagcloud in the top of the screen is formed from the data in the repository - subject names. The size of the subject name indicates how much content it has.

In the wide range the development of the educational portal can be divided into two different tasks:

1. Integration of Waramu learning object repository (LOR) with the portal,
2. Implementation of functionalities of the social software in the level user interface.

The Waramu repository is a Java application, connected to MySQL database. Waramu has also been developed in CET. Below we will introduce the metadata specification, Web services and curriculum mapping used in Waramu.

The Koolielu portal itself is built on top of the Elgg – an open source e-portfolio system (see <http://elgg.org>). It is well known social media platform, enabling easy implementation of the social software technologies like tags, social bookmarks, recommendations, widgets and communities.

Portal management

The biggest difference from the previous version of the portal is involvement of the users (teachers) in producing the content, finding and sharing educational resources. In the old portal only small number of users – moderators – had right to upload the content and publish information. This led to overload of the human resources and to the quality problems in content moderation. A lot of interesting materials left unpublished and there was not enough time for quality control. In the new version of the portal every registered user can publish news, advertisements and learning materials. The moderators and editors of the portal have still an important role – they have to accept or reject the published content. This increases the range of the authors and provides wider set of different content.

Repository

The core of the new version of the educational portal is standard based repository of learning objects. Metadata of learning objects in Waramu is compatible with the Learning Object Metadata (LOM) application profile of Learning Resource Exchange (LRE) created by the European Schoolnet. The connection between the portal and the repository is based on Waramu Publishing Interface Web service (<http://trac.htk.tlu.ee/waramu/wiki/WaramuSoap>). Thanks to standard based metadata and Web services it is connected to the European networks of learning repositories. With the FIRE network it is connected through federated search and with the LRE network it is connected through metadata harvesting. Learning materials stored in Estonian educational portal can be searched through the European Learning Resource Exchange portal <http://lreforschools.eun.org/>.

Curriculum mapping

LOM applications enable different ways for content classification. In European projects the Multilingual Thesaurus (<http://lre-thesaurus.eun.org/>) is used. Pedagogical experts in Estonia find that insufficient because it structures the content in very broad level – suitable for all European countries and not taking account national specificity. For classification purposes the hierarchical structure of Estonian curriculum was integrated with the repository. This was based on the fact that curriculum is the best way for the teachers to understand the content. In educational portal all learning materials are connected with the topics of national curriculum. This provides easy and quick browsing mechanism to portal users. Also enables good overview for decision makers about what topics of the curriculum are well covered with the materials and where the content is needed?

Tags

Repository is usually database system with several tables connected to each other. The presentation of the data in table format is not a user friendly way. More attractive method is to present data stored in the tables as tag clouds. Keywords, subject and author names used in the content descriptions can be handled as tags. Instead of presenting them in the simple list or in complex tables they can be rendered as alphabetical order tag cloud. The size of the keyword indicates how often it is used in database. User can browse the content by clicking on tag. Tag clouds are the easiest way for presenting data in attractive way. Tags are also well known from the social software environments and that's why users know how to use them.

Social bookmarks

Registered user of the portal can create bookmarks to favorite learning materials. It provides faster way to the important content. What is founded once can be reused again. Those bookmarks are also visible to other users through collections. This enables sharing of interesting information. This approach is well known from social bookmarking environments like Delicious. The specific content has also indicator that shows in how many collections this material is presented. This is one way how to describe how popular the content is.

Recommendations

We decided not to provide functionality for the scale-based content rating. Instead of giving the points to the learning materials portal moderators can give recommendations on how to use the specific learning resource. E.g. this content is suitable for self-study. Relevant metadata will be stored in the repository and content

can be searched with this criteria. Instead of quantitative evaluation we created functionality for qualitative evaluation. Registered users can comment learning materials. They even can start discussion about specific content. Though some quantitative information about content popularity is available. For example number of comments related with the content, how often this content is downloaded or opened by other users. Learning materials can be sorted based on this information.

Personal desktop

When most of the sections of the portal existed in some way in the older version, this is totally new section. Registered user can design she's own personal desktop. This is made possible with the widgets technology. Every section or functionality in the learning portal has widget. User can decide what kind of widget-based services are important to here. They can drag all needed elements to the desktop end create personal working space. Most of them (e.g. latest news, latest discussions, new materials in my subject) provide instant access to the different parts of the portal. They are useful for picking up the latest information. User does not need to browse through the portal to find out interesting materials. Some of them are important tools for portal administrators. For example editors can see the list of news created by the users who have less rights and need editors approval for publishing. Also subject moderators can have list of content waiting for publishing. Some of the widgets are usable for creating personal knowledge space. Tools like blog, message board and activities can be used for this purpose. And some of the tools can create connections with the outside world. Widgets like Twitter, Flickr and XGadgets can integrate wide range of information from outside of the portal with users personal desktop.



Figure 2: Educational portal Koolielu personal desktop section. Subject moderator has selected widgets for presenting the list of content waiting for publishing, newest content in he's subject and list of activities in his community.

User profile

Most of the widgets are suitable for users personal desktop but some of them are suitable for presenting different kind of information in users personal profile page. The same widget can be used in different places. When personal desktop is accessible only to its owner, in profile page she can decide who sees what? Is it for all users, for

registered users or only for friends? Some of the widgets can be used in both places for different purpose. For example “My latest content” widget can be used in personal desktop for making shortcut to the content. The same widget can be used in users profile as a portfolio that presents users latest work. Some of the widgets can be handled from the personal desktop while the result is presented in users profile (e.g. blog). And some of the widgets are reasonable to integrate only in users profile page (e.g. Flickr photos or XGadget multimedia applications). With widgets user can build striking and memorable personal page – similar to the social network environments.

Communities

Community section did not exist in the previous version of the portal. It enables users to form virtual working groups or to find users with similar interest. For example some existing communities of practice moved their virtual home to the portal. Some new work groups are emerging from this environment. We hope that by connecting the learning repository and communities of practice in the same portal we increase the use of learning materials and also support content creation in collaborative way. In the future we plan to run teacher-training courses in the same environment. Communities can be transferred to study groups. This increases again the range of the portal users and quantity of content. We believe that big group of active users and critical mass of learning materials are critical for the success of the learning portal.

Conclusion

The new version of the educational portal is already online but official launch of the portal will take place during the September 2009 but this is not the end of the portal development. Lot of new development ideas and user needs emerged during the development process. They have been put aside for future development. We also plan to build on the top of this portal a new e-portfolio system that supports competency based training and personal development. Even in the software design process we have focused on Web 2.0 traditions – all interesting and popular applications are in continuous beta phase.

Deer Leap: the National Strategy for ICT in Georgian Schools

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Background

Computers have been used in education for more than 50 years. During this period, not only technology itself has evolved – the approaches to make use of technology in teaching and learning have changed radically as well. While in the beginning the main goal was to replace teacher with computer, then soon it was realized that “learning with computers” instead of “learning from computers” is the right way to go. In the Soviet school system computers were associated only with teaching informatics as a specialized school subject. By the end of 20th century, most of the countries have changed their policies about the use of computers in schools so that integration of Information and Communication Technologies (ICT) into all school subjects and grade levels was prioritized. Georgia accepted the similar approach when the Deer Leap Programme was initiated by the Ministry of Education and Science in 2005. By doing this, several new challenges were created: how to engage teachers of all subjects to make use of ICT and related new teaching methods, how to guarantee equal access to computers and Internet to all teachers and pupils throughout the country, how to provide suitable software, digital learning resources and Internet services for learning purposes etc. Deer Leap Foundation succeeded to make a jump start and to address all these new challenges in a systemic manner. The experiences from Tiger Leap programme in Estonia were used as guidelines. In many ways, the Deer Leap programme has been a success story, but this claim will be just an emotional statement without reliable empirical proof. The Focus on ICT in Education (FITS) study was initiated in 2007 by the Ministry of Education and Research, aiming to provide empirical evidence about the success of integrating ICT into teaching and learning in the schools of Georgia.

Deer Leap programme

Deer Leap was launched in 2005 by the Ministry of Education and Science of Georgia as a national programme for integrating ICT into teaching and learning in Georgian schools. The aim of the Program was defined to facilitate the modernization of the education system in Georgia by creating a country-wide school-based ICT infrastructure and building capacity in modern information technology. The Deer Leap was approved to be a three-year programme (2005-2008) with a strong prospective of at least one more 4-year extension phase. Prior to Deer Leap program (data from 2003/2004) Georgian schools possessed 2600 unequally distributed outdated computers. Internet connection was very rare with a very low speed (33kbps) and high cost (sometimes up to 20 times higher than in the EU). Informatics was a compulsory subject in all secondary schools, the content of this subject was programming – frequently taught without computers. ICT was rarely used in other subjects and in school management. After the needs assessment Deer Leap initial phase (2005-2008) was established to provide:

- access to computers and Internet in each school;

- availability of educational software and services;
- availability and quality of technical support;
- ICT skills of teachers and students;
- integration of ICT into curriculum;
- integration of Education Management Information System on school, district and national levels.

During the three-year period (2005-2008), the programme has been financed mainly from the state budget (36,7 MGEL), with additional support from private sponsors (7,8 MUSD).

Deer Leap programme has been administered by the Deer Leap Foundation, which is established in 2005 by the Ministry of Education and Science. During the three-year period (2005-2008), the programme has been financed mainly from the state budget (36,7 MGEL), with additional support from private sponsors (7,8 MUSD).

The main achievements of Deer Leap programme during the period 2005-2008 were:

1) Development of ICT infrastructure in schools: more than 30 000 new computers were provided to schools, increasing the average pupil/computer ratio from 250 to 36. All computers were equipped with pre-installed Linux operating system and a set of open-source software applications. Internet connectivity was provided to schools so that 60% of all primary and secondary pupils have access to Internet at school. Web-based collaboration environment for educational projects was developed and integrated with LeMill.net portal in order to support authoring and sharing the learning objects.

2) Teacher training: introductory-level computer literacy courses for teachers were developed and implemented in 35 training centres nationwide, 23 000 teachers (out of 70 000) have passed these courses. The follow-up training programme InTech on methods of integrating ICT into teaching and learning was developed in cooperation of the Department of Education, State of Georgia, US. Although InTech course was not yet implemented, a great deal of preparation work has been completed.

3) Digital learning resources: 310 Web-based learning resources have been developed for literature studies, music and art; 70 Web-based school journals have been published, 70 Web sites have been produced by pupils under social sciences project 'My Environment'. Georgian teachers have contributed 173 digital learning resources to the largest international educational repository LeMill.net.

4) Administration and support: most of the schools have hired IT managers.

5) Awareness raising and dissemination of results: Deer Leap programme has been visible in society and has gained a positive image on the national level.

6) Educational projects: DLF has conducted several successful projects on the national level for integrating ICT into teaching and learning. The most successful projects have been 'Georgian literature', 'Cosmic Odyssey', 'My Environment', 'Vakhtang VI', "e-directory of Georgian and foreign composers", "e-directory of Georgian and foreign artists", "e-journals", "Team writings". In addition, several schools have participated in international projects of iEARN. Some collaborative learning projects have been carried out between Georgian and Estonian schools.

7) Unplanned actions: 14 000 laptops have been provided for excellent pupils under presidential programme 'My First Computer'. As an act of foreign aid from the Republic of Romania, a country licence for online learning content management system AEL has been granted to Georgian schools by Siveco Ltd.

Evaluation study

An evaluation study "Focus on ICT in Schools" (FITS) was initiated by the Ministry of Education and Science of the Republic of Georgia, motivated by the need for reliable and valid data from schools as an input for decision-making with regard to the next phase of Deer Leap Programme. This is why there was an urgent need to start systematical collection of data from schools: not just pupil-computer ratio, but also the ways and intensity of ICT use, related regulations, investments, role distributions etc on the local level. The best way to guarantee validity and reliability of this data (as well as comparability on the longitudinal scale) was to prepare a monitoring survey scheme and instruments that can be re-used on the regular basis (for instance, in every 3 years).

The research design and instruments were prepared by Tallinn University, following the methodology and indicators used in international studies of ICT in education (IEA study SITES, OECD study on ICT innovation in education). The survey questionnaires and logistics was similar to ICT Monitor study in the Netherlands and Tiger in Focus study in Estonia, both of which are quite close to international comparative study SITES Module 1 which involved 26 countries around the world. The questionnaires were translated from English to Georgian language and adapted to the local context. Some new items were added to the questionnaire in relation with the Linux operating system that comes with all computers purchased by the Deer Leap Foundation. The objectives of FITS survey were:

- to analyse the scope and ways of integrating ICT into learning/teaching processes, by measuring the intensity, purpose and ways of computer usage by the teachers and students within the schools' settings;

- to identify the problems related with educational use of ICT that need to be addressed in the next phase of the Deer Leap programme

- to describe the readiness of teachers and students to use ICT in teaching and learning, by assessing the their ICT competencies and attitudes towards ICT; and

- to search positive and negative determinants that could shape the attitudes of teachers and students towards ICT usage in teaching and learning.

Research questions were stated in the following manner:

1. What are the main characteristics of the ICT infrastructure in Georgian schools?
2. How has the use of ICT been integrated into teaching and learning in Georgian schools?
3. What strategies are the school leaders implementing in order to integrate ICT into teaching and learning?
4. How do the main stakeholders of implementing ICT in education (school principals, ICT-managers and teachers) envision the future trends and risks related to deeper integration of ICT into teaching and learning in Georgian schools?

The preparations for FITS survey were initiated in autumn 2007, not all schools in Georgia have received new computers by that time. In order to get a more realistic (and less emotional) picture about the use of ICT in schools, the research group and Deer Leap administration decided to study only those schools which have received computers before the summer 2007. Out of these 667 schools, a systemic sample of 167 schools was formed by picking every 5th school from the alphabetical list.

In every school five persons were asked to fill in a questionnaire: school principal, ICT manager and three teachers. Although response rates were quite good, the results cannot be interpreted as representing the situation in all schools of Georgia. The results and related inferences can be generalized only to 25% of schools, which are most likely more innovative and active than the rest of schools in Georgia. Total 160 school principals responded. The full report of FITS study can be found at <http://htk.tlu.ee/deerleap>.

The new national strategy for ICT in Georgian schools: Deer Leap Plus

Proposed timeline for the new national strategy Deer Leap Plus (DL+) is 2009 – 2012. The scope of DL+ strategy is wider if compared with the first master plan: in addition to primary and secondary schools, all institutions conducting initial and in-service teacher education will be included in the list of eligible beneficiaries.

Although in general, the goals of the Deer Leap programme have been achieved, there were still some challenges that need to be tackled during the follow-up programme: insufficient Internet connectivity in schools, pressure to change from open-source platform to Microsoft-based one, quality assurance of the teacher training, need for digital learning resources, reliable monitoring of programme activities, development of SMIS/EMIS, staff turnover in DLF, technophobia among teachers.

The goals of Deer Leap Plus programme

The vision: by the year 2012, technology-enhanced learning has become a normal part of everyday school life in all schools of Georgia. Majority of teachers and pupils are using computers and Internet for information searching, assessment of learning outcomes, creating and sharing digital learning resources, project-based learning, social networking and administrative tasks.

The mission: Deer Leap Plus programme will go beyond equipping all schools with computers, Internet access, virtual collaboration environments and presentation technologies, our mission is to introduce the new culture of teaching and learning that is characterised by collaborative knowledge building in multi-disciplinary problem domains.

The goals of the Deer Leap Plus programme are:

- 1) to ensure access to computers, Internet and presentation technologies for all teachers and pupils,
- 2) to provide ICT skills for all pupils, teachers and school principals,
- 3) to open up the Georgian schools for working and learning together with each other, with local community and businesses, with academic and international partners,
- 4) to provide digitally enriched learning environment,

5) to integrate ICT into curriculum as a cross-curricular theme and, on the other hand, to integrate various curriculum subjects via innovative e-learning methods.

Guiding implementation principles:

- local initiative and innovative experiments should be supported financially in the form of open calls for project proposals
- networks/communities should be seen as a key instrument for disseminating innovation and best practice among schools, teachers, parents and other actors
- activities that enhance integration with other strategies/policies should be prioritized
- production and promotion of open source educational software and digital learning resources with flexible licenses (e.g. Creative Commons) should be prioritized.

The **eu**ro**pean** school 2.0

The seventh EDEN open classroom conference

Call for contribution: Introduction to innovative ICT-based teaching and learning practices in an educational institution in 5000 words to qualify for the European Award for Innovation in the School System

An experience of Blended-learning 2.0

The learning construction between creativity and innovation

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Today the psychosocial interest in the observation of learning dynamics avails itself of new instruments which also become subject of that observation. From the memory, by the pen, the printed book and the Net, **cultural artefacts** conveying knowledge change: they are protagonists of our reflections. By assuming the dependence of the self on the social and physical context, as an axiom, starting from a situational perspective in which personality and environment are complementary, it is obvious to agree with Mantovani (1995) that “artefacts” that is everything which represents a kind of interface with which we are in relation, from the language to the computer, once they have been created, they change the attitudes of their creators themselves, correcting, through the acquisition of meaning, their social environment. The more these artefacts technologically develop, the more they take root within the community which has created them, thus becoming an inseparable part of them, so that they can be considered the “matrix of mentality” (Debray, 1991) which not only changes the content, but creates social phenomena on its own. It is possible to share the idea of Rheingold (2000) about the necessity of learning the advantageous use of technology and moving towards the concretization of that so called *collective intelligence* by Lévy (1996), that is to exploit technology itself while learning, in order to influence also processes besides contents.

Within the complex dialogic activity between environment, users and artefacts, multimedia learning gets its meaning only if it can keep the flexibility that the system has reached and, giving up outdated teaching methods, makes the *communication interpersonal aspect* the focus of didactics, it is through dialogue that, according to constructivists, the educational goal which is shared by all the actors of this process, is reached, that is the *construction of knowledge*, born from the individual’s contribution to common experience.

Therefore, by adopting a constructivist approach, the phenomenology of didactics completely changes, since contents, relationships and learnings become part of a wider process of knowledge building, through a dynamics which changes the historically one direction communication teacher-learner. The classical approach by which learning follows teaching (and it often rather pursues it) is abandoned for the emergence of the constructivist idea of “more learning and less teaching”, perfectly agreeing with the idea of *long life learning* society. Today it seems that it is not (so) important to learn something, but to know how to access knowledge, since that, as De Kerckhove says, what is important are not only contents, but processes. In this sense the *interpersonal communication aspect* becomes the focus of the application of constructivist didactics on line, since it is defined by an interconnection of roles and relationships which are never neatly delimited: a continuous transformation of the relationship teacher-expert and student-user, and the change of the educational environment, which substantially becomes a “learning community”, building its own contents by the enhancement of the communication instruments of which it avails itself, follow each other.

But it often happens that e-learning instruments do not adapt themselves to the idea of education we have above illustrated and to the innovation needs of the educational process. The latter gets stuck within the limits of a planning which is not thought according to a process, producing an excess of tools or a poor communication with the Net resources, and significantly limiting the potentials of the educational experience. An artefact for communication on the Net, even if it is well devised, does not cause, for its intrinsic qualities, the creation of a community: the use of tools and their operational logic within the process of co-construction, must be subject of sharing and co-construction, as well as the “recognizable” contents of learning-education (the contents of courses, to be explicit). (Smiraglia, 2007)

The considerations reported below are based on Zucchermaglio’s reflections, about the study of daily life contexts, since it is always necessary to consider the radically situated, locally built and socially founded character of social practices in which the use of instruments is mediated by joint interpretation and social interaction processes. (Zucchermaglio, 2003)

LEARNING 2.0

The principle on which our didactic planning is based, is *learning by use* which postulates the idea according to which the more widespread a technology is, better we learn to use it, the more its use is optimized, the more it becomes performing (Flichy, 1995). To decide to shift the attention towards a **learning 2.0**, has the purpose of joining the historical and productive theories of the constructivist approach to multimedia learning, to the new technologies which strongly enhance the culture of sharing.

The e-learning 2.0, refers to a new way of thinking learning inspired by the pedagogical and technological point or rather psycho-technological point of view of constructivist didactics, by the approach to social software typical of the web 2.0. The starting assumption is that knowledge, both as meaning and understanding, is socially built and the whole educational process must be focused on collaboration, by the mediation and support of digital instruments. (Wikipedia)

As regards University subjects of Social Psychology, taught by Prof. Smiraglia at the Universities of Naples and Cassino, the role of technologies has been for many years central in didactic experimentation by the methodology of blended learning. After five years of exploration of ICT potentials for University teaching, today this course avails itself of two educational channels on line supporting and integrating face to face class lessons: a blog and an e-book.

The experimentation of the e-book by [Scriptaweb](#) together with the [didactic blog](#), has produced a fruitful research which aims at integrating all the functions useful for a blended learning, into the digital text. This distinction has allowed to obtain, from one side, the typical advantages of learning mediated by technologies, through the blog lack of formality, but on the other side a new attention to the studying methods of learners about educational contents, through the interactive channels existing within the multimedia book.

Both instruments have been chosen because they are based on innovation and creativity, and because of their structure, which is completely in tune with the evolution and rapid development of the web 2.0, which offers the opportunity of creating and easily sharing multimedia contents, thus emphasizing the collaboration on line between users. (Riva, 2008) Therefore not a few experts manage the information for all surfers as before, but a self-poietic, usable and accessible community does that. The Internet by now is not only a panacea of information, but with an exponential frenzied growth pace now it can today really represent that collective intelligence described by Lèvy, a privileged stage of a common knowledge construction, into which everyone can participate with a style and the role which best suit it. From a psychosocial point of view, the usability guaranteed by a graphic, really immediate interface, as those ones characterizing the 2.0, makes it possible for users to express themselves with great simplicity and create new contents, sharing them immediately with the community to which they belong and obtaining by it a feedback in a more or less simultaneous way. It is just the sense of *community* which has a leading role in the cognitive structure of the social networking approach.

As it happens with big changes, sceptics always exist, among them there is the authoritative inventor of the World Wide Web, Berners-Lee (Prati, 2007), for him the web 2.0 does not really exist but as a developed expression of the 1.0, or there are even detractors, among them there is Keen (2009) who considers the widespread dilettantism dominating the new approach to the net, a dangerous transformation of culture, getting to define *user-generated* media as instruments of a democratization which will have consequences such as “the blurring, clouding and even the disappearing of truth”.

For whom is writing this contribution it is unquestionable that the new forms of social sharing make every day obsolete the most recent digital experiences, creating a bigger gap than before between the users of new media and those who are excluded from this use (even not considering the cultural, social or political reason for this exclusion), but it is also an undeniable fact, the progressive development towards the construction and collaboration of the web community (through blogs, social networks, wiki, etc.) which even if it starts from a common original idea of global connectivity, has completely modified the system of making a network, with times and ways which cannot be compared to the foregoing procedures anymore. The risk of drifts towards

anarchism is not to be underestimated. It requires, specially in culturally defined contexts such as those of learning or information, to pay more attention to sources.

Without considering advantages and limits in detail, which a knowledge from “below” can produce, let us go on illustrating this innovative 2.0 learning experience.

BLOG

Within the categorization carried out by Riva (2008), as regards the instruments characterizing the web 2.0, the blog is identified as privileged example for describing the “expressive sites”, the main affordance of which is the possibility of creating and sharing its contents.

By now since 2007 we have been availing ourselves of a blog, initially created on a common Open Space (as blogspot or wordpress) and then, after the e-book introduction, hosted on the server of the Scriptaweb editor, which for the simplicity of its interface and the functions has suitably met the needs of courses being always attended by a large number of students. It has then resulted to be fundamental to have the possibility to avail ourselves of an instrument which does not require a big effort for familiarizing users with its use, being the staff supporting the training process only made up with the teacher and one tutor, compared with the number of students in a class which each year ranges between 100 and 250 enrolled students. To such an end we have chosen to start remote courses with as less as possible functions, making the blog be essentially available as an instrument for studying into depth and debating the subjects dealt with in the classroom.

The blog has really got a more informal role within the identity negotiation and communication processes between students and with the teacher and the tutor, functioning as a real bridge between the classroom and the network. According to the real meaning of “blended”, technologies perform the role of facilitating face to face didactics and offering an arena for exchanging ideas and deepening subjects which otherwise would not be well debated.

Within the user interface the blog avails itself of two areas: Post (main articles) and Sidebar (with different tools and link with the ebook). The former is the central part of the Home Page and is structured according to the articles posted by the teacher and on which the debates of the students being registered in the blog are concentrated together with their contributions by the utility “comments”. The articles loaded by the teacher can have any extension: in this case they mainly consisted of Power Point files already projected during the lessons or loaded for deepening issues debated in the presence of students. This space has been occasionally used for giving self-evaluation questionnaires, for example just before tests or exams, in order to give learners the opportunity of debating among them the possible critical issues concerning their preparation and guarantee the teacher an overview on the level of comprehension and clarity of the illustrated subjects.

The Sidebar on the right shows, as we have above said, different instruments:

- **The noticeboard** for the last minute notices and updatings also referring to the lessons held at the presence of students. The “Noticeboard” has been used for efficiently

managing the organization questions (possible suspensions of the didactic activity carried out at the presence of students, deadlines for the delivery of works and others), but occasionally any kind of directions addressed to all students in general (it was for example, necessary to use the noticeboard for publicizing the rules to follow as regards source quotation).

- **The pages** are posted with different uses compared with the main articles, they have been used to open debates not concerning the specific contents of the course, which are also important for a correct and untroubled carrying out of lessons. In particular, this space has been planned with the function of publicizing questions which would otherwise exhaust the space devoted to debates concerning the contents of the course or would force the teacher and the tutor to a repetitive and tiresome exchange of mail with learners: in the “pages”, common interest topics have been highlighted, as for example the instructions for the registration procedure or those for the drawing up of the final dossier (activity portfolio), in order to give importance, through the blog, to the most frequent problems, to guarantee a public answer which would reduce the possibility of a too big demand of *ad personam* helps. A special page has been devoted to the presentation of the teacher and the tutor, with enclosed photos and e-mail addresses, in order to familiarize users with deferred communication, above all those who take advantage of the on line blended part and do not take part into the lessons carried out in the presence of students.
- **The links** represent the possibility of communication of the educational environment with the environment outside the Network. Before any other tool, students are recommended to use Wikipedia, as one of the best knowledge sharing resources, useful for a quick and very good collection of information. The other external resources are loaded during the courses lasting some months, also after suggestion by the teachers and according to teaching needs.
- **The tag clouds** and the **search** (a small search engine inside the blog) allows to immediately get to meanings, easily identifying the “memes” colonizing each specific educational experience.

The large number of visiting users, has required the utmost limitation of superfluous communication exchanges, probably to the detriment of the informality characteristic of the web and above all of the 2.0, but undoubtedly more in line with the educational purpose. We have managed to conform each intervention with the following criteria:

1. innovation of the expressed position compared with the foregoing ones;
2. creativity in the use of on line resources
3. relevance of the subject of the article to which the comment refers;
4. the formal organization of contents.

Students have been explicitly requested, repeatedly in the classroom and later in the blog, to consciously, creatively and positively intervene into the debate, in order that each intervention

could give an added value to discussion. To such an end each comment explicitly referring to other colleagues' contributions or to other subjects introduced by the teacher into posts (by links to the text in question), referred to only as reflection and further investigation hints, has been considered relevant from the point of view of quality. The mere sharing of a position, for example, expressed in public but not producing new reasoning opportunities, has been considered as mere exhibitionism, dangerous for the frenzied pace of the activity in course. Because of the amount of interventions which daily accumulate in the blog, each new comment has become a big job both for the teacher and the tutor and the whole didactic community, called to constantly follow all discussions, in order to intervene with contributions which are not a repetition of already debated subjects.

To introduce references outside the blog (always by links) has also been considered desirable, in order to show the interest in deepening subjects and the gained familiarity with the search instruments and techniques, but more than anything else, with the logic of sharing. The management of both external and internal sources, that is both referred to colleagues' quotations and to texts and/or authors found outside the blog, has been a practice particularly protected during the course, in order to make aware learners of studying knowledge sharing methods. To share a reference or an in-depth study had to be motivated by the desire of offering an added value to the whole educational process, and not by a mere ostentation of one's own presence. Being in any case the final assessment something obviously personal, and the on-line participation fully considered a judgment parameter for the attribution of marks, it has been necessary to manage this aspect by strictly assessing comments, because of the risk of the emergence of an over-contribution which was hardly useful, if not even harmful for the community. The organization of the intervention contents, in this regard, has been structured in order that learners could privilege the quality and not the amount of contributions. They have been often explicitly required to take care of the form of their writings, avoiding linguistic abbreviations typical of CMC and accurately using references to sources (internal and/or external sources).

EBOOK

The book is a real instrument, in its codex form, it is the most used artefact in the field of education and we can hardly imagine a cultural development without the written language, but above all without its possibility of being repeated.

In 2000 Gallino wondered if the most extraordinary technical product that history had ever known, the book, could be imitated or even replaced by the Network. We can answer to his question by referring to the fusion of technologies which is culminating into the form of the ebook.

The digital revolution has really invested the publishing sector and the form of the digital book. The ebook is considered the electronic format of a paper document, and in this case the danger is represented by the possible limitation of a paper text to a mere digital version, at most being a hypermedia text, which can hardly become an added value in terms of collaboration and positive development of knowledge. Another possibility for the ebook is that of being more properly

called *eBook reading device*, a hardware having the possibility of containing hundreds of digitalized texts. The advantage of this sort of liquid portable library, as regards the preservation and spread of knowledge, is enormous, as well as it is in terms of cutting down costs and spaces.

Even if the aesthetic, cultural and also romantically affection value of the traditional book, cannot be estimated, the evolution of publishing cannot neglect these changes, and as the history of the last century has taught us, cultural changes are strongly influenced by development and by the innovation potential of digital technologies. In this sense, digital publishing must take upon itself the task of carrying out a total Copernican revolution of approach to texts, absolutely not clashing with the paperback, but providing really innovative services, fully compatible with the coexistence of two absolutely not conflicting, but rather each other integrating technologies.

Within on-line learning contexts, ebooks can have an important role in changing the paradigm necessary for the world of culture. Up to now the adaptation of didactic contents to new educational online experiences has often limited itself to a simplification through the multimedia language of study subjects; above all, in blended learning, the learning objects are replaced (producing an oversimplification) or simply accompanied (implying a cognitive overload) by the traditional study of the paper handbook.

According to our experience, the ebook, connected to the blog only by an icon, has supported didactics allowing that change of paradigm which has more and more distinguished the on line experience from the mere distance reply of interactions occurred at the presence of learners, mixing in a new way, private study with the construction of knowledge.

If it had of course been only a digital version of a common book, for example an hypertext or a pdf version, no concrete innovation would have been possible, at least in the didactic field. It is obvious that the characteristics of the digital book must be in line with the collaboration approach and the integration with the resources outside the text, they must substantially interact with the network. (Marconato, 2009)

The challenge of digital publishing, above all that one addressing to the world of didactics, should be that of changing its own identity and mission, coming out from a competition which is (and we could say so, luckily) completely nonsensical. The issues which are debated with references to the ebook are complex and deserve a special attention.

In this sense the choice of adopting the online book completely designed and produced by the publishing house Scriptaweb, has to be interpreted. It is something more than the simple digital version of a printed book. The project from which it comes is the carrying out of the integrated system for the publishing and on line use of published works which is based on the availability for each reader of a personal copy to be read on line, which can be looked up from any computer (Smiraglia, 2007); a dialectic space in which authors and readers can exchange their ideas in order to make of a cultural product, a team project. The highest expression of how the user of the text can personalize it and intervene in it –besides the power given to him to stimulate the author through reflections and analyses- is the possibility of receiving a paper copy called “MyPod”, in which personal notes, sharing notes and references introduced by the user while reading, are printed. In this way to the book initially written by the author a personal version of each reader

corresponds, a version enriched by the interaction had with whom has written the book and with the other readers.

Interaction activities are obviously carried out as regards the single version of the text, within the educational context (or didactic community) using it.

The interaction levels to which the ebook by Scriptaweb refers are a lot and take place between the reader and the book, between the readers, between the readers and the author and avail themselves of a lot of instruments:

- **Author's notes:** these are observations that the author decides to share with readers, which can be integrations or improvements of what has been written in the text, or the publication of fruitful reflections privately had with some readers. In the educational context this becomes a privileged channel of the relationship with the teacher, since it, taking advantage of the lower degree of formality and the seeming virtual character of communication, allows a direct analysis of contents by the mediation of the author of the text himself.
- **Reader's notes:** each reader can decide at which level to expose his observations or questions. He can in particular decide to keep them private (they will be a part of his Dossier), or to share them only with whom has written the book (the author-teacher) or he can make them be visible for all readers.
- **Dossier:** it is the area of personal notes of each reader. In his dossier it is possible to quote for their own use, as memos, some parts of the text, some analyses (for example looking for them by the special instruments existing in the ebook), questions to be completed before sharing them in public or simply personal reflections.
- **The book and the network:** the ebook gives the possibility of making the contents of the books interact with the materials existing in the Web by a search instrument which works both within the text, identifying the different points by which an idea is dealt with and outside on all possible links dealing with the subject being deepened in the whole Network.
- **Multimedia:** the book also offers the opportunity of managing multimedia materials in different formats, up to real films, for guaranteeing an immediate communication of particularly important themes which require a special attention. This greatly distinguishes the ebook by Scriptaweb both from most competitors and paperback versions.
- **Surfing instruments:** the book is provided with a dynamic index, rapidly referring within the text, to the post-it cards, introduced by readers or the author and to the multimedia elements. Besides that it avails itself of instruments like the highlighter, a pencil and notes, for facilitating the use of the text. In this way the approach to the text takes into account the personal learning styles of learners, who can reproduce their habit of studying a book, in the online version too, also facilitated by the instrument digitalization.

Scriptaweb is an e-learning system which takes place by the 'book form' but even more, it is a 'community book' because of the network of relations which are built around it, with moments

of interaction and sharing of study experiences, of assessment of learning, of development of integration tasks. (Smiraglia, 2007)

As it can be easily understood, this instrument becomes particularly interesting for whom works in the field of education, because it facilitates studying and teaching in a creative and innovative way, not neglecting the attention for the educational process and product.

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The risk of learning mediated by technologies- which who is writing has run during the experiences made by the only use of an e-learning platform- consists of the separation between contents to study and process into which to take part: we can run the risk of focusing our attention on the interaction process and practices to the detriment of the contents specific of the exam, often limited to the products specially created for online use.

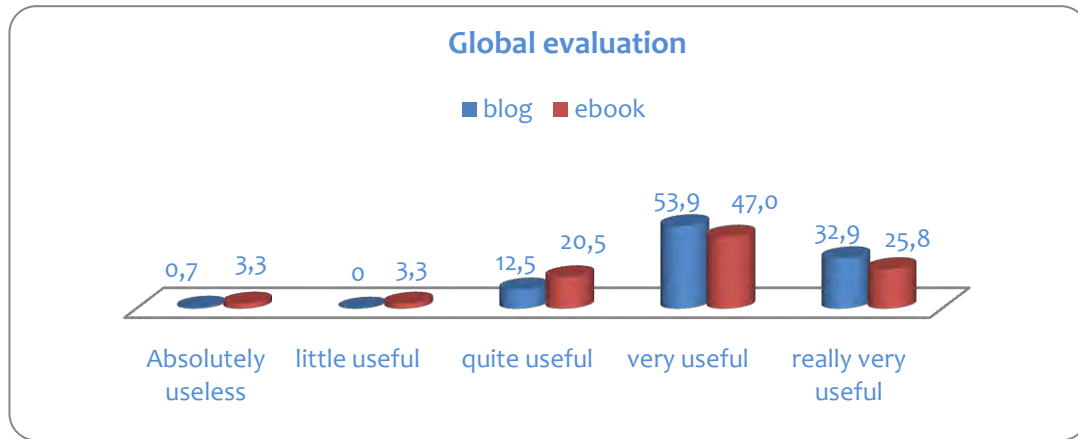
In a blended university course, it is not possible to sacrifice the study of the text, however, as regards traditional texts, the study of books is inevitably deferred to a later moment than that of teaching and interaction, but by the ebook by Scriptaweb, it has been possible to integrate the different needs of the didactic model of a constructivist kind taking advantage of the use of the ICT.

As regards the limits due to the difficulty of reading on the screen, it is important to underline that the ebook by default provides, on purchasing the digital version, a *draft* of the paper text, in order to facilitate the possible users who are not interested in purchasing the paperback version.

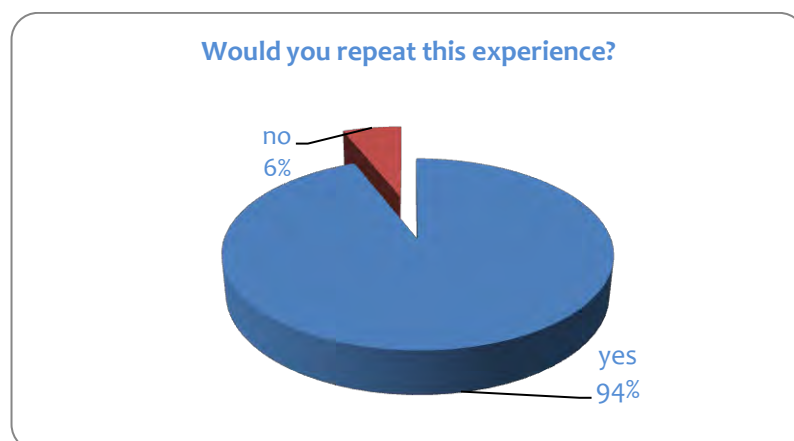
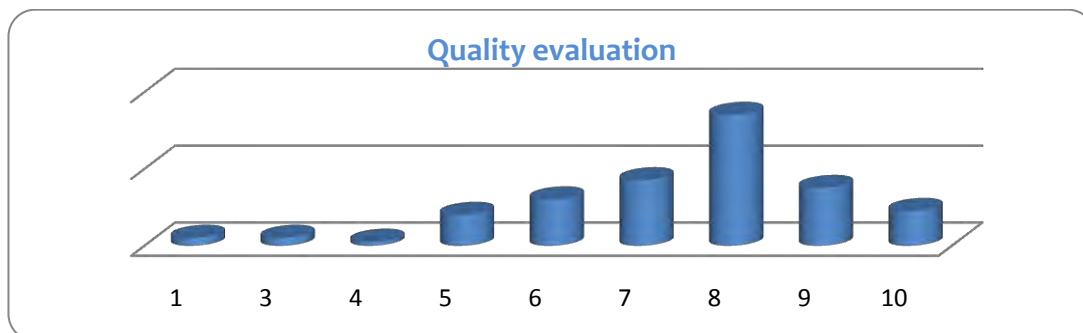
EVALUATION OF THE EXPERIENCE

It has been showed (Oubenaissa et al, 2002) how much on-line interaction increases the sensitivity of students to a **restructuring of knowledge**, compared with traditional courses, by increasing the processes of *meta-cognition* which allow to improve one's own cognitive style according to better performance strategies. The joint use of the blog and ebook has allowed to stimulate each student to intervene in the dynamics of learning, actively participating into collective studying, without finding any difficulty of familiarization with the instrument. Revising and working on multimedia materials, on the exam text and the comments of the class-community, being spurred to reflect about the best way of presenting their interventions on line and using a dialectic attitude towards their colleagues' contributions, students have found themselves to master the exam subjects in a different and perhaps better way compared with the traditional way of studying (read and repeat). In particular they have found themselves involved in the construction of their own objects of learning. They have been called not only to deal with their preparation, but above all with their approach to learning.

Over 70% of learners has very positively evaluated the use of the ebook in the educational experience, not neglecting the massive positive answer to the utility of the didactic blog (over 86%).

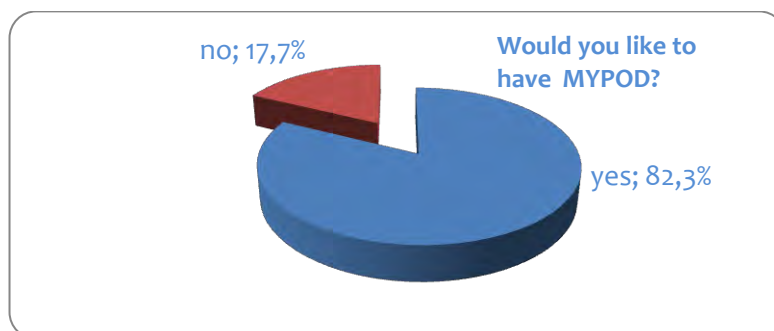


The whole quality of the blended experience, evaluated by a Likert ten step scale, has showed the absolutely positive judgment profile of the course attendants who almost all of them (94%) have stated to be ready to repeat an experience of this kind.



Among the many aspects emerged from evaluation questionnaires, it is interesting to notice the high percentage of students who are interested in having a trace on paper of the work both individually and collectively carried out on line, by the personalized version of the paperback

book, called MYPOD, which reports the notes introduced during the educational activity. This shows a positive answer not only about the object in itself, but also about the adoption of a flexible text which is potentially always in course of publication: the idea of the construction of a participation knowledge.



CONCLUSIONS

The evolution of a system cannot avoid understanding the role played by the technological evolution in course, since modernization is based not only on the technologies of communication in itself, but also on their full and conscious acceptance. (Gallino, 2000) Consequently to turn our face to the changes of the web 2.0 is impossible, at least as it is impossible to ignore the delicate role of *user-generated* media in the quality of cultural development. The counterpart of democratization fostered by the network, is dilettantism, as well as sharing represents the decline of the ownership right. If 77% of university students state not to consider a serious crime to copy the contents taken from the network (CAI research, Keen 2009) -whatever they are- it is evident that we find ourselves to face a problem which links the Internet, or rather its use, directly with culture. (Keen 2009)

We could agree with Rheingold (2000) about our need of learning to use technology in an positive way and this is one of the reasons why teaching, and learning even more, need to have a space of their own in the new generation World Wide Web, which is the present protagonist of digital revolution, which has undoubtedly guaranteed human beings (who are more and more "digital beings") with the overcoming of space and time limits of their perceiving themselves in the world and of their perceiving themselves as a community. On the other hand since learning is a social activity, to have a medium like the Network allowing a huge socialization, can really change the nature of man and his knowledge. (Gallino 2000)

It is not an ideological attitude but it represents a need which is more and more urging within the world of politics and in the world of didactics, particularly in the world of university: the password is *flexibility* and education must take it into account in order to not deny that *progress* which it is the first one to help. The transformation needed does not only have an influence on the means to be adopted, but rather shows itself as a **deep alteration in the culture of developing culture.**

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E-book for a blended-learning experience 2.0

Description of an **innovative ICT solution** to be presented in the form of Exhibitions or Demonstration Sessions in 2000 words.



Smiraglia Stanislao - Grimaldi Daria -
Department of Human and Social Science
University of Cassino - Italy

The book is a real instrument, in its codex form, it is the **most used artefact in the field of education** and we can hardly imagine a cultural development without the written language, but above all without its possibility of being repeated.



In 2000 Gallino wondered **if** the most extraordinary technical product that history had ever known, the book, **could be imitated or even replaced by the Network.**



We can answer to his question by referring to the fusion of technologies which is culminating into the form of the **ebook.**

E-book for a blended-learning experience 2.0



The **digital revolution** has really invested the publishing sector and the form of the **digital book**.

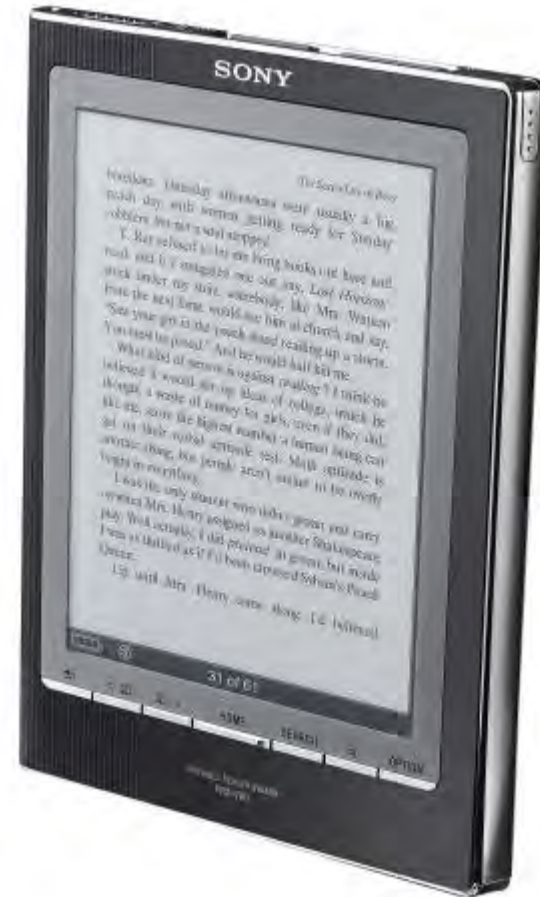




The ebook is considered the **electronic format of a paper document**, and in this case the danger is represented by the possible limitation of a paper text to a mere digital version, at most being a hypermedia text, which can **hardly become an added value in terms of collaboration and positive development of knowledge.**

Another possibility for the ebook is that of being more properly called **eBook reading device**, a hardware having the possibility of containing hundreds of digitalized texts.

The advantage of this sort of liquid portable library, as regards the preservation and spread of knowledge, is enormous, as well as it is in terms of cutting down costs and spaces.



E-book for a blended-learning experience 2.0

Even if the aesthetic, cultural and also romantically affection value of the traditional book, cannot be estimated, the evolution of publishing cannot neglect these changes, and as the history of the last century has taught us, **cultural changes are strongly influenced by development and by the innovation potential of digital technologies.**



In this sense, digital publishing must take upon itself the task of carrying out a **total Copernican revolution of approach to texts**, absolutely not clashing with the paperback, but providing really innovative services, fully compatible with the coexistence of two absolutely not conflicting, but rather each other integrating technologies.



Within on-line learning contexts, ebooks can have an important role in **changing the paradigm necessary for the world of culture.**



Up to now the adaptation of didactic contents to **new educational online experiences has often limited itself to a simplification through the multimedia language of study subjects**; above all, in blended learning, the learning objects are replaced (producing an oversimplification) or simply accompanied (implying a cognitive overload) by the traditional study of the paper handbook.

According to our experience, the ebook, connected to the blog only by an icon, **has supported didactics allowing that change of paradigm** which has more and more distinguished the on line experience from the mere distance reply of interactions occurred at the presence of learners, **mixing in a new way, private study with the construction of knowledge.**

The screenshot shows a blog post titled "persuasione e suggestione" (persuasion and suggestion). The main text discusses the influence of mass media and the concept of "memetic" change. It mentions "scintology" and "jesus camp" as examples of persuasive techniques. The post includes tags like "CONFORMITÀ", "FONDAMENTALISMO", "INFLUENZA SOCIALE", "MEMI", "PERSUASIONE", "SETTARISMO", and "SUGGERIZIONE". A red circle highlights an e-book icon titled "Scintologia: Strategie. Le vie della persuasione sono infinite" by Scintologia. To the right of the e-book icon, there is a "ShinyStat" widget showing 51989 total visits and 1 online visit. Below the widget, there is a "Lingue" (Languages) section with options for "English" and "italiano". A red arrow points from the right side of the image towards the e-book icon.

scintology: filmati di propaganda dell'organizzazione e sito di contrasto del movimento in particolare, molti altri link e documenti, testi on line e quanto altro sono reperibili qui con riferimento al fondamentalismo ecco un esempio delle tecniche suggestive e di colonizzazione dei cervelli (qui dei bambini!);

jesus camp

e sull'altra sponda... seppur cambia l'apparenza (!) vi sembra che l'apparenza non dica abbastanza sull'invarianza memetica?

imam in erba

....come già avveniva per altri idoli nella più lontana notte dei tempi e più "modernamente" avviene (da qualche migliaio di anni, briciole di tempo) la scena è animata da tanti bambini che esprimono la loro vera personalità e tanti uomini attuali e futuri che pensano e penseranno con la loro testa. o no?

TAGS: CONFORMITÀ, FONDAMENTALISMO, INFLUENZA SOCIALE, MEMI, PERSUASIONE, SETTARISMO, SUGGERIZIONE

EDIT | COMMENTI (9) »

MAG 12

1 Comment

LEZIONE 12 MODIFICA |

persuasione e suggestione

Scintologia: Strategie. Le vie della persuasione sono infinite

ShinyStat™

Visite tot. 51989

Online 1

Lingue

English

italiano

If it had of course been only a digital version of a common book, for example an hypertext or a pdf version, no concrete innovation would have been possible, at least in the didactic field. It is obvious that **the characteristics of the digital book must be in line with the collaboration approach and the integration with the resources outside the text, they must substantially interact with the network.**

The challenge of digital publishing, above all that one addressing to the world of didactics, should be that of **changing its own identity and mission, coming out from a competition which is (and we could say so, luckily) completely nonsensical.** The issues which are debated with references to the ebook are complex and deserve a special attention.

In this sense the choice of adopting the online book completely **designed and produced by the publishing house Scriptaweb**, has to be interpreted. It is **something more than the simple digital version of a printed book**.



The screenshot displays the Scriptaweb website interface. At the top left is the 'ScriptaWeb' logo. To its right, the text 'Lo scaffale di Daria Grimaldi' is visible. Below the logo, a section titled 'Appena pubblicati:' lists several books. In the center, a 3D rendering of a book titled 'Le vie della persuasione sono infinite' by Stanislas Smiraglia is shown. To the right of the book, the following details are provided: 'Stanislas Smiraglia', 'Le vie della persuasione sono infinite', 'Edizione per l'Università di Napoli', 'Pagine 313', 'ISBN 978-88-6381-026-4', 'Multimedia 28', and 'Pubblicazione online 05/03/09'. A blue button at the bottom right of the book details states 'Il libro ora è consultabile'.

ScriptaWeb

Lo scaffale di Daria Grimaldi

Appena pubblicati:

- Heliopolis
In ricordo di un maestro.
Envy Paci a trent'anni dalla morte
- Logos
Narrative Based Medicine e
Complessità
- Luca Tateo - Pagine oscure
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Stanislas Smiraglia
Le vie della persuasione
sono infinite

ScriptaWeb
Napoli, 2009

Stanislas Smiraglia
Le vie della persuasione sono infinite
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Pagine 313
ISBN 978-88-6381-026-4
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The project from which it comes is the carrying out of **the integrated system for the publishing and on line use of published works which is based on the availability for each reader of a personal copy to be read on line**, which can be looked up from any computer (Smiraglia, 2005); a dialectic space in which authors and readers can exchange their ideas in order to make of a cultural product, a team project.

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English Daria Grimaldi

ScriptoWeb Lo scaffale di Daria Grimaldi

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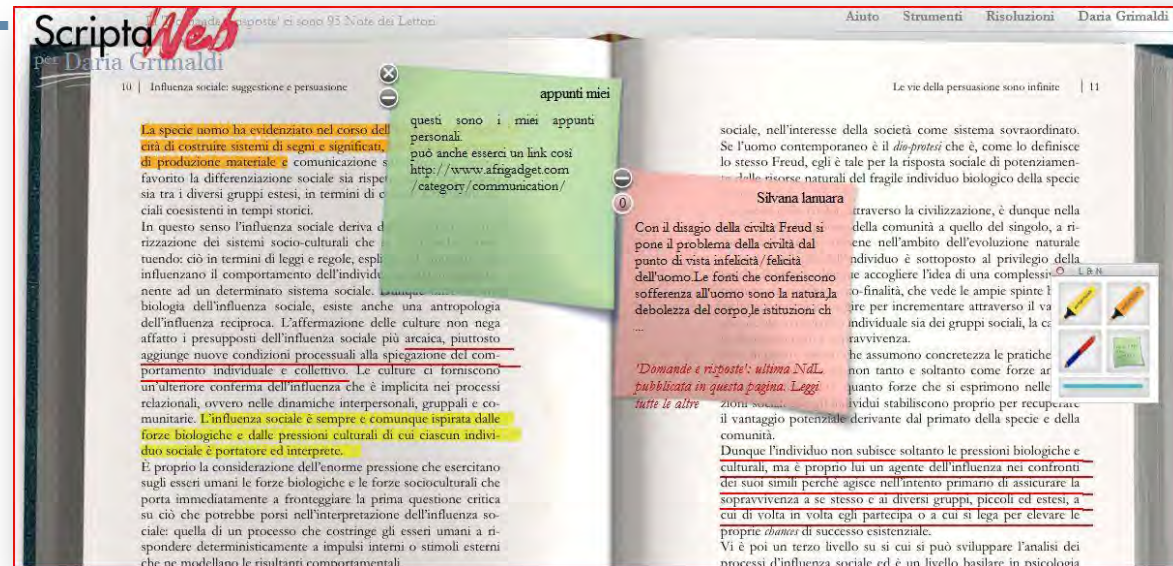
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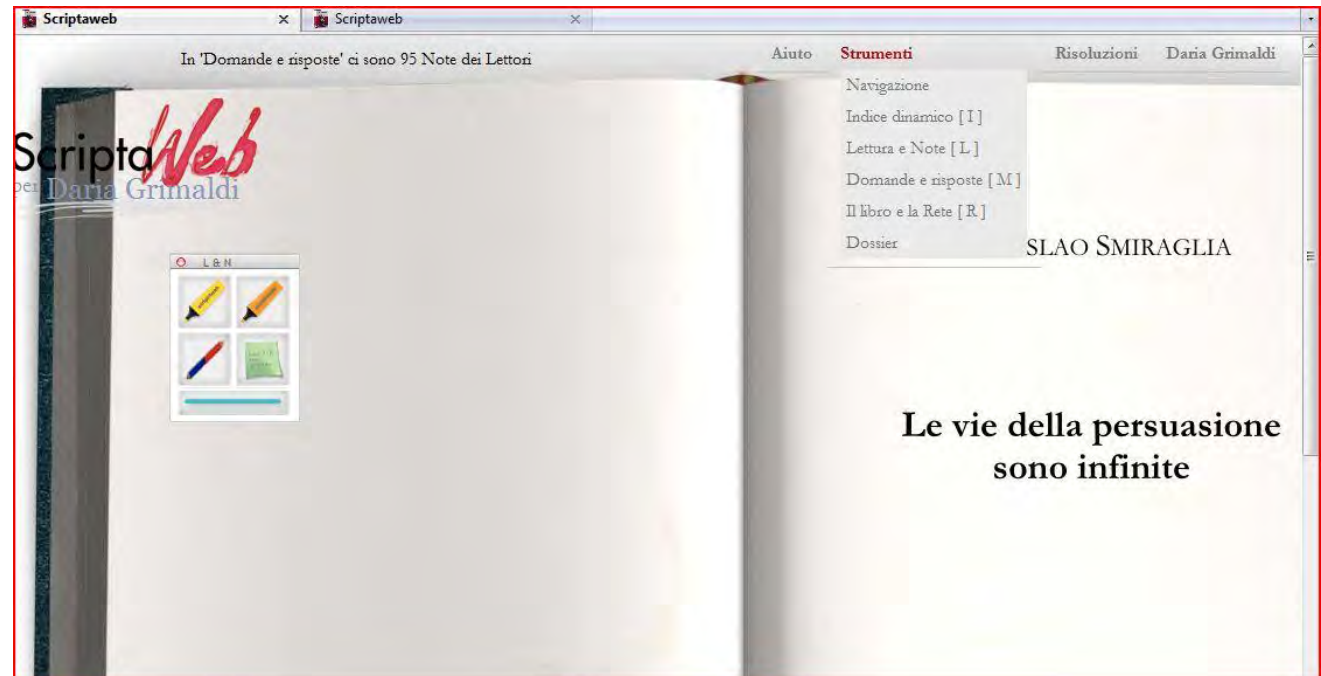
ScriptoWeb
Napoli, 2008

E-book for a blended-learning experience 2.0

The highest expression of how the user of the text can personalize it and intervene in it –besides the power given to him to stimulate the author through reflections and analyses- is the possibility of receiving a paper copy called "**MyPod**", in which personal notes, sharing notes and references introduced by the user while reading, are printed. In this way to the book initially written by the author a personal version of each reader corresponds, a **version enriched by the interaction had with whom has written the book and with the other readers.**

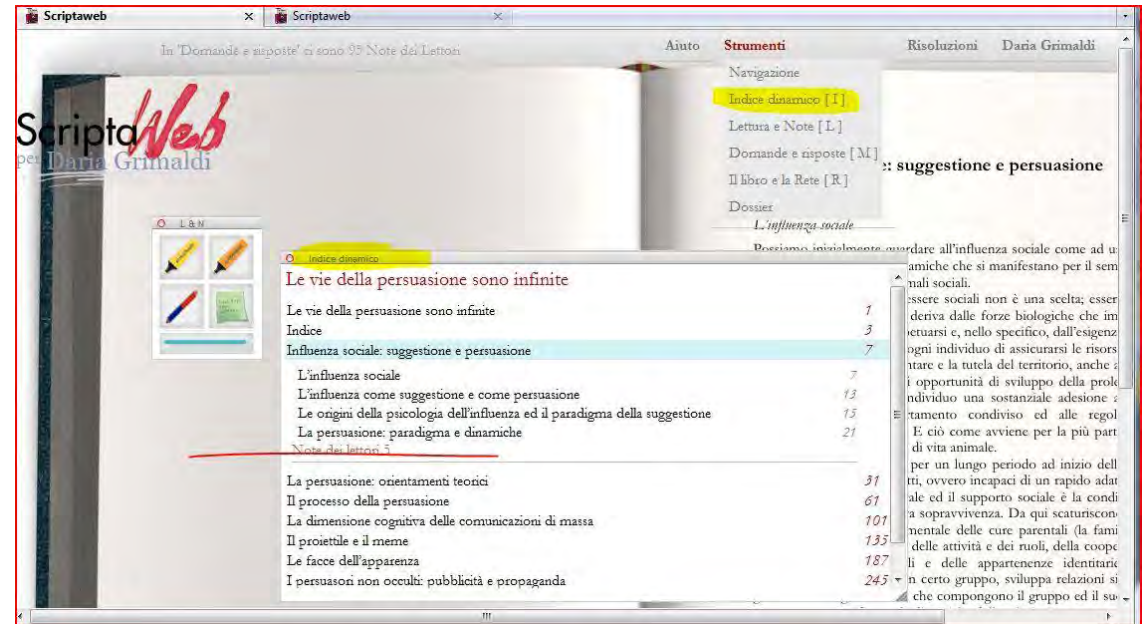


Interaction activities are obviously carried out as regards the single version of the text, within the educational context (or didactic community) using it. **The interaction levels to which the ebook by Scriptaweb refers are a lot** and take place between the reader and the book, between the readers, between the readers and the author and avail themselves of a lot of instruments:



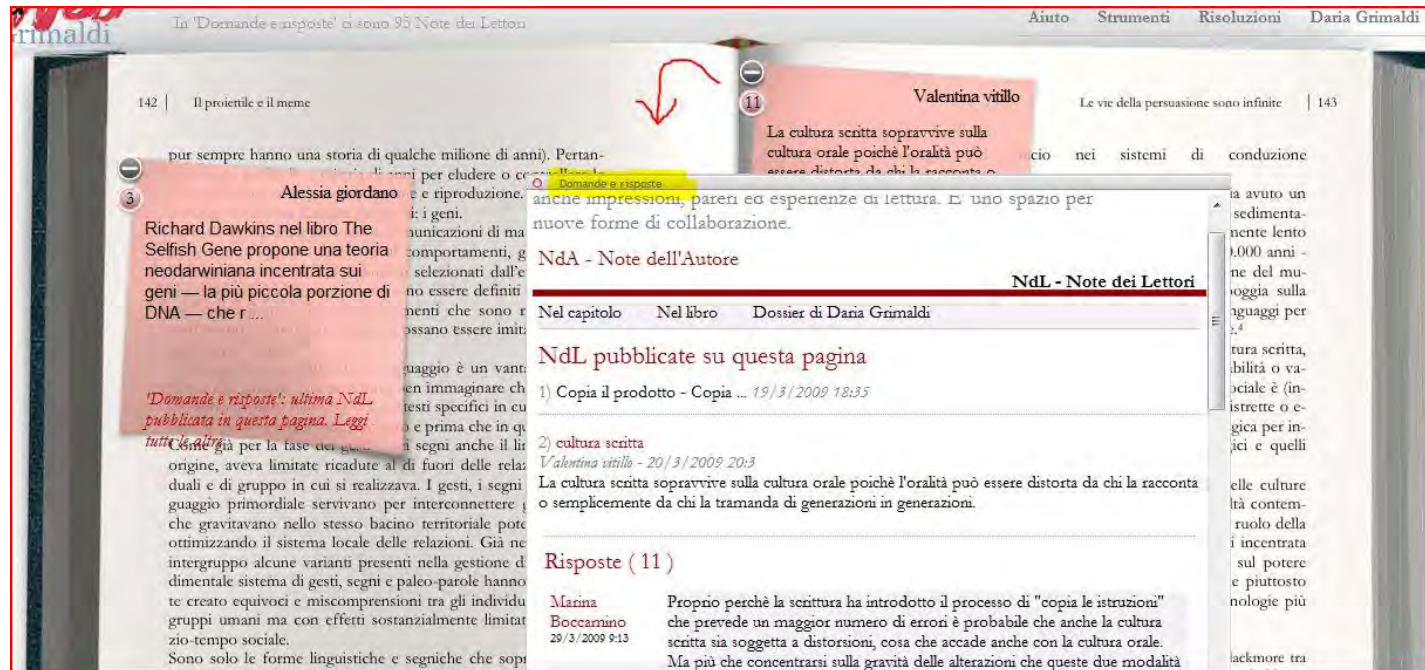
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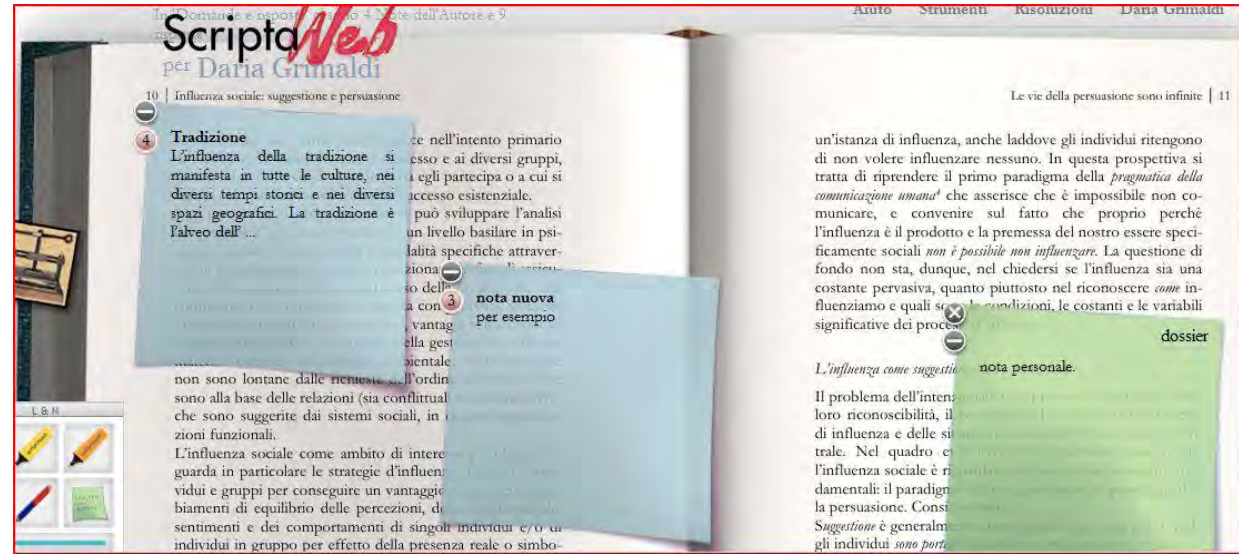
E-book for a blended-learning experience 2.0



Reader's notes

Each reader can decide at which level to expose his observations or questions. He can in particular decide to keep them private (they will be a part of his Dossier), or to share them only with whom has written the book (the author-teacher) or he can make them be visible for all readers.

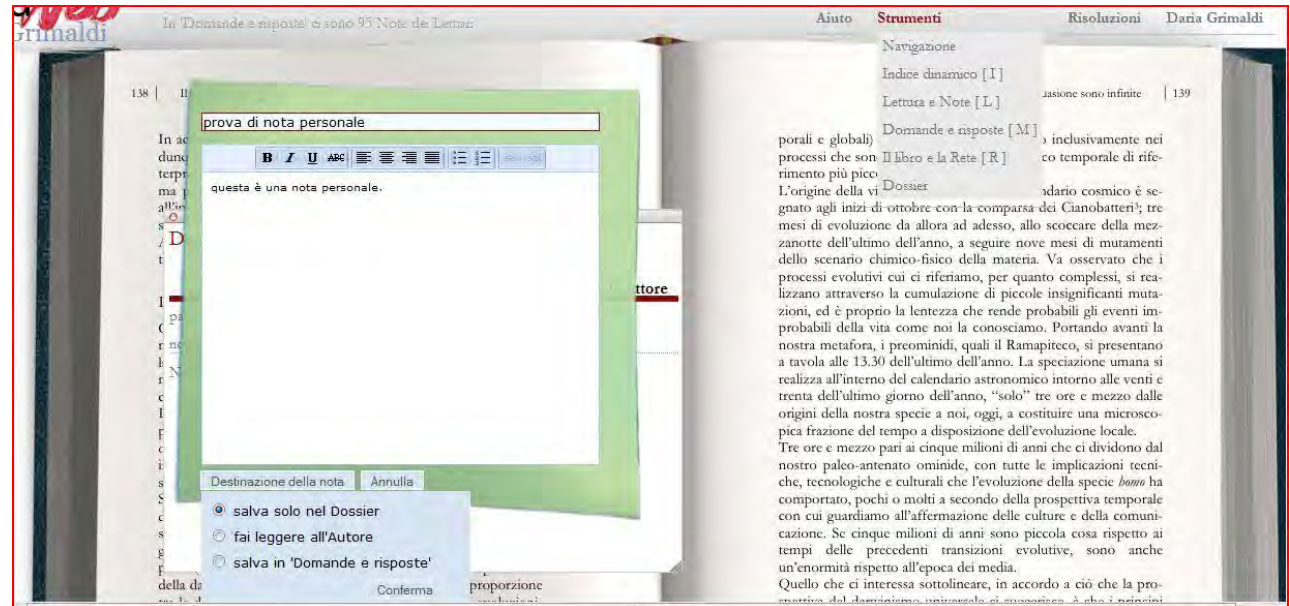
Author's notes



The **bleu ones** are **observations that the author decides to share with readers**, which can be integrations or improvements of what has been written in the text, or the publication of fruitful reflections privately had with some readers. In the educational context this becomes a **privileged channel of the relationship with the teacher**, since it, taking advantage of the lower degree of formality and the seeming virtual character of communication, allows a direct analysis of contents by the mediation of the author of the text himself.

E-book for a blended-learning experience 2.0

Dossier



It is the area of personal notes of each reader. In his dossier **it is possible to quote for their own use, as memos, some parts of the text, some analyses** (for example looking for them by the special instruments existing in the ebook), questions to be completed before sharing them in public or simply personal reflections.

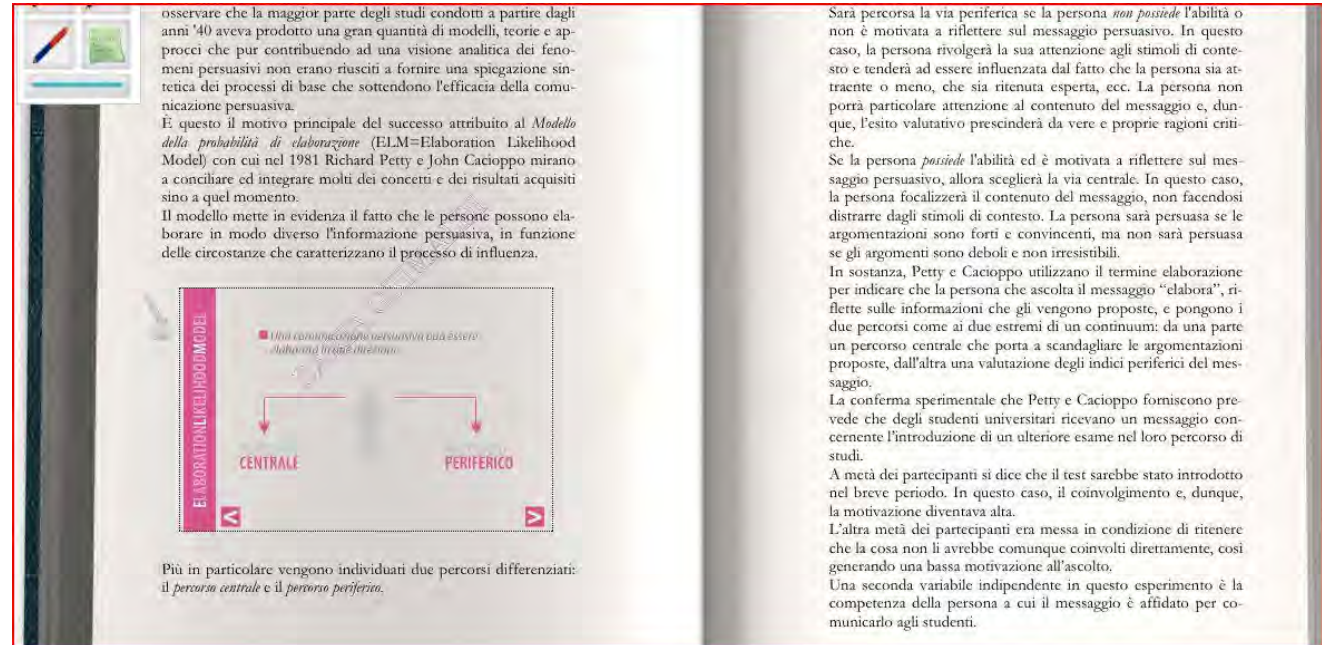
E-book for a blended-learning experience 2.0

The book and the network



The ebook gives the possibility of **making the contents of the books interact with the materials existing in the Web** by a search instrument which works both within the text, identifying the different points by which an idea is dealt with and outside on all possible links dealing with the subject being deepened in the whole Network.

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The book also offers the opportunity of **managing multimedia materials in different formats**, up to real films, for guaranteeing an immediate communication of particularly important themes which require a special attention. This greatly distinguishes the ebook by Scriptaweb both from most competitors and paperback versions.

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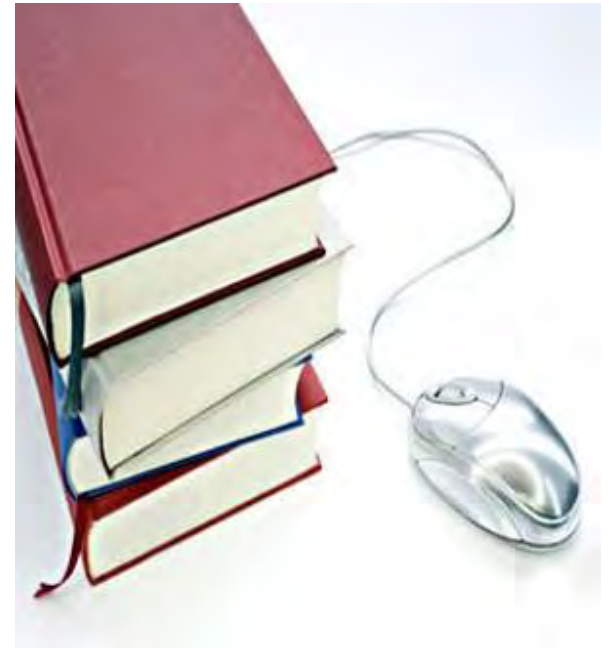


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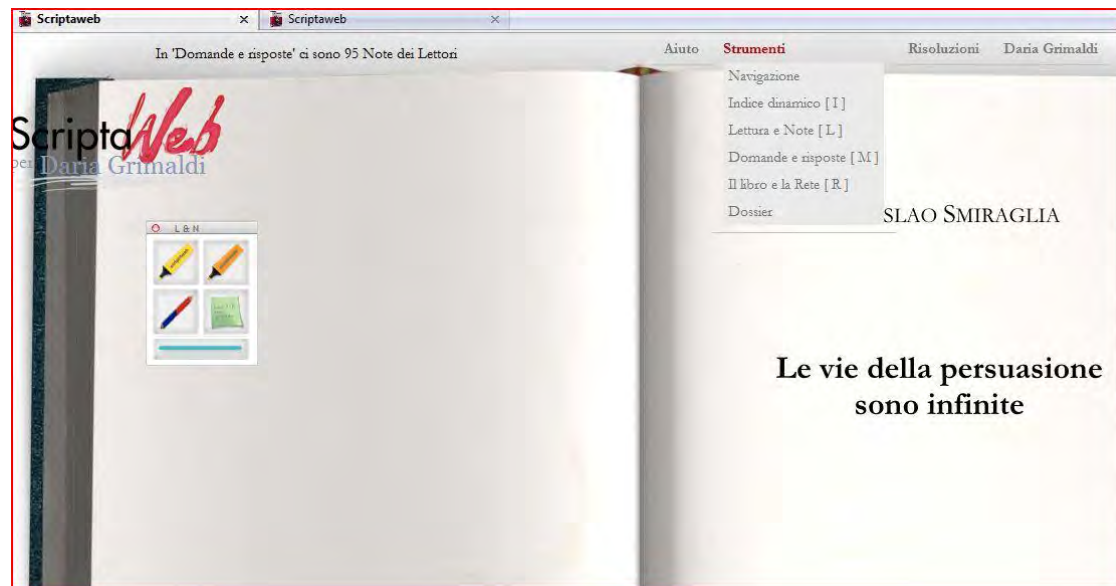
The screenshot displays the Grimaldi e-book interface. The main window shows a text document with annotations. A red box highlights a section titled "Valentina vinilo" with the text: "La cultura scritta sopravvive sulla cultura orale poiché l'oralità può essere distorta da chi la racconta o...". Below this, a sidebar contains navigation and notes. The sidebar has a header "Aiuto Strumenti Risoluzioni Daria Grimaldi". Below this, there is a section "Domande e risposte" with a list of questions and answers. The "Domande e risposte" section includes a question about the relationship between oral and written culture, and an answer by Valentina Vinilo. The sidebar also features a section "NdL - Note dell'Autore" and "NdL - Note dei Lettori". The "NdL - Note dei Lettori" section includes a list of notes, with the first note being "1) Copia il prodotto - Copia ... 19/3/2009 18:35". The sidebar also has a section "Risposte (11)" with a list of responses, including one by Marina Boccamano dated 29/3/2009 9:13.

The risk of learning mediated by technologies- which who is writing has run during the experiences made by the only use of an e-learning platform- consists of the **separation between contents to study and process into which to take part.**

We can run the risk of **focusing our attention on the interaction process and practices to the detriment of the contents specific of the exam**, often limited to the products specially created for online use.



In a blended university course, it is not possible to sacrifice the study of the text, however, as regards traditional texts, the study of books is inevitably deferred to a later moment than that of teaching and interaction, but **by the ebook by Scriptaweb, it has been possible to integrate the different needs of the didactic model of a constructivist kind taking advantage of the use of the ICT.**



To deepen the discussion by email:

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stanismiraglia@unicas.it

Grimaldi Daria (PhD student):
d.grimaldi@unicas.it

Department of Human and Social Science
University of Cassino - Italy



Thank you!

REMIX CULTURE FOR TEACHERS: COLLABORATIVE AUTHORIZING OF LEARNING RESOURCES WITH LEMILL

Hans Põldoja, Mart Laanpere, Tallinn University, Estonia

Introduction

The role of the schoolteacher is constantly evolving. The computerization of schools has changed the way how teachers work with learning resources. Instead of choosing between a few textbooks they have to make a choice between thousands of digital learning resources. Quite often these resources are created by other teachers, not by professional textbook publishers. When teachers are creating learning resources they have typically their own students in mind. This means that other teachers who want to use the resource will have to customize it to meet their needs and target group.

The introduction of open content licenses such as Creative Commons has helped to overcome several legal limitations that teachers have when they using digital learning resources. These liberally licensed learning resources that can be modified and redistributed by other teachers are known as open educational resources (OER's). Instead of reinventing the wheel the teachers can build on the work of others.

David Wiley has discussed about the similarities between teachers and DJ's (Wiley, 2005). Both use a collection source of materials - learning resources or songs - that are typically made by other people. They both sequence and blend these materials in a meaningful way and sometimes add pieces that are created by themselves. We can look at the lesson as a dj set and learning resource as a mix album.

In this paper we will introduce a web-based learning content authoring environment LeMill (see <http://lemill.net>) where teachers can become DJ's of digital learning resources. This environment uses latest Web 2.0 technologies that enable teachers to create their collections of resources, remix with rich media content from other web environments, collaborate with their colleagues and present the resulting work to their students.

Description of LeMill

LeMill software was initially designed and developed in 2005–2008 as part of European Commission's 6th Framework Programme project CALIBRATE. A special emphasis was put on the design process of LeMill. Members of the development team had a strong belief that LeMill software should be developed with the teachers and for the teachers. The design process was carried out by the principles of scenario based design (Carroll, 2000) and agile software development methods (Schwaber & Beedle, 2001; Cohn, 2004).

In the beginning of the project we wrote a set of scenarios that described how teachers use the LeMill system in their everyday work. Based on these scenarios we organized participatory design sessions with primary and secondary school teachers in four countries that participated in the development — Estonia, Finland, Hungary and Norway. In each session we had two or three teachers and a researcher. The teachers were asked to read the scenarios and answer the questions about the scenarios. The questions were structured so that they helped to rise a discussion about the scenario. All the design sessions were recorded and summarized.

One of the main outcomes of the design sessions was a decision to divide educational resources into three categories. The first category consists of educational content such as reading material, exercises and presentations. Second category contains educational methods and third category is meant for tools that can be used in learning. Teachers are used to similar division also in the physical world where textbooks are considered as content and cameras or microscopes are considered as tools. All these resources are created by the members of LeMill community. In order to coordinate their work they need tools for collaboration and socialization. Based on these reasons we decided to divide LeMill into four main categories — Content, Methods, Tools and Community.

Besides social aspects LeMill has also several restrictions that are designed into the system. One of the main restrictions is the format of the learning resources. Typical learning object repositories allow users to upload all common file types and therefore end up as piles of office documents. In LeMill we have decided that all the learning

resources are web-based. Web-based learning resources are much more suitable for collaborative editing because all people who work with the resource can access and edit the latest version using standard web browser. One of the main ideas in LeMill project is to encourage teachers to collaborative authoring of learning resources.

In the Content section we provide simple templates for creating web-based learning resources. The most commonly used templates are web pages, presentations, exercises and lesson plans. Each template contains specific fields that guide teachers who are creating the learning resources. This way teachers can focus on the content and doesn't have to worry about the visual appearance of the learning resource. Web page is a generic template that can be used for many types of learning resources. Presentation template allows people to upload their presentation slides and add short comments about each slide. It is also possible to upload audio recording of the presentation. Exercise template contains various types of questions such as multiple choice and fill-in-the-blanks. Exercise template in LeMill is designed mainly for self tests. The answers will be validated immediately after the student has submitted the exercise, but the results are not stored in LeMill. We understand that exercising is a good way to learn many topics such as math and grammar. On the other hand we think that exercises may be easily misused as a simple way to assess students.

Content section also contains media pieces and references. Media pieces can be images or audio files that are uploaded to LeMill and used in the learning resources. Teachers can upload new media pieces or search for existing media pieces directly on the learning resource templates. References are links to educational websites and learning resources that are stored outside LeMill.

Embedding external resources into LeMill content.

It is important to consider copyright issues when remixing content. We decided that all the resources that are created inside LeMill are published under Creative Commons Attribution-Share Alike (BY-SA) license. It means that teachers do not have to worry about license compatibility when they put together several LeMill resources. LeMill content is compatible with Wikipedia content, because they migrated to Creative Commons BY-SA license in June 2009. This opens up a valuable source for the teachers. It is also possible to use media pieces that are published under compatible licenses. Teachers can benefit from photos that are published in Flickr (25 million compatible photos) and Wikimedia Commons (5 million compatible media pieces). When embedding external resources to LeMill there are no license restrictions, because only a short line of code that displays the content is copied to LeMill.

Teaching and learning is not only about delivering and receiving learning content. In the Methods section teachers have written descriptions of methods that they use in their teaching practice. These include various pedagogical methods, educational games and icebreaking techniques. All the descriptions can be improved by other teachers. It is also possible to add links to related learning resources and tools.

Tools section is technically similar to Methods section. It contains descriptions of various Web 2.0 services, software applications and even physical tools that can be used in learning. Many of the tools that are described in LeMill are free and open source.

All the learning resources, related methods and tools can be added to a collection. Typically teachers use collections to group together resources that they use in their course. We can look at the collection as a mix album. In most of the cases it contains resources that are created by several teachers. Even if the teacher has created all the learning content herself it is quite possible that the methods and tools that she was planning to use in her learning context are already described by other LeMill users. We encourage teachers to add teaching and learning stories to their collections. This is a short story where the teacher can explain how she used these resources in her teaching. This can be used for sharing success stories and pointing out things that didn't work so well. Collections in LeMill are personal and cannot be edited by other users. However, it is possible to add other peoples collections inside your collection. This can be used for creating "textbooks" that consists of several "chapters". Collections can be embedded to other websites such as blogs.

[cs](#) | [de](#) | [en](#) | [es](#) | [et](#) | [fi](#) | [fr](#) | [hu](#) | [ka](#) | [lt](#) | [pl](#) | [ru](#) | [se](#)

[Log in](#) [Join](#)

LeMill

[Content](#) [Methods](#) [Tools](#) [Community](#)

Collection: Brief History of New Media

creator: [Teemu Leinonen](#)

Content

- [Introduction: What is New Media?](#)
- [Media Computer - From Math to Augmentation](#)
- [Hypertext and Hypermedia](#)
- [Networks](#)

Methods

- [Lecture](#)
- [Study Project / Project Learning](#)
- [Writing learning diaries](#) ([Tarmo Toikkanen](#))

Tools

- [Fle3](#)

Teaching and learning story

New Media is a multidisciplinary and multiperspective field. The course is designed for University students coming with different backgrounds. The course intends to generate a share understanding between different professionals of some of the phenomena related to New Media from a historical perspective. We try to answer to the following questions: Who has been doing what? why? where? what has been the socio-cultural context of these events? What have been the implications? The course is evaluated with a grade from 1-5. The grade is formed as such: Lectures and participation to lecture discussions: 50%. Wikipedia exercise: 20%. Retrospective futurism exercise and exhibition: 30%. Minimum attendance is 8 lectures, you can be absent only from two lectures.

[RSS](#) [Subscribe to RSS feed for this collection](#)

[About](#) | [Blog](#) | [FAQ](#) | [LeMill development site](#) | [Feedback / Report a problem](#)

Figure 1. Example of a collection with the teaching and learning story.

In the Community section it is possible to see all the members of LeMill community. Members can be browsed by various categories such as location, languages that they speak or subjects that they teach. Each member has a profile page that contains basic information about her and portfolio of resources that she has created in LeMill. Members can form groups to collaborate with other teachers. These groups are typically based on the country and subject. All the groups are open for anybody to join. In some schools where there are several active LeMill users the teachers have established schools group in LeMill. Each group has a discussion forum but these forums are not used very actively in LeMill.

Collaborative authoring is a complicated process and the system must be designed so that it guides people to work together with other members of the community. Many collaborative online projects such as Wikipedia are based on a

wiki software. Wikis are typically very flexible and it is users task to define the structure. We feel that teachers who might be new to online communities need some structure that is scaffolding their work. For that reason we have developed an authoring workflow that has several restrictions. If a new learning resource is created based on a template it will be in draft mode. When the teacher is satisfied with her work she can publish that. Draft version can be made visible when the teachers wants input from other people. The authors are suggested to assign learning resources to groups. In that case only members of the group can edit a learning resource. If some other user wants to edit the resource she must join the group. This way we try to guide people to the Community section and connect groups with the content. Each learning resource has also a discussion page that is similar to talk pages in Wikipedia. If the learning resource is assigned to a group the discussions will appear also in the group forum.

Conclusions

LeMill is a fast-growing online community of teachers from more than 20 countries, publishing their learning resources in 12 different languages. We invite everybody to try it out and use it for disseminating the remix culture among teachers.

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Knowledge sharing, School Innovation and Web 2.0. The Protovoulia Initiative.

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Introduction

Eight Greek Foundations -- namely, the Lambrakis Foundation (the initiator of the partnership), the Evgenides Foundation, the A. G. Leventis Foundation, the I. F. Kostopoulos Foundation, the National Bank of Greece Cultural Foundation, the Bodossakis Foundation, the Stavros Niarchos Foundation and the Alexandros S. Onassis Foundation -- have joined forces to undertake the Protovoulia (Education and Development Initiative), in order to fund and run a programme of Actions, designed to introduce and sustain a set of innovation-driven improvements to school education in Greece. The long-term objectives of Protovoulia are to enhance the quality of education and to promote access to equal opportunities for life-long learning, improving the skills base and employability of young people, by facilitating the active participation of teachers and pupils themselves.

Through this ethos of equal cooperation and within the framework of their broader social mission, the Foundations are committed to implement a series of effective proposals with three goals in mind: first, to improve the quality of school education in Greece; secondly, to enrich pupils knowledge and cultivate their competences and abilities at large; and finally, to better inform upper secondary level students and their families concerning their options for tertiary level education, both through providing information on tertiary education courses and degrees, and through offering occupational profiles and information regarding the requisite knowledge and competences for various career paths.

To this end, the Protovoulia comprises two main lines of actions, one addressing broad, General Education needs, at Primary and Lower Secondary level, and the other addressing the Professional and Personal Development needs of Upper Secondary students. The defining characteristic of this Education Initiative is its holistic approach to Education, Culture and Social Development (comprising growth and social inclusion). It is this approach which aligns the Protovoulia objectives to the stated EU objectives for Europe in the 21st century.

Network of School Innovation

The major action undertaken by Protovoulia is the development of an integrated network to facilitate the introduction and validation of innovations in the Greek school system. This is envisaged by setting up a pedagogical background relating to innovative curricula, learning materials and didactic methodology. Furthermore, Protovoulia supports the development and operation of an online on-the-job (school-based) training platform, with a blended training scheme encompassing introductory seminars of groups of teachers, as an online Teacher Training Lab. The School Innovation Network facilitates the enhancement of the school management and accountability culture, by adopting collaborative learning methods, at both the “real” school and at the “virtual” electronic level, thereby facilitating a gradual change of the

school 'culture'. Schools around Greece have been invited to join, after a selection procedure, with their teachers participating in the online Training Laboratory and collaborating at the school and inter-school level, in education activities of a broad range, from lesson planning and validation to better use of the daily school time schedule and the collaboration with local community and local stakeholders. The training program is providing support to both the school and the teachers to enhance their education planning, implementation and assessment capacity and, thus, their capacity to handle change, innovate and sustain a continuous drive towards better quality and more effective education. A number of Web 2.0 tools, like blogs, wikis and in-house content sharing and collaboration solutions, have been adopted, both inside the Moodle-based training environment and at the portal of Protouvoulia (<http://schoolnet.protouvoulia.org>).

The 'Network of School Innovation' is aimed at all Greek schools. It supports the development of initiatives by teachers themselves. Through the collaboration of schools it promotes educational innovation in schools and it aims to bring about fundamental change in the format and content of education so that creative forms of working and learning in schools will result. Both schools and individual teachers may participate in the 'Network of School Innovation'. The primary aims of the network are:

- The development and implementation of integrated educational schemes, in order to bring about the effective shift from educational and learning practices based on memorization and rote learning to learner centred educational activities that systematically promote and foster the development of students' creative abilities, with the active participation of teachers and pupils;
- The development of authoritative, reliable, and user-friendly forms of educational innovation;
- The production of teaching material to enrich learning materials already available in Greek schools.
- The utilization of other Protouvoulia actions;
- The systematic support of teachers in designing, developing and implementing schemes of educational activities;
- The cooperation between its members in order to highlight and promote 'good practices of innovation' in education;
- To cultivate community spirit between members in order to foster a positive learning environment and develop pupils' abilities;
- To promote innovation and to support dialogue in education.
- The participation of the schools enables them to become points of reference, so that modern educational methods may be gradually and constantly evaluated and introduced. The teachers are invited to study and to experiment with proposed schemes of activities, as well as to compile reports on the educational practices used. They are also invited to make proposals that cultivate pupils' abilities and demonstrate an interdisciplinary approach to knowledge, critical thought, and assessment, which meet the quality criteria of Protouvoulia.

The outcome of the collaboration of teachers in the 'Network of School Innovation', as well as of other teachers (registered on the Network web area), may be commented on using the website, thus giving the opportunity to the extended community of educators to showcase 'good practice'. The aim of this is to enhance the quality of education through the provision of educational solutions, which will be tested and hopefully adopted widely, thus gradually increasing the proficiency levels of the Greek school community, and in this way contributing to social cohesion. The web area of the School Innovation Network serves:

- Teachers who are interested and who sign up to the Network, giving them suggestions and schemes of educational activities, the opportunity to compile entries for school use in the 'Thematic Presentations', as well as to generally comment primarily online on the activities proposed by the Network;
- Teachers (i.e. registered users) at Network schools, who will also be given the opportunity to compile schemes of educational activities and 'educational practices' as well as to evaluate them, and the right to compose encyclopaedic entries in the Thematic Presentations;
- The professional support of the teachers at the Network schools in adopting modern educational methods and in evaluating their effectiveness in Greek schools.

Thematic Presentations

Themes of knowledge are being introduced by groups of subject experts, referenced and hyperlinked to other online sources of information, while coupled with Web 2.0 tools, like blogs and wikis – the *WikiGnossi* (i.e. 'Gnossi' being the Greek word for Knowledge). Schoolteachers and pupils are being invited to join a knowledge sharing experience, testing new forms of knowledge building and validation. This action aims at providing interesting and continuously validated learning materials to schools, while addressing the important question of bringing knowledge, research and academic thinking closer to school education. In this way, the "thematic presentations" investigate new forms of publishing and validating knowledge to address learning at school ages. The online 'knowledge environment' at <http://themes.protovoulia.org> is currently expanding to include solutions which will support the interoperability of cultural and scientific information repositories of Greek content, which will provide contextualised search and cataloguing solutions aimed at supporting school learning. This interoperability initiative will be coupled with the Learning 2.0 tools, while bringing together most of highly valued learning materials being documented by a cohort of prestigious libraries, archives, museums and science and technology centres.

The informal collaborative peer production and learning space i.e. the 'Thematic Presentations' around selected educational themes (i.e. history of science; European civilisation) are a complementary action and are aiming at improving the learning material that the Protovoulia initiative makes available to schools, as well to invite the scholarly community to contribute to this venture (thereby enriching the scientific and educational material to which pupils have access). At the same time, it aims to offer suitable Web 2.0 tools

to pupils so that they may develop and share educational material such as encyclopaedic information suitable for school use, as well as interactive presentations of subjects of scientific interest.

As the work on the 'Thematic Presentations' has just been started, the following outcomes may be envisaged: the enrichment and extension of the 'Thematic Presentations' and the secure and fast access of members of the educational community to sources, reference works and collections on the internet.

This is to be complemented by a Content Management System (CMS), which will allow the users (i.e. scholars/experts, teachers and pupils) to work together and to produce in turn additional educational material with the aim of:

- Gradually enriching the scientific and cultural learning material made available to teachers and pupils by the scholarly and/or scientific community;
- Enabling teachers and pupils to gain experience by producing educational material together (in communities);
- Increasing the availability of encyclopaedic knowledge on the internet, with entries suitable for use in schools, in various areas of knowledge.

In the above context, <http://themes.protovoulia.org> functions as a suitable internet environment for making educational material available for use in schools. At the same time, the web-address hosts innovative and user-friendly presentations (mainly for the ages 10 to 15) of specific areas of knowledge by specialists and scholars, as well as the results of the creative endeavours of the educational community. The number of participants who compose and edit the Thematic Reference Works will gradually increase, the starting point of which will be the "Thematic Presentations". The action will be realised in a way that it supports the participation of teachers and schools in the 'Network of School Innovation'.

Technological solutions

Different forms of state-of-the-art Web 2.0 tools are used in the various actions of the Protovoulia Initiative. The 'Innovation Workshop' of the 'Network of School Innovation' is supported by a Moodle e-Learning platform that was customised to the needs of the selected educational design. In this platform (<http://epimorfosi.protovoulia.org>) different forms of Web 2.0 social computing tools are used (i.e. forums, blogs, metadata/tagging). Furthermore, the platform was customised in order to use a specially built Content Management System (CMS) that supports the educational material produced by the actions of the Protovoulia initiative. The teachers who participated in the 'Network of School Innovation' were automatically registered users of the 'official' blog that was customised using a WordPress solution.

In the context of the 'Thematic Presentations' action, the same specially built Content Management System (CMS) that supports the educational material produced by the actions of the Protovoulia initiative is used. This CMS is designed to take into consideration the latest developments in educational metadata and tagging. The wiki (i.e. the *WikiGnossi*) is using a MediaWiki solution, while all content is put in 'productive comment and use' with a fully customised blog again using a WordPress solution.

Lessons to learn

The 'Network of School Innovation' was evaluated at the end of the pilot 'Innovation Workshop', in August 2008. The evaluation practices included on-line structured questionnaires administered to all participant teachers, namely 163 teachers from 62 schools, of which 27 were Primary and 35 Secondary schools, and b) focus groups with the teachers and educational researchers who acted as 'facilitators'. Among the indications that emerged, it is interesting to focus on the following:

Success levels of the implementation of web 2.0 in Teacher Training:

Protouvoulia has shown that the successful implementation of Web 2.0 in Teacher Training relies primarily on: i) access (equity); ii) competences and; iii) motivation of teachers. This triad of requirements is further mediated through: iv) individual needs of teachers; v) the applied course structure; and vi) adequate (external) support structures. The results of the survey showed that teachers with basic IT skills were indeed more successful in familiarizing themselves with a modern e-Learning platform and the embedded web 2.0 applications. On the other hand, inadequate digital competences on the part of about 20 per cent of participants, along with inadequate access, were pointed out as factors that reduced the levels of those teachers' confidence and, subsequently, prevented their active participation. It is crucial, thus, that more emphasis is placed upon digital literacy training practices, and on more intensive introduction to the technological applications used, in order to ensure the commitment and the continuous compliance of all actors, regardless of their prior IT familiarization.

Teachers' further professional development and school practices:

Most of the teachers (over 65 per cent) stated that they themselves benefited from their participation in the workshop mainly on the following points:

- They were trained to use a methodological framework for the systematic design, implementation and evaluation of school practices;
- They received respect as professionals, as they chose for themselves the object of their training and thus they were not forced to take the role of the student like in other specific training programs;
- They were also given the role of 'researcher', as they were guided through an exploratory process, in order to record the special attributes and needs of their school unit and students and to unravel the different aspects of innovation;
- They were in contact with colleagues from different disciplines and levels of education from various parts of Greece, with whom they share common interests.
- They were given the opportunity for constructive dialogue with researchers, subject experts and educationalists.

Familiarization with the notion and practices of 'open' knowledge:

The possibility for creating user generated content through collective practices, although at first welcomed by the majority of teachers, was actually utilized to a minimum degree. As indicated by the facilitators, this reluctance is mostly attributed to most teachers' unfamiliarity with peer reviewing and assessment practices, as well as lack of motivation. Apart from this,

insufficient technical support and user-friendliness of the services appeared to have affected this attitude.

Based upon these indications, it is important to recognize that the perception of ownership of the learning process and results plays a key-role in the motivation of learners to engage in the learning experience and, at the same time, to the implementation of peer production practices. To this end, trainees should be substantially supported with the use of purpose-fit social computing tools, e.g. blogs and wikis. It goes without saying that school openness needs to be coupled with state-of-the-art pedagogies and competence-building oriented curricula, while contextually endorsing the web 2.0 solutions, activating knowledge sharing, collaborative working and validating emerging knowledge building paradigms. Financial capacity, together with expertise and political leverage are necessary ingredients for an effective recipe for change and quality upgrade in school education, to address both growth and social mobility (equity), in the European context.

Changes in the Greek school system need time, consistency and resources as well as policy perspective, and they have to be related to contextualised innovation and to broader as well as to more focused learning objectives, at the knowledge/subject, competence and school development level. In addition school development goes hand-in-hand with the professional development of teachers and their qualifications, i.e. technologically and pedagogically competent and qualified teachers can serve as incubators and multipliers of innovation in- and outside of schools (e.g. teachers becoming teacher trainers).

Apresentação do Portal **Casa das Ciências**

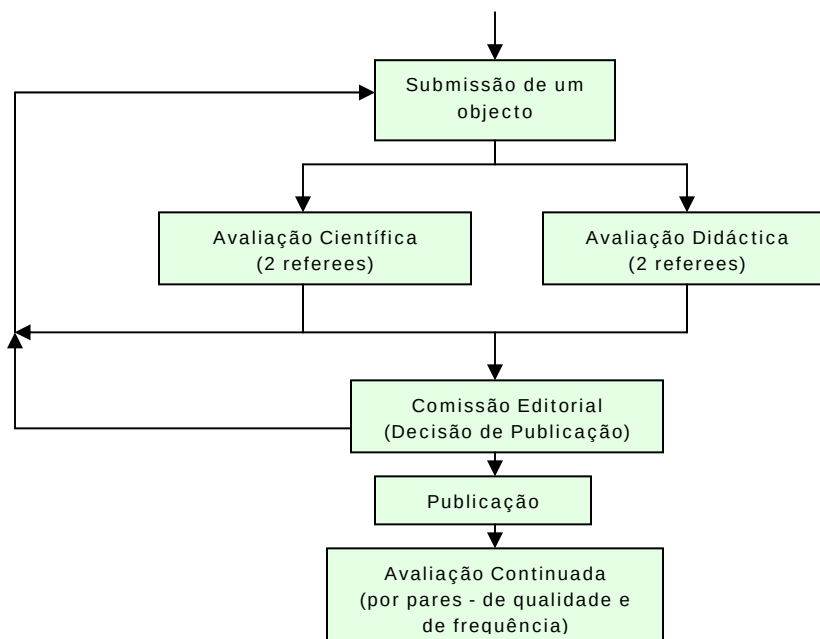
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Este projecto assenta na demonstração de viabilidade e sucesso de um modelo de avaliação e partilha de objectos de características científicas com utilidade didáctica para professores, usando como suporte a Web.

A lógica de avaliação prévia em moldes similares aos da publicação de artigos em revistas científicas, bem como da sujeição a uma licença *Creative Commons* aquando da submissão, para um público que não está habituado a este tipo de processos, são as duas grandes características inovadoras deste projecto.

Em consonância, este modelo serve de motor para a formação contínua de docentes, na medida em que as avaliações de carácter científico e didáctico, vão diagnosticar carências e concepções deficitárias ou alternativas de carácter não qualificante, que são para os indicadores de necessidades de autoformação. Trata-se então de um Portal de professores para professores numa lógica colaborativa de *Creative Commons*, construído sob a égide da Fundação Calouste.

O esquema de percurso de um objecto submetido por um autor ajuda a entender esta lógica e define o modelo de *backoffice* automatizado subjacente ao portal para dar resposta a este tipo de funcionamento em termos digitais.



Os objectos que não receberem pelo menos três avaliações positivas para publicação, são de imediato devolvidos aos autores com os comentários dos avaliadores. Os outros são objecto de apreciação final da Comissão Editorial.

Cada objecto depois de publicado pode receber comentários dos utilizadores sendo a frequência acumulada de *downloads* ou visitas, outra medida do seu sucesso.

O objectivo do projecto é recolher e disponibilizar materiais para servir os professores de ciências no ensino básico e secundário. Aos professores e investigadores que tenham desenvolvido materiais, oferecemos esta plataforma de divulgação do seu trabalho, depois de o passarmos por uma avaliação científica e didáctica.

Todos os utilizadores registados poderão:

- Utilizar os materiais aqui depositados, sabendo que todos foram previamente avaliados sob o ponto de vista científico e didáctico;
- Encontrar endereços de outros portais relevantes, depois de analisados, escolhidos e comentados;
- Depositar os materiais que desenvolveram, para as suas aulas, para poderem partilhar a sua utilização com outros professores;
- Debater problemas educativos específicos;
- Verter as suas experiências num debate alargado;
- Procurar instrumentos de auto formação.

O portal Casa das Ciências é um veículo integrador e amplificador dos esforços actuais para a utilização das tecnologias da informação no processo de Ensino/Aprendizagem feitos por agentes muito diversos cujos resultados se encontram dispersos. Este portal vai dar visibilidade e utilidade aos esforços de muitos docentes, reconhecendo-lhes o mérito que efectivamente têm, transformando-se num sítio *web* de referência para todos os professores de Ciência em língua portuguesa. A responsabilidade da manutenção do portal está cometida a um "Gabinete Coordenador" constituído por um pequeno núcleo que também será responsável pela coordenação de toda a actividade que se gera em torno dos diferentes componentes do portal. A direcção estratégica é definida pela Comissão Editorial. Sendo um instrumento de suporte à actividade docente nas diferentes áreas das ciências, espera-se merecer o apoio generalizado não só dos professores e instituições de educação básica e secundária mas também das instituições de educação superior. É, tendencial e progressivamente um portal dos professores e para os professores, um espaço onde estão materiais que os próprios professores consideram úteis e eficazes para a sua actividade profissional, onde se podem trocar ideias sobre esses materiais e o modo de os usar; sendo também um sítio onde os professores podem partilhar as suas experiências. Todos os materiais colocados no portal ou aí recomendados, são previamente avaliados dos pontos de vista científico e pedagógico, e organizados de forma a acompanhar os programas oficiais.

A aceitação por uma Comissão Editorial, e a publicação de uma determinada peça neste portal, será vista como prestigiante para os autores, em analogia com a publicação científica usual. A frequência de utilização por pares, bem como os respectivos comentários afixados darão uma medida do impacto dos materiais aceites e publicados, semelhante à contagem das citações em ciência. Estes mecanismos que irão sendo

apurados ao longo do funcionamento do portal, possuem naturalmente impacto previsível no currículo dos autores, são manifestamente prestigiantes e, a longo prazo, estima-se que venham a ser uma referência nacional no domínio desta actividade.

Há já sinais claros de que muitos professores começam a compreender este novo posicionamento da função docente, aderindo à proposta de sumeterem à avaliação por pares o seus materiais. A informação fornecida pela casa das Ciências sobre a deposição de materiais avaliados começa também a ser usada nos relatórios de actividade que os professores elaboram.

Porto, 5 de Setembro de 2009

O Portal educativo (re)ligar

A importância e necessidade de nos (re)inventarmos como profissionais de educação

Assunção Pestana, Daniel Rocha, David Lamas, Edgar Lamas,
Estela Lamas, Joel Almeida, Marco Lamas, Sónia Sousa

O mundo é feito por nós, afirma Goodman. Ou, mais precisamente, o nosso conhecimento consiste na construção de “versões-de-mundos”. Goodman gosta de escrever assim para sublinhar que as nossas construções não são diferentes interpretações ou explicações de um mesmo e único mundo pré-existente e independente delas, mas sim, que construções e mundo são uma e a mesma coisa.

Prefácio de d’Orey a Goodman, 1995:5

No âmbito do tema da Conferência, esta apresentação centra-se na emergência de recursos educacionais abertos que, combinados com software social (Web 2.0 e 3.0), emergem como instrumentos críticos para uma aprendizagem inovadora (aprendizagem ao longo da vida), enquanto potenciadores de novos paradigmas do Conhecimento e de formas colaborativas da Aprendizagem.

O Portal educativo **(re)ligar** surge numa dupla perspectiva, aparentemente contraditória, fazendo convergir resultados e propostas, experiências isoladas e convergentes, ocorridas em espaços culturais e geográficos dispersos, experiências essas que se vão entrelaçando numa dialógica (in)consequente, num espaço virtual único e plural de potencialidades múltiplas, tendo por meta facilitar a aprendizagem como processo dinâmico e criativo. Efectivamente, o Portal **(re)ligar** resulta de experiências diversificadas, um pouco dispersas, que têm vindo entretanto a cruzar-se, na e pela reflexão que originaram, dialogando; em contra-partida abre-se a novos caminhos, a novas experiências para a busca de soluções de aprendizagens inovadoras.

Por um lado, a realidade com que nos deparamos como profissionais da educação – o crescente recurso a simples avaliações quantitativas dos resultados escolares tem arrastado os agentes educativos para um alheamento dos fins últimos da educação e dos seus coerentes processos pedagógico-didáticos; a dúvida e a consequente reflexão parecem secundarizadas pelo agir docente que assumiu como inquestionável a organização escolar vigente há já várias décadas. Ora, o Portal **(re)ligar** assume-se, primordialmente, como uma ponte entre o trabalho docente e a intelectualidade do seu cariz profissional (Innerarity, 2009).

Por outro lado, a rápida evolução que se faz sentir, no mundo da WWW, obriga-nos a encarar outras realidades que se entrecruzam com a realidade escolar/académica identificada. Referimo-nos à

- Web 2.0 – A segunda geração da Web pode ser definida como a capacitação do utente para activamente criar conteúdo e participar na Web, expondo-se e relacionando-se com outros utentes. A ênfase está nas tecnologias que capacitam para a colaboração tal como as redes sociais, as feed RSS, blogs e conteúdos para serviços de publicação (imagem, texto e vídeo). A maior parte destas ferramentas são, hoje em dia, de fácil manuseamento, o que permite virtualmente a qualquer pessoa publicar conteúdos muito variados na Web. Por um lado, com técnicas

poderosas como a AJAX e outras, com a Web 2.0, tornou-se mais fácil criar conteúdos dinâmicos e interactivos (páginas) que são construídos colectando informação de diferentes fontes, de acordo com os interesses do utente. Por outro lado, as *RSS feeds*¹ a fragmentação do conceito de “página” da Web 1.0 (nos começos da Web), reduzindo deste modo, efectivamente, a navegação, por vezes fastidiosa, do processo de procura de informação.

- Web 3.0 – A definição da terceira geração da Web está ainda pouco clara mas permitir-nos-á certamente acesso à informação universal, que considera a disponibilização de conteúdos adequada a diferentes ambientes de uso. A Web 3.0 provavelmente permitirá o acesso ubíquo a conteúdos e a serviços num ambiente de contextos inteligentes [1, 2, 3, 4].

E, cientes de que vivemos na era digital da Sociedade de Informação que se pretende em (trans)formação para a Sociedade da Cognição / Conhecimento / Competência / Sustentabilidade Global, sentimos que somos chamados/as a (re)inventarmo-nos como profissionais de educação e, assim, contribuir de forma decisiva para que possamos falar de uma sociedade humanizada e fortemente implicada na promoção da aprendizagem – a Sociedade da Aprendizagem, em que todos/as e cada um/a se autonomize e esteja aberto/a a aprender e a aprender a desaprender para continuamente aprender ao longo de toda a vida.

Hoje, comunicamos a qualquer momento, de qualquer lugar, o que quer que seja, consequência das tecnologias de informação e comunicação e da evolução para a nova geração das redes estruturadas de (tele)comunicações digitais de alto débito/banda larga. Assistimos ao desenvolvimento artístico-técnico-científico-informacional dos sítios/portais na/da Internet; usamos e fruímos da interactividade, convergência e mobilidade das novas infotecnologias interactivas da comunicação multimediatizada ASVM/AVM – audio-scripto-visual e multimédia /audiovisuais multimédia em redes sociais semânticas.

Não podemos esquecer que o processo de Bolonha tem originado mudanças no ensino, mudanças essas que incluem uma reestruturação profunda nos papéis do professor e do aluno, no modelo de ensino, nas metodologias de aprendizagem, abrindo oportunidade para o trabalho, quer colaborativo, quer cooperativo e para o desenvolvimento de capacidades e atitudes pessoais e inter-pessoais. Encontramo-nos, assim, perante um cenário favorável para uma aprendizagem activa, baseada na solução de problemas e orientada para/por projectos.

Neste cenário, o contexto educativo passa pela criação de componentes virtuais de educação ajudando, assim, a promover a dimensão que o Espaço Europeu preconiza para o ensino superior e a possibilitar o alargamento do conceito de mobilidade de estudantes e professores. Dessa forma, a educação tal como a conhecemos tem vindo a sofrer alterações constantes e rápidas, algumas são vistas como potenciais mudanças sistemáticas nos paradigmas educacionais — a mudança do paradigma de ensino para o paradigma da aprendizagem,

- passando da centralidade do professor para a centralidade do aluno;
- passando por um processo de aprendizagem electrónica;
- dando cada vez mais ênfase ao papel do aluno;

¹ Os *RSS feeds* oferecem conteúdo Web ou resumos de conteúdo juntamente com as ligações para as versões completas deste conteúdo.

- aproximando discentes e docentes;
- aumentando a cooperação e a colaboração;
- proporcionando uma maior participação dos alunos e
- propiciando o consequente desenvolvimento de competências.

Neste novo contexto, os alunos devem estar cientes do que se espera deles ao longo da sua aprendizagem – espera-se que estes sejam auto-motivados, autónomos e responsáveis pela sua aprendizagem. Dos professores espera-se que se concentrem não tanto no ensino, mas mais na aprendizagem; o professor deve, pois, criar condições propiciadoras da aprendizagem, perspectivando a tarefa de ensinar em função da tarefa de aprender; isto é, urge que se concentre no binómio ensino-aprendizagem. Importa reconhecer que esta abordagem requer mais preparação por parte das instituições de ensino, dos docentes e dos discentes; preparação essa que incute um novo sentido de confiança e de pertença entre os actores envolvidos, ou seja, entre os vários intervenientes / actores da/na comunidade de aprendizagem.

O sucesso de uma comunidade de ensino-aprendizagem depende de uma forte ligação entre os seus membros, da existência de confiança e de motivação ou seja da boa vontade entre os membros dessa comunidade, atitudes essas e motivações que implicam cooperação e interdependência entre os seus membros e que implicam o desenvolvimento de relações de confiança a distância e que permitam o desenvolvimento de interações sociais com sucesso. Esses ambientes são criados através do auxílio de ferramentas de transmissão de informação e de interacção a distância. Aqui o professor, o aluno e a instituição de ensino assumem o papel de criar uma ponte entre o uso dessas tecnologias para comunicar as suas expectativas e necessidades, promovendo assim a qualidade do processo de ensino-aprendizagem.

Ora, hoje em dia, com as actuais tecnologias já podemos utilizar recursos e ferramentas que permitem construir comunidades a distância capazes de incutir entre os seus membros atitudes colaborativas, comunidades essas que trabalham cooperativamente sem fronteiras temporais e espaciais; comunidades que constroem o seu conhecimento e adquirem e desenvolvem as competências a distância. Esses ambientes virtuais de aprendizagem englobam, assim, processos e metodologias de aprendizagem onde alunos, professores e instituições trabalham em conjunto e se apoiam por forma a adquirir os objectivos, as competências e os conhecimentos inicialmente estabelecidos (Keith, Desmond and Magnus, 1993).

Mas, será que essas comunidades virtuais serão capazes de promover níveis de interacção de qualidade, especialmente num contexto social tecnológico ainda em constante mudança, recente e instável? A necessidade de comunicar e de interagir a distância actualmente já é um facto. O que fazer quando perante um cenário social recente como este se, naturalmente, as regras de conduta sociais demoram tempo a sedimentar e não podem ser incutidas de hoje para amanhã? (Haythornthwaite, et al., 2000)

O Portal **(re)ligar** baseia-se na importância e necessidade de nos (re)inventarmos como profissionais de educação perante os processos de ensino actuais. Questiona e baseia-se, ainda, na influência e no papel das TIC, bem como no desenvolvimento de comunidades de aprendizagem electrónicas. Identifica, também, possíveis desafios, necessidades e expectativas que esta nova concepção do processo de ensino-aprendizagem introduz na sociedade vigente. O triângulo didáctico sustenta o Portal **(re)ligar**; pela dinâmica que lhe

é própria e que resulta dos intervenientes – docente / saber / aluno e na/pela resposta aos desafios, necessidade e expectativas, ele assume-se noutros três triângulos estratégicos de tácticas complementares e articulatórias, a saber:

- aprender, apreender, empreender;
- informar, formar, transformar;
- aceder, suceder, progredir.

São estes triângulos que determinam, *per se*, a constituição de três grupos de três eixos cada, os quais pretendem ser (re)orientadores da actividade a desenvolver no Portal **(re)ligar**:

- comunicação, compreensão, (com)partilha;
- comunicabilidade, educabilidade, usabilidade;
- cognição, conhecimento, competência.

O Portal **(re)ligar** define-se como um espaço de labor científico aberto a uma intervenção participada, em termos de desafios e de partilha de saberes, numa dialéctica teoria/prática, que vise a reflexão e a abertura a novos caminhos – um espaço virtual cujo objectivo é o de perceber de que forma é que esses ambientes podem influenciar o processo educativo actual. Pelos temas e problemáticas abordadas, bem como pela funcionalidade da sua estrutura, procuraremos que este espaço esteja próximo dos agentes educativos, nomeadamente, docentes de todos os níveis de ensino.

Desta forma, pretendemos promover um ambiente virtual de aprendizagem inclusivo socialmente que vá ao encontro das expectativas, necessidades e motivações da sua comunidade educativa

- onde pais, professores, alunos e instituições de ensino possam assegurar o apoio e segurança necessária à comunidade educativa;
- onde seja possível interagir, trocar informação, opiniões e conhecimentos, entre os seus membros, de uma forma saudável;
- onde se possam construir conhecimentos;
- onde se promova a mútua ajuda, por forma a colmatar as necessidades de cada um/a, proporcionando-lhes oportunidades para inovar no seio da sua comunidade de aprendizagem.

(Hawthorn, 1998; Iacono and Weisband, 1997; Jones and Firozabadi, 2001; Lewicki and Bunker, 1996; Luhmann, 1998; Moran and Ian, 1993; Wesley, 2002)

Pretendemos, também, contribuir para um melhor entendimento

- do papel da sociedade educativa no desenvolvimento de espaços (comunidades) virtuais de aprendizagem onde haja partilha de saberes interculturais de forma a que o trabalho colaborativo/cooperativo possa influenciar o actual processo de ensino-aprendizagem e, logicamente, começando pelos agentes educativos;
- da forma como podemos contribuir para o desenvolvimento de um espaço colaborativo onde todos os intervenientes do processo educativo possam contribuir para o desenvolvimento de processos de ensino e de aprendizagem alternativos e eficientes, de forma a minimizar os níveis de abandono e insucesso escolar no ensino em geral, seja a nível do básico, seja do secundário, seja do superior.

Perspectiva-se, para isso, uma fase inicial de 24 meses, como **projecto-piloto**, cujo objectivo inicial é o de estabelecer redes que viabilizem a constituição de comunidades virtuais, sendo a meta a criação de um *Thesaurus da Educação*. Daí decorrem objectivos que irão incentivar a percorrer etapas que se interligam e, em simultâneo, se constituem em meios para atingir a meta identificada:

- promover a investigação (investigação-acção; estudo de casos ...);
- disponibilizar formação avançada e formação profissional;
- divulgar boas práticas;
- reflectir sobre as práticas lectivas;
- produzir artigos;
- elaborar (produção/realização/difusão) materiais multimediatizados ASVM/AVM de aprendizagem (com)partilhada
- ...

Esta é uma reflexão que faz parte do corolário de uma série de actividades desenvolvidas desde 2002. Retomando a abertura, diremos que a tomada de consciência de resultados de acções passadas (um ponto de chegada), se transforma num ponto de partida, em inventivas para o futuro. É nossa intenção apresentar o protótipo do Portal **(re)ligar** no decurso da Conferência EDEN, Projecto que conta com o apoio, a nível de consultoria, de individualidades de renome internacional.

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THE DIGITAL ORCHARD: SOWING TECHNOLOGY, CULTIVATING INNOVATION

AN INNOVATIVE APPROACH TO THE USE OF TECHNOLOGY IN EDUCATION

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Abstract

The Digital Orchard is a project developed at Citilab-Cornellà with the support of the i2CAT Foundation, whose objective is to help high school teachers use technology in innovative ways in the classroom. It has been conceived as a Living Lab for education, focused on secondary education, with plans to expand it to other levels and areas. It will also be offered in course format during the 2009 -2010 academic year, an initiative supported by the Department of Education of the regional government in Catalonia, Spain. In this course, teachers and facilitators will work together to propose, discuss and test innovative approaches to using technology in the classroom, with a focus on Web 2.0 tools and personalisation of learning. It is expected that this collaborative and social approach, supported by the creation of a community of practice, will have a positive impact in closing the digital gap between teachers and students, help teachers realise the potential of new technologies, and support the new policies being issued by both the regional and national governments in Spain.

Introduction

L'Hort Digital (The Digital Orchard) is a project developed at Citilab-Cornellà (<http://en.citilab.eu>) with the support of the i2CAT Foundation (<http://www.i2cat.cat>), whose objective is to help high school teachers use technology in innovative ways in the classroom. Citilab-Cornellà is an experimental centre for the convergence between the new Internet generation and the new Knowledge Society, a workspace for the citizens of the Knowledge Society to activate, stimulate and expand their capacity for creativity and innovation. The center is orientated to the promotion of Social Internet-related projects and pays special attention on the evolution of new places, concepts and methodologies related to the impulse of the Information Society and the new economy of telecentres, living labs and e- learning. Education projects are one of the main priorities, and the Digital Orchard is the result of bringing together technology, learning and innovation.

A Living Lab for technology enhanced learning, the Digital Orchard will be an open space, in which both new and traditional technologies will be showcased, so users can test them, find new applications in the classroom, and develop innovation projects based on them.

Objectives:

The main objective of the Digital Orchard is to help high schools teachers (and, in future stages, users from other levels and areas) develop innovative approaches and applications of new technologies in the classroom. The Digital Orchard is based on a Living Lab approach, and aims to promote the personalisation of learning by means of social and collaborative tools, the so-called Web 2.0.

Although the project focuses on teachers and educators, its ultimate purpose is to reach students, and help them realise the potential of using technology and Web 2.0 tools in their learning process, both formal and informal, and to carry on these skills to their professional lives and lifelong learning.

Rationale:

The increasingly widespread access to the Internet and the growing popularity of social networks and applications mean that new generations spend more of their lives online. This generation of learners, usually referred to as Net Gens, Millennials or Digital Natives, is regarded as familiar with computers, internet and technology in general. Nevertheless, there is no strong evidence that shows that they are also using these tools in their learning processes, formal or informal. It is also not clear how can these tools be appropriated for use in the classroom, and how can teachers take advantage of their students' social presence for academic activities. In many cases, this is also

associated to the fact that teachers have less experience and knowledge of these tools – they are no longer the experts.

According to a BECTA report on the use Web 2.0 technologies¹, "relatively few learners are engaging in more sophisticated Web 2.0 activities, such as producing and publishing self-created content for wider consumption. In order to be motivated to publish content, learners must perceive that publication carries utility for the self or important others. In addition, learners may lack the technical knowledge and skills needed to publish content online. Learners may also be unaware of the potential applications to which particular tools are especially suited."

Prensky² suggests that new technologies have the potential to radically change education, although this change might not be evident in the classroom, but in what he calls the After-School learning: all the ways in which students learn, using technology, outside the walls of the classroom. In today's world, teachers often feel "left-behind" regarding new technologies, and are seen by the students as "illiterate". The fact is, most students are more fluent in using new technologies than their teachers, and this creates a divide. But, as Prensky goes on to suggest, teachers do not need to be proficient in the use of technologies to take advantage of them in an educational setting. They should learn how to use them and understand them, but not necessarily master them. If teachers "divide the labour of learning", this might benefit all parties involved in the learning process: students probably do know more about the technologies and this could be acknowledged by teachers, by asking their students for help, involving them in the design of learning activities. Teachers, on the other hand, can evaluate the way students use the technologies, identify opportunities for these technologies to be used in the learning process, evaluate and compare different options, and offer advice on how to apply technology to real problems. In summary, our students' strengths are their ability to quickly learn new technologies, their fearlessness to try new things. Teachers' strengths should lie in their ability to teach lessons about and with technology, engage students, guide them. Both groups should work together.

As the aforementioned BECTA report points out, "Lack of significant sophisticated activity by learners that involves more than consumption and social networking suggest that there is a role for teachers in supporting effective learning using Web 2.0. This role may be to ensure that learners have the technical skills to use the tools effectively and the metacognitive, synthesis and critical reflection skills to use Web 2.0 applications to support learning wherever they are."

The role of teachers has seen a shift from transmitters of information to facilitators and guides, the so-called transition from "sage on the stage to guide on the side". Most of the resources and content used in class are already available in some way or another on the Web, so teachers are no longer the "owners" of information and knowledge. This is not to say that they are no longer needed: it means, in fact, that their role becomes even more important, helping students develop their ability to sort, understand, analyse and use information creatively, inspiring them, guiding them in their learning paths³. As Theo Kuechel says in his blog⁴: "It's not about a set of ICT skills [...], it is about exploring the pedagogical potential for using the content that goes beyond merely illustrating a subject."

A recent study by BECTA⁶ shows successful examples of implementing Web 2.0 in secondary schools, with teachers emphasizing the importance of communication and collaboration in participatory learning, and the role of technology as a tool to support the learning process. Some teachers see the implementation of Web 2.0 approaches as key to personalising learning, and do not think technology will render teachers obsolete; if anything, it will make the role of teachers as moderators and facilitators become even more crucial.

The Spanish and Catalan governments are currently in the process of revising their educational policies; one of these policies is aimed at the "digitalisation of education": providing resources to schools, teachers and students, in order to take advantage of the new technologies available, such as digital whiteboards, digital textbooks and netbooks.

The Digital Orchard project was initially proposed as a space in which teachers could explore the possibilities of technologies and Web 2.0 applications in the classroom, by developing innovation projects in a collaborative environment. The project was inspired by the MediaZoo at the University of Leicester⁵. We choose a different metaphor, an orchard, to illustrate the different types of tools and users, and the way the former can be incorporated into the users' toolkits – the Orchards.

An Orchard is defined as a "a piece of enclosed land planted with fruit trees."⁷. It shares the same root as the Spanish and Catalan words, *hortus*: the project is called Hort Digital in Catalan, and Huerto Digital in Spanish. We want to convey a meaning of ownership, as each individual's orchard would be different, including the plants and trees (tools

and technologies) that the users choose according to their needs. It changes over time, “growing”, and in time, bears fruit: knowledge, resources, relationships, communities. Taking the metaphor one step further, the Digital Orchard is related to four different areas, which represent different combinations of technologies and users. For example, medium to expert users that work with technologies and tools that are already being used in the classroom represent the Garden: an environment that users know, and in which they feel comfortable. Tools such as Powerpoint, and to some extent Blogs and Wikis, belong here. These same users could at some point feel the need to see new species and try to grow them themselves, and visit the Botanic Garden. Here, they can see and test tools that might not have been created for education, but are in the process of being adapted for it: YouTube, podcasts, video.

Some users, perhaps, would like to try their hand at gardening for the first time, or would like to learn how to grow a particular species. A Greenhouse would be the perfect place for this. And what about new, undiscovered plants and trees? This area represents the unknown, the future: those technologies that have not been developed yet, or that are not widespread – perhaps they thrive in other places, but are unknown to us. These are the Exotic Species.

These four areas are neither perfectly defined nor isolated, and each one would contain different plants depending on the experience of the user, or the environment they work in. That is where the Orchard enters the picture. No matter in which area the users are, or which plants they choose, they can always carry them to their own, individual Orchard, and look after them, learning how to work with them, and gather or harvest the fruits they will, in time, bear. The “owner” of the Orchard can then share these fruits with other users, helping them to plant and grow their own Orchard.

Methodology:

The Digital Orchard is based on a Living Lab approach, in which users are involved in all stages of the process, and innovation is user-driven. In this context, tools and support will be provided to the users, and the learning will be based on projects, proposed and developed by the users. A virtual space will also be available, so users can work in groups, synchronously or asynchronously, hold discussions, and share ideas and content. This approach has previously been used successfully in other Citilab projects, such as Seniorlab⁸, by means of Ning, a free, Web 2.0, social-network tool.

In a Living Lab environment, research and practice inform each other, and all stakeholders participate in the innovation process: this would not only include students and teachers, but also school authorities, government representatives, and family and parents. Following this approach, a series of interviews were conducted with representatives of the high schools closer to the area of influence of Citilab. The purpose of these interviews was to explore in which ways, if any, was technology being used in the classroom, the needs of teachers and students, and listen to their ideas and suggestions. A common theme was the need for training in ICT use in the classroom, as opposed to training in ICT skills. At this point, and no earlier, was the project presented and explained, listening to comments and suggestions as to which areas were the ones that needed most work and how could this be implemented in the high schools.

We also learned that, even though these schools were geographically close, the student population was not homogeneous among them, and that each school has a particular strength. Thus, some of them are leaders in the ICT area, while others tend more towards the artistic side. All these differences and strengths are being taken into account in the design of the Digital Orchard course, and we expect to see interesting synergies develop when the project starts at the end of this month.

Once the current situation was established, we spoke to the local representatives of the Department of Education in the city of Cornellà, Catalonia. The department of Education of the *Generalitat de Catalunya* (the regional government) has local offices in all major towns and cities, called *Centros de Recursos Pedagógicos* (Pedagogic resources centers), which coordinate the schools and high schools within their geographical influence. In this case, the *Centro de Recursos Pedagógicos Baix Llobregat 5* supports the five high schools in Cornellà, plus two high schools in Sant Joan Despí, a nearby city. After several meetings with the coordinators of the center, it was agreed to create a new course for teachers during the academic year 2009-2010, to be offered as part of the official courses organized each year. This was a very important point, since the recognition by the Department of Education counts towards teachers' promotions and CV.

In recent years, Cornellà has seen an increase in population, mainly from immigration, both from other regions of Spain and from other countries. This creates a unique situation, with its own advantages and challenges. The cultural diversity and richness provides numerous opportunities for cultural exchange and learning, but at the same time, language and cultural barriers represent an obstacle for the integration of some students. Another project carried out by Citilab, Edulab⁹, looked at these issues, and addressed them using digital storytelling. It proved to be a successful

initiative, and also showed that the use of technology can help bridge cultural gaps and bring down the barriers for integration - in this case, a cultural and language divide. We expect that the Digital Orchard project will help in closing the technology gap between teachers and students, the so-called Digital Natives/Digital Immigrants dichotomy.

The Digital Orchard will have three versions: a physical space, which will serve as an open laboratory for both teachers and students; a virtual space, where teachers and facilitators will work together in projects, participate in discussions and exchange ideas; and the course format, which will run during the Academic year and will use both the physical and the virtual spaces, through face-to-face sessions and online collaboration.

The face-to-face sessions are structured as modules, so they are fairly independent in content, and activities and e-tivities are planned for each one. These may vary, according to the users' suggestions and ideas, but it is expected that they will cover a broad range of technologies and Web 2.0 tools, as shown in the following table:

Face-to-face activities	Applications and tools	Online activities
Module 1: Blogging. Microblogging.	Twitter	Social network – Ning Blogs (by subject areas) Twitter
Module 2: Social bookmarking and RSS	Del.icio.us Google Reader	Create a "resources center" for each subject
Module 3: Online collaboration, wikis	Wiki. Google Docs	Collaborative Wikis, by subjects and areas. Wikipedia contributions, critical analysis of entries, submission of local articles and information
Module 4: Online presentations and slide shows	Google Docs, Slideshare, Prezi, Animoto	Effective presentations, user-generated content
Module 5: Multimedia (Images, video, audio, music)	Voicethread, Blip.fm, Podcasting, Audacity, iTunesU, Flickr, YouTube	Audio feedback, podcasts as tools for revision, user-created podcasts and videos. Music as a resource.
Module 6: Aggregator pages & Social browser	Netvibes, Pageflakes, Flock	Personal Learning Environment

Table 1. The Digital Orchard course: modules, tools and activities

This way, the teachers will create bit by bit a "toolkit", a set of personal learning and teaching support tools. Web 2.0 tools have been proposed as foundations or "hubs" for Personal Learning Environments^{10,11}, and in this case, teachers can create their own PLEs, and later use the acquired knowledge and skills in their teaching. Furthermore, they can also guide their students in building their PLEs, so students can create a digital record of their learning process.

A previous study¹², involving 33 students at university level, showed that the use of Web 2.0 tools in the context of a PLE was perceived by most of the students as positive and that it added value to the learning process. Students explored the application of several Web 2.0 applications as tools for collaborative and participatory learning, developing projects, blogs and wikis. Questionnaires and interviews showed evidence of learning and developing skills,

appropriating these tools for purposes of organising and managing content, and the strengthening of social interactions and relationships. The Digital Orchard will follow a similar approach, at high school level.

Future steps

The project will enter the pilot stage in October 2009. We expect that this stage will shed some light on the way technology can be adopted by teachers for its application in the classroom, using collaborative learning and social networking approach. The most innovative aspects of the project are:

- The creation of a Living Lab for education at high school level, comprising all seven high schools in the area
- The use of technology and Web 2.0 tools for the personalisation of learning, both for teachers and students, in a social and collaborative environment, using a project-based learning approach

The future strategy for the Hort Digital comprises:

- Expansion: although the Hort Digital is being aimed at secondary education, expansion plans include primary schools, higher education, further education/FP (check term), and lifelong learning.
- Transference: once the first Hort Digital is established, its management will be transferred to the Education Department, through its Center of Pedagogical Resources. Citilab would still act as main advisor and will provide support, but the everyday activities will be run by the Center.
- Dissemination: we plan to invite other Centers to join the project, so the idea will not only be spread through different levels of education, but also geographically.

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TOWARDS A MODEL BASED STRATEGY FOR TEACHERS PROFESSIONAL DEVELOPMENT: AN INSIGHT IN ITALIAN POLICY AND STRATEGIES

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A.N.S.A.S. (Italian national institute for documentation and Innovation in education research)

Presentation of ICT policy and practice of the institute

The first phase

Since 2001 A.N.S.A.S. ("Agenzia Nazionale per lo Sviluppo dell'Autonomia Scolastica") has been developing PuntoEdu a blended e-learning model and on line environment to support initial and in-service training for school personnel. On behalf of the Italian Ministry of Education, PuntoEdu has been training more than 600.000 teachers through blended e-learning courses focusing on different professional needs such as initial training issues, European citizenship, Information and Communication Technologies, Innovative teaching methods, curriculum related specific topics, special educational needs.

The second phase

After the first years, in-service continuous professional development has become a major issue for the Italian school system and blended e-learning courses have been evaluations highlighted an emerging demand for a permanent learning environment always available and accessible. After more than one year of research and instructional design team work a new web-based national-wide learning environment, FOR, has been issued. The objective of the on line environment was to support the community of Italian school teachers providing training opportunities and informative and normative digital content but also to foster the creation and development of communities of practice. The on line platform for teachers, in fact, provided several opportunities to develop collaborative activities in order to exchange experiences, share knowledge and solve specific problems with the support of experts and professionals.

A new scenario

In the meanwhile, in the very last years, our society has been changing more and more quickly and epochal changes have occurred in students' behaviour. As Nicholas Negroponte has foreseen more than ten years ago we have finally reached the digital age: for the first time ever in Europe young people are now accessing the internet more frequently than they are watching TV. The digital natives use the computer screen or mobile devices to externalize thoughts and

manipulate contents on digital surfaces to construct new situated knowledge. They like to express their personality creating and sharing digital contents, communicating in real time, learn in their own personalized style. Besides the globalization of economy has changed the requirements needed from our schools. Many of the traditional middle-class jobs will not be available anymore and young people need new competencies and skills to succeed in the work force marketplace. "In "The world is flat", Pulitzer Prize-winner Thomas L. Friedman lists requirements and needs of the new global economy¹.

The requirements of the new economy as well as the needs of the knowledge society are very well defined and the differences between older generations and the millennials have been studied quite deeply in the last few years. On the other side, school doesn't seem to develop new and effective teaching and learning method in order to respond to the needs of a digital society. Very often national educational policies alone seem not to be able to bring innovation into school systems in order to prepare our students to develop new required skills and competencies. Moreover teachers very rarely move spontaneously (or through top-down large scale national training initiatives) from the traditional long-time established mass schooling approach to innovative pedagogies or ICT driven student-centred learning methods. Instead education is often still "sinking into abstraction, concentrating onbook-learning and the memorisation of facts, turning out young people who, according to some criteria, know a great deal and are capable of achieving high marks in exams but have not learnt how to think, have failed to acquire any culture" (OECD, Review of National Policies for Education 1998).

To be able to allow our students to build social networks on their learning experiences, to provide educational content that match different learning styles and develop new pedagogies for the new generations we need first to help teachers to experience the new digital worlds (as learners) and to experiment ways to integrate ICT in everyday teaching in order to find out the real effective pedagogical potential. Teachers need to discover a new understanding as learners and researchers, they need to discuss new directions and solutions. We cannot pretend simply to change pedagogies providing facts about a new Google generation or instructions on how to use the most advanced technologies. If we want to obtain concrete results and a real change in our school systems we need to start from the heart of education, teachers and instructors, and we need to help to develop a new understanding, a new vision and, finally, to build a new pedagogy for the net generation.

¹

The new needs are listed as follows: "Collaborators (Those who can collaborate with people between companies and among companies to facilitate global supply chains), Synthesizers (Those who can put together disparate technologies to create new services and products), Explainers (Those who can explain complexity into simple concepts that all can understand), Leveragers (Those who can combine the best of what computers can do with the best of what people can do and reintegrate innovations), Adapters (Those versatile people who can apply depth of skills to a widening scope of situations), Personalizers (Those who can personalize digital services within natural human contexts), Localizers (Those who can tailor global capabilities to local markets). All of these jobs require people to apply, analyze, synthesize, evaluate, problem solve, and create new knowledge to survive. [...] Schools need to incorporate the 21st century skills in order to prepare students for the global work force" (B. Pletka, 2007, p.46).

The end of e-learning:

looking for new pathways towards innovation

The above described tendencies stress the central role of the teacher in the school innovation process and the need of new pedagogies to face the challenges in the new scenario.

Traditional training models, e-learning courses and online communities seem not to provide adequate responses to the new complex needs while a sort of disconnection is rising producing a wide gap between the old traditional mass-schooling methods, the attitudes of the digital natives and the needs of the global economy. *"A review of the first wave of e-learning revolution is not pretty. The landscape is littered with poor products and a lot of disillusioned learners...There are also big lessons for the software providers, who gave technology-obsessed course developers free rein to create glitzy, highly, interactive, very expensive multimedia courseware that too often dazzled the eye without ever informing the mind"* (D.Burns, 2003).

In our experience training solutions based only on a top-down approach (with training courses limited in time, organized by providers or administrative bodies, located in specific "training places" separated from the real working place) are not sufficient to meet the needs of the professionals of the school in the third millennium and to provide efficient and effective solutions to foster reflection, provide benchlearning opportunities, develop problem solving skills for complex contexts, and to support a collaborative approaches to professional issues. As Jay Cross stated a learning paradox is taking place in modern society: most of the budget today (80%) is spent in formal training but most of the learning (80%) is comes from informal situations (Cross, 2007). That means that people learn in everyday's life, trying to find solution to concrete problems and asking colleagues or peers for support. If we want to improve effectiveness of professional development initiatives we need to shift from exclusive large scale top-down solutions to bottom-up initiatives tailored to small or medium-sized communities of practice and focusing on specific job-related solution providing knowledge and support linked to concrete work contexts.

The third phase: building a digital school

Looking back to our experience as national institute in charge of teacher training and promotion of innovation in education we can realize that many things have change around us: our society has moved from the industrial age to an information age, web based services and digital contents have changed the way we live in our professional and social environment, our students have become *screenagers* changing their approach to the external world, the approach to teacher training has evolved from time limited course models to continuous web based professional development initiatives but one thing does not seem to be changed in the last century: the classroom. A traveler in time wouldn't probably recognize any of our modern society's institution but he wouldn't see any relevant difference if comparing an old classroom with today's classrooms.

One fundamental change has come at the end of the twentieth century with the introduction of the Interactive Whiteboard in education. For the first

time a teaching tool enters massively and worldwide in the everyday learning environment and, as a Trojan horse, brings technology into the classroom. All at once “e-learning” has become an obsolete word, “computer –labs” were no more happy islands used to get familiar with informatics. ICT skills are no more related to the ability to use software packages or hardware systems; they are more and more connected to the definition of “digital competencies” (*“Digital competence involves the confident and critical use of Information Society Technology (IST) for work, leisure and communication. It is underpinned by basic skills in ICT: the use of computers to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet”*)².

The new context has pushed to an evolution of the ICT Italian policies and innovation strategies with the classroom becoming the heart of educational change and support on the job through coaching becoming the way in which innovative pedagogies can be gradually developed by teachers. The strategy includes three directions aiming to provide alternative models for different application contexts.

The first direction is being developed through a large-scale in-school on the job approach aiming to change the learning setting and the teaching methods in ordinary school classrooms. In this direction 30.000 interactive whiteboards will be distributed providing web-enhanced coaching in order to enable teachers develop digital skills and innovative pedagogies. This approach aims to evolve the traditional blended learning, content delivery training initiatives into context situated and teacher specific support. Coaching has been chosen to help teachers facing concrete problem-solving and to promote reflective practice amongst teachers (from “push” top-down actions to pull teacher needs linked initiatives).

The second direction is being developed through bottom-up classroom-specific actions. The Ministry of Education, Universities, IT providers, Local Authorities and our institute will work together to define different learning models experimenting the use of a wide range of ICT devices and web based technologies inside the classroom. In this context the transformation of the classroom and the development of innovative pedagogical models will not be linked to a nation wide inclusive project but will be led by the needs and the specific characteristics of the teachers involved with the scientific coordination of experts and with the opportunity to define the preferred technological setting (through governmental funds) and personalize the learning environment and the teaching models.

The third direction applies to specific isolated areas (such as islands or mountain regions), where schools are not able to provide regular curricular school activities because of geographical obstacles. In this case the aim is to change classroom structure through an extension of the learning environment, connecting pupils and teachers from different classrooms and locations through the combined use of a video conference system and networked Interactive Whiteboards. The traditional classroom is transformed into a completely new extended social learning environment combining on line asynchronous learning strategies and computer mediated synchronous lessons.

Considering this background scenario A.N.S.A.S projects to promote and support innovation in education we will now focus more specifically on some ICT-based teaching and practices developed in some of our recent initiatives.

Innovative ICT-based teaching and learning practices

The DiGiscuola Project: a Pilot project

DiGiscuola (www.digiscuola.it) was a pilot project started in 2007/2008 that aimed to introduce digital contents in the classroom by exploiting the potential of the interactive whiteboard (IWB). The project was promoted by the Ministry for Reforms and Innovation in Public Administration, in collaboration with the Education Ministry, with the objective of creating a bridge between traditional didactics and the new generations. Among the other collaborators there was the National Agency, the main Italian Publishers (digital content providers) and the University of Milan, entrusted with conducting the monitoring activities (focus groups, interviews, questionnaires...) of the project's results.

Digiscuola involved 556 Italian schools, 3300 Italian and Maths school teachers who were enrolled in the methodological training run by the National Agency for the Support of School Autonomy (ANSAS, formerly INDIRE, www.indire.it), and about 3300 students. The experimentation was focused on Math and Italian due to the worrisome outcomes of the OECD-PISA³ surveys that attest the very low-level performance of Italian students in those subjects.

The project involved the selection (through a call for applications) of high schools that had joined the initiative and the allocation of, to each of them, an IWB equipped with video projector and a laptop for each teacher in training (up to a maximum of six teachers per school, three Italian and three Mathematics teachers). The recipients of the training were teachers from southern regions: Sicily, Sardinia, Puglia, Campania, Basilicata, Calabria, Abruzzo and Molise.

DiGiscuola had a complex architecture that foresees the allocation of an "electronic scholarship" to the participating schools. These vouchers served to acquire the digital didactic contents that publishers inserted in the DiGiscuola.it portal, thus generating a marketplace based on the principle of free market. Within this environment the teachers who had joined the project and their scholastic administrators purchased didactic contents, and the students, enrolled in special virtual classes could work on the contents assigned to them.

The project had a big impact on the School System as a result of its innovative aspects and its many declared objectives:

- to promote innovation in school;
- to bridge the digital divide gap between students/teachers;
- to promote the use of the Interactive Whiteboards and digital contents;
- to create a marketplace of digital contents.

From the monitoring conducted by the *Università Cattolica del Sacro Cuore di Milano* it was discovered that the teachers in training comprehended and internalized the integration of the ICT in their daily teaching (56.87%) managing to draw on the motivation of the students (55.32%) and putting into practice collaborative learning dynamics among them (41.01%).

From an analysis of the projects which were created by the collaborative work of the teachers in training and the object of the in-class experimentation phase (coaching) it emerged that:

- 74% of the projects foresee the use of the IWB to support in-class production, thus mainly impromptu use;
- 45% for internet navigation;
- 40% for the use of specific software.

The fact that the majority of the projects foresaw a collaborative use of the IWB between students and teacher (86%) is meaningful even if the real level of collaboration will need to be investigated in depth at the end of the coaching phase.

As a last analysis we took into consideration the roles that teacher and student were called to assume during the project work:

- Expert (role centred around the communication of content) 62.41%
- Organizational support (advice, information) 34.83%
- Tutor (if presence-distance integration is foreseen) 29.66%
- Group leader (support the work groups) 64.48%
- Technical support 23.45%

The conception of the teacher as the distributor of contents as the only individual eligible to provide education, rooted in the principle of one-way teaching to the detriment of personalization according to multiple intelligences⁴ and the multiple cognitive styles of the students, tends to disappear.

The training began with an in-person first encounter conducted over the course of a two-day residential training seminar during which the teacher-trainees met with the National Agency researchers and with their respective e-tutors, previously selected and trained by the Agency. The activities that began during the course of the seminar (training agreement, familiarization with the portal, the contents and the phases of training) were then continued at a distance over the following months under the careful direction of the tutor who, working with his/her own teachers (10-15 at maximum) in a dedicated online environment (the virtual classroom), led an analysis of three themes that constitute the backbone of the DiGiscuola program:

1. How to strengthen the face-to-face lesson with the use of the multimedia interactive whiteboard integrating it and blending it with the “media” that has always made up the educational setting of the classroom: the blackboard, ball-point pen, the geographic maps, all the way to the CD and computer;
2. How to carry out the personalization of the educational course of the student keeping in mind individual needs, understanding different sensibilities and intelligences, and taking advantage of the potentialities of multiple semiotic codes: text, audio, images, video;

⁴ Visual-Spatial, Bodily-kinesthetic, Musical, Interpersonal, Intrapersonal, Linguistic, Logical – Mathematical from Gardner, H. (1993).

3. How to choose the digital didactic contents, to evaluate the quality in relation to the curriculum, to didactic planning and the educational objectives the teacher intends to pursue.

The training was divided in three phases: two months of analysis of case studies based on the educational nodes proposed, a month of planning an innovative didactic course (*training*) and a final phase of three months during which the experimentation planned in phase two is put into action (*coaching*).

The teachers in training were assisted by the expert *tutors* and are followed, until the final phase, by a *coach* who assists them during the course of the experimentation in the classroom with the students.⁵

Plan for the diffusion of the Interactive Whiteboard: The classroom as the heart of educational change

The *Plan for the diffusion of the Interactive Whiteboard* ([Scuola-Digitale/Lavagna](#)) is a second step to effectively change learning setting and teaching methods. The Plan is a three year initiative to introduce ICT into the very heart of the school: the classroom. In order to receive the funding, all the schools selected through a call for applications bound themselves to place the IWB equipment into the classroom, and to use it in ordinary school activities.

The initiative, open to all Italian junior secondary schools (age 11 to 13), is a large scale action that will equip classrooms with about 30,000 IWBs, supporting teachers with an on the job coaching service. The main purpose of the project is to embed ICT in daily learning activities promoting an attitude to critical reflection among teachers.

To comply with the codes, language and specificities of different disciplines the intervention is directed to the teachers of all the main disciplines i.e. Italian, history, geography, foreign language, Arts, Music, Sports, Mathematics, Sciences and Technology.

The declared objectives of training program were very similar to those of *DiGiscuola* project:

- To transform the classroom learning environment through the use of the IWB and the new digital content;
- To integrate ICT in the design of teaching activities;
- To use of the IWB to support the different teaching strategies (personalization of learning, interactive lectures, collaborative activities, etc);
- To use of IWB in teaching of different disciplines;
- The introduce digital resources and digital tools in the ordinary activities of the classroom.

The training model in this project is a further evolution of the one used in *DiGiscuola Project*, a blended e-learning model and on line environment that

⁵ Elena Mosa, "Digiscuola project", *interactive whiteboards (IWB) and digital contents: an innovative recipe for school re-medi@tion*. Book of abstract **I-Learn Forum** Paris 4-6 February 2008

points more on the job logic. The face to face meetings are the opportunity to detect teachers attitudes and training needs and to find together specific job-related solution to concrete work contexts. In the on line collaborative environment is the place where teachers can communicate, share work and research experiences, compare notes and discuss didactic matters with colleagues and experts.

The training is divided into phases: firstly teachers work both in presence and online with an e-tutor on some case studies and best practices documenting the use of the IWB in school, in the second phase they experiment innovative solutions of didactics into the class.

On the first part of the training the tutor is a facilitator of the collaborative activities (using both synchronous and asynchronous tools like video conferences, chats, blogs, wikis, calendar...) and is, at the same time, an expert on the topics being addressed. During the second phase, the expert has a different mission: to assist teacher-trainees during the course of the experimentation in the classroom with the students. The work of the tutor became more in-person oriented since the main goal is to scaffold teachers in their work with their students, supported by the IWB.

At present, the first action of the *Plan* has just started. About 3800 schools proposed themselves as candidates to join the project and the requests for IWB were more than 11.000. The project has distributed funds to all the schools that had to create buying networks under the management of regional school authorities (*Uffici Scolastici Regionali*). At the moment, schools are buying and installing technology. Monitoring this procedure, the Ministry of Education estimates that more than 8.500 IWBs will be installed in schools by the end of September 2009. At the end of the same month, the training and coaching programme will be started and more than 25.000 teachers will be involved.

[Scuole in rete](#)

Besides large scale initiatives as *Digiscuola* and the *Plan for the diffusion of the Interactive Whiteboard*, the Ministry of Education is supporting [Scuole in rete](#), a small scale project that is providing ICT solutions for geographically isolated schools and mountain spots. Within this project, ANSAS have started to pursue TPD introducing models for innovative practices instead of trying simply to improve teachers ICT skills. Since those projects are at an early stage, their impact on a large scale has not been measured yet, but we would like to describe a case to illustrate how this model based strategy can affect both the integration of innovative practices and teachers capacity to produce innovation autonomously.

The case is related to *Marinando*, the first project within, an initiative to support geographically isolated schools. This project, started in 2006, experimented a networked school model for two 11 years old students living in Marettimo, a small island near Sicily. Two years after *Marinando*, a group of teachers from one of the schools involved in the project, developed autonomously an adaptation of the model. Comparing the two cases, we will try to point out which are the competencies teachers developed in the pilot project

and subsequently used in the following experience, but we will also try to focus on the effects of the TPD strategy on teaching practice.

MARINANDO: opening the classroom to break isolation

In Italy, schools located on small islands or mountain sites often fail to provide a quality learning experience and do not help their students to socialize outside their community. As a consequence, young people tend to drop school quite early or to move from the birthplace to continue their education. The last was the case of Marettimo, one of the Aegadian Islands. During the past decades, many students left the island after elementary school to move to Trapani, the nearest town in Sicily, with their families. As a consequence, the island depopulated quickly. In 2005/06, only two students enrolled in secondary school: a boy and a girl, both eleven years old. With such a small number of students, the school could employ only three core subject teachers: Italian, Math, English. The *Marinando* project experimented an e-learning solution to provided Marettimo's students all curricular subjects involving teachers from two schools in Florence, more that 900 km far from Marettimo.

ANSAS researchers designed a classroom setting where Marettimo's students could attend their daily curricular lessons with Florence teachers. The meetings were hosted on an ANSAS dedicated server that provided a high performance and stable infrastructure. To support cooperation and social interactions between Marettimo students and their "virtual" classmates in Florence, ANSAS also provided *EduLab*, an asynchronous on line learning environment.

Though this model couldn't replace face to face interactions, the purpose of the project was to create an environment that could preserve a communication "naturalness". Each classroom was equipped with an interactive whiteboard, a fast Internet connection and a video conference system. Interactive whiteboards were used to share content through a conferencing software (Smart Bridgit). The setting was designed to create a rich audio and video feedback: classroom were equipped with microphones, speakers, two cameras, a TV set and a video mixer. The TV set, hanged on the classroom wall, provided a video feedback of the connected classroom. Teachers (or students) could control the cameras with a remote, rotating and zooming on a particular subject.

Marettimo's and Florence's staff had to be trained to work with the classroom setting. Many of them had poor ICT skills. A small group had experienced e-learning for professional development and a few used ICT with students. Interactive whiteboards were new to everybody.

ANSAS researchers provided an initial on site training and supported the group of teachers during the year using the *EduLab* environment. Beyond the technical issues, ANSAS helped teachers to develop a "pedagogical use" of technology. Initially, in fact, on line meetings were mainly transmissive and teacher centered lessons: this strategy allowed to control technology more easily, but affected negatively students participation and social interactions. To create a more collaborative environment, teachers had to learn how to manage turn taking during conversations, to control the cameras for a coherent visual feedback during interactions and to use interactive whiteboards to support collaboration on digital content. They also had to learn how to "repair" communication when technology produced an obstacle. For instance, in music lessons, Marettimo's

students usually played with their schoolmates in Florence: during this activity, teachers had to face a slight delay in sound transmission.

Researchers performed a “coaching role” offering their expertise on technology and instructional design strategies, facilitating a reflective and collaborative professional practice but also helping teachers to solve practical problems. As a result, teachers generally improved their basic ICT skills and they were able to apply new competencies with pervasive technologies within ordinary classroom activities. On average, they have been able to embed ICT in different pedagogical strategies and, though not all of them created an highly collaborative environment, Marettimo's students could attend curricular and extracurricular activities improving their social connections outside the island.

Towards innovative solutions for an open classroom: the adaptation of an experimental model

After *Marinando*, other schools joined the *Scuole in rete* project. At the same time, one of the teachers that took part in the pilot experience, Linda Guarino, autonomously created a re-design of the *Marinando* model for an elementary class in the Istituto Comprensivo of Favignana.

As the Istituto is in charge of the management for all Aegadian Islands' small schools, including Marettimo's, elementary teachers knew about the pilot experience and were interested in learning how to use the ICT setting, especially interactive whiteboards. When they planned a set of extracurricular activities on digital and media literacy for fifth grade students, the school management took a chance to disseminate the skills and competencies the school staff developed with *Marinando*.

Digital and media literacy were part of a project based activity for the class: the production of a short video about *la mattanza*, a traditional tuna fishing event in the Aegadian Islands. During the first part of the year, students worked on the basics of Internet browsing and searching. Teachers designed task based activities to collect and evaluate information on *la mattanza*. Students were also asked to compare information found on the Internet with pictures or documents from their family records. The ICT setting for these activities was an ordinary classroom equipped with Internet connection, an interactive whiteboard, a computer and a scanner.

In the second part of the year, students were asked to elaborate creatively the documents collected. To accomplish this task, they were going to learn the basics of digital video and photo manipulation. Since none of the teacher was an expert in these subjects, the school involved two consultants. Both of them were based in Florence and could be in Favignana only for a short period of time, but they were available for on line meetings on a regular basis. The school staff decided for a blended learning solution and, as in *Marinando*, they planned a set of on line synchronous lessons with the consultants.

Marinando's classroom setting required an investment the school couldn't afford, so teachers designed an alternative solution. The classroom was already equipped with an interactive whiteboard, but there were no cameras or TV set to provide *Marinando's* rich video feedback during the meetings. The ICT setting for the *Marinando* model also included a professional web conference applications with interactive whiteboard sharing functions. None of these tools were available in Favignana, so teachers evaluated open source alternatives that could allow a rich web conference system, a desktop sharing functionality and a collaborative whiteboard tool. Last, class could not access the dedicated server to host their

conference meetings, but communication had to rely on a consumer ADSL connection.

Aware that the low budget setting could be less stable and rich compared to *Marinando's*, teachers chose to turn the technical constraints into a learning objective: students had to learn strategies to “repair” the communication flow in case of noise or interruption and to stay focused on task even in a “reduced social cues” environment. They planned to work on these skills with using concrete problem solving.

In the first meeting consultants introduced themselves using their Internet “identity”: they browsed and commented their profile on social and professional networks, sharing their web pages, pictures and videos on the web conference application. During this meetings, the presentation quickly became a conversation: students were allowed to browse independently through shared documents and to ask questions. Students were asked to present their class and their project on *la mattanza*, using their blog⁶ and a school profile on a social network.

As only a computer with microphone and web cam was available in the classroom, a group of students managed turn taking in the conversation with the consultants while another browsed content on the interactive whiteboard. Social interactions were intense, both within the class and towards the consultant, and kids really enjoyed this communication environment despite frequent problems with the web cam signal.

The following on line meetings focused on specific tasks: learning how to manipulate digital photos with software (*Gimp*) and understanding the basics of digital video editing. In the first part the consultant commented with students a gallery of resources. For instance, during the activity on digital photography, the consultant shared a set of manipulated images of *la mattanza* inviting students to discuss how different visual effects could change the meaning of the image. The second part of the meeting concerned more technical issues; in the case of digital photography, the consultant explained student how to apply effects on the pictures and invited them to create one on their own. The Internet connection didn't provide a constant performance and communication was frequently interrupted. Even in this case, the class found a “repair” strategy using a file transfer function of the web conference application. Though interactions with the consultant were slightly delayed, students motivation remained high.

Fostering TPD with a model based strategy

The extracurricular activity became an occasion for teacher professional development. The adaptation of the *Marinando* model, in fact, required Favignana teachers to acquire high level digital competencies in a short period of time.

To design and manage the low budget classroom setting, they had to become familiar with the hardware and software equipment for synchronous meetings. The required competencies were not only operational ones. To choose alternatives to a desktop sharing application they had to be able to compare software performance. Competency in computer mediated communication was also important. As in the *Marinando* project, teachers had to modify their face to

face communication style, adapting it to the constraint of the video and web conference system.

Many of these competencies were acquired in a situated context and the presence of an expert colleague facilitated the process. Guarino shared her skills with the school staff and played an important role in critical decisions about technology and classroom management. She also acted as “coach” replicating ANSAS researchers role in Marettimo: she was present in activities planning and during the meeting, solving problems and supporting reflective practice among her colleagues.

From this perspective, the experience suggests reflections on the model based strategy for TPD that ANSAS is currently promoting. Though the subject needs further investigations, the Favignana case seems to point out that this strategy can support the dissemination of an innovative practice and can also be replicated autonomously by schools. The case also seem to state that “peer coaching” can be an alternative to the presence of external ICT consultants or experts.

As a conclusion, we may also add that the Favignana case was not only relevant for the adaptation of *Marinando* model, but because it produced innovation itself. The digital and media literacy activities, in fact, represent a good practice for advanced 21st century skill development in young students. Media literacy activities were quite innovative. In Italy, this subject is present in programmes or recommendation⁷, but only a few school offer regular activities. Teachers, by the way, rarely are experts in subject as digital photography or video editing: some of them may be self trained or have attended a short training. This often lead to a very “amateur” approach to the subject that can lead to a poor learning experience. In this perspective, the on line presence of the two experts for extracurricular activities represents an innovative way to “open the classroom” and may serve as a model for similar practices. Last, the presence of experts helps to “open the classroom” also for teachers. They tend to plan didactics individually and the professional community often acts as an “inner circle” where others professional cannot easily have access. In this experience, ICT to support a collaborative behaviour with subject experts and allow to “empower” curriculum. Beyond this, teachers have the chance to do more than “mediate” content or information: they mediate social interactions between students and people outside school.

Conclusion

A successful online learning experience results from the blend of pedagogy, technology and organizational support and highlights the active role expected of perspective online learners.

We believe that “tools” by themselves cannot innovate school and we promotes ad participates to projects that focus on the use of ICT with a pedagogical approach.

The formative models proposed today “do not speak a familiar language” for the students and the risk is to lose their attention and their involvement. The

students of the new millennium are characterized by their ability to engage in "multitasking," that is, to do many things concurrently, to learn under numerous and varied stressors. Their language is made up of text messages, acronyms, music listened to on an mp3 reader, I-pod, videogames involving less and less text, and more images, animation, video, audio, etc.

Today's teachers have to learn to communicate in the language and style of their students in order to involve them in a learning process which is more active, rich, engaging and motivating. This doesn't mean changing the meaning of what is important, or of good thinking skills. But it does mean going faster, less step-by-step, more in parallel, with more random access, among other things.

As a matter of fact, using a digital device or adapting materials to the language of the Digital Native is not enough if school activities are proposed in a linear/traditional way and the learning path is content-centred and not learner-centred.

The New Millennium Learner has to be personally involved in the creation of its own knowledge. He creates and manages things (images, words, audios, videos, etc.), he is multi-tasking, multi-space, multi-time.

Technology integration is using computers effectively and efficiently in the general content areas to allow students to learn how to apply computer skills in meaningful ways. Integration is incorporating technology in a manner that enhances student learning.

As a consequence the teacher of the future must be not only accomplished in instructional techniques and technology, but also in the integration of technology into the curriculum.

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TEACHERS COMPETENCES IN HIGHER EDUCATION INSTITUTIONS

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Key words: *e. learning, network, teachers, university*

Abstract

Europe's response to globalisation is embodied in the Lisbon Strategy, which promotes a society and an economy founded on knowledge and innovation. "Providing high-quality education and investing more and more effectively in human capital and creativity throughout people's lives are crucial conditions for Europe's success in a globalised world" [1].

Teachers play a crucial role in supporting the learning experience of young people and adult learners. They are key players in how education systems evolve and in the implementation of the reforms which can make the European Union the highest performing knowledge-driven economy in the world by 2010. To implement Bologna ideas and Lisbon Strategy in Eastern countries there is intended project Western-Eastern Teachers Education Network (WETEN) by TEMPUS programme.

Competences and qualifications in European Contest

These Common European principles should provide an impetus for developing policies which will enhance the quality and efficiency of education across the Union according to the common European principles: a well-qualified profession; a profession placed within the context of lifelong learning; a mobile profession; a profession based on partnerships. To implement European principles there is very important that teaching profession should be well qualified and teachers should be graduates from a higher education institution or equivalent; teacher education programmes should be delivered in all three cycles of higher education in order to ensure their place in the European higher education area and to increase the opportunity for advancement and mobility within the profession as well as the contribution of research and evidence based practice to the development of new knowledge about education and training should be promoted. The activities, which include subject-based and pedagogical training, should be available throughout their careers and be recognised appropriately as well as the content of initial and continuous professional development programmes and should reflect the importance of interdisciplinary and collaborative approaches to learning. Different competences are coming through teacher mobility and mobility projects for teachers should be facilitated and promoted as an integral part of initial and continuous professional development programmes as well as initial and continuous professional development programmes should ensure that teachers have the knowledge and experience of European co-operation to enable them to value and respect cultural diversity and to educate learners to become EU citizens and globally responsible.

Development of teacher's network

Western-Eastern Teachers Education Network (www.weten.org) is devoted to the development of the network of universities teachers in European higher education institutions working together to share expertise on effective learning and teaching in universities. This network for pedagogical innovation in higher education aims to bring together practitioners and experts from western universities from Europe, to share good practice, share materials and share new teaching methods with teachers from eastern HEI. There is a need for changing the focus from teacher oriented methods to student centered learning, focus on pedagogical issues faced by eastern universities when implementing ICT in education. One reason is that eastern institutions have not sufficiently experience to address the wide range of these issues as lone institutions. The main targeted area is the education and training needs of HEI academic community. The actuality of the problems of increasing the awareness of the importance of professional development for academic staff from HEI, of adopting new teaching methodologies, of implementing eLearning systems in the partner universities is well

grounded, since the adoption of the Bologna Declaration by the partners' institutions implies the revising and the promotion of new teaching methods.

Introducing new approaches and technologies at Eastern HEI

WETEN is based on the fact that the participating universities understand and take into account the fact that the process of introducing new approaches and technologies at a HEI itself must be carried out with the application of programme-objective approach, since it requires to solve a set of tasks connected with creating organisational, staff, financial, methodical, programme, technical and other types of provisions. The objectives of the proposed thematic network are to:

- undertake an analysis of the pedagogic traditions, skills and competences required for HEI academic staff from eastern institutions in comparison with western institutions;
- review and compare the existing teaching methods;
- co-operate in improving teaching and learning in HEI, in promoting open and distance learning;
- create a virtual library of materials on teaching methods;
- develop an online community to exchange ideas, content, educational resources;
- identify the existing material and produce 5 teaching guides for effective implementation of e-learning
- to train circa 400 academic staff from eastern HEI in using new methodologies;
- to implement as a pilot phase the new methodologies for 6 study subject areas, including education sciences.
- promote and disseminate the network findings.

By working together, institutions will gain insights into pedagogic practice at higher education level in the participant countries; will identify good and innovative practice; to be strategically placed to negotiate truly multinational teaching methods. This will also enable them to provide more effective, evidence-based support for learners from different educational traditions than their own, and to contribute to the free mobility of educators. However, before applying such approach for improving university internal quality system and realisation of the European dimension of education to its full extent, university staff must direct its efforts at revealing and target solving problems connected with wide usage of eLearning technologies in the training process by means of raising professional competence of academic staff working under conditions of open educational technologies.

Good practise of EU countries in methodology and methods of mapping and enhancing education, in promoting new teaching methods, in creating e-learning system as well as application of methods of effective management in this field would be extremely useful for partner universities. The project will achieve this goal via training target group to propagate EU values, advocate for Moldova and Ukraine EU membership at home and in the EU and advance their EU integration through enhanced cooperation and common projects, among Moldavian, Ukrainian and EU partners.

During the implementation of the project outcomes will be created:

- the comparative analyses of educational development needs and existing provision for embedding, upgrading and updating the learner support skills at tertiary level;
- comparative studies of approaches to learner support (e.g. lectures, seminars, field trips, role play, problem based learning, collaborative learning and the case method), peer observation and review, e-learning, assessment, and flexible delivery;
- trained network promoters and trainers;
- training materials developed for trainings and placed on the Internet for open use;
- producing and delivery of the 5 courses devoted to the special groups such like developers, managers, tutors, administrators, IT specialists of e-learning courses (Moldavian and Ukrainian partners, target group - academic staff from partner institutions, circa 400);
- the implementation of new technologies and methodics in 6 subject areas (education sciences as the priority area for partner countries, and the others will be chosen during the project life);
- technical prerequisites for the teacher network and for retraining courses, providing the target group with necessary infrastructure for the development of project results.

Eastern universities have definite developments in the area of using e-learning technologies in the training process (availability of technical premises, training environment, experience of working within international projects), but cannot always use and develop e-Learning resources in their universities.

The implementation of the ICT new open sources technologies and new methodic created specially for e-learning courses and ICT environments, which would ensure the training of HEI teachers according to contemporary academic standards, presuppose the provision and conditions required for the implementation of the ICTs in the process of teaching and university management in higher education. Higher education in Eastern countries should radically modify its curriculum and at the same time stress the development of lifelong learning skills and creativity as well as the use of the ICTs in the process of instructing highly qualified specialists for the national economy.

Moldova and Ukraine are open to promote the new technologies in teaching, learning, evaluation, and educational management and the structures needed to ensure the collection, processing, and dissemination of information pertaining to the operation and reform of the system of education. The application of the new information and communication technologies in the teaching, learning, and evaluation process plays a major role in ensuring the quality of higher education.

ICT is to the fore, either as a subject of training (usually from the technical angle) or in supporting communication among teachers (in networks, discussion groups, etc.). Flexibility is also conducive to independent learning and self-evaluation. With a suitable approach to teaching, it may also encourage the development of a critical outlook by providing easy access to a wide range of sources.

The partnership contains three groups of competencies and contributor categories. The first category is those with expertise in comparative studies of pedagogical methodologies, competences, professional standards. The second category is those who contribute with expertise in ICT applications relevant to teacher training and learning contexts. These two categories are represented by EU partners that will disseminate the results of the Network they were involved in the framework of the Socrates programme (NETTLE, BLearn, EDEN), to the eastern members of the consortium, the third category. Last category is represented by the academic staff of the partner countries. The third category is the end-users making active use of the solutions of their learning needs. These are initially represented by teachers and master degree students from 5 Eastern countries universities and at the later stage by the larger target audience. All three categories are actively involved in the project work during the time span of the project, contributing with their unique skills, perspectives and experiences.

The project started with a retrieval of different collaborative teaching/learning solutions for the specific target group and reviews of experiences of the EU partners. Available resources will be discussed and also the value added of these resources will be exploited.

The target audience is very demanding and do not accept simple standardized courses and inflexible service delivering. They often want the retraining to be delivered in a short time and matching their particular needs, i.e. on using effectively ICT in teacher activities. Success will depend on adaptability and not on the traditional concept of producing the same courses in the same manner. The learning environment should therefore be able to accommodate such requirements.

Team working, flexible course design, just in time training, quality assurance has to be parts of the project activities. The blended approach and e-learning environment used during this project has the intention to fulfil this request. Retraining courses for academic staff will last for about 6 months in a flexible way offering them the possibility to prepare simultaneously their courses with new methodology.

The ICT is of crucial importance here not only for working methods themselves but also for enabling the desired team collaboration model. All of the involved in the project development designers are actively engaged in the use of ICT for educational purposes, adults training and information dissemination.

Results will be achieved through the development of new teacher competences, new teacher training processes towards the use of ICT in education, new environments and policies. The working methodology implies the use of new technologies in the context of teaching practices. The new technologies and methodologies will be used to the different subject areas and contribute to an interdisciplinary approach. The project authors aim to develop more interactivity and cooperation to enable tutors, trainees, mentors, students

to engage in on-going dialogue, share experience, and allow access to more information, support, exemplar materials, and online mentor training. Proposed project will provide selected trainees with free access to CLMS on condition that it is used to maintain contact with tutors, other trainees and staff in created network partnership, which could continue after the project life, will establish digital video studio facilities to enable tutors, trainees and mentors to develop their own e-learning materials and provide a facility for webcasting. Thus the teaching staff from partner countries will receive enhance access to ICT to use and develop learning resources to support student learning and to provide and obtain feedback during education process.

Key competences to be implemented

According to the European document common European principles for teacher competences and qualifications will be selected and implemented some key competences:

the Work with others [2]: Teachers and Trainers (T&T) need to be able to work in a profession which should be based on the values of social inclusion and nurturing the potential of every learner. They need to have knowledge of human growth and development and demonstrate self-confidence when engaging with others. T&T need to be able to work with learners as individuals and support them to develop into fully participating and active members of society as well as they should also be able to work in ways which increase the collective intelligence of learners and co-operate and collaborate with colleagues to enhance their own learning and teaching in different institutions of HE.

Work with knowledge, technology and information [2]: T&T need to be able to work with a variety of types of knowledge. Their education and professional development should equip them to access, analyse, validate, reflect on and transmit knowledge, making effective use of technology where this is appropriate. T&T pedagogic skills should allow them to build and manage learning environments and retain the intellectual freedom to make choices over the delivery of education. Their confidence in the use of ICT should allow them to integrate it effectively into learning and teaching. T&T should be able to guide and support learners in the networks in which information can be found and built as well as should have a good understanding of subject knowledge and view learning as a lifelong journey. Their practical and theoretical skills should also allow them to learn from their own experiences and match a wide range of teaching and learning strategies to the needs of learners.

Work with and in society [2]: they contribute to preparing learners to be globally responsible in their role as EU citizens. Teachers should be able to promote mobility and co-operation in Europe, and encourage intercultural respect and understanding. They should have an understanding of the balance between respecting and being aware of the diversity of learners' cultures and identifying common values. T&T should be able to work effectively with the local community, and with partners and stakeholders in education – parents, teacher education institutions, and representative groups. Their experience and expertise should also enable them to contribute to systems of quality assurance.

Teachers' work in all these areas should be embedded in a professional continuum of lifelong learning which includes initial teacher education, induction and continuing professional development, as they cannot be expected to possess all the necessary competences on completing their initial teacher education.

As well as we are talking about the T&T it is important to make need analysis to make clear how teacher is going to prepare the module, i.e. way of development, delivery and administration of the teaching/learning process.

Teachers should be equipped to respond to the evolving challenges of the knowledge society, participate actively in it and prepare learners to be autonomous lifelong learners. T&T should, therefore, be able to reflect on the processes of learning and teaching through an ongoing engagement with subject knowledge, curriculum content, pedagogy, innovation, research, and the social and cultural dimensions of education. Teacher education needs to be at higher education level or its equivalent and be supported by strong partnerships between higher education and the schools or other institutions where teachers will gain employment.

Teachers also have a key role in preparing learners for their role as EU citizens. As such, they need to be able to recognise and respect different cultures. First-hand experience gained in other European countries supports teachers in responding to this challenge.

Priority should, therefore, be given to the development of mutual trust and recognition of the competences and qualifications of teachers.

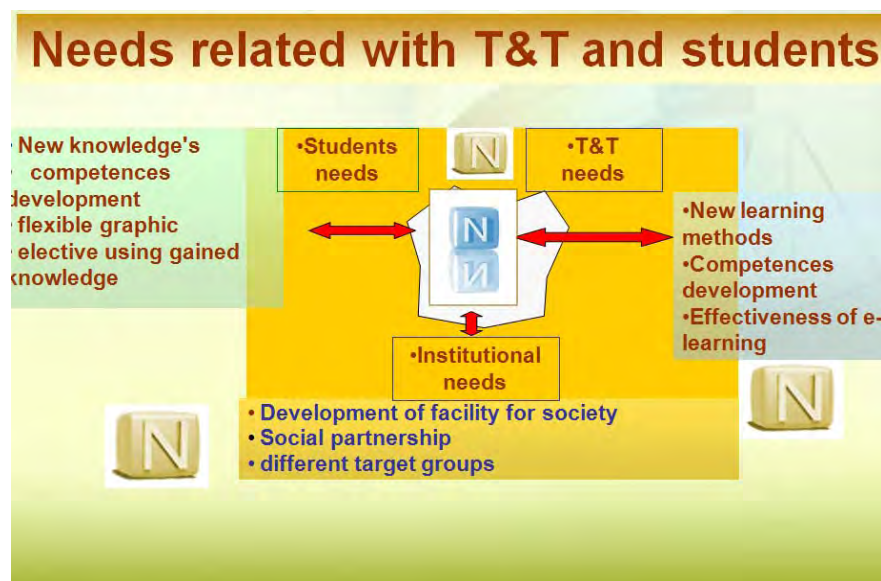


Figure No. 1 Teachers and student's needs analysis.

Teachers also have a key role in preparing learners for their role as EU citizens. As such, they need to be able to recognise and respect different cultures. First-hand experience gained in other European countries supports teachers in responding to this challenge.

Priority should, therefore, be given to the development of mutual trust and recognition of the competences and qualifications³ of teachers. Although teachers play a critical role in society, they cannot act alone. Their own high quality education needs to be supported by the institutions where they are employed, within the context of coherent national or regional policies that are appropriately resourced. T&T support system is very important in study process and for gaining new competences.

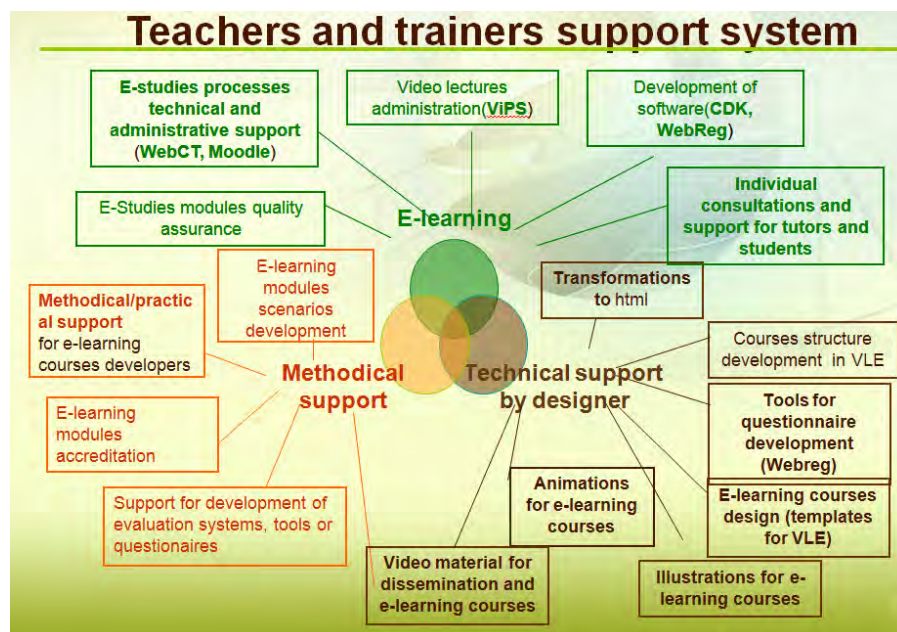


Figure No. 2 Teachers and trainers support system.

The collaboration between different institutions with different educational systems can optimize the success of initiatives such as the ones referred to the design of the curricula based on a student-centered approach to learning, the use of ICT in the context of teaching and learning, and the training of HE teachers. Taking this into consideration the first output of the European project WETEN-Western/Eastern Teacher Education Network (www.weten.org) aims to analyse the pedagogic traditions in four EU universities. The study on skills and competences used in EU countries developed during the project has two main objectives. The first one is to compare the results in the EU countries aiming to understand the similarities and differences in what regards seven dimensions that emerged from the data analysis of the survey carried out in the 4 EU partners : (i) institutional mission and strategic objectives; (ii) the Bologna process implementation; (iii) educational model/concept; (iv) institutional implementation of the learning model(s); (v) ICT and learning enhancement; (vi) training of HE teachers, and (vii) quality assurance. The second objective is to promote a round table discussion with HE institutions of two countries outside the EU where the last ones can re-engineer their training processes and their curricula taken into account the knowledge about the practices of the European partners.

These policies must address initial teacher education and continuing professional development, but must also be set within the broader context of education policy in general. Those who train teachers have an impact on the quality of learning and, therefore, they need to be supported as part of the national or regional system. The main goals of teachers support system is to develop teachers/tutors and students support system by implementing e-learning methods and tools, as well as by developing and delivering e-learning modules using new ICT or e-studies technical support e-studies facilities organizing, management and support, search of new technological designs, their testing, integration or adapting for special needs.

Conclusions:

- Teachers play a crucial role in supporting the learning experience of young people and adult learners.
- By working together, institutions will gain insights into pedagogic practice at higher education level in the participant countries; will identify good and innovative practice; to be strategically placed to negotiate truly multinational teaching methods.
- The rapidly-developing infrastructure creates conditions for development of e-learning.
- Created e-learning infrastructure is ready to support resources what are possible to integrate to the general virtual space.
- Higher education in Eastern countries should radically modify its curriculum and at the same time stress the development of lifelong learning skills and creativity as well as the use of the ICTs in the process of instructing highly qualified specialists for the national economy.
- The new technologies and methodologies will be used to the different subject areas and contribute to an interdisciplinary approach.
- T&T should, therefore, be able to reflect on the processes of learning and teaching through an ongoing engagement with subject knowledge, curriculum content, pedagogy, innovation, research, and the social and cultural dimensions of education.

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School Networking and Innovation - The case of the Network of School Innovation

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The Network of School Innovation

The Network of School Innovation (NSI) is a joint initiative of 8 Greek Welfare Foundations¹. The main goal of the NSI is to provide training and support to K-9 teachers and schools in order for them to establish those conditions which favor sustainable educational innovation within the school environment. The NSI addresses many aspects of school education and introduces a state-of-the-art pedagogical approach to instructional, competence-based design and assessment, deploying the Key Competencies (the new literacies) agenda.

The NSI main objectives are

- to develop solid reliable and user friendly types of educational innovation
- to develop and implement integral educational activity plans, which aim at shifting from memorization teaching and learning practices to educational activities which actively involve teachers and students and enhance development of creative skills
- to empower schools and teachers and enhance their relative autonomy in the (centrally administered) Greek school system
- to support teachers in effectively assessing the needs of their school community, proposing activities that meet the "diagnosed" needs, planning, implementing and evaluating those activities
- to enhance procedures which involve debate, cooperation, sharing and collaborative knowledge building
- to engage members of the school community in creating a learning culture which promotes development of key competencies for students
- to create and gradually implement a framework of depicting and assessing educational practice and integrating it in the school's developmental course
- to produce educational resources that enrich those already available in Greek schools
- cooperation of NSI members in order to reveal good practices of school innovation
- critical integration of international experience in education.

The NSI schools and teachers meet on an e-learning platform. The platform offers a) teacher training programs, b) access to educational resources and c) interaction opportunities. The NSI uses a broadly known free and open source e-learning platform, the MOODLE (Modular Object-Oriented Dynamic Learning Environment).

Training Course Description

NSI teachers are initially familiarized with the international discourse on school innovation. The discourse then evolves among members of the e-network. Before proceeding with

¹ The Evgenides Foundation, the Lambrakis Foundation, the A. G. Leventis Foundation, the I. F. Kostopoulos Foundation, the National Bank of Greece Cultural Foundation, the Bodossakis Foundation, the Stavros Niarchos Foundation and the Alexandros S. Onassis Foundation.

their work teachers go through a self - evaluation of their professional status. This procedure allows them to reveal their areas of strength and areas of growth and consequently customize specific supplementary learning objectives of the training program they are about to participate in and at the same time make their own long term professional development planning.

Teachers of the same school make up a smaller group within the learning platform. These groups start their collaborative work by preparing an extensive profile of their school. The school unit's areas of strength and areas of growth are explored in the same way this occurs for each teacher. The school team then decides on the area of their activity for the beginning training period. There is no limitation as to the activity's subject, which may vary among the fields of pedagogy (e.g. differentiated teaching, etc), instructional methodology (e.g. didactic in math), co-curricular activities (e.g. environmental, health education activities etc), school development (e.g. dropout rate reduction), psycho-social support of students (e.g. newcomer induction programs etc), parent involvement, school - community relations (e.g. cooperation with municipality or local industry or market, organization of intercultural festival etc), regional, national and / or international cooperation, administrative issues (e.g. extensive use of IT solutions in everyday operations etc.), infrastructure etc.

Four different courses are offered on the ISN training platform:

Program A: "Introduction to Innovation"

Program B: "Targeted Innovation"

Program C: "Defined Innovation"

Program D: "Open Access Circle"

Learning objectives, content and assignments vary by course and so does the degree of support offered to school teams. Programs A, B and C involve on site (school) activity and thus run throughout the school year. Their duration varies between 5 and 7 months depending on performance pace and on type of activity. Program D is a self-learning program, thus support is very limited.

Program A: Introduction to Innovation

This program aims at establishing within the school a core of teachers who create and adopt procedures and practices which foster educational innovation.

Teachers who complete this training program must be able to:

- effectively use *all* applications of the e-platform
- be conscious of their knowledge, skills and competencies, their professional areas of strength and of growth in order to perform effectively their teaching tasks
- have a clear and detailed picture of their school's profile
- effectively participate in creative cooperations
- promote sharing of knowledge, information and experience among teachers from different backgrounds
- plan educational activities which foster school innovation and meet their students' needs
- implement educational activities based on previous planning and be able to handle eventual modifications
- assess the activity's implementation by adopting procedures which lead to

- conclusions and proposals about effectiveness and sustainability
- perceive their work beyond the limits of the classroom within the broader scope of the school unit
- employ multiple educational resources in order to perform successfully their teaching tasks
- diagnose and put forward the result of their participation in a professional training procedure
- enrich the network and be enriched by participating in it.

Teachers from the same school who participate in this program work together as a team. The team is coordinated and supported by an NSI Facilitator in order to perform the following assignments:

- self-perception of professional status and establishment of professional development goals
- school profile description
- choice of activity subject
- activity planning
- activity implementation
- activity evaluation
- concluding self-reflection activity
- perspectives of adopting and diffusing innovative practices at school

Program B: Targeted Innovation

This program aims at consolidating innovative practices and targeting educational activity at the specific school's students' needs and interests.

Teachers who complete this training program must be able to:

- conduct a needs assessment of their school
- set goals and propose practices to meet the diagnosed needs
- plan educational activities based on the set goals
- implement and evaluate the activity (same as in Program A)
- actively support peer cooperation and dialogue and work towards consolidation of innovative practices within the school
- develop essential communication with students, parents and community and incorporate the cultural, cognitive and social capital that is available
- take advantage of exchange and cooperation opportunities which lie beyond the school limits
- participate in the educational innovation discourse by using the e-platform's interactive applications
- be able to diagnose and describe on their own the result of their participation in a training process
- enrich the network and be enriched by being part of it.

Successful completion of Program A is a prerequisite for a school team to go on to Program B. Furthermore, an additional two teachers are required as new members of the team which gradually becomes larger, thus enabling diffusion of innovation. Newcomers join their team by entering in the actual Program their colleagues are in; at the same time they need to invest extra effort in order to meet the objectives of Program A. To this end

they are assisted by the Innovation Coordinator (IC). The IC is a member of the team who has successfully completed Program A. Appointment of the Innovation Coordinator is a result of the team's proposal and the principal's approval. The Innovation Coordinator and the team are supported by the NSI Facilitator, whose role in this Program becomes more consultative rather than coordinative, thus enhancing team autonomy.

The assignments teachers are asked to work on in Program B are the following:

- self-perception of professional status and establishment of professional development goals
- needs assessment of their school
- choice of activity subject
- activity planning
- activity implementation
- activity evaluation
- concluding self-reflection & professional development monitoring activity
- perspectives of adopting and diffusing innovative practices at school

Program C: Defined Innovation

This program aims at consolidating those conditions and the kind of school culture which foster autonomous and sustainable innovation at school level.

Teachers who complete this training program must be able to:

- create and sustain those conditions which enhance innovation within the school's environment
- implement the Network's (NSI) pedagogical and methodological approach in all of the school's activities
- perceive their activity as part of a broader action plan, which is designed and implemented at school level
- cooperate with students in order to plan, implement and evaluate educational activities
- set goals focused on learning results for their students and monitor accomplishment of those goals
- contribute to developing in the school a framework of operation which calls for cooperation at various levels and internal assessment of all initiatives.
- contribute to the school's opening to society
- be informed on evolution in the use of Information and Communication Technologies (ICT) in education.

Teachers who attend Program C must have successfully completed Program B. The addition of at least two new NSI members in the school team is required. Again, newcomers enter with their team in the actual Program their colleagues are in; at the same time they must work to meet the objectives of Programs A and B. To this end they are assisted by the Innovation Coordinator, who may be the same person as in Program B or may be substituted by another team member with the same procedure he or she was appointed. In Program C the Innovation Coordinator coordinates and supports the team's activity and works with them towards reaching autonomy in school innovation. The NSI Facilitator supports the Innovation Coordinator in evaluating the school's and the teachers' work.

Upon completion of Program C all school teams must have participated in at least one cooperation with other school(s). In Programs B and C teachers are encouraged to plan a joint activity with NSI members from other schools and implement it in their own environment. With the assistance of the NSI Facilitator results of the parallel implementation of the activity are compared and the teams work together to draw conclusions and make proposals regarding good practice.

Teachers participating in Program C work on the following assignments:

- update of personal professional reflection tool and development plan
- update of school's needs assessment data
- formulation of long-term and short-term goals set at school unit level, based on needs assessment results
- activity planning, implementation and evaluation with special emphasis on measurement of learning results for students
- concluding self-reflection & professional development monitoring activity
- assessment of the impact of the school's participation in the NSI

In addition to the above mentioned assignments Program C teachers are expected to prove

- implementation of the NSI approach in other activities evolving within the school
- or
- cooperation with the principal in order to establish those conditions and structures which foster school innovation (inclusion, collaborative learning and knowledge building, allocation of resources, parent and community participation, etc).

When completing this final training phase schools should be autonomous in effectively developing innovative initiatives which involve all of the school's staff and students.

In addition to the learning goals which are specified by Training Program the contribution to developing a network of schools and teachers is a horizontal goal, which applies to all Programs and calls for the following action:

- participation in the fora discussions on the e-platform
- post of instructional materials on the e-training environment
- proposal of bibliography, articles, links and other educational resources.

Training in Programs A, B and C include participation in two live seminars: an introductory and a mid-term. In addition, an annual Comprehensive Meeting is organized in November, where NSI schools and their teachers from all parts of Greece have the opportunity to present their work. This meeting is open to all teachers and the educational community as well as policy makers who participate in workshops and international level discussions about school innovation.

Program D: Open Access Circle

The Open Access Circle (OAC) is a self-training program. This Program enrolls teachers independently from their school and thus allows those teachers who cannot form a core of interested colleagues within their own school environment, to participate in the Network. Moreover, Program D is open to all teachers - even those working in upper high-school. Members of the OAC are encouraged to work on joint activities with teachers from other schools. OAC teachers have access to the theoretical framework, tools and resources of Program A members. They can work together with other OAC teachers on educational

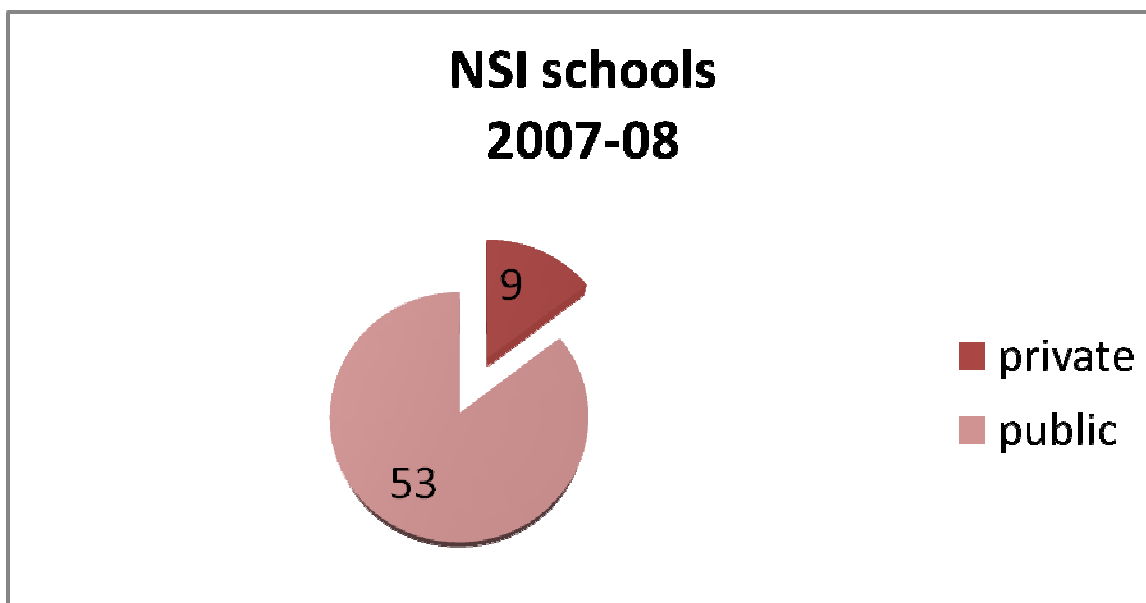
activities and submit their work on the e-platform. Two OAC Facilitators provide feedback, advice and ignite discussions in the OAC environment. Program D teachers have the opportunity to interact with teachers from all four Programs by participating in discussions in the joint fora of the e-platform.

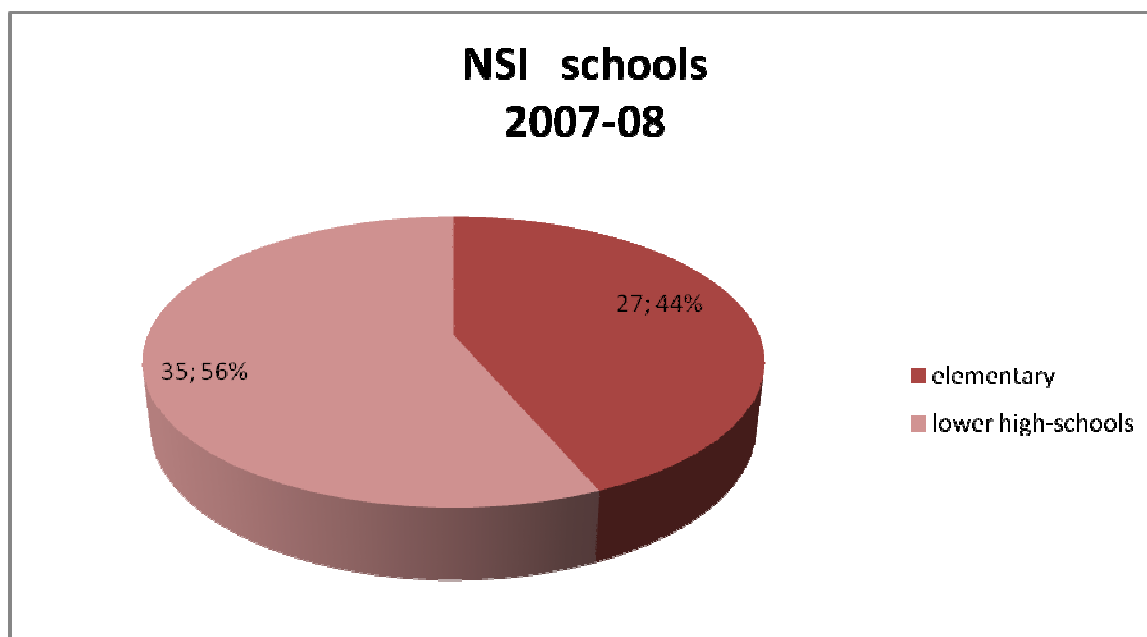
The NSI implemented

The NSI was introduced into the Greek school system in September 2007, when the first team of NSI Facilitators was trained. Later in that school year 62 schools with 163 teachers joined the Network. In the school year following (2008-09) the number of participating schools rose up to 85, 50 of which were newcomers schools. The 35 old schools proceeded to Program B. The NSI has currently entered its third year of implementation with a goal of involving a total of 100 schools. As registration of the results of the NSI performance evaluation in 2008-09 has not yet been completed, it is not possible to refer to them at this point. Therefore, discussion will be focused on the data of the first year, which was a pilot phase.

The NSI Pilot Phase

The NSI recruits elementary and lower high-schools (K-9). Out of the total of 62 schools participating in 2007-08, 53 were public schools and 9 were private, whereas 27 were elementary and 35 high-schools.





Schools which responded to an open call by the NSI, were selected upon the following criteria:

- application of 2-4 teachers who are familiar with basic ICT applications (e-mail & internet use)
- fast internet access at school
- engagement of principal (school head) to support the school team's activity (stated in the application form).

In addition, geographical criteria of equity were implemented.

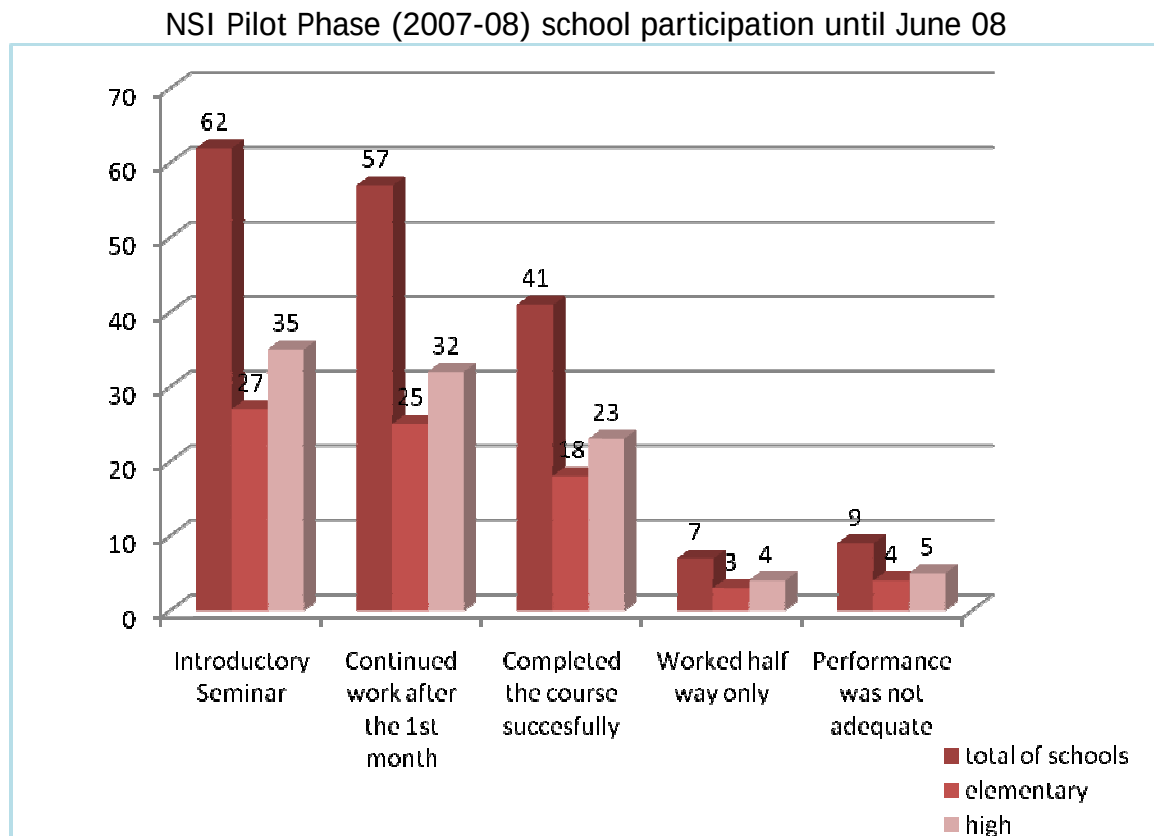
The Open Access Circle was activated very late in that year with limited effort to attract participants and was therefore not evaluated. Teachers who participated in Program A represented different disciplines, which favors adoption of interdisciplinary approaches to teaching and learning and enrichment of content.

The training begun with a set of introductory seminars organized in 6 different cities all over Greece. Participants had the chance to meet their Facilitator as well as University Professors - members of the team who worked on preparing the theoretical framework of the NSI and the training materials. During the seminar teachers were familiarized with the e-platform and did their registration. Due to the short duration of training in this first year no mid-term seminars were organized. Thus, this was the sole meeting of trainees with their Facilitator and with teachers from other schools.

In 16 out of the 62 schools the principal participated as a member of his school team (a trainee) in the Program. However, enrollment of principal did not seem to relate to school team performance. This could be associated to the fact that the Greek school head's load of administrative work does not allow him time and energy to actively participate in training activities which involve systematic and consistent cooperation with staff.

Out of the 62 schools admitted in the NSI, 5 schools with their 12 teachers dropped out within the month following the introductory seminar. An additional 8 teachers left the NSI even though their school team continued working in the Network. 92% of the (62)

schools and 88% of the (163) teachers remained in the Program. 41 out of 57 school teams completed their work successfully. 7 school teams did not finish their work until the end of June, whereas the work of 9 schools was not compatible to the NSI approach. 5 schools, which had planned and implemented their activity but did not file their reports (training assignments) in due time, worked on their reports during summer and submitted them in early September. This gave them the opportunity to proceed in Program B.



The 143 teachers who participated in the training program filed 99 reports, 56 of which were educational activity plans and 43 were assessment reports. Some schools worked on more than one educational activities. Overall participants planned implemented and evaluated 43 educational activities. The activities covered a spectrum of different disciplines and / or areas, as follows:

- 32% were focused mainly on environmental and /or health education
- 21,4% were on language and literature
- 21,4% on interculturalism, diversity and / or cooperation
- 9% focused on math
- 3,5% on journalistic action
- 1,8% on instructional approaches to science
- 1,8% on instructional approaches to geography
- 1,8% on sports education
- 1,8% on differentiated instruction
- 1,8% on creative approach to weekly scheduling
- 1,8% on teacher empowerment
- 1,8% on parent involvement.

Regardless of activity subject some major characteristics or approaches were common in most cases and were of course related to the NSI approach:

- 80% of the activities were interdisciplinary
- 84% involved teacher cooperation within the school
- 93% referred to key competencies as learning objectives.

Upon completion of training participants (teachers and facilitators) were asked to answer to questionnaires which involved questions on

- training content & structure
- training materials
- training environment (e-platform)
- trainers (Facilitators)
- training organization & support (administration)
- program compatibility with school life
- networking opportunities
- NSI participation impact.

Teachers and trainers generally asked for more time, which was expected, since the NSI pilot phase run for three months only. Duration of training normally lasts 5 to 7 months and thus allows time for familiarization with the theoretical framework and the use of the e-platform and for effectively planning, implementing and evaluating an educational activity. In the same context teachers and trainers complained about pressure resulting from report submission deadlines.

The texts and tools which are offered to trainees as a basis to ignite discussion and action on school innovation were deemed reliable and helpful. However, a need was expressed to link the theoretical framework to good practice hands-on activities. The tools offered for work in the school were helpful and appreciated by teachers. Minor improvements were suggested and were introduced in the following year's training programs.

Users were generally satisfied with the e-training platform. The functions the MOODLE offers, gave trainees the opportunity to work in groups, communicate and cooperate with their facilitator, submit and announce their work, get and give feedback, have access to the work and proposals of colleagues, participate in open discussions and relate to teachers from different learning environments. Nevertheless Greek teachers are not advanced ICT users and especially older teachers (who happen to be large in number – as is the case in many European countries) are very reluctant to use technological solutions at work. There were teachers who participated in the NSI because they are indeed interested in educational innovation and because they take innovative initiatives within their school, however they refrain from technology. Those teachers probably created or already had an almost inactive e-mail account in order to meet the criteria of admission to the NSI and at some point in their professional life have learned how to do a search on the internet. During training they actively participated in their team's work and their contribution was monitored by the Facilitator who used phone or e-mail or the intervention of other team members to establish communication. Their presence in the platform was either limited to the registration event, which took place during the introductory seminar or to 2-3 short visits. The majority of trainees visited the platform in order to submit their work. A smaller part of them actively and systematically participated in forum discussions.

Limited participation to open discussions could also be associated to a lack of knowledge sharing culture and / or to potential limited professional self-esteem. Teachers and Facilitators asked for an extensive training on the use of the e-platform and for detailed directions of use.

Cooperation with the NSI Facilitator was generally deemed very satisfactory. According to trainees, in some cases the work of the Facilitator was limited to coordinating the team's work, but in most cases the Facilitator was able to ignite the teachers' minds towards creative and interesting aspects of school life. Facilitators themselves felt that they need to be better trained on issues related to monitoring and coordinating team work as well as to inciting teachers. It is important to mention at this point that ISN teachers are given no incentives at all to participate in the training Program.

Teachers and Facilitators were generally very satisfied with administrative support. The need for this kind of support was limited anyway. However, help desk services and communication with school and authorities, as well as organization of the introductory meeting were done without problems, according to both teachers and Facilitators.

Program content and methodology were deemed compatible to school curriculum. The NSI enhances teacher autonomy which is in most cases feasible. Nevertheless, in a limited number of schools teachers were not able to develop the degree of creativity and flexibility they had initially planned for, due to the principal's intervention or opposition. Most of the schools who faced this kind of problems left the Network and did not continue to the next Training Program.

Networking among teachers from different schools was limited. The opportunity to communicate with teachers from other environments was mostly restricted to the use of the e-platform except for the introductory seminar, which allowed for live interaction. During the seminar participants had the opportunity to meet with teachers from other schools of the same or neighboring prefectures. It was noted that communication on the platform occurred more often among teachers who had met during the seminar than among "strangers". As mentioned above, those teachers who were advanced IT users were also active in developing debate and cooperation with colleagues from other schools. Teachers and Facilitators asked for an opportunity to attend a common meeting – for all ISN members, during which their work could be presented. All trainees and trainers referred positively to the fact that the NSI has a potential to build a solid learning community by uniting a pool of teachers with very different backgrounds, expertise and experience, who act in a variety of educational environments towards the same goal of improving the quality of education offered to children and youth.

Most teachers noted that participation in the NSI did not lead to important change or improvement within the school unit. In most cases, however, development of cooperation among teachers and / or students was considered an important asset in school life. Teachers stated that they felt they personally benefited from participation in the NSI training, because they were engaged in systematic planning, implementation and evaluation activities which involved partnerships, interdisciplinary and creative approaches and led to conclusions related to perspectives. Sustainability and continuity seems to be an element they were lacking in routine educational planning; the feeling that their activity ended at the end of each school year seemed to cancel part of their professional

investment in it. The NSI approach proposes the sustainability aspect as part of planning and evaluating and thus seems to cultivate a sense of satisfaction and work orientation.

Improvements were done according to the recommendations of users and of the experts (university Professors) working with the NSI and the second year of the NSI started with 35 schools proceeding to Program B and another 50 new schools entering Program A. The ISN is now recruiting schools for its third year of implementation. The NSI coordinators work closely with the Ministry of Education to agree on standardized admission and accreditation criteria and methods. The NSI will be evaluated and respectively adopted by the Greek state.

THE MUSEU DAS COMUNICAÇÕES AND NEW TECHNOLOGY

1. Introduction

The Museu das Comunicações (MC) will be twelve years old in October 2009. In its first decade, it has developed an image and concept that are distinct from the more conventional museum on which it was founded – the *Museo do Correio*, which first opened in 1877. This, which was later named the *Museu dos Correios, Telefones e Telégrafos*, became known as the *Museu dos CTT* and was developed under the auspices of that organisation.

Following the policy and economic changes that took place in the communications sector in the 1990s, which led to the separation of postal services from telecommunications, the Fundação Portuguesa das Comunicações (FPC) was created. This was officially recognised as being of public interest by decree published in issue no. 250, series II of the Official Gazette of 26 October 1999 and included the participation of those entities which at the time made up the sector – the Instituto das Comunicações de Portugal (ICP) (the regulatory body), CTT and PT (both communications operators).

It was in this context that the MC was born, with a collection comprising items belonging to the state (ICP) and others belonging to the two private companies. Its mission is set out in the statutes governing the FPC, in which mention is made of setting up and maintaining a museum of science and technology of telecommunications.

The exhibitions dedicated to new technologies, which are included in a more conventional-style museum, are explained by the fact that the FPC, of which the MC is a part, was established on the one hand by companies providing communications services, in a liberalised sector open to competition, and on the other by the national body responsible for overseeing the sector.

The need for communications operators to meet their customers' needs forces them to adopt the most technologically advanced solutions in order to maintain their market position.

2. The exhibition areas

The main exhibition areas dedicated to new technologies in the MC are:

The House of the Future

The permanent exhibition entitled “House of the Future” (CF) was opened on 17 May 2002, World Telecommunications Day, and in its representation of the latest technologies, above all in the areas of teleworking and entertainment, represents an entirely new approach to the way in which the story of communications has been traditionally presented.

In its early days, the exhibition displayed only a few domestic devices in a living room and an office.

An important aspect of this project was the convergence of interests in promoting new technologies that allowed a protocol to be signed between the FPC and various partners linked to the communications sector, not from the perspective of competition, but rather from that of complementary solutions.

In 2009, the CF concept was further developed through the creation of new sections: the “CF Chronology” section, which introduced the historical and artistic dimension of houses of the future; the “Inovadomus” section, which introduced the environmental and sustainability

dimension; and the “Future Labs – Visual Experiences of the Future” section, which introduced the laboratory and pre-commercial dimension.

The School of the Future

In March 2007, a new section at the MC was opened that continued with the new technologies concept that underlies the CF, though with a non-domestic education-oriented focus: the School of the Future (EF).

This section recreates a classroom equipped with all the latest technological innovations, such as interactive boards, laptop computers, wall projections and Internet access.

The EF was designed to aid its target age group with developing new skills, raising awareness of the Internet as a tool for learning, knowledge, creation and online file-sharing.

3. EDUCATION FOR DIFFERENT AGE GROUPS

The CF, alongside the EF, was responsible for half of all visits to the MC in 2008. This popularity has been enhanced over the years by developing the educational aspect of the exhibition: promoting TV programmes, publishing educational material, working on educational projects with schools, holding workshops for school groups and senior citizens, and creating guides with educational content for guided visits and learning games for animated visits.

The House of the Future

Ever since it opened, the CF has provided visitors from different age groups with educational visits and animated visits. The former takes a scientific look at the exhibition contents and is closer to formal education in its approach. The latter, more light-hearted, examines the exhibition through performance, which is provided by *Super Avozinha*, or SuperGran. By pretending not to understand how the new technological solutions work during the performance, she demonstrates their effectiveness and introduces the audience to the ideas involved.

The exhibits observed and demonstrated in the guided visit are presented during the tour through the various areas of the CF. The emphasis is placed on the telecommunications infrastructure. Based on this are the various functions available to the house's inhabitants, which can be summed up in terms of the following concept pairs: communications/security, communications/health, communications/inclusion, communications/comfort, communications/work, communications/knowledge and communications/leisure.

The technological concepts and contents are demonstrated by an Educational Department (SE) monitor, who experiments and explains the operation and use of the different devices. The CF has been personalised by creating a family of imaginary occupants – mother, father, child and grandmother – so that comparisons can be made with real life situations and in the aim of making the explanations, demonstrations and concepts more easily understood.

The School of the Future

This area was designed to fulfil two objectives: to be a place where visitors could learn and experiment through activities developed by the museum as part of its mission to raise digital literacy and disseminate the Internet as a new communications tool; and to be a laboratory where teachers could create and experiment with new content.

The aim was to enable teachers to prepare future lesson plans using the new devices in the EF, which would then slowly trickle into educational establishments, creating model lessons that could be shared with students and other teachers. In this way, an early foothold could be established in teaching with interactive boards, laptops and the Internet.

However, only one teacher and his trainee music-teacher students from the Instituto Piaget rose to the challenge.

They prepared an informal, dynamic and fun lesson for primary school children (aged around 8) that proved that learning – without losing the teacher's human and teaching qualities – can be more appealing and effective when using cutting edge technology.

As regards the, successfully achieved, objective of making use of the teaching opportunities provided by the museum's Educational Department, since 2007 the EF has been running an activity called “Knowledge Workshops” aimed at teaching visitors to use the Internet as a communication tool from a secure, ethical and creative standpoint.

In statistical terms, around 20% of the museum's visitors in 2008 took part in these workshops, which are organised according to the following formats:

a) Knowledge Workshops aimed at a lower secondary school audience in which children take a 1½-hour lesson that teaches all the steps necessary to create and publish webpages on the Internet and blogs: how to search, publish and index, select and cite sources, and shoot and edit videos and photographs.

b) Knowledge Workshops for Senior Citizens, whose objective is similar to the above but suited to an audience with no prior computer knowledge. They are aimed at encouraging the use of the Internet as a communication tool that bridges generations, reduces isolation and develops new skills. The investment in these workshops is greater: around 22-25 hours divided into various sessions, with about 10 people per class. Since 2007, some 50 classes for senior citizens have been held.

c) Miscellaneous Workshops: taking the new technologies used in the EF as its basis, the MC has run special courses to coincide with international and world commemorative days:

On International Museum Day (2008), dedicated to the theme of “Museums as agents of social change and development” proposed by ICOM, the MC presented a project entitled ***School of the Future: a place for everyone. Overcome, discover and learn: three ways of overcoming distance at the Museu das Comunicações***, which recounts the experience of three people in one of the senior citizen classes, in the aim of encouraging life-long learning.

On International Day for Monuments and Sites (2009) promoted by the Council of Europe and European Union, whose theme was "Heritage and Science", visitors were invited to establish a link between the historical past and new technology in a workshop entitled **Digital Guidebooks: Heritage and Science in Communication**, via activities held in more traditional exhibition rooms and in the House of the Future.

On World Post Day in 2008, a new educational workshop was held entitled **Post Tree** which promoted a dialogue between the past and present state of written communication in various parts of the museum: the exhibition on the history of the messenger service in the 15th century and the House of the Future exhibition.

4. Educational Project for 2009/2010

In the aim of marking European Year of Creativity and Innovation and ITU Year...

The MC will present an educational project entitled "Building the Future" during the 2009/2010 school year that includes educational activities and learning games for different age groups, as well as an "ideas competition" for schoolchildren.

The project aims to focus on the exhibition areas – House of the Future, Chronology, InovaDomus and FPC Future Labs – discovering the specific nature of each and interlinking their separate discourses into one common principle – reflecting on the holistic sense of the concept of communication in the modern world.

From information society to knowledge society, we aim to reach the target of an informed citizenship, in order to develop a population which is creative and socially proactive in terms of using new technologies as a means of enabling new ways of looking at information; as well as to reflect on man's future in a world of emerging technologies.

The MC challenges the schools community to take part in the Educational Project as a pedagogic tool available to teachers that proposes a visit to the museum, participation in the planned activities and involvement in the **Future Languages** competition.

The idea behind the project is for the museum and schools to work together during the 2009/2010 year on the following themes:

- Creativity and Innovation
- Secure Internet
- Global Society/Cultural Identity
- Information Society/Knowledge Society

- Communicating Ideas: Marketing

The way in which the themes above are approached assumes that projects will be freely developed. The best work will be awarded a prize which will vary according to educational level and a public exhibition will be organised to show all of the work produced by participating schools.

LOGUTENKOVA TATYANA

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TEACHING A FOREIGN LANGUAGE THROUGH E-LEARNING TECHNOLOGIES (MESI PARTICIPATING IN PILOT APPLICATION OF ELBEP PROJECT)

In October, 2007 Moscow State University of Economics, Statistics and Informatics (MESI) Tver Branch began participating in ELBEP Project «Eliminating Language Barriers in European Prisons through Open and Distance Learning Technologies». This project was initiated and is coordinated by Anadolu University (Turkey). All member teams (apart from above mentioned they are EADTU, EDEN, Linguapolis (Belgium), Innowacja Foundation (Poland), Hellenic Open University (Greece) and Dr. Wolfram Laaser) have got vast experience in distance and e-learning, creation of e-courses. The project is aimed at producing electronic portals of Turkish, Polish, Greek, Spanish and Russian languages.

The team of MESI, Tver Branch has developed the e-portal of the Russian language which is placed in the electronic platform the Prometheus System of Distance Learning. Our basic approach which we call prospective interactivity is to foresee all the difficulties and questions, our future students will have, at the stage of developing the portal and hence to prepare answers to these questions and solutions of the students' problems which may arise in the process of learning the Russian language. Apart from the main language portal (learning materials with a number of learning tools and instruments) we have also created an information portal where our future students will be able to find help and answers to their questions about learning the Russian language. Further, there is the main page of the information portal developed by MESI, Tver Branch for ELBEP project.

ELBEP Project
Tver branch of MESI

[Русский](#) | [English](#) | [Deutsch](#) | [Français](#) | [Nederlands](#) | [Ελληνικά](#)

Project Team - Berdnikova Olga - Burukhina Larisa - Bystrov Stanislav - Gotlib Artem - Logutenkova Tatyana - Tretyakova Irina - Cherny Dmitriy	Instructions - How to ask your tutor - FAQ How to use the System of Distance Learning - How to work with the course of Russian Language	Studybook Studybook	Links Anadolu University MESI Prometheus SDL

Dear friends! Wellcome to Homepage of MESI (Tver).

Step 1

Be sure that your computer is equipped properly enough to learn the course of Russian Language through «Prometheus System of Distance Learning»:

- Celeron 600 МГц | 64 Mb | 20 Gb | 40x | AGP 8 Mb
- MS Internet Explorer 6.0 and higher
- Internet connection from 128 Kbps

Step 2

Apply to the organizer of distance learning to provide you with a login and password for the access to «Prometheus» System of Distance Learning

Step 3

Study the [presentation](#) with the guides for students about how to work within «Prometheus» System of Distance Learning.

Step 4

Study the presentation with the guides for students about how to work with the course of Russian Language.

170100, г.Тверь, ул.Советская, 58
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Сайт ТФ МЭСИ: <http://www.tver.mesi.ru/>
E-mail: tfmesi@tver.mesi.ru

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The information offered in this portal is as follows:

1. The list of both hard- and software required for learning Russian in the e-portal.
2. Steps a student should make to log in for learning Russian.
3. PowerPoint presentation «How to use the System of Distance Learning Prometheus», which a student should study in order to use the functionality of the system to the upmost extent, that is: to download and learn the e-course of Russian, to test acquired language skills and knowledge, to communicate with the tutor.
4. PowerPoint presentation «How to work with the course of Russian Language» describing the structure of the e-course, its learning tools and instruments, possible navigation within the course, etc. We use PowerPoint presentations as more visual ways of instructing.
5. Instructions for a student «How to ask a question to the tutor».
6. FAQ. This list is compiled by developers who try to imagine what questions they will have if they were students. The list is made in the form of a phrase-book: a question is formulated in Russian and then is provided with a translation into the language which is native for a student. To ask a question to the tutor the student should choose a question from the list and send it to the

tutor. So the student asks questions in Russian. All the questions are divided into two groups, they are:

Questions about Prometheus:

1. I cannot enter Prometheus System of Distance Learning – Я не могу войти в СДО «Прометей»
2. I cannot find (electronic course of the Russian Language, e-forum, file, test for self-training, etc.) – Я не могу найти(электронный курс русского языка, электронный форум, файл, тест для самопроверки, т.д.)
3. I don't see the task sent to me by the tutor – Я не вижу задание, отправленное мне тьютором
4. I would to place my question in the forum but I don't know how to do that – Я хочу поместить свой вопрос в форуме, но не знаю, как это сделать.

Questions about learning materials:

1. I don't understand the meaning of word..... – Я не понимаю значение слова.....
2. I don't understand the meaning of phrase..... – Я не понимаю значение фразы.....
3. I don't understand the task to exercise №..... from Unit ____ – Я не понимаю задания к упражнению №..... урока №____
4. I don't understand the grammar form of word..... – Я не понимаю грамматическую форму слова.....
5. I don't understand what I did wrong in the test.....of Unit ____ – Я не понимаю, что я сделал(а) неправильно в тесте..... урока №
7. A story about the developers of the information and language portals – the team of Moscow State University of Economics, Statistics and Informatics, Tver Branch.
8. A link to the main page of Prometheus System of Distance Learning, where a student should log in for learning.
9. Links to the sites of Anadolu University (Turkey), Moscow State University of Economics, Statistics and Informatics (MESI) and Tver Branch of MESI.

The interface of this portal is multi language; it is translated into a number of languages which are native for our students. The list of languages may be extended depending of the students and their languages. A student will choose the language which is either native or well known to him and read all instructions quite easily. It's worth mentioning that while preparing for teaching students we should translate the instructions into their native languages as introducing any third language will lead to the phenomenon of language interference preventing students from apprehending learning materials and hence acquiring new knowledge and skills. The technology used for developing information portal allows translations into an endless number of languages.

After technological assessment of ELBEP language portals (that is an essential part of such sophisticated projects) we have come to the conclusion that the interface of our language portal should be also multi language. During the pilot application it turns out to be very important for the students who consider Cyrillic alphabet to be one of the main difficulties they face with. In fact this contradicts the monolingual approach which we have chosen for the development of the Russian language portal. In accordance with the theory of teaching foreign languages a monolingual approach is preferential as it excludes any other language in communication between a student and a teacher and, correspondingly, excludes language interference. But an intermediary language is now introduced into our language portal because of recommendations of experts, taking part in technological assessment, and then was approved by students, participating in the pilot application of ELBEP project. It has become obvious that because of the absence of a teacher who may answer students' questions immediately the rigid requirements of the monolingual approach may and should be reconsidered. But as soon as the student learns to orient within Prometheus System of Distance Learning and e-course of the Russian language, knows both its logic and structure, understands all the tasks and instructions for exercises, he or she may easily return to the monolingual version of the course, just changing the language interface for the Russian one.

Successful learning of a foreign language demands an active participation of a teacher or a tutor. The role of a teacher or a tutor is even more important for the beginners, when they have almost no communication skills in the language they are learning. Prospective interactivity approach which we follow allows reducing this demand only partly, but to foresee all the difficulties and questions a future student will have is impossible, as each student is a personality with his or her own aims, habits and

abilities. Hence, even for e-learning a foreign language it is really important to arrange due tutor's support and consulting students about all questions arising while a student is learning a foreign language.

Following our Turkish colleagues we have arranged two types of tutor's support – synchronic and a-synchronic. Synchronic support is realized on-line in the form of video conferences or chat sessions. A-synchronic tutor's support is offered off-line in the form of e-forum, file-exchange or e-mail. Both synchronic and a-synchronic support can be properly arranged only in the electronic educational platform which provides various forms of interaction between a student and a tutor. Bearing that in mind we have placed our language portal within Prometheus System of Distance Learning. We have been using the advantages of this System for about 10 years, since it was first introduced into teaching English, French and Latin in Moscow State University of Economics, Statistics and Informatics (MESI) Tver Branch. This vast experience turns out to be very helpful in ELBEP project.

Target group for ELBEP project is prison staff of some European countries (Belgium, Germany and Greece). Because of their professional responsibilities prison staff should know a number of foreign languages to communicate with different ethnic groups of prisoners. The questioning of prison staff being the first stage of ELBEP project and conducted by our colleagues from Belgium, Germany and Greece has confirmed that the target group is interested in learning foreign languages. Their interest apart from being professionally specific corresponds to the rapid development of intercultural communication, intensification of people migrations all over the world. In this respect our target group is hardly different from any other group of students. But a few peculiar characteristics of the target group should be taken into account while we were creating our language portal and when we are arranging their e-learning. First, our language course should include words and phrases to be used in professional communication of the prison staff. Second, while arranging their e-learning we should understand that to arrange synchronic tutor's support means to synchronize the time of on-line consulting which may be rather difficult. Among the factors making synchronic support difficult there are time difference between the countries (including Russia), and specific time-table of our students' job, most of whom are working in shifts. From the very beginning we suppose that the main tutor's support for the project target group would be a-synchronic.

Our suppositions were proved to be true during the pilot application of ELEP project from July,1 till July, 31 2009. For the pilot application 25 students were logged in for learning e-course of Russian, 7 of them are prison staff members from Germany, and 18 are employees of the Justice Department of Belgium. Belgium student are allowed to participate in the project, to learn a foreign language during their work hours, and this proves that their management is greatly interested in language education of their subordinates, on the one hand, and on the other, motivates students much more. However, three of our Belgium students asked if they may learn Russian not only during their work hours but also at home. Surely, our answer was positive, as one of the advantages of e-learning in comparison with traditional face-to-face teaching and learning is to get a possibility to study at any time and in any place the student wishes. One of our Belgium students asked to shift his learning for the August because of his business travel. We agreed. Our students from Germany could learn Russian only at their leisure time. This could hardly influence their personal motivation as there is no any strong dependence on the time of learning but reduced the number of students for whom their personal interest appeared to be more important than some career considerations.

While planning tutor's support we were trying to find a solution for another problem, which is also very urgent for teaching our target group, that is multi language communication between a student and a tutor. There is no such a problem when all the students are from one and the same country. But this requirement essentially reduces the advantages of e-learning which is according to the very definition is «learning without borders». Still, if we attract students from different countries a question immediately arises which language to use and how to arrange communication between a tutor and students whose native languages are different. While teaching other disciplines though e-learning technologies to students of various nationalities this problem is solved by choosing an intermediary language, usually one of the international languages – English, German or French. This solution can hardly be optimal while teaching a foreign language, as we have to limit the number of students, making as a necessary requirement their knowledge of the intermediary language to become the language of communication between a student and a tutor. Another solution for this problem is either to find so many tutors how many languages native for the students should be used as a means of communication, or to find a tutor who knows all the necessary languages. This second solution is probable but can hardly be wise from the practical point of view, especially if it is necessary to

know one of rare languages. And why not to look for a solution which is based on the advantages of electronic as compared with face-to-face communication? The solutions we have chosen are the synthesis of a number of ways of multi language communication to be used simultaneously. They are as follows.

1) Foreseeing and forecasting questions and difficulties students will face with while learning Russian with the use of electronic language portal. Bearing in mind that the course created by our team is elementary, our students will hardly have any communication skills in Russian. Preparing e-learning, as has been described above, becomes very important. This way of communication is preferential, it also widens language experience of a student, gives a student a possibility to acquire additional communication skills in the language he or she is learning.

2) Using an intermediary language – any foreign language which is known to both a student and a tutor. This way of communication should be used but rarely, as it leads to the phenomenon of language interference.

3) Communicating in two languages. Let's call this way of communication the principle of Soyuz-Apollo, as it was first applied in communication between cosmonauts and astronauts during their joint space flight. The essence of this way of communication is the following: every participant of communication speaks the language which is foreign for him but native for the other participant. This is really very simple, but genius. You will necessarily understand the message which is in your native language even if this message is abundant in mistakes. As applied to ELBEP project, this means that a student should formulate his or her questions and requests in Russian, while a tutor should answer in the language which is native for the student. So the question arises, how to cope with that. It has been so much said and written about drawbacks and mistakes of electronic translations and deficiencies of translating software. Still, we could hardly find a person who has never used this software. Electronic translators cannot be good for translating complicated syntactic phrases, but if you do understand the logic of this program, you will easily formulate a syntactically simple phrase, which will be translated with few mistakes. To help our students we have added a link to Google language instruments to our language portal. A student places the phrase or word which he or she doesn't understand in learning materials into a box on the right top corner of any page of the course and gets a translation variant into his native language (this is adapted to the language of the interface). The same may be done if a student would like to ask a question, with the

help of Google software the student may translate his question into Russian and then send it to the tutor. The tutor translates his or her answer into the language which is native for the student and sends it to the student. If compared with the second way of communication this way helps us to exclude language interference and widen communication skills of the student in Russian.

During the pilot application of the Russian language portal we got a possibility to make the list of frequently asked question more precise and add some more questions. All questions asked by our students are divided into two groups:

- 1) technical questions: about Prometheus SDL functioning (e.g. how to log in for learning, how to start self-training); about the functions of the Russian portal (how to translate the interface into another language, how to get print materials). This group of questions is larger than the other one. These questions help us to make improvements, to add more visualization means.
- 2) questions about the methods of teaching and learning: about translating the content into the language which is native for the student, about the ways of learning Cyrillic letters. In fact these are not questions proper but students' comments on the course. Students mentioned that Flash-animations help much to visualize the meaning of words and phrases of the course of Russian. There were few questions about the methods of learning. This may be connected with the pilot nature of the application. The students' attitude to learning was not greatly motivated, e.g. two of our students asked for a break in learning because of their holidays. The number of questions about the methods of teaching and learning will probably increase in the real application of ELBEP project to start on September, 1 2009. The students will be more motivated as their learning will end in tests and examinations which during the pilot were facultative.

Pilot application of the Russian portal has allowed formulating the requirements for tutors of foreign languages through e-learning technologies. They should study the courses in comparative grammar and types of languages, arrangement of intercultural and multi language communication, e-communication, psychology of e-communication. Tutors should know a number of foreign languages; at least they should study the course for the beginners. But to have deep knowledge in the theory of comparative linguistics seems to be more important.

As implicações do b-learning no sucesso, satisfação e motivação dos alunos do 3º ciclo do Ensino Básico: a perspectiva dos professores e a perspectiva dos alunos.

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Resumo

Este trabalho tem como objectivo investigar e conhecer as implicações do *b-learning* para o sucesso, satisfação e motivação dos alunos do 3º Ciclo do Ensino Básico. A amostra foi constituída por 276 alunos e 48 professores. Neste trabalho foi feita a análise de conteúdo de duas das questões presentes num questionário aplicado a alunos e professores sobre o tipo de aulas por eles preferido. Os resultados indicam que os alunos consideram importante a combinação das duas modalidades de ensino-aprendizagem, presenciais e *online*. No entanto, a presença física do professor e reduzida utilização das plataformas de aprendizagem online neste nível de ensino são dois factores a considerar.

Palavras-chave: b-learning, motivação, satisfação, ambiente de aprendizagem.

Abstract

This work aims to investigate and understand the implications of b-learning for the success, satisfaction and motivation of Middle School students. The sampled population consists of 276 students and 48 teachers. For this paper we focused on the content analysis of two questions in a questionnaire applied to pupils and teachers, about their preferred type of learning environment. The results show that students consider important the combination of the two types of teaching/learning environments, face-to-face classes and online. However, the physical presence of the teacher and the still reduced use of online learning platforms, for this level of education, are two factors to be considered.

Key-words: b-learning, motivation, satisfaction, learning environment.

Introdução

Actualmente vivemos na era das novas tecnologias de informação e não podemos descurar esta verdade que influência todos os sectores da sociedade, nomeadamente

o da educação. A escola do século XXI apresenta novos limites e novos repto, obrigando os múltiplos actores que nela participam a uma actualização e flexibilização constante, onde a partilha e colaboração são desafios a alcançar. O paradigma da sala de aula alterou-se definitivamente, as circunstâncias modificaram-se. A utilização da tecnologia restrita à aula de Informática/TIC passou a ser uma realidade constante na vida dos alunos e dos professores. Como refere Sousa, (2008), vive-se num período de grandes mudanças onde a transição para a sociedade da informação e do conhecimento atinge também a educação. As novas tecnologias de informação e de comunicação estão a destruir as barreiras do tempo e do espaço, alterando significativamente o conceito tradicional de sala de aula e respectivos procedimentos associados. Também Moran (2008) refere que *“A escola pode ser um espaço de inovação, de experimentação saudável de novos caminhos. Não precisamos romper com tudo, mas implementar mudanças e supervisioná-las com equilíbrio e maturidade.”* (p.1).

Neste contexto, há que repensar a educação e as múltiplas formas de aprender. Sabendo que actualmente a Educação a Distância é uma forma de ensinar/aprender que privilegia um processo que favorece a aprendizagem colaborativa numa perspectiva do aprender a aprender, a sua adaptação à sala de aula do 3º Ciclo do Ensino Básico (CEB) poderá ser uma mais-valia no processo de ensino aprendizagem. Actualmente, é exigido ao professor um novo tipo de competências e de flexibilidade na sua performance. É insuficiente apenas o conhecimento e domínio da tecnologia por parte do professor, acima de tudo, este terá de ser capaz de transformar o espaço de aula, modificar, inovar e motivar para a aprendizagem. Ao aluno, que lhe será exigido? Será que ele está motivado para estas novas formas de aprendizagem? Será que ele conhece estas novas formas de aprendizagem? Será que os ambientes virtuais proporcionarão aos alunos uma aprendizagem real e efectiva?

Enquadramento Teórico

O conceito de *b-learning* apresenta várias definições, de acordo com a perspectiva dos investigadores (Duhaney, 2007; Graham, 2004; Singh, 2003; Oliver e Trigwell, 2005; Marino, 2007; Orey, 2008; Bartolomé, A. e Aiello, M., 2006; Yelon, 2006; Moran, 2007). No entanto, podemos dizer que existe um tronco comum que estes utilizam e que nos pode auxiliar a clarificar este conceito, maioritariamente associado a investigações em no Ensino Superior. No entanto, como o presente trabalho de investigação, recai sobre o ensino básico, tentou-se extrapolar a utilização destes conceitos para este nível de ensino, numa tentativa de conhecer as implicações do *b-learning* para o sucesso, satisfação e motivação dos estudantes do 3º CEB.

Para diversos autores (Duhaney, 2007; Graham, 2004; Singh, 2003), o termo *b-learning* pressupõe a combinação de múltiplos meios de comunicação que são planeados para completar e promover a aprendizagem. Este conceito está enraizado na ideia que a aprendizagem não é estanque, mas sim um processo dinâmico. Misturando/combinando proporciona diversas vantagens de aprendizagem ao estudante que possui diferentes formas de aprender. Oliver e Trigwell (2005) referem a necessidade de reconstruir o conceito de *b-learning*, envolvendo nele os alunos a partir da teoria da variação, a efectivação real do b-learning, com a finalidade de melhorar o processo de ensino-aprendizagem. Para Hemphill (2006), o conceito de *b-learning* corresponde a experiências educacionais que combinam a aprendizagem presencial com a instrução mediada por tecnologias. No entanto, para Yelon (2006), há que reflectir sobre interesse em escolher o melhor de cada uma das modalidades, presencial e *b-learning*. Para Marino (2007), o *b-learning* corresponde a um modelo eclético que combina o melhor do presencial com as funcionalidades da aprendizagem electrónica, no sentido de potenciar os pontos fortes e reduzir as fragilidades dos dois sistemas. Moran (2007), referindo-se aos modelos híbridos *online*, considera que num futuro próximo os cursos presenciais tornar-se-ão progressivamente semi-presenciais, referindo que o presencial flexibiliza-se com o virtual. Segundo Orey (2008), a definição do conceito de *b-learning* depende da perspectiva encarada (estudante, professor e administrador), no sentido de se atingir uma meta de instrução. Em síntese, podemos constatar que as diferentes perspectivas apresentadas visam melhorar o processo de ensino-aprendizagem, combinando, as duas modalidades, de forma a maximizar as potencialidades de cada uma, centrando o processo de aprendizagem no estudante. Se considerarmos que na actual sociedade onde a tecnologia faz parte do quotidiano dos estudantes, a utilização das TIC no processo de ensino-aprendizagem poderá/deverá ser aproveitada como um factor de motivação para os estudantes. Esta motivação que, segundo Fontaine (2005, p.11) é imperativa para “...iniciar qualquer acção, mantê-la ou terminá-la.”. É a motivação que acciona nos indivíduos a dinâmica na resolução dos seus problemas e preocupações, e também, a procura por atingir determinados propósitos com vista à sua realização pessoal. A motivação pode também originar o impulso para aprender conferindo um determinado valor ao que foi apreendido. Para Fontaine (2005, p.11), “*Em termos gerais, a motivação é o aspecto dinâmico da acção*”. Tal como referem Siqueira e Welchsler (2006) a ideia de movimento surge associada muitas vezes ao conceito de motivação e relacionam-se no aspecto da motivação levar o indivíduo a fazer algo, permanecendo em acção. Desta forma, é importante desenvolver e ter em consideração a construção motivacional nas crianças, reduzindo assim a necessidade

de utilizar a motivação extrínseca para a consecução das tarefas escolares, no entanto, como sustentam Moraes e Cabrita (2008), acredita-se que nem todos os alunos estão preparados para a aprendizagem online, especialmente os alunos mais jovens, pouco motivados ou sem maturidade suficiente para se responsabilizarem pela sua aprendizagem.

Contexto do trabalho

O universo alvo deste estudo foi os alunos do 3º CEB de três escolas do concelho de Rio Maior, num total de 27 turmas (568 alunos); Posteriormente, foram também incluídas três turmas do Agrupamento Vertical de Escolas de Alcanede, concelho de Santarém, com o objectivo de colmatar alguns questionários que não fossem respondidos. Também foi considerado para este projecto de investigação a aplicação de questionários aos professores que leccionam as respectivas turmas inquiridas. Os questionários foram aplicados entre 20 de Maio e 20 de Junho de 2009.

Metodologia

Este trabalho corresponde a uma investigação exploratória e descritiva. Iniciou-se com a construção de um guião de questionário para alunos e outro para professores, submetido à revisão de peritos. Durante o mês de Dezembro de 2008 procedeu-se à aplicação do pré-teste a um grupo de alunos e professores com o objectivo de proceder à avaliação dos instrumentos de recolha de dados. A selecção dos professores e alunos inquiridos para a realização do pré-teste foi feita de forma aleatória. Com base nas recomendações dos peritos e nos resultados obtidos no pré-teste procedeu-se à reformulação do questionário e à respectiva aplicação na amostra apurada. O método de selecção da amostra a utilizar foi o da amostra casual aleatória simples, utilizando-se uma adaptação à técnica da lotaria, Hill, M. (2002). Responderam ao questionário um total de 276 alunos e 48 professores.

Neste artigo, é apenas apresentada a análise de conteúdo de duas das questões do questionário, da questão aberta efectuada aos professores, *Qual o tipo de aulas que considera mais motivadora para os alunos? Aulas presenciais, B-Learning ou Ambas. Porquê?* E da questão aberta efectuada aos alunos, *Qual o tipo de aulas que consideras mais interessantes? Aulas presenciais, B-Learning ou Ambas. Porquê?*

O processo da análise de conteúdo realizou-se em três momentos (Ferreira, 2007): O primeiro correspondeu à organização, escolha e selecção do material a ser analisado. No segundo procedeu-se ao agrupamento das respostas em várias categorias definidas pelos seus indicadores obedecendo a critérios de coerência e

homogeneidade. O último momento correspondeu à inferência e à interpretação dos dados.

Análise dos dados

Dos 48 professores respondentes, apenas 17 referiram que utilizam plataformas de aprendizagem na sua prática lectiva com os alunos, 35,48% não justificaram a não utilização e 25,81% referiam que a não utilização deve-se essencialmente à falta de conhecimentos e formação para o fazerem com segurança. Este facto é sustentado por Pedro, N. e tal (2008) quando mencionam que a falta de formação dos professores para utilizarem plataformas de aprendizagem associada à resistência e conservadorismo face à mudança funcionam como um factor limitativo à sua utilização.

Relativamente à questão: *Qual o tipo de aulas que considera mais motivadora para os alunos? Aulas presenciais, B-Learning ou Ambas. Porquê?* Os resultados foram os seguintes: aulas presenciais (41.17%), b-learning (0.00%) e ambas as modalidades (58.83%). As razões apresentadas foram integradas nas respectivas categorias. Nas aulas presenciais: presença e comunicação entre os participantes (28.57%), afectividade (28.57%), ensino-aprendizagem (14.29%) e maturidade dos alunos (14.29%).

As justificações apresentadas pelos professores salientam a importância dada presença do professor dentro da sala de aula e à afectividade: *“Nada substitui a presença do professor uma vez que há competências que apenas se adquirem a partir da comunicação presencial”* (14.29%), *“O professor ainda é um actor essencial no processo de aprendizagem”* (14.29%) e *“Os laços afectivos que se desenvolvem são mais importantes”*.

Considerando as aulas mais motivadoras para os alunos as que utilizam ambas as modalidades, os resultados foram os seguintes: categoria ensino-aprendizagem (40%) referindo por exemplo que *“Permite uma aprendizagem diferenciada para os alunos”*, *“Diversificação das estratégias utilizadas permitindo a motivação dos alunos”*. Na categoria conteúdos e recursos (10%) e satisfação geral (10%). Não justificaram a questão 40% dos respondentes.

No que diz respeito à questão: *Qual o tipo de aulas que consideras mais interessantes? Aulas presenciais, B-Learning ou Ambas. Porquê?* Os alunos consideraram mais interessantes as aulas presenciais (47.10%), seguidamente ambas as modalidades (35.15%) e por fim as aulas de b-learning (17.75 %). No entanto, o somatório das duas últimas é superior a 50%.

Os indicadores das aulas presenciais foram agrupados nas seguintes categorias com maior peso: avaliação e apoio às actividades (23.08%) afirmando que *“O professor pode ver o meu interesse e empenho”*, *“O professor pode esclarecer as dúvidas”* e por exemplo *“Porque a professora dá melhor a matéria”*. Na categoria ensino-aprendizagem (13.85%), referindo que *“Aprende-se melhor”*, *“Estamos mais atentos”* ou *“É mais fácil aprender”*. Na categoria TIC e actividades online (11.54%) foi essencialmente dito que *“Não experimentei aulas com b-learning”*. Na categoria presença e comunicação entre os participantes (9.23%) foi mencionada principalmente *“Há mais comunicação entre os alunos”* ou por exemplo *“Gosto de ouvir o professor a dar a matéria”*. Não justificaram a resposta 32.31 % dos inquiridos.

Em relação às aulas de *b-learning* as categorias resultantes foram: ensino-aprendizagem (26.53%), por exemplo, *“Aprendemos melhor a matéria”*, *“É bom aprender coisas novas”* ou *“Aprendo com mais facilidade”*. Na categoria satisfação geral (24.49%) foi referido *“Mais interessantes”*, *“Porque gosto mais”* ou *“As actividades são mais motivadoras”*. Em TIC e actividades online (14.29%), foi mencionado *“Porque utilizamos o PC”*, *“Utiliza-se tecnologia nas aulas”* e *“Porque estou na Internet”*. Não justificaram a resposta 28.57% dos inquiridos.

Para os que consideraram mais interessantes, ambas as modalidades, os resultados foram reunidos nas seguintes categorias: satisfação geral (41.24%), os alunos referiram que *“Gosto das duas formas de aprender”*, *“As aulas tornam-se mais interessantes”* ou *“As aulas com b-learning são mais divertidas”*. Na categoria ensino-aprendizagem (23.35%), foi maioritariamente referido que *“Aprendemos melhor em ambas as situações”*, *“Assim, aprendemos na escola e em casa”*, *“O b-learning completa as aulas presenciais”* e *“Nas aulas presenciais tiramos as dúvidas e no b-learning aprendemos mais”*. Não justificaram a resposta 27.84% respondentes.

Discussão

Face ao exposto, ainda que a análise desta duas questões por si só, tenha um significado reduzido, podemos concluir que para estes alunos e professores a combinação das duas modalidades é bastante importante para o processo de ensino-aprendizagem. O *b-learning* assume-se como a combinação das duas modalidades pedagógicas e ambas se complementam, promovendo o processo de aprendizagem (Singh, 2003; Duhaney, 2004; Oliver e Trigwell, 2005; Hemphill 2006; Bartolomeo e Aiello, 2006; Marino, 2007; Moran, 2007). Podemos até dizer que os alunos estão intrinsecamente motivados (Guimarães, *et al* 2000; Siqueira e Wechsler, 2006; Fontaine, 2005) para a realização de tarefas online, sentindo-se satisfeitos com a realização das mesmas, mas a utilização das plataformas de aprendizagem *online*, por

parte dos professores, ainda é uma prática em fase embrionária para este nível de ensino. Também, para o grupo etário dos alunos em estudo, a presença física do professor ainda tem um peso considerável. Os professores também sugerem que a maturidade dos alunos neste nível de ensino, também se poderá afirmar como um factor determinante na utilização do b-learning para os alunos do 3º CEB. Os professores cada vez mais deverão ficar atentos à mudança que se vislumbra e que também está reclamar modificações nas práticas pedagógicas presentes e futuras. No entanto, apenas com a conclusão desta investigação, com a análise das restantes questões e itens dos questionários se poderão validar as conclusões verificadas.

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B-LEARNING: DA UTILIZAÇÃO DE RECURSOS DISPERSOS A MANUAIS ESCOLARES AGLUTINADORES – UM EXEMPLO PRÁTICO?

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Resumo

O manual escolar (ME) de Ciências da Natureza e Ciências Naturais (CN) do 2º e 3º ciclos respectivamente, podem ser excelentes ferramentas de desenvolvimento de competências quando concebidos numa perspectiva socioconstrutivista e usados em contextos de aprendizagem por pesquisa. Neste trabalho apresentamos uma proposta para complementar a utilização tradicional do ME impresso com o e-learning do ME virtual, em actividades de sala de aula ou de estudo individual. Pensamos que esta metodologia de blended learning (b-learning ou aprendizagem híbrida), ao tirar o máximo partido do melhor que o ensino presencial e a distância oferecem ao aluno, promove com sucesso a aprendizagem dos conteúdos, contribuindo para a promoção da literacia científica dos alunos e, consequentemente, para a melhoria da sua qualidade de vida permitindo alcançar um estado de bem estar / saúde positiva.

Palavras-chave

Manual escolar; blended learning

Importância do manual escolar

O ME é uma ferramenta didáctica que funciona como elo de ligação entre o conhecimento e o aluno, sendo o instrumento mais importante de apoio ao estudo e, quase sempre, o único dos alunos (Gérard & Roegiers, 1998). Um bom ME é aquele que não transmite passivamente a informação, mas que oferece uma interacção entre o aluno e a informação, de modo a promover a actividade de pensar, adquirir e construir o conhecimento, independentemente dos conteúdos tratados (Oliveira, 1997). Actualmente, são vários os autores que corroboram os referidos estudos de há uma década.

Neves (2002) salienta a importância que o ME continua a ter no ensino-aprendizagem nas escolas e valoriza o papel do ME na construção do conhecimento pelos alunos. Porém, refere alguns constrangimentos inerentes ao facto de o ME, pelo qual o aluno estuda, nem sempre ser facilitador dessa construção, não difundindo uma imagem correcta da natureza da Ciência. A autora desenvolveu uma investigação que contribui para uma reflexão sobre a problemática da selecção de manuais de Ciências, atendendo à valorização que é dada ao ME no actual contexto educativo.

Constatando a utilização generalizada do ME no ensino básico, Leite (2003) chama a atenção para a exigência do ME não ser apenas uma compilação de conteúdos, mas apresentar um modo de os trabalhar que incentive alunos e professores, utilizadores desse ME, a percorrerem um verdadeiro caminho de construção do saber. A autora refere que se a escola pretende transformar o discurso científico num discurso didáctico compreensível para os alunos, é igualmente importante que aconteça o mesmo com os ME. Neste sentido, Leite (2003) frisa a importância de o discurso didáctico estimular nos alunos a curiosidade, o espírito de descoberta e de análise de situações da vida, em vez de os ensinar a, passivamente, receberem um

conhecimento já feito, pelo que é igualmente importante que os ME cumpram estes requisitos. Apesar disso, é importante reconhecer que os ME nunca poderão ter em conta todas as situações relativas a contextos reais nem todas as características dos alunos a que se destinam. Por isso, a sua utilização tem de pressupor sempre um trabalho dos professores na adequação do discurso e dos processos de ensinar.

A crescente influência da sociedade de informação e do conhecimento na construção das aprendizagens é o agente mais mutagénico nas sociedades contemporâneas. Actualmente a aquisição do conhecimento não se realiza apenas na escola, sendo inúmeras as fontes informativas ao dispor dos alunos (Morgado, 2004). O ME reveste-se da maior importância no processo ensino-aprendizagem, constituindo-se como o recurso mais prático e acessível à maioria dos alunos, desempenhando um papel fundamental nas práticas educativas. O ME não só é o principal instrumento integrador de vários saberes científicos, como é o elemento articulador e regulador da teoria e prática curricular. Ao desempenhar uma função importante no controlo do ensino e do currículo, constitui, ao mesmo tempo, uma possibilidade de regulação do próprio trabalho dos professores. Assim, urge reflectir sobre as práticas curriculares, no sentido de as tornar mais atractivas e eficazes tendo como ponto de partida o aluno, como é defendido por Morgado (2004), pelo que os ME devem ter um carácter aberto e abrangente, incentivando o recurso a outras fontes de informação e estimulando o dinamismo e a interactividade dos alunos na construção das suas aprendizagens.

O ME é elaborado obedecendo e aplicando as orientações curriculares emanadas pelo Ministério da Educação que se inscrevem numa perspectiva construtivista (Lima e Gomes, 2006).

Os ME virtuais interrelacionam os conteúdos disciplinares com os inúmeros recursos digitais ao alcance do utilizador. Usando o ME virtual como ponte de acesso ao mundo da informação, será possível coadunar os interesses da escola e dos alunos que nela aprendem a aprender. Os novos meios tecnológicos são um enorme atractivo para a população estudantil, que neles vê um excelente recurso de aprendizagem mais autónomo, dinâmico, interactivo e actual. A mudança de atitude face a esta nova dimensão do ensino-aprendizagem potencia o desenvolvimento de competências e consequentemente prepara melhor os jovens para os desafios contemporâneos.

Metodologia baseada em blended learning

A diversidade de capital intelectual dos alunos que actualmente frequentam a escolaridade obrigatória, exige a produção de conteúdos interactivos e adaptados aos diferentes contextos quer pessoais quer escolares. O b-learning apresenta-se hoje como a melhor resposta para esta nova dinâmica curricular, uma vez que combina e integra diferentes tecnologias e metodologias de aprendizagem, indo ao encontro da pedagogia diferenciada e do ensino individualizado, na sala de aula. O recurso a esta modalidade pedagógica permite a cada aluno, em particular, seguir percursos diversificados, respeitando o seu ritmo de aprendizagem e melhorando a eficácia e eficiência da aprendizagem (Singh, 2003). O b-learning ou aprendizagem híbrida articula o e-learning ou aprendizagem electrónica com a aprendizagem tradicional do ME impresso.

O e-learning é um método tecnológico educacional, cujos conteúdos são interactivos em formato multimédia e distribuídos, segundo Lima (2008): “via Internet, Intranet ou suportes magnéticos ou ópticos (sendo os mais comuns CD-ROM e DVD-ROM). O termo abrange genericamente a “aprendizagem baseada na Web” (“Web-based learning”), a “aprendizagem baseada na Internet” (“Internet-based learning”), a “aprendizagem em linha” (“online learning”), o “ensino distribuído” (“distributed learning”) e a “aprendizagem baseada no computador” (“computer based-learning”).

Trabalhar competências numa vertente de e-learning baseia-se numa metodologia interactiva de netforuns, caixa de perguntas electrónica, atendimento on-line, rentabilizando todos os recursos existentes numa e-escola que se quer aberta ao mundo. Aprender electronicamente é ter acesso a um universo de informação à velocidade da luz. A escola do futuro é concerteza a e-escola dos

desafios contemporâneos das plataformas *moodle* e dos blogues temáticos que centram a aprendizagem nos alunos, na melhoria da qualidade vida (Europe, 2008).

A articulação do ME de CN, instrumento base do aluno, com as novas tecnologias de comunicação, particularmente orientadas no contexto sala de aula, motiva e facilita o desenvolvimento dos saberes em uso, ao longo da escolaridade básica, tornando o aluno progressivamente mais capaz de alcançar as competências gerais, definidas no documento da Reorganização Curricular (2002).

Desenvolver as competências numa perspectiva de b-learning, conjugando a aprendizagem via manual escolar com e-learning, corresponde às expectativas das escolas actuais, permitindo abordar e explorar áreas do interesse de todos no sentido de promover a literacia científica da comunidade escolar (Costa, 2005) e melhorar a qualidade de vida pessoal e social da comunidade escolar (Arends, 2008). Uma educação para a contemporaneidade, que se deseja numa escola do futuro também designada por e-escola, deverá ter como eixos fundamentais a alfabetização científica dos cidadãos (Costa, Monteiro & Costa, 2009), a promoção da saúde escolar e o recurso às novas tecnologias de comunicação, utilizando como principal ferramenta de comunicação a Internet e o acesso a uma plataforma de aprendizagem *moodle* (DGIDC, 2008). O recente programa e-escolas defende que se a educação é crucial para o desenvolvimento de qualquer sociedade, o acesso à Internet em Banda Larga é a folha branca dos estudantes de hoje. A mochila está rapidamente a ser substituída pelo computador e os quadros electrónicos já convivem em algumas escolas portuguesas, lado a lado com os tradicionais quadros negros a giz, (Telecom, 2008).

Uma aprendizagem interactiva usa linguagens de programação na óptica do utilizador que tornam os microcomputadores uma excelente e eficaz ferramenta para qualquer tipo de trabalho ou projecto a desenvolver na e-escola. O Software de processadores de texto, folhas de cálculo e bases de dados do Microsoft Office permitem a qualquer jovem a elaboração de inquéritos em MSWord, lançamento de dados em MSExcel, criação de bases de dados em MSAccess e elaboração de gráficos em MSChart, o que indubitavelmente torna a aprendizagem mais atractiva e motivadora.

As novas tecnologias de informação e comunicação, actualmente ao dispor das comunidades escolares, cativam os alunos e potenciam a interiorização das aprendizagens, como é referido por Lima & Capitão (2003, p. 23) “... constata-se que a evolução tecnológica atingiu patamares de sofisticação muito altos, conduzindo à proliferação de ferramentas com capacidades muito aliciantes de produção de e-conteúdos, sendo mais provável que as exigências ou expectativas dos alunos que frequentam cursos de e-learning e e-conteúdos sejam maiores do que as dos alunos que frequentam cursos presenciais. Por outro lado, conteúdos mais ricos e mais estruturados criam uma motivação maior e fomentam a aprendizagem”.

As simulações de computador, os CD-ROM e os sítios da Web virtuais são meios poderosos para trazer o mundo exterior para dentro da escola. A criação de blogues temáticos, a participação em projectos on-line e a pesquisa avançada com motores de busca agregadores, facilita e promove a aprendizagem electrónica. São inúmeros os sítios da Web onde os alunos podem beber informação e candidatar-se a projectos, aprender interactivamente ou concorrer a concursos relacionados com temáticas de CN, como alimentação, hábitos alimentares, energias alternativas numa escola de futuro, aprendendo interactivamente e integrando a geração do século XXI que aprende na mobilidade. As páginas do manual escolar, exemplificadas, demonstram claramente a riqueza do b-learning ao dispor dos alunos.

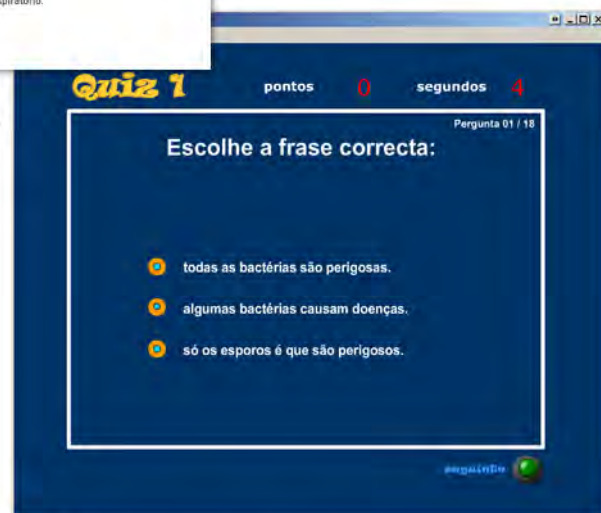
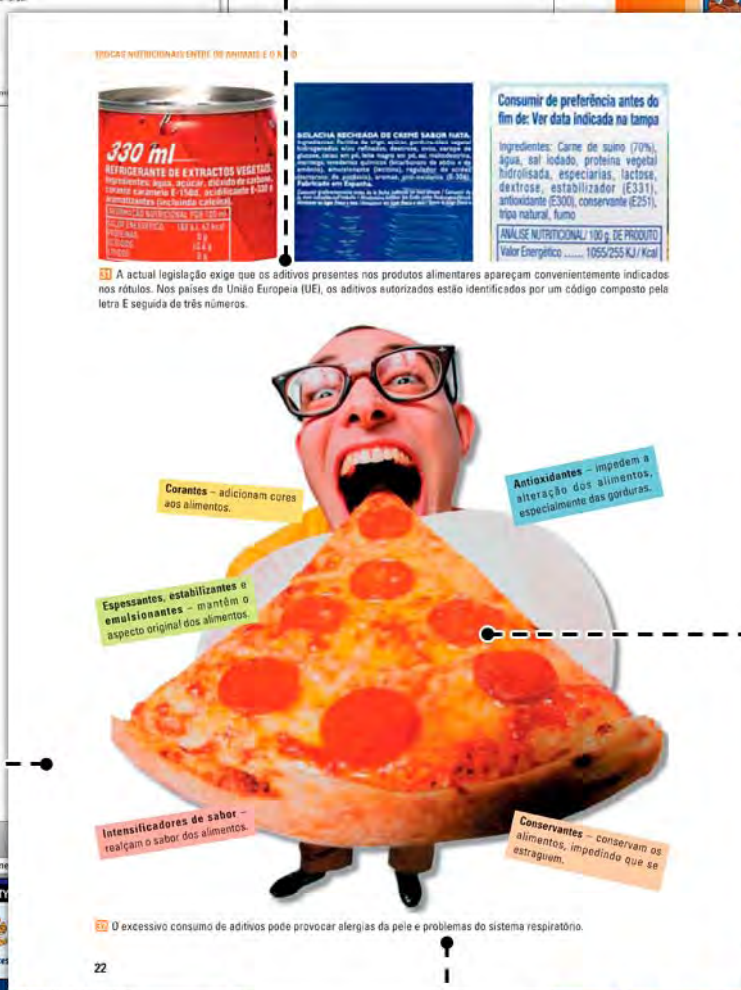
Manual escolar virtual

Utilizamos o ME de Ciências da Natureza, Bioterra 6 da Porto Editora (Motta & Viana, 2005), para exemplificar algumas das funcionalidades do manual virtual. Implementamos *links* através de XHTML/CSS/Javascript em determinados locais das imagens ou legendas de tal forma que o

aluno, ao passar o rato possa abrir páginas da internet directamente relacionadas com as aprendizagens a construir.

Pretende-se, assim, que, em b-learning, o ME não funcione como um pólo, que no extremo oposto encontra o e-learning. Queremos, isso sim que seja, ele próprio, um recurso aglutinador. Assim, o ME deve, do nosso ponto de vista, remeter, desde logo, para alguns recursos de e-learning. Estes não se devem esgotar *per si* mas são, eles mesmos, pontos de partida para outras fontes que, autonomamente, o aprendente terá curiosidade de explorar.

Aditivos – os “E” nos alimentos



Quiz

Segurança Alimentar para os Mais Novos

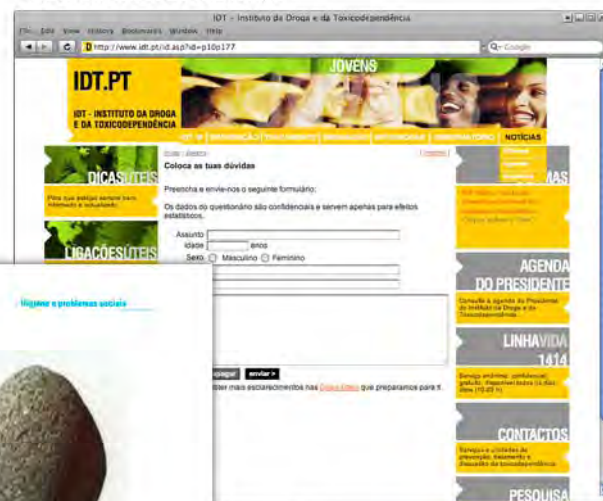
Ministério da Saúde

Atchim – o lado divertido da gripe



Instituto da Droga e da Toxicod dependência

“Coloca as tuas dúvidas”



Abuso de drogas ilegais

Desde há muito tempo que se utilizam drogas como medicamentos, devido às suas propriedades analgésicas. Mas estas drogas são consumidas em baixas doses e com prescrição médica. O consumo de drogas em doses elevadas distorce a realidade de tal forma que produz falsas sensações de bem-estar e provoca danos quase sempre irreversíveis.

As drogas ilegais estão actualmente no centro da indústria e do tráfico mundiais. O abuso de drogas denomina-se **toxicod dependência**.

O **toxicod dependente** desenvolve uma dependência física da droga a que vulgarmente se chama vício, passando o tempo a pensar na droga ou no modo de a conseguir. Sempre que lhe é possível, administra cada vez mais droga, o que leva o organismo a tolerar a substância. Assim, o toxicod dependente tem de aumentar a quantidade de droga para obter o mesmo efeito e tem sintomas de ressaca quando deixa de consumir, fazendo tudo para obter a droga de que precisa.



NÃO PONHA UMA PEDRA SOBRE O ASSUNTO

A SUA OPINIÃO FAZ PARTE DO COMBATE

30 IDT – Instituto da Droga e da Toxicod dependência – www.drogas.pt



31 Um toxicod dependente administra a si próprio substâncias altamente prejudiciais. A falta de higiene em que vivem os toxicod dependentes é um factor de contágio de doenças infecciosas.



32 Na Europa tem vindo a aumentar o policonsumo de drogas, isto é, os toxicod dependentes consomem várias drogas ao mesmo tempo.



33 Os kits para toxicod dependentes são distribuídos gratuitamente e previnem doenças infecto-contagiosas.

99



Filme sobre a SIDA
Médicos sem Fronteiras



Jogo “Máquina da Verdade”
Tu alinhas?

Plataforma Contra a Obesidade Quiz



Alimentos e nutrientes

A alimentação é um dos factores que influenciam a saúde e a duração da vida de um indivíduo. Através da **alimentação** o organismo obtém os nutrientes indispensáveis ao seu bom funcionamento.

Os **alimentos** são constituídos por nutrientes. Um **nutriente** é um constituinte alimentar necessário à manutenção da vida.

Os nutrientes têm diferentes funções. Os nutrientes **energéticos**, como os lípidos e os glícidos, fornecem, principalmente, energia. Os nutrientes **plásticos**, como os prótidos, os lípidos e alguns minerais, constroem e reparam o corpo. Os nutrientes **reguladores** e **protectores**, como as vitaminas e alguns minerais, regulam o bom funcionamento do organismo e protegem contra certas doenças.

A água é o componente mais abundante e regula as transformações que ocorrem no corpo humano.

As **fibras**, como a celulose, têm origem vegetal. Estes glícidos, apesar de não serem totalmente absorvidos, têm uma função **reguladora** do sistema digestivo: facilitam o trânsito intestinal, dando volume às fezes e evitando a prisão de ventre.



Alimentos ricos em fibras. Uma alimentação equilibrada em fibras previne o cancro do intestino grosso.



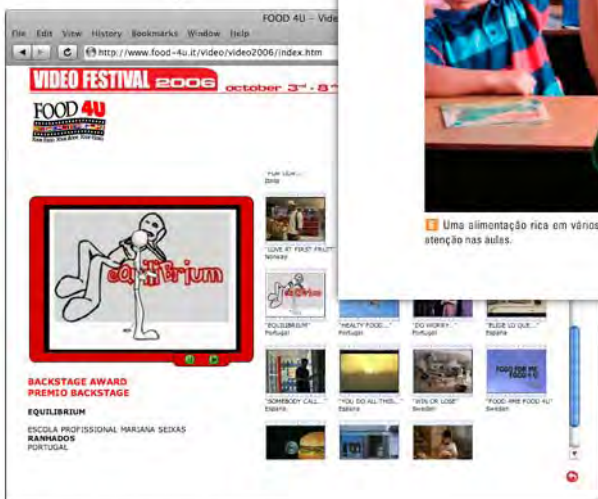
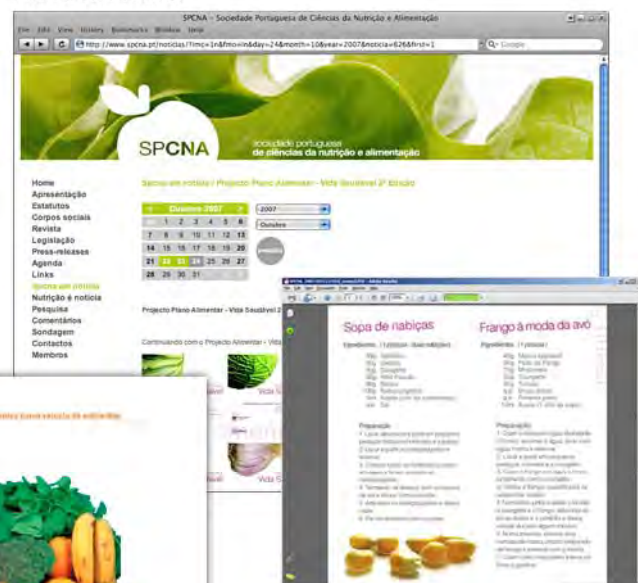
Uma alimentação rica em vários nutrientes é essencial para estares com atenção nas aulas.



Enquanto recuperas de uma fratura precisas de ingerir mais alimentos com minerais como o cálcio, para reconstituir a ossa.

11

SPCNA Plano alimentar



Vídeo "Equilibrium" Food4U



"Testa os teus conhecimentos" Agrupamento de Escolas da Lousã

Conclusão

Aproveitar as CN como flexibilizadoras e dinamizadoras de projectos, ao nível das instituições escolares, parece ser um dos rumos mais seguros a seguir para a construção de um currículo para a contemporaneidade, capaz de dotar os aprendentes das competências essenciais que os tornem mais felizes e saudáveis. A rentabilização do manual escolar de Ciências da Natureza e de Ciências Naturais, em contexto de blended learning, do ponto de vista que defendemos, contribui para desenvolver nos alunos as competências necessárias para promover a sua literacia científica e uma construção do conhecimento mais partilhada e mais contextualizada.

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TECNOLOGIAS DA INFORMAÇÃO E COMUNICAÇÃO E PENSAMENTO CRIATIVO NA IMPLEMENTAÇÃO DO PROJECTO “JOVENS REPÓRTERES PARA O AMBIENTE”

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Resumo

A formação de cidadãos cientificamente cultos, capazes de contribuir para o desenvolvimento da sustentabilidade na Terra, impõe-se como uma missão da sociedade em geral e da Escola em particular. A articulação interdisciplinar das actividades desenvolvidas na Escola apresenta-se como um desafio capaz de vencer barreiras que se têm manifestado difíceis de transpor para atingir a desejada formação de cidadãos cientificamente cultos. Para isso, pode contribuir a criação de novos tempos e espaços, centrados na educação ambiental e no desenvolvimento da literacia, capazes de fazer interagir, de forma produtiva, os diferentes intervenientes na sociedade, utilizando as Tecnologias da Informação e Comunicação (TIC).

Neste artigo, pretendemos apresentar uma prática de ensino e aprendizagem, desenvolvida ao longo dos anos lectivos de 2007/2008 e de 2008/2009, na Escola Secundária Emídio Navarro – Viseu, orientada pelos princípios da Educação em Ciência, em que, no âmbito do Projecto Jovens Repórteres para o Ambiente (JRA), os seus intervenientes mobilizaram saberes relacionados com várias áreas disciplinares, tendo por base as TIC, e desenvolveram competências de natureza diversa, com vista à promoção do pensamento criativo, num contexto de participação voluntária e de educação não formal.

Nas actividades realizadas, foram envolvidos intervenientes muito diversos que contribuíram de diferentes formas para a visibilidade do projecto. Da comunidade escolar estiveram envolvidos alunos do Ensino Secundário, professores de Biologia/Geologia, Inglês, Física/Química, Português e Área de Projecto. Da comunidade local, estiveram envolvidos a Câmara Municipal de Viseu, o Instituto Politécnico de Viseu e o jornal Diário de Viseu.

Da avaliação dos resultados do projecto, destaca-se um envolvimento entusiástico por parte dos alunos directamente envolvidos, bem como de toda a comunidade. Estes resultados são mensuráveis a partir das publicações feitas na imprensa local e na página Internet JRA, do reconhecimento manifestado por várias instituições locais e pelos prémios nacionais conseguidos ao longo dos dois anos de implementação do projecto (1º lugar na categoria de “Vídeo Digital” e o 2º lugar na categoria de “Artigo em Português” no *Concurso Nacional 2009*) e resultaram de uma mobilização interdisciplinar de recursos e saberes, altamente potenciados pelas TIC.

Palavras-chave: TIC, Pensamento Criativo, Literacia, Educação Ambiental, Educação em Ciência.

1. Introdução

Neste artigo pretendemos descrever e fazer uma apreciação do trabalho desenvolvido nos anos lectivos de 2007/2008 e de 2008/2009, na Escola Secundária Emídio Navarro – Viseu, inserido no Projecto Jovens Repórteres para o Ambiente, um Programa internacional de educação para o desenvolvimento sustentável que envolve vários países da *Foundation for Environmental Education* (FEE).

Começamos, assim, por fazer a apresentação de uma prática de ensino e aprendizagem, desenvolvida numa instituição de ensino secundário pública, durante dois anos, baseada em TIC e orientada pelos princípios actuais da educação em ciência, que rompeu com uma prática de abordagem, compartimentada e fechada dentro das salas de aula, de temáticas que atravessam toda a formação de cidadãos que se desejam responsáveis e cientificamente cultos.

A operacionalização do projecto, ao nível da Escola Secundária Emídio Navarro – Viseu, centrou-se sobre o tema aglutinador “Viseu, Cidade Jardim”, tendo-se desdobrado em três dimensões nucleares: “Biodiversidade”, “Energias” e “Saúde e Ambiente”. Esta implementação teve em conta que “actualmente, a sociedade exige que a escola, com a ajuda da família e do meio envolvente, forme cidadãos activos, conscientes, independentes e críticos e não alunos submissos” (Martins & Sá, 2008, p. 244) e que, para o conseguir, é necessário mobilizar todos os meios disponíveis, incluindo as TIC, estar preparado para aproveitar todas as oportunidades que vão surgindo e promover o desenvolvimento do pensamento criativo.

Destacaremos algumas conclusões acerca das vantagens de introduzir na escola espaços e tempos que permitam desenvolver um trabalho verdadeiramente transversal e ajustado ao desenvolvimento da literacia dos jovens em idade escolar e à sua preparação para os desafios da sociedade actual, caracterizada, entre outros aspectos, pela velocidade da mudança e pela incerteza. Daremos particular destaque às potencialidades de um trabalho centrado na educação ambiental para o desenvolvimento de competências e para o desenvolvimento da criatividade, utilizando todas as potencialidades das TIC, em projectos de realização em equipa, cuja apresentação à comunidade assume grande importância.

Apresentaremos, assim, uma reflexão sobre a importância de um trabalho interdisciplinar, baseado em TIC, preparado e desenvolvido dentro da escola, em contexto de formação não formal, com visibilidade local, nacional e internacional, com vista à formação de cidadãos cientificamente cultos, capazes de procurar soluções para um desenvolvimento sustentável.

Este projecto centrou-se no desenvolvimento de pequenos trabalhos, por parte dos alunos, com o fim de desenvolver uma visão integradora do saber relativamente ao planeta Terra, enquanto fonte de recursos variados que têm permitido a vida, mas que, devido ao facto de estarem a ser explorados a um ritmo acelerado, poderão estar à beira do seu esgotamento. Face a este problema é necessário tomar medidas urgentes para evitar não só esse esgotamento, mas também as consequências que advêm da sua exploração massiva, impossibilitando a vida no planeta.

Actualmente, os responsáveis políticos têm manifestado preocupações relativamente aos problemas ambientais, adoptando algumas medidas para minimizar esses problemas. A sociedade tem também um papel a desempenhar nesta matéria e a escola deve preparar os jovens para a adopção de comportamentos responsáveis.

Esta comunicação encontra-se estruturada em quatro partes: a interdisciplinaridade na formação de cidadãos cientificamente cultos, contributos das TIC e do pensamento criativo para a educação para a sustentabilidade, um caso “Viseu cidade jardim” e apresentação e discussão de alguns resultados.

2. A interdisciplinaridade na formação de cidadãos cientificamente cultos

A formação de cidadãos cientificamente cultos é um imperativo cada vez mais evidente, mas o tempo tem-nos mostrado que não é fácil de alcançar. Uma das vias pode passar pela operacionalização da interdisciplinaridade, que é outro “quebra-cabeças” para muitos dos que têm nas suas mãos a responsabilidade de dar resposta a todos estes desafios.

A operacionalização da interdisciplinaridade traz vantagens, mas é muito difícil. Como diz Tavares (1997) “tem-se falado e escrito muito, nestes últimos anos, sobre interdisciplinaridade, embora esse discurso tenha chegado à prática com bastante dificuldade e, por vezes, de um modo distorcido, incompleto e até contraditório” (p. 64).

Estes e outros constrangimentos impedem, muitas vezes, que se tenha uma perspectiva integradora do saber. Ora, assim sendo, estamos perante uma sociedade em que “é preciso substituir a visão tradicional do conhecimento como algo estável e seguro por algo dotado de complexidade que tem de se adaptar constantemente a diferentes contextos e cuja natureza é incerta” (Cachapuz, Praia & Jorge, 2004, p. 364). Por isso, é necessário que o ensino se oriente para os saberes básicos de todos os cidadãos no século XXI que correspondem a “aprender a ser” e suas subordinadas: “aprender a conhecer”, “aprender a fazer” e “aprender a viver juntos” (CNE, 2004, p. 17).

Praia, Cachapuz e Sá-Chaves (2007), retomando os trabalhos de Delors e Morin, apontam, como competência fundamental a desenvolver nos diferentes níveis de formação, a “capacidade de resolver problemas emergentes que, por isso mesmo, não podendo ser previstos com antecipação, não são resolúveis através de receitas e técnicas previamente seleccionadas em outras instâncias de decisão e fora dos contextos nos quais esses mesmos problemas ocorrem. Para que esta competência possa ser desenvolvida, importa que as estratégias de formação desenvolvam e estimulem a capacidade reflexiva (pensamento crítico, pensamento para acção ...), bem como a capacidade de comunicar com o Outro na sua diversidade” (p. 14).

Surge assim a necessidade de promover o trabalho em projectos que envolvam professores de diferentes áreas disciplinares, desejavelmente de modo voluntário. Efectivamente, há um conjunto de vantagens mútuas quando as áreas disciplinares não se fecham sobre si mesmas e quando são estabelecidas pontes entre as diferentes áreas do conhecimento. Entre outras razões, isso permite evitar repetições que podem ser geradoras de desmotivação. Aí, a articulação efectiva é a palavra de ordem.

É pelo diálogo, pela reconciliação entre as disciplinas que se pode encontrar o elemento essencial desta nova atitude, uma articulação dos saberes que dará uma imagem renovada do homem e da natureza (Gonçalves, 1997, p. 107).

Os povos devem pois dar à ciência a importância que esta merece. A ciência deve ser um bem e acessível a todos. Daqui resulta que devemos ser “cientificamente cultos” e preocuparmo-nos com a universalização do direito ao conhecimento.

Segundo Cachapuz e al. (2004) “a Educação em Ciência deve dar prioridade à formação de cidadãos cientificamente cultos, capazes de participar ativamente e responsabilmente em sociedades que se querem abertas e democráticas” (pp. 366-367).

3. Contributos das TIC e do pensamento criativo na educação para a sustentabilidade

Ler, escrever e contar são, hoje, actividades naturais do dia-a-dia das sociedades consideradas civilizadas, mas isso já não é suficiente. A utilização dos meios que são postos à nossa disposição obriga-nos ao desenvolvimento de outras competências.

As TIC podem ser utilizadas, com igual facilidade, comodidade e economia, como fonte de informação e como meio de comunicação de grande impacto na escola e fora dela. Contudo estes são os aspectos mais básicos da sua utilização e ficam muito aquém das suas

potencialidades. Importa que as TIC se tornem uma porta aberta para a estruturação do pensamento, desejavelmente criativo e orientado para o desenvolvimento sustentável.

Utilizar a tecnologia no processo de ensino e aprendizagem é um requisito necessário, mas não é o suficiente para desenvolver o conhecimento e as competências necessárias para a construção do conhecimento no século XXI.

Nas sociedades contemporâneas a capacidade de comunicação com diferentes públicos determina fortemente o sucesso profissional. Assim, aqueles que tiverem um maior desenvolvimento de competências comunicativas em todos os meios e que mais facilmente sejam capazes de se adaptar às constantes alterações que vão surgindo a cada minuto, ou seja, que seja mais capaz de utilizar os meios disponibilizados pela tecnologia, estão, à partida, mais aptos para enfrentar os novos desafios.

Por isso, é fundamental acompanhar o desenvolvimento da tecnologia e da sua introdução na escola com mudanças no ensino, que facilitem o desenvolvimento de competências nos diferentes domínios do saber.

É ainda importante definir o ambiente de trabalho mais propício ao desenvolvimento da criatividade, o que implica encontrar o justo equilíbrio entre a compreensão dos contextos de cada indivíduo e as especificidades dos criativos, por outro lado, e os objectivos da organização, por outro.

Para o desenvolvimento da inovação e da criatividade contribuem diversos factores muito importantes: liderança desejavelmente criativa e inovadora; ausência de burocracias e níveis hierárquicos muito rígidos; adequada dimensão do grupo (nem demasiado pequeno, nem exageradamente grande); grande flexibilidade, rapidez de resposta e grau de envolvimento, capaz de permitir a livre circulação de ideias; convívio entre diferentes grupos e acesso aos trabalhos desenvolvidos por outros, permitindo a troca de experiências e o conhecimento de outras realidades.

Por isso, diferentes meios, diferentes suportes e diferentes ambientes (na rua, no parque, na escola) de modo a desenvolver um trabalho que ao mesmo tempo interesse os alunos, envolva os familiares e gera satisfação por parte da comunidade escolar.

Em qualquer dos momentos das diferentes fases do desenvolvimento do trabalho (preparação, recolha de dados, tratamento dos dados, preparação do trabalho final e apresentação a público) é possível introduzir a mais-valia da criatividade, capaz de tornar cada trabalho um trabalho único, novo e potenciador de novos trabalhos que incorporam todas as experiências anteriores.

No Ano Europeu da Criatividade e Inovação (2009), em que o objectivo principal é promover abordagens criativas e inovadoras de modo a preparar melhor os cidadãos para os desafios do mundo globalizado, foi nossa intenção levar a cabo um projecto que tivesse na sua estratégia global objectivos de inovação e criatividade, contribuindo para o desenvolvimento de competências que, como já dissemos são consideradas muito importantes no século XXI.

Verifica-se também que, ao promover estratégias de comunicação criativas, pode desenvolver-se o espírito científico dos alunos. Capacidade para comunicar eficazmente.

A importância do desenvolvimento de actividades marcadas pela criatividade e pela inovação estão muito ligadas à necessidade que se prevê que continuem a marcar os próximos tempos caracterizados pela complexidade, dado que os problemas que surgem, nomeadamente os que se relacionam com a crise planetária de natureza social, política, ambiental, pela mudança e pela incerteza. As repostas para os problemas que vão surgindo são cada vez mais provisórias e não procuram apresentar uma chave infalível, mas uma abordagem tentativa. Também hoje temos muitas situações problemáticas cujo desfecho se mantém em aberto e que precisa da criatividade e da inovação para originar novas soluções que possam ser equacionadas.

É nesta base de deve ser equacionada a educação de cidadãos para o século XXI que cada vez tem mais meios disponíveis, mas também tem cada vez mais problemas, mais complexos e de resolução mais incerta.

As grandes vantagens do desenvolvimento de uma sociedade que promove a criatividade passam certamente por ter cidadãos mais capazes de enfrentar os desafios mais inesperados e complexos que podem ocorrer. A criatividade deve fazer-se sentir a todos os níveis: ao nível da formação, das soluções, das metodologias dos meios utilizados e das possibilidades de organização. As soluções do passado já mostraram do que são capazes e qual é o resultado. Não nos resta outra alternativa a não ser seguir novos caminhos. Mesmo que os resultados não sejam os desejados isso prepara-nos para colocar novas hipóteses e para aceitar a incerteza e a transitoriedade das soluções.

Por outro lado a criatividade também pode ser mobilizada para promover ambientes de trabalho em rede em que as ligações de diferentes pessoas, em diferentes pontos do mundo, sejam utilizadas para validar as diferentes soluções que vão sendo propostas por cada indivíduo. Ora, as tecnologias para o conseguir estão ao alcance de todos.

O culminar do desenvolvimento do projecto, ao longo de dois anos, mostrou que um dos modos mais eficazes de expandir as competências dos alunos passa pelo apelo à sua

criatividade em projectos de realização em equipa, em que se utilize a comunicação, muito importante para a construção do conhecimento, como estratégia para o pensamento criativo, procurando fugir à repetição e fazendo apelo a novas soluções para os problemas (velhos e novos).

A escola foi utilizada com o espaço em que o projecto pôde ser desenvolvido, sendo considerado agradável e com reconhecimento social. A utilização das horas que normalmente não são bem rentabilizadas pelos alunos tornou-se claramente numa vitória, ganha pela dinâmica gerada pelo projecto, com o apoio das TIC e baseando-se na criatividade.

4. Um caso: “Viseu, Cidade Jardim”

Face aos desafios que a sociedade enfrenta, no ano lectivo de 2007/2008, foi considerado fundamental o desenvolvimento de um projecto que envolvesse os alunos na temática do ambiente, considerada então, na Escola Secundária Emídio de Navarro – Viseu, uma temática importante, de intervenção urgente e perfeitamente enquadrada no Ano Internacional do Planeta Terra (2008).

Ora, tendo sido a cidade de Viseu apresentada, num estudo realizado pela *Deco* e publicado na *Proteste* de Julho/Agosto de 2007, como sendo a melhor cidade para viver em Portugal e considerando que, de 1991 para 2001, a população da cidade aumentou cerca de 11%, segundo os dados do INE, continuando a partir daí ainda a crescer, tornava-se importante que fossem criadas condições para que essa qualidade de vida fosse preservada.

Para que tal pudesse acontecer, pareceu-nos muito importante que fossem equacionadas duas vertentes: a preservação da biodiversidade e a sensibilização para a produção e utilização de energias renováveis não poluentes.

Assim, partimos para o projecto “Viseu, Cidade Jardim” tendo no horizonte os seguintes objectivos: i) promover a educação para o desenvolvimento sustentável; ii) sensibilizar a população em geral para questões da preservação ambiental; iii) promover a metodologia do trabalho de investigação – baseada na investigação de estudo de caso; iv) desenvolver competências de comunicação.

Considerámos que o centro do nosso plano de acção poderia ser procurar dar resposta ao seguinte problema: *Como preservar a qualidade de vida na cidade de Viseu?* Para isso, foi nosso propósito apresentar e testar algumas soluções: educar, informar e alertar para a

necessidade de preservar, melhorar e alargar as zonas verdes da cidade (e da escola) e para a utilização de energias alternativas.

Relativamente à metodologia adoptada, parece-nos importante referir que procurámos proceder à identificação de problemas ambientais locais; promovemos o trabalho de pesquisa documental e a elaboração de entrevistas; promovemos o desenvolvimento de competências relacionadas com o tratamento de dados, com a elaboração de conclusões e a sua divulgação através de publicação de artigos e de fotografias, de disseminação de acções de esclarecimento e ainda da produção de vídeos.

No ano lectivo de 2007/2008 desenvolvemos principalmente a dimensão da biodiversidade e a dimensão das energias.

Relativamente à dimensão da biodiversidade centrámo-nos em três eixos: i) Preservação e melhoramento das zonas verdes existentes na Escola Secundária Emídio Navarro - Viseu; ii) Sensibilização para o aumento das zonas verdes proporcional às novas áreas de construção; iii) Caminho pela Biodiversidade no Parque do Fontelo.

Relativamente à dimensão energias, detivemo-nos na sensibilização e promoção de medidas para a produção de energias alternativas não poluentes.

Para além destas duas dimensões, o plano de acção possibilitou ainda: i) divulgar iniciativas locais que manifestassem preocupações e/ou despreocupações ambientais; ii) visitar a redacção do Diário de Viseu; iii) realizar uma visita de estudo à Serra do Caramulo e S. Pedro do Sul, em articulação com o plano de actividades da área Disciplinar de Biologia e Geologia; iv) divulgar o Projecto JRA à Escola; v) organizar uma mesa redonda sobre política ambiental na cidade de Viseu, com a participação da Câmara Municipal de Viseu.

Como intervenientes no projecto, estiveram envolvidos onze alunos (sete alunos do 11º ano e três alunos do 12º ano), quatro professores e diversas entidades da cidade de Viseu: Câmara Municipal, Instituto Politécnico e o jornal Diário de Viseu. A coordenação foi assumida pela professora de Biologia e Geologia, que articulou a implementação do plano de acção com professores de outras áreas disciplinares: Português, Inglês, Física e Química.

No ano lectivo de 2008/2009 destacámos a dimensão “Saúde e Ambiente” e centrámo-nos em dois eixos: i) Sensibilização para a preservação do equilíbrio ambiental como factor imprescindível à saúde; e ii) “Caminho pela Biodiversidade” no Parque do Fontelo.

Para além desta dimensão, o plano de acção previa ainda: i) Divulgação de iniciativas locais que manifestassem preocupações e/ou despreocupações ambientais; ii) Visita à redacção do Diário de Viseu; iii) Visita de estudo ao Planalto Beirão, estação de tratamento de águas e estação de tratamento de águas residuais, em articulação com o plano de actividades da área Disciplinar de Biologia e geologia; e iv) Divulgação do Projecto JRA à Escola.

Como intervenientes mais directos e com maiores responsabilidades no projecto, estiveram envolvidos oito alunos do 11º/12º ano e quatro professores da Escola Secundária Emídio Navarro – Viseu, bem as entidades já envolvidas no ano lectivo anterior (Câmara Municipal de Viseu, Instituto Politécnico de Viseu e o jornal Diário de Viseu).

5. Apresentação e discussão de alguns resultados

Com a implementação deste projecto foram atingidos os objectivos propostos no plano de acção. Verificou-se que os alunos se envolveram de forma empenhada nas actividades dinamizadas, como ficou demonstrado pela quantidade e qualidade dos trabalhos realizados e que a seguir se apresentam. Conseguiu-se envolver toda a escola e toda a restante comunidade, como se pode verificar a partir da cobertura efectuada pela imprensa local, pelos artigos publicados na imprensa regional e na página dos JRA (www.youngreporters.org.) e pelos materiais produzidos para as diferentes acções dinamizadas.

5.1. Cobertura jornalística das actividades

No âmbito da parceria com o jornal Diário de Viseu, foram publicadas diferentes peças jornalísticas em que as actividades desenvolvidas foram apresentadas de diferentes formas e com diferentes finalidades.



Figura 1 – Exemplos da cobertura jornalística das actividades do projecto (Diário de Viseu)

Esta parceria contribuiu de forma muito positiva para o desenvolvimento de diversos aspectos relacionados com o projecto. Por um lado, publicar era uma obrigação, o que contribuiu para desbloquear alguma inibição e para evitar algum perfeccionismo exagerado que muitas vezes leva a não mostrar o que se produz porque se pensa, injustificadamente, que não tem interesse, não é pertinente ou não está suficientemente bem escrito.

Por outro lado, a cobertura da imprensa deu visibilidade ao projecto ao nível local. A Câmara, os pais e as outras escolas ficaram a saber que um grupo de alunos ocupava parte do seu tempo a pensar em assuntos problemáticos do dia-a-dia, de modo a tentar encontrar soluções e a levá-las à prática ou a propô-las a quem tinha poder para intervir na resolução desses problemas. A receptividade de factos próximos, levados a cabo por elementos da comunidade envolvente, possibilita uma relação diferente com a imprensa. Numa sociedade como a portuguesa, em que os índices de aquisição e leitura de jornais são relativamente baixos, estes factos contribuem para a melhoria desses indicadores o que já é muito positivo.

Por outro lado, os alunos têm uma noção mais aprofundada de como é que funciona a redacção de um jornal e dos critérios editoriais que podem presidir à sua elaboração e ao modo como esses meios podem ser utilizados.

5.2. – Artigos, fotografias, apresentações e vídeos digitais

Uma outra vertente muito importante teve a ver com a produção de textos com vista à apresentação do resultado de investigações e estudos de questões relacionadas com os temas seleccionados. Isto permitiu uma maior consciencialização do processo de escrita, envolvendo a planificação (incluindo a recolha dos dados para a produção do texto, a selecção dos dados mais relevantes, a sua organização hierarquizada em função dos objectivos pretendidos), a textualização e a revisão, utilizando a colaboração dos professores de diferentes áreas que voluntariamente se disponibilizavam para melhorar os diferentes aspectos relacionados com o processo de produção textual, a coordenação do projecto, a colaboração dos diferentes assessores, ou mesmo a redacção do jornal.

Uma outra vertente teve a ver com a produção de filmes digitais, fotografias e apresentações. Por um lado há uma forte componente de recolha de dados (informação, imagens) que implica, numa fase posterior a sua selecção, hierarquização, estruturação e a apresentação final desenvolvendo diferentes literacias.

Também aqui entra a grande importância de novas ferramentas ligadas às TIC que possibilitam a recolha de dados e o seu tratamento, à elaboração de documentos ajustados a diferentes finalidades comunicativas e baseados em alguma actividade criativa.



Figura 2 – “O reflexo das nossas atitudes”- Fotografia publicada em 2008

Ao longo dos dois anos de implementação do projecto, os alunos submeteram um total de treze artigos em português, três fotografias legendadas em português, dois vídeos digitais e duas apresentações na página JRA (www.youngreporters.org).

No ano lectivo de 2007/2008, foram submetidos seis artigos em português e uma fotografia legendada também em português. Foram seleccionados para o *Concurso 2008* três artigos (“Brinquedo que ameaça a Indústria Automóvel”, “Serão apenas postes de alta

tensão?” e “Saída de Campo à Serra do Caramulo”) e a fotografia submetida (“O reflexo das nossas atitudes”).



Figura 3 – Artigo publicado em 2008 (“Brinquedo que ameaça a Indústria Automóvel”)

No ano lectivo de 2008/2009, foram submetidos sete artigos em português, duas fotografias legendadas em português, dois vídeos digitais e duas apresentações. Destes trabalhos, foram seleccionados, para o *Concurso Nacional 2009*, dois artigos (“Lontras no Rio Pavia” e “O futuro das penas”), uma fotografia (“Seminário Nacional 2008”), os dois vídeos digitais (“Recuperação do Rio Pavia” e “Impactos Ambientais na cidade de Viseu”) e as duas apresentações (“Recuperação do Rio Pavia” e “Impactos Ambientais na cidade de Viseu”).

No *Concurso Nacional 2009* foi atribuído o primeiro lugar, na categoria de “Vídeo Digital”, ao trabalho intitulado (“Recuperação do Rio Pavia”) e o segundo lugar, na categoria de “Artigo em Português”, ao trabalho intitulado “O futuro das penas”.



Figura 4 – “O futuro das penas” (2º prémio no Concurso Nacional 2009 - Artigo em Português)

5.3 – Outras actividades

Das restantes actividades destaca-se o trabalho sobre as plantas invasoras que resultou numa revisão do “Arboreto da ESEN – Viseu” elaborado pelo Professor Jorge Paiva, a Visita de Estudo à Serra do Caramulo, o Caminho pela Biodiversidade no Fontelo e a elaboração de uma proposta de melhoramento dos espaços verdes da Escola Secundária Emídio Navarro-Viseu.

Pode-se destacar ainda a Mesa redonda sobre “Política Ambiental na Cidade de Viseu”, a elaboração de análises à água do Rio Pavia nos laboratórios de Química da ESEN, a “Operação limpeza das margens do Rio Pavia” e a visita à redacção do Diário de Viseu.

Finalmente, entendemos que um aspecto importante na implementação do plano de actividades foi a apresentação à comunidade escolar e à comunidade em geral (Exposição de posters, no Fórum-Viseu, sobre o Rio Pavia) do trabalho realizado, o que resultou no reconhecimento expresso, em diferentes momentos, pela direcção da escola e pela Câmara Municipal de Viseu.

Os próprios elementos que estiveram envolvidos nas actividades reconheceram que essa participação foi importante para eles: “Recebi, com grande entusiasmo, a notícia da possibilidade de ir ao *Rock in Rio*, através do projecto *Jovens Repórteres para o Ambiente*, do qual sou elemento integrante, com imenso prazer. (...) Para mim, esta iniciativa poderá ser o começo de uma longa caminhada ... Por um Mundo Melhor” (L. A. 10/04/2008).



Figura 5 – Imagens da apresentação do relatório de actividades 2008 na ESEN

Resta-nos referir algumas limitações que também estiveram presentes ao longo do desenvolvimento deste trabalho, relacionadas sobretudo com o facto de os alunos do ensino secundário sentirem alguma pressão devido à existência de exames, com implicações no acesso ao ensino superior, o que lhes reduz o tempo disponível.

6. Conclusões

A educação para a cidadania, mais do que uma necessidade é, hoje, uma exigência de toda a sociedade.

A partir da análise dos dados apresentados, podemos concluir que alunos, professores, responsáveis políticos, encarregados de educação e demais elementos da comunidade ocuparam alguns tempos livres em actividades que contribuíram favoravelmente para o seu desenvolvimento enquanto cidadãos responsáveis e cientificamente cultos, capazes de assumir responsabilidades na sociedade em que estão inseridos e capazes de contribuir para a formação de outros cidadãos que com eles lidam.

Apontar para alguns caminhos que nos levem a uma educação para um futuro sustentável é a tarefa que acreditamos ser da competência da escola do século XXI, o caminho para uma educação que nos permita viver melhor uns com os outros, com o Planeta e no Planeta (Sá & Andrade, 2008, p. 258).

O contributo da utilização criativa de todas as potencialidades das TIC para a mudança de atitudes, de responsabilidades e de exigências parece ser evidente, o que

contribui para um novo rumo que a escola pode assumir: mais aberta e mais capaz de desempenhar a sua missão.

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