7th EDEN Research Workshop

EDEN
EUROPEAN DISTANCE AND E-LEARNING NETWORK

Learners in the Driving Seat

Users? – Partners? – Consumers? – Peers?

Where are we heading to?

22-23 October, 2012
Leuven, Belgium

To Do List
☒ Library
☒ Exams
☒ Party

CAUTION!
STUDENT
DRIVER

BOOK OF ABSTRACTS & WORKSHOP PROGRAMME

Learners in the Driving Seat

Users? – Partners? – Consumers? – Peers?

Where are we heading to?

Leuven, Belgium
22-23 October, 2012

WORKSHOP PROGRAMME
&
BOOK OF ABSTRACTS

European Distance and E-Learning Network (EDEN)
Conference Proceedings

Edited by
Morten Flate Paulsen and András Szűcs
on behalf of the European Distance and E-Learning Network

EDEN
EUROPEAN DISTANCE AND E-LEARNING NETWORK

European Distance and E-Learning Network (EDEN) Conference Proceedings

7th EDEN Research Workshop
Leuven, Belgium

Published by the European Distance and E-Learning Network

Editors:

Morten Flate Paulsen
András Szűcs

Editorial co-ordination:

Anna Wagner

WORKSHOP PROGRAMME

To Do List
☒ Library
☒ Exams
☒ Party

CAUTION! STUDENT DRIVER

WORKSHOP STRUCTURE

21 OCTOBER, SUNDAY

19:00 − 20:00   **WELCOME RECEPTION**

22 OCTOBER, MONDAY

9:00 − 11:00   **PLENARY SESSION 1**

PARALLEL SESSIONS A 11:30 − 13:00		PARALLEL SESSIONS B 14:00 − 15:30		PARALLEL SESSIONS C 16:00 − 17:30	
A1	Paper Presentations	B1	Paper Presentations	C1	Paper Presentations
A2	Workshop: EmpOERing Students and Academics through Large-Scale Open Content Initiatives	B2	Workshop: Transitions into Higher Education: Can Social Networking Support Learning to Learn Competencies?	C2	Workshop: Increasing Student Satisfaction with Distance Learning – Getting on the Right Track
A3	BEST student workshop: Learning styles and technology	B3	Workshop: The Use of Learning Analytics in Education I.	C3	Paper Presentations
A4	Connect lounge/work space	B4	Connect lounge/work space	C4	Posters' Introduction

17:30 − 18:30   **PLENARY SESSION 2**

19:30 − 22:00   **CONFERENCE DINNER**

23 OCTOBER, TUESDAY

8:45 − 10:10   **PLENARY SESSION 3**

PARALLEL SESSIONS D 10:35 − 12:00		PARALLEL SESSION E 13:00 − 14:30	
D1	Paper Presentations	E1	Paper Presentations
D2	Workshop: Become a Guardian of CVET Quality	E2	Workshop: Preparing Future Lifelong Learners at School. What do We Know about the Necessary Teacher Competences?
D3	Workshop: Prospectives on Tablets in Education	E3	The Use of Learning Analytics in Education II.
D4	Paper Presentations	E4	Connect lounge/work space
D5	Connect lounge/work space		

15:00 − 16:00   **CLOSING PLENARY**

SUNDAY
21. 10. 2012.

16:00 - 18:00 **Registration**

Venue: Universiteitshal (University Hall), KU Leuven,
Naamsestraat 22, Leuven
Foyer at the entrance of Jubileumzaal

19:00 - 20:00 **Welcome Reception**

City Hall,
Great Market Square

Welcome Address
Louis Tobback, Mayor of Leuven

Presentation of the EDEN Fellow Award
Morten F. Paulsen, President of EDEN

MONDAY
22. 10. 2012.

09:00 - 11:00 **Plenary Session 1**

Promotiezaal

Chair: Morten F. Paulsen, EDEN President

Words of Welcome
Morten F. Paulsen, President of EDEN
Ludo Melis, Vice-President for Education,
Katholieke Universiteit Leuven

Keynote Speeches

**Teaching as a Design Science: Innovations with
Pedagogies and Technologies**
Grainne Conole, University of Leicester, United Kingdom

Drivers for Driven Learners in the Driving Seat
Wim Van Petegem, Katholieke Universiteit Leuven, Belgium

11:00 - 11:30 **Coffee Break**

11:30 - 13:00	**Parallel Session A**

Session A1	**Paper Presentations**

Promotiezaal

Chair: Sonia Hetzner, University of Erlangen-Nürnberg, Germany

Students' Attitude towards ICT Learning Uses: A Comparison between Digital Learners in Blended and Virtual Universities

Iolanda Garcia, Universitat Oberta de Catalunya – UOC, Anna Escofet Roig, Begona Gros, University of Barcelona – DOE, Spain

Examining a Learner-Driven Relationship of Inquiry: Discerning Emotional Presence in Online Math Coaching

Stefan Stenbom, The Royal Institute of Technology – KTH, Sweden, Martha Cleveland-Innes, Athabasca University, Canada, Stefan Hrastinski, The Royal Institute of Technology – KTH, Sweden

Researching the Time Profiles of Working Distance Learners

Bill McNeill, The College of Estate Management, United Kingdom

Session A2	**Workshop**

Jubileumzaal

EmpOERing Students and Academics through Large-Scale Open Content Initiatives

Gabi Witthaus, Grainne Conole, Ming Nie, University of Leicester, United Kingdom

This workshop will begin with the development of a shared consensus on the concept of OER, along with an exchange of participants' own experiences of OER. The workshop will provide a comprehensive overview of current OER initiatives, drawing in particular on a series of OER country reports developed by the POERUP project. In addition, participants will have the opportunity to reflect on the implications of these OER initiatives for their own practice, for student learning and for institutions

MONDAY

THE EDEN BEST RESEARCH PAPER AWARD – 2012 LEUVEN

Since 2008, EDEN continuously granted the Best Research Paper Award at EDEN's Annual Conferences as well as at EDEN's bi-annual Research Workshops. A high quality standard selection process shall guarantee the branding of a distinguished award for scholarly conference papers in the field of open, distance and e-learning.

The selection process takes place in collaboration with the **Ulrich Bernath Foundation for Research in Open and Distance Learning** and is supported by a reputable Jury.

Members of the Jury for the second 2012 EDEN Best Research Paper Award are **Martine Vidal** (Chair of the Jury, Chief Editor of Distances et médiations des savoirs/Distance and Mediation of Knowledge, France); **Gráinne Conole** (Professor of Learning Innovation and Director of the Beyond Distance Research Alliance at the University of Leicester, UK); **Jan Elen** (Vice-Dean Education, Faculty of Pedagogical Sciences, Katholieke Universiteit Leuven, Belgium); **Ulrich Bernath & Thomas Hülsmann** (Trustees and Directors of the U. B. Foundation, Germany).

Conference papers have been selected as research papers and evaluated against the following criteria: (i) contributes convincingly to the theme(s) of the conference; (ii) deals with a research question of relevance for conference participants; (iii) rigorous examination/research methods are applied; (iv) findings, results and outcomes are convincingly presented and critically examined; (v) conclusions are thoroughly discussed (including aspects like applicability, transferability, and/or further research); (vi) literature is reviewed against the state of art. In addition, authors needed to confirm that at least 30% of their paper has been originated for and at least one author has registered for participation at the Seventh EDEN Research Workshop in Leuven.

The Jury nominated the following FINALISTS (as in the programme schedule):

A1   **Students' Attitude towards ICT Learning Uses: A Comparison between Digital Learners in Blended and Virtual Universities**
by Iolanda Garcia, Universitat Oberta de Catalunya

B1   **Why do Learners Cooperate? Hints from Network Sciences on Motivation for Collaborative Learning,**
by Fabio Nascimbeni, MENON Network, Belgium

C3   **Using Social Media to Engage and Develop Online Learners**
by Lisa Marie Blaschke, University of Maryland University College and Carl von Ossietzky University of Oldenburg, Germany

C3   **Inclusive Open Educational Practices: How the Use and Reuse of OER can Support Virtual Higher Education for All**
by António Teixeira et.al.

D1   **University Students' Attitudes toward Cell-Phone Based Learning**
by Yaacov J Katz, Bar-Ilan University, Israel)

D1   **Emotional Presence and Mobile Learning: Learner-Driven Responses in a Wireless World**
by Martha Cleveland-Innes et.al.

D4   **User Centred Design of Learning Spaces**
by Ulf Hedestig &, Mikael Soderstrom, Umea University, Sweden

Session A3	**Workshop**

Meeting Room AB	**BEST student workshop: Learning styles and technology**

Oana Şipoş, Technical University of Cluj-Napoca,
Tassos Natsakis, Katholieke Universiteit Leuven

How do people learn? Are all the students learning the same way? How can technology boost and facilitate the learning process?

This workshop will touch upon these questions by presenting the theory of learning styles and of how people perceive knowledge, and by providing practical tools and techniques to facilitate the knowledge transfer from the teacher to the learner.

Session A4	**Connect lounge / Work space**

Jubileumzaal	Connect lounge / work space located in the Jubileumzaal will serve delegates' networking and exchange of views throughout the whole workshop. Posters will be displayed in this area, as well as the stand of ESU set up, where their toolkit resulted from a project on student-centered learning will be explained and distributed.

13:00 - 14:00	**Lunch**

14:00 - 15:30	**Parallel Session B**

Session B1	**Paper Presentations**

Promotiezaal	*Chair: Airina Volungeviciene, Vytautas Magnus University, Lithuania*

Why do Learners Cooperate? Hints from Network Sciences on Motivation for Collaborative Learning

Fabio Nascimbeni, MENON Network EEIG, Belgium

Students' Attitudes toward Social Networking

Vilma Musankoviene, Vaidas Astrovas, Daina Gudoniene, Julita Piguleviciene, Kaunas University of Technology, Lithuania

Enabling an Environment for Student Generated Content

Satish Patel, Linnaeus University, Sweden

Session B2	**Workshop**

Jubileumzaal	**Transitions into Higher Education: Can Social Networking Support Learning to Learn Competencies?**

Martina Salm, University of Bremen, Germany, Ildiko Mazar, EDEN Secretariat, Neil Taylor, Alison Hudson, Dundee University, United Kingdom

Transition from secondary school to university and moving back into training or education to reskill or upgrade competencies represent a challenge for any learner. Research suggests that an approach based on the development of learning to learn competencies could contribute largely in equipping learners to deal with these transitions more effectively.

The eLene2learn network has been identifying and exploring the use of existing practices, tools and methodologies in the application of ICT to the development of learning to learn competencies. The approach taken by the network of nine European partners, and the results of the first phase of the three year project, will be presented at the start of the workshop/webinar. This will be followed by a debate which will be led by two experts in the field on the strengths and challenges of using social networks to support transition into higher education.

Session B3	**Workshop**

Meeting Room AB	**The Use of Learning Analytics in Education**

Erik Duval, Department of Computer Science, KU Leuven

This workshop will be held in format with different round table discussions, this with the focus on the use of Learning Analytics in Education. The students of Erik Duval's course "Problem Solving and Engineering Design" will discuss their individual projects on Learning Analytics with the participants involved in the workshop. The aim of this workshop is on one hand, to provide the students with feedback regarding their individual projects and on the other hand to give the available participants insight in the possible use of Learning Analytics in Education.

Session B4	**Connect lounge / Work space**

Jubileumzaal	Connect lounge / work space located in the Jubileumzaal will serve delegates' networking and exchange of views throughout the whole workshop. Posters will be displayed in this area, as well as the stand of ESU set up, where their toolkit resulted from a project on student-centered learning will be explained and distributed.

15:30 - 16:00	**Coffee Break**

MONDAY

| 16:00 - 17:30 | **Parallel Session C** |

| **Session C1** | **Paper Presentations** |

| **Promotiezaal** | *Chair: Fabio Nascimbeni, MENON Network EEIG, Belgium* |

Hybridisation of Agency: Paradox

Caroline Stockman, Katholieke Universiteit Leuven, Belgium

Transforming Communication with ICT

Gytis Cibulskis, Danguole Rutkauskiene, Evaldas Karazinas, Kaunas University of Technology, Lithuania

Activity-Based Competence Model – An Approach for 21st Century Learners

Sonia Hetzner, University of Erlangen-Nürnberg, Germany, Christina M. Steiner, Graz University of echnology, Austria, Stan Karanasios, University of Leeds, United Kingdom, Roland Hallmeier, University of Erlangen-Nürnberg, Germany, Marcel Berthold, Graz, Austria
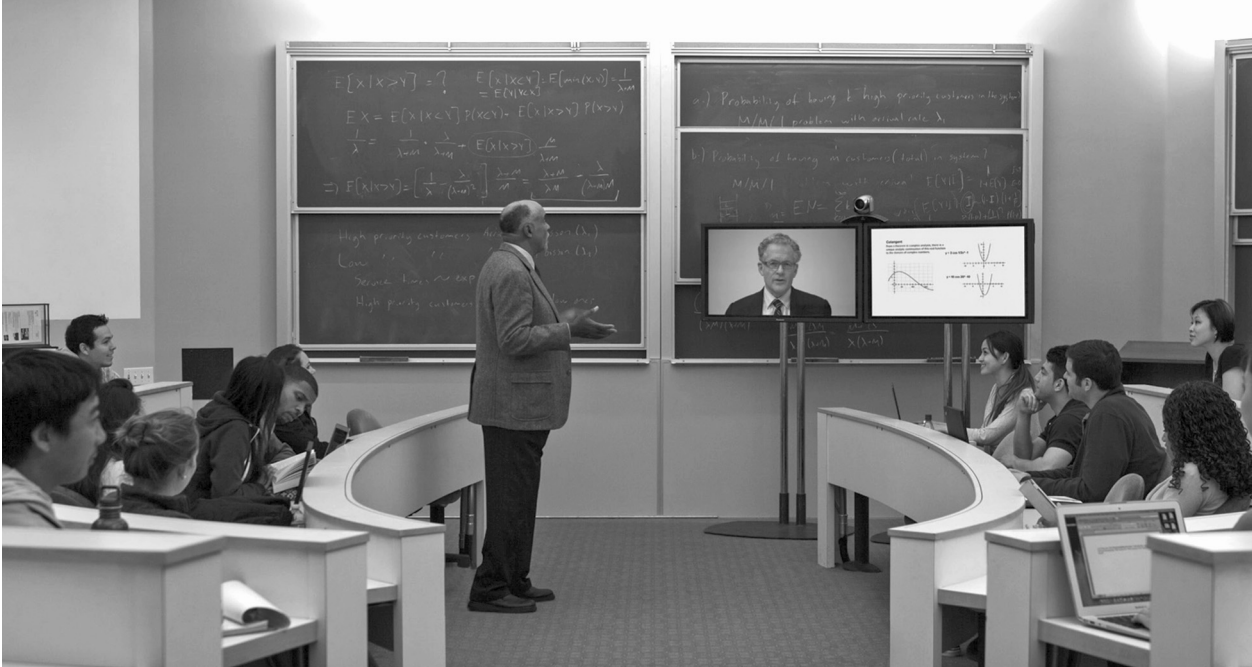
| **Session C2** | **Workshop** |

| **Jubileumzaal** | **Increasing Student Satisfaction with Distance Learning – Getting on the Right Track** |

Andrea Foley, Katja Gauci, University of Portsmouth, United Kingdom

The theme of the workshop concerns student satisfaction with a course studied by distance learning. The words "student satisfaction" have become a cliché but in the changing higher education environment institutions are striving to enhance the student experience as a means of raising students' perception of their course and the institution.

The workshop should appeal to practitioners who wish to find out more about enhancing the learning experience of distance learning students and how that contributes to student motivation and the student perception of their course. At the practical level, research about students' expectations and teaching online can help inform our professional practice.

This is a collaborative and interactive workshop, presented by a distance learning student (in person) and an academic. They bring their experience of a distance learning course that is evolving from "correspondence course" to wholly online.

Breakdown Walls and Unleash Minds with Polycom Video Collaboration

Imagine the most innovative learning environments; ones that allow faculty and students to be anywhere with any compatible intelligent device to access live and on-demand learning through multiple modalities. Compete successfully with other schools to brand your institution as a leader that not only meets mandated educational requirements, but fulfills the expectations of your students as well.

Discover Polycom education video solutions.

Polycom technology helps transform the classroom. With Polycom, you reduce administrative costs, improve productivity, extend your outreach and build student enrollment. Our combined video conferencing, video recording and streaming solutions for lecture capture, and our interactive whiteboard help you deliver a blended learning experience that both captivates and motivates students. That is the power of Polycom education video solutions.

www.polycom.com/education

Polycom

Session C3	**Paper Presentations**

Chair: Bill McNeill, The College of Estate Management, United Kingdom

Meeting Room AB

Using Social Media to Engage and Develop Online Learners

Lisa Marie Blaschke, Carl von Ossietzky University of Oldenburg, Germany

Inclusive Open Educational Practices: How the Use and Reuse of OER can Support Virtual Higher Education for All

Antonio Moreira Teixeira, Universidade Aberta, Carlos Joao Correia, Filipa Afonso, University of Lisbon, Portugal, Antonio Garcia Cabot, Eva Garcia Lopez, Salvador Oton Tortosa, University of Alcala, Spain, Nelson Piedra, Universidad Tecnica Particular de Loja, Ecuador, Luciana Canuti, Jacqueline Guzman, Universidad de la Republica de Uruguay, Uruguay, Miguel Angel Cordova Solis, Universidad Continental de Ciencias y Ingenieria, Peru

Session C4	**Posters' Introduction**

Jubileumzaal

Moderator: Andras Szucs, EDEN Secretariat

Facilitating Pre-Induction Socialisation for Distance Education Programmes

James Brunton, Noeleen O Keeffe, Eamon Costello, Seamus Fox, Elaine Walsh, Lorraine Delaney, Anne Morrissey, Dublin City University, Ireland

Problem Based Learning (PBL) as a Method of Learning How Simulation Based Learning (SBL) Improves the Efficiency of Output Goals in Healthcare Higher Education

Ildiko Szogedi, National Ins. for Qua. and Org. Dev. in Healthcare and Medicines (GYEMSZI), Istvan Csollak, Semmelweis Hospital of Miskolc, Miklos Zrinyi, Teva Hungary Ltd., Hungary

ARGG! Augmented Learning Ring in Gradara and Gabicce Mare

Giovanni Torrisi, University of Urbino, Italy

MONDAY

Teaching and Learning on an Institutional VLE in a University

Pauline Aquilina, University of Malta, Malta

I-Tutor – Intelligent Tutoring for Lifelong Learning

Gigliola Paviotti, Macerata University, Italy, Andras Szucs, EDEN Secretariat, Hungary

17:30 - 18:30	**Plenary Session 2**

Promotiezaal	*Chair: Deborah Arnold, University of Burgundy, France*

Students as Pilots… But Where is the Map ?

Marianne Poumay, University of Liege, Belgium

Student-centred learning: fact, challenge or myth?

Rok Primožič, European Students' Union – ESU
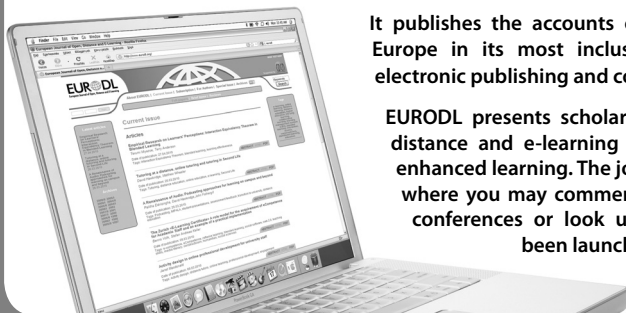
19:30 - 22:00	**Conference Dinner**

Faculty Club in the Grand Beguinage, a unique historic setting, dated back to the 13th century.

During the event:
Presentation of the Best Research Paper Award

For those who have booked places, please bring your dinner ticket

EUR DL
European Journal of Open, Distance and E-Learning

EURODL, the European Journal of Open, Distance and E-Learning (**www.eurodl.org**) is a free-of-charge refereed online journal on distance and e-learning.

It publishes the accounts of research, development and teaching for Europe in its most inclusive definition, exploring the potential of electronic publishing and contributing to the Open Content movement.

EURODL presents scholarly work and solid information about open, distance and e-learning as well as new dimensions of technology-enhanced learning. The journal is also an interactive platform – a place where you may comment, find links to interesting sites, prepare for conferences or look up conference documentation. EURODL has been launched and is supported by EDEN – the European Distance and E-learning Network.

| 08:45 - 10:10 | **Plenary Session 3** |

Promotiezaal

Chair: Wim Van Petegem, Katholieke Universiteit Leuven, Belgium

The Creative and the Curious: When Learners Roam Free

Helen Keegan, University of Salford MediaCityUK, United Kingdom

Is ICT Actually Helping Learners to Drive? A Combined Policy/Research Perspective

Claudio Dondi, SCIENTER, Italy

| 10:10 - 10:35 | **Coffee Break** |

| 10:35 - 12:00 | **Parallel Session D** |

| Session D1 | **Paper Presentations** |

Promotiezaal

Chair: Ari-Matti Auvinen, HCI Productions Oy, Finland

University Students' Attitudes toward Cell-Phone Based Learning

Yaacov Katz, Bar-Ilan University, Israel

Emotional Presence and Mobile Learning: Learner-Driven Responses in a Wireless World

Marti Cleveland-Innes, Mohamed Ally, Norine Wark, Athabasca University, Tak Fung, University of Calgary, Canada

MOVE-ON: Professional Learning for Adults on-the-Move

Elena Avatangelou, Exodus S. A., Greece, Ildiko Mazar, EDEN Secretariat, United Kingdom, Aristotelis Alexopoulos, ALBA Graduate Business School, Greece, Emanuela Ovcin, Consorzio per la Ricerca e l'Educazione Permanente – COREP, Italy, Victoria Damyanova, Institute of Technology and Development Foundation – ITD, Bulgaria

Session D2	Workshop

Jublieumzaal	**Become a guardian of CVET Quality**

Airina Volungeviciene, Vytautas Magnus University, Estela Dauksiene, Lithuanian Distance and eLearning Association – LieDM, Danute Bacinskiene, Vytautas Magnus University, Lithuania, Anthony F. Camilleri, Marie Bijnens, European Foundation for Quality in eLearning – EFQUEL, Belgium, Claudio Dondi, SCIENTER, Italy

The workshop aims at validating quality criteria for application of ICT in VET on the level of institutional integration, curriculum and professional skill development. During the workshop, quality criteria on application of ICT on all three levels will be presented and discussed. Participants will be asked to review online collaborative documents and to raise questions and comments for quality criteria lists and be invited to:

- *become acquainted with the quality criteria set up among project consortium for ICT integration on institutional, curriculum and professional skills development levels*
- *to become reviewers and experts in ICT integration in CVET quality criteria development*

During and after the workshop all participants will be invited to join the Revive VET community for quality in CVET under NAP area to become: a) case authors, b) experts and peer reviewers, c) guardians of ICT integration quality in CVET!

Session D3	**Workshop**

Meeting Room AB	**Perspectives on Tablets in Education**

Jan Elen, Mieke Vandewaetere, Katholieke Universiteit Leuven, Belgium

This workshop includes a comparison and debate on the use of tablets in education. There will be a video conference between the participants of the EDEN Research Workshop and Students from the Sub faculty of Psychology and Educational Sciences, Kulak. The students involved in this video conference are Master students in Educational Studies and are following the course "Topics in Instructional Technology".

TUESDAY

Session D4	**Paper Presentations**
Rector Saloon	*Chair: Kay MacKeogh, Dublin City University, Ireland*

User Centered Design of Learning Spaces
Ulf Hedestig, Mikael Soderstrom, Umea University, Sweden

Virtual Schools and Colleges in Europe: Looking for Success Factors
Ilse Op de Beeck, Wim Van Petegem, Katholieke Universiteit Leuven, Anthony F. Camilleri, Marie Bijnens, European Foundation for Quality in eLearning, Sally Reynolds, Audiovisual Technologies Informatics & Telecom, Belgium, Paul Bacsich, Giles Pepler, Sero Consulting Ltd., United Kingdom

Second Level Teacher's Training in the Use of ICT: The Day After
Miltiadis Tsoulis, Costas Tsolakidis, Costas Vratsalis, University of the Aegean, Greece

Session D5	**Connect lounge / Work space**
Jubileumzaal	Connect lounge / work space located in the Jubileumzaal will serve delegates' networking and exchange of views throughout the whole workshop. Posters will be displayed in this area, as well as the stand of ESU set up, where their toolkit resulted from a project on student-centered learning will be explained and distributed.

12:00 - 13:00	**Lunch**

13:00 - 14:30	**Parallel Session E**

Session E1	**Paper Presentations**
Promotiezaal	*Chair: Costas Tsolakidis, University of the Aegean, Greece*

Online, Face to Face or Blended – What Tutorial Delivery do Students Want in Distance Education?
Lorraine Delaney, James Brunton, Eamon Costello, Seamus Fox, Anne Morrissey, Noeleen O Keeffe, Elaine Walsh, Dublin City University, Ireland

ASSIST as a Tool to Evaluate Course Design
Maria Svedin, Olle Bälter, KTH - Royal Institute of Technology/Stockholm University, Kerstin Pettersson, Max Scheja, Stockholm University, Sweden

Developing Professional for ICTs in Education and Educational Technologies: Whom, What and How to Teach

Maria Tatarinova, Moscow State University of Economics, Statistics Informatics – MESI, Russian Federation

---

Session E2	**Workshop**

Jubileumzaal

Preparing Future Lifelong Learners at School. What do We Know about the Necessary Teacher Competences?

Claudio Dondi, SCIENTER, Italy, Fabio Nascimbeni, MENON Network EEIG, Belgium, Nikos Zygouritsas, Lambrakis Foundation, Greece

Changing teaching to change learning is a shared European concern. Teachers can play a key role in making school an effective learning environment where students are helped in developing autonomy and ownership of their learning experience – through the leverages of motivation, pleasure and understanding of the sense of what they learn. Innovating teacher education and promoting new teacher competences is however a challenge for most European countries.

The LLWings project – helping teachers in building Wings for lifelong learning for their students – has identified a set of teacher competences to make learning meaningful for students and favour their autonomy as learners and citizens.

The workshop is aimed at discussing together with researchers and practitioners the relevance of the LLwings teacher competence framework, its validity and the viability of the certification proposed, in the broader framework of teacher education and training for school innovation.

Session E3	**Workshop**

Meeting Room AB

The Use of Learning Analytics in Education

Erik Duval, Department of Computer Science, KU Leuven

This workshop will be held in format with different round table discussions, this with the focus on the use of Learning Analytics in Education. The students of Erik Duval's course "Problem Solving and Engineering Design" will discuss their individual projects on Learning Analytics with the participants involved in the workshop. The aim of this workshop is on one hand, to provide the students with feedback regarding their individual projects and on the other hand to give the available participants insight in the possible use of Learning Analytics in Education.

Session E4	**Connect lounge / Work space**

Jubileumzaal	Connect lounge / work space located in the Jubileumzaal will serve delegates' networking and exchange of views throughout the whole workshop. Posters will be displayed in this area, as well as the stand of ESU set up, where their toolkit resulted from a project on student-centered learning will be explained and distributed.

14:30 - 15:00	**Coffee Break**

15:00 - 16:00	**Closing Plenary**

Promotiezaal	*Chair: António Teixeira, Universidade Aberta, Portugal*

Research Workshop Concluding Remarks
   Lisa Marie Blaschke, Carl von Ossietzky University
   Oldenburg, Germany
Student Endnote
   Representative of Leuven Union of Students in
   Pedagogical Sciences

TUESDAY

BOOK OF
ABSTRACTS

TABLE OF CONTENTS

HIGHLIGHTS FOR THE CONFERENCE

Iolanda Garcia, Universitat Oberta de Catalunya,
Anna Escofet, Begona Gros, University of Barcelona, Spain

Caroline Stockman, University of Leuven, Belgium

Fabio Nascimbeni, MENON Network, Belgium

António Teixeira, Universidade Aberta & University of Lisbon, Portugal,
Carlos João Correia, Filipa Afonso, University of Lisbon, Portugal,
Antonio García Cabot, Eva García López, Salvador Otón Tortosa, University of Alcalá,
Spain, Nelson Piedra, Universidad Técnica Particular de Loja, Ecuador,
Luciana Canuti, Jacqueline Guzmán, Universidad de la República de Uruguay,
Uruguay, Miguel Ángel Córdova Solís, Universidad Continental de Ciencias y
Ingenieria, Peru

Lisa Marie Blaschke, University of Maryland University College and
Carl von Ossietzky University of Oldenburg, Germany

Ilse Op de Beeck, Wim Van Petegem, KU Leuven,
Anthony F. Camilleri, Marie Bijnens, EFQUEL, Sally Reynolds, ATiT, Belgium,
Paul Bacsich, Giles Pepler, Sero, United Kingdom

PAPERS

Iolanda Garcia, Universitat Oberta de Catalunya,
Anna Escofet, Begona Gros, University of Barcelona, Spain

POSTERS

WORKSHOPS

STUDENTS' ATTITUDE TOWARDS ICT LEARNING USES: A COMPARISON BETWEEN DIGITAL LEARNERS IN BLENDED AND VIRTUAL UNIVERSITIES

Iolanda Garcia, Universitat Oberta de Catalunya,
Anna Escofet, Begona Gros, University of Barcelona, Spain

Introduction

The introduction of information and communication technologies into university classrooms has been crucial to university teaching and learning. Various studies [1,2] highlight the possibilities offered by ICT and the turning point they represent for traditional learning environments, giving rise to virtual learning and blended learning. In the case of virtual learning, we are referring to online teaching and learning environments delivered via technological platforms [3,4], in the case of blended learning, we are referring to learning environments that combine face-to-face teaching with the use of ICT [5,6,7].

Whether in one type of environment or other, it seems that technologies go hand-in-hand with students who, as digital natives, have developed new study and learning skills and have highlighted the need to open up classrooms to new sources of knowledge and new ways of learning. The main argument that supports the 'net generation' discourse is that through frequent use of technologies students become competent users and this makes them capable of transferring their digital skills to learning with the support of technology. However, most studies suggest that although today's students come to university with some digital skills, the use of digital media for studying might be quite different and the transfer of these skills is not automatic [8,9,10,11]. Moreover, some characteristics, such as their ability to simultaneously process multiple channels of information, can have negative effects.

Some research studies suggest that age differences concerning perceptions and experiences of technology-mediated learning are important, but other demographic characteristics, such as gender [12] and academic discipline [10] may also be important. To account for this broader aspect, an emerging discussion in the literature has been to distinguish between "learning" and "living" technologies [10]. This differentiation suggests that although today's students come to university with a wide repertoire of skills in using digital media, the use of these tools for study might be quite different and the transfer of these skills for learning is not automatic [10,11].

27

Helsper and Eynon [13] analysed the different aspects of what a digital native is by exploring whether acting like a digital native is determined by age; experience or breadth of use, independently of their age or experience. The conclusion is that the degree of digital expertise is related to the confidence in the use of technologies, the use of the Internet as a first port of call for information and the use of the Internet for learning as well as other activities [13].

Taking into account that the use of technology to support learning in higher education is becoming more and more relevant, the debate must focus on real evidence about students' attitude towards ICT uses for learning purposes. Our study focuses on the analysis of students' ICT uses and perceptions in academic contexts comparing two groups of students: those attending to an online university versus students at traditional universities that provide access to a virtual campus and offer some blended courses.

This paper aims to clarify issues relating to the types of activities that technologies support in everyday and academic life for both groups of students. The initial hypothesis is that the use of technology to support learning is related with the type of actions and tasks being carried out on a daily basis and therefore it is also influenced by the academic learning context, in this case the university model (online or face-to-face/blended).

Methodology

The main research questions of the study are as follows:

1. What kinds of activities are supported by technologies in everyday life and academic life among university students?
2. In which way does the university model (blended or online) affect academic ICT use and preferences of students?
3. How the university model (blended or online) shapes students' perceptions about ICT learning uses?

To respond to these questions we have elaborated and applied a questionnaire to a sample of students from five universities with different characteristics (one of them offers online education and four offers face-to-face with LMS teaching-support environments)[1].

---

[1] The online university is the Universitat Oberta de Catalunya (UOC) and the traditional/face-to-face universities are the University of Barcelona, the Polytechnic University of Catalonia, the Vic University, and the University of Lleida.

HIGHLIGHTS FOR THE CONFERENCE

The analyzed population is the total number of students enrolled during the 2010-2011 academic year along their first and fourth years of study at Catalan universities. The final sample of participating students was a total of 1,042 people (error 5 %, confidence interval 95.5 %) and the selection was random.

The independent variables considered in this analysis are: age, gender, university institution of origin (model: virtual or face-to-face), and area of knowledge. The dependent variables considered are:

1. Informal use of ICT: type and perception of competence.
2. Academic use of ICT (teacher-led): type, frequency of use and perception of usefulness.
3. Academic use of ICT (decided by the students).
4. Perception and evaluation of the use of ICT.

The questionnaire, based on the research of Kennedy et al. [10], is divided into two parts, the first is designed to characterize university students' uses of technologies (both in formal and non-formal learning contexts) and the second – based on a Likert-type scale (1-5 values of agreement) – aims to analyze the students' perceptions of the use of ICT in different learning dimensions. To create the second part of the questionnaire, we elaborated a set of indicators of ICT use, from the perspective of its perceived utility for students. In doing so, we tried to represent each of the dimensions or presences proposed by Garrison, Anderson and Archer [14] in the CoI model (cognitive, social and teaching). This framework articulates the processes required for knowledge construction through various forms of "presence", which are teaching, social, and cognitive. However, it's important to take into account that although the same terminology is used, the CoI model was not directly applied in this study. In the formulation of those items we emphasized the role of technology as a mediator of different processes related with teaching and learning in a broad sense; that is to say, either in virtual or blended environments, with different methodological approaches and both led by teachers and decided by students. This resulted in a scale formed of 30 items shown in Table 2.

To analyze the reliability of the scale, Cronbach's Alpha coefficient was applied and the result was 0.944, which shows high reliability. After checking the appropriateness of the scale factor analysis (test of Kaiser-Meyer-Olkin (KMO) = 0,950. Barlett test of sphericity: χ^2 = 17,552, 84; df = 435; p < 0.001), and Moreover, the sample size is adequate (+ sample 5 units per item), an exploratory factor analysis (principal component, varimax rotation) was performed. The results

HIGHLIGHTS FOR THE CONFERENCE

show 5 different components that account for 61.9 % of the variability found in the data (Table 1).

Table 1: Perception of ICT uses in academic tasks. Factor analysis

Component		Autovalors inicials			Sumes de les saturacions al quadrat de l'extracció		
		Total	% de la variança	% acumulat	Total	% de la variança	% acumulat
dimension0	1	11.745	39.149	39.149	11.745	39.149	39.149
	2	2.999	9.998	49.147	2.999	9.998	49.147
	3	1.523	5.076	54.223	1.523	5.076	54.223
	4	1.210	4.035	58.258	1.210	4.035	58.258
	5	1.100	3.668	61.926	1.100	3.668	61.926

Table 2: Perception of ICT uses in academic tasks. Factor analysis

	Component				
	1	2	3	4	5
30. ICT help to show me the way I am	.785				
26. ICT help to generate a pleasant atmosphere in the classroom	.778				
28. ICT facilitate my social relationship with the group	.757				
25. ICT help me to explain my problems to the teacher	.717				
27. ICT help me to ask others questions	.702				
23. ICT allow me to express my emotions more freely	.690				
29. ICT allow me to publicly show what I do for the subjects	.671				
24. ICT enable the teacher to pay more attention to us	.636				.406
13. ICT help the teacher to guide the working methodology		.736			
14. ICT allow me to plan my work		.717		.316	
15. ICT allow me to better evaluate my progress in the subject		.626		.513	
17. ICT facilitate the presentation of content		.594	.413		
12. I like teachers to use ICT in the subjects		.540	.428		
16. ICT enhance the pace of work		.538		.399	
20. ICT facilitate the integration of knowledge from different sources		.528			.438
1. ICT help me to gain knowledge related to the subject			.679	.319	
5. I use ICT when I want to know more about a topic			.679		.308
3. ICT help me to do my academic homework faster			.653		
4. ICT help me to do my academic homework better			.622		
2. ICT help me to develop skills related to the subject			.613	.419	
7. ICT allow me to exchange ideas with my colleagues			.494		.464
10. ICT allow me to apply the acquired knowledge				.644	
8. ICT make it easier for me to pass the course				.634	
11. ICT facilitate my self-assessment processes		.310		.623	
9. ICT help me to follow the course			.437	.496	
18. ICT facilitate the diagnosis of my learning mistakes	.362	.431		.476	
22. ICT allow me to better communicate with my teacher	.313				.725
19. ICT help me to receive assistance from the teacher		.350			.668
6. ICT allow me to exchange ideas with my teacher				.436	.628
21. ICT help me to resolve my doubts		.379	.305		.513

HIGHLIGHTS FOR THE CONFERENCE

The emergent factors are related with the next groups of processes:

1. Social support 1: Communication, expression of emotions and working climate.
2. Didactic support: Introduction and monitoring of content and activities.
3. Cognitive support 1: Efficiency in the development of knowledge and skills.
4. Cognitive support 2: Perception of learning and self-regulation.
5. Social support 2: Teacher and peer support through interaction.

In the following section we present the results obtained from different types of analysis. Firstly, we detail the main characteristics of the sample of students participating in the study. Secondly, using a segmentation analysis (model selection criteria), we present the most characteristic and differentiating features of the two groups of students (one comprised of students from an online university and the other from various traditional face-to-face/blended universities) taking both the independent and dependent variables identified into account. Finally, the analysis focuses on the students' attitudes and perceptions of the use of ICT in the university, in the two groups mentioned earlier. To do this, a Student's t-test analysis was applied.

Analysis of the results

Characterization of the sample

Of the total 1,042 participants in the study, 36.9 % are male and 63.1 % are female. The knowledge areas they are carrying out their studies in are Social Sciences (43.9 %), Technical (25.6 %), Humanities (25.7 %) and Natural Sciences (4.8 %). Of the total number of participants, 74 % are in their first two years of study and 26 % between the third and fifth year. Almost half of them, 45 %, also work.

In general, the level of access to technologies is high. The majority of the students typically connect to the Internet in their usual place of residence (77.7 %), followed by the family home (47.3 %), the workplace (36.9 %) and the university (30.9 %). The frequency of connection to the Internet is more than once a day in 82.9 % of cases and 13.5 % connect just once a day. Only 3.6 % connect to the Internet less frequently.

Emerging differences between virtual and face-to-face/blended universities

By using a segmentation analysis model criteria (program spad, descriptive analysis, based on a chi-square) we present the most characteristic and differentiating

HIGHLIGHTS FOR THE CONFERENCE

features of the two groups of students, taking both the dependent variables previously mentioned into account. Segmentation refers to the process of partitioning a population into sub-groups according with the criterion variable. Treating the information in this way allows us to detect the most characteristic and distinctive features of each group. We should highlight that what appears most associated with one group are not the characteristics presented by all of the components, nor are they only ones, instead they are the characteristics that emerge as differentiating features of one group compared with the other in a statistically significant way (in this case, $p < .001$).

With regards the profile of students at the online university, a feature that stands out is that many are studying social sciences, are over the age of 23, have computer equipment, connect to the Internet regularly and work. The students in face-to-face/blended environments are studying natural sciences and technical subjects, are under the age of 22 and do not work.

The informal use of ICT (Table 3), not connected to their academic work, identified by each group shows that the students at the virtual university use technologies for mainly informative and educational purposes, while among the students in face-to-face/blended environments the predominant use of technologies is for leisure and communication purposes.

Table 3:   Informal use of ICT

Students in face-to-face/blended environments	Students in online environments
Daily - Use Internet to chat Daily - Use Internet to participate in a social network Daily - Use Internet to download software/films Daily - Use Internet to listen to music Daily - Use Internet to stay in contact with friends Daily - Use Internet to make friends Daily - Use Internet to share mp3 files Daily - Use a mobile telephone to listen to mp3 files Daily - Use a mobile telephone to take photographs or video Daily - Use a mobile telephone to play games Daily - Use a mobile telephone to make video-calls Daily - Use a computer to listen to music Daily - Use a computer to play games	Daily - Use Internet to send and receive email Daily - Use Internet to access the virtual campus Daily - Use Internet to search for information for academic purposes Daily - Use Internet to search for general information Daily - Use Internet to access communication media Daily - Use Internet to read content/ syndicated news Daily - Use Internet to translate texts

With regards the autonomous ICT use (not teacher-led) in their academic activities (Table 4), what stands out among the online students are less uses and more confined to the tools found in a virtual campus, while among the students in face-to-face/blended environments we see greater diversity in the use of technologies. This may be due to the great dispersion and diversity among the approaches used by the four face-to-face/blended universities that we are considering as part of the same group.

Table 4:   ICT uses in academic tasks

Students in face-to-face/blended environments	Students in online environments
I use social networks in my academic work I use information repositories in my academic work I use a mobile telephone in my academic work I use YouTube in my academic work I use online documents (Google Docs) in my academic work	I use forums in my academic work I use blogs in my academic work

With regards the students' use of ICT at their teachers' suggestion (Table 4), we see that the online students make frequent use of a greater number of technologies, with a more clearly educational use and one associated with Web 2.0 than in the case of students in face-to-face/blended environments.

Table 4:   Teachers' led ICT uses

Students in face-to-face/blended environments	Students in online environments
Frequently - Use of virtual campus Always - Use of mobile telephone Always – Social networks Always - MP3/MP4 Always – YouTube	Always - Use of virtual campus Always - Use of repositories Always - Use of forums Always - Use of Google Docs Always - Use of Internet searches Always - Use of wikis Always - Use of blogs

Finally, the perception of competence in informal uses of ICT is also different and coherent with the previously described uses. Among the students in the virtual environment we can see greater perceived competence in the use of most technologies, while among the students in face-to-face/blended environments there is a perception of having an average level of competence. Moreover, very different uses of technologies appear once again between both groups.

HIGHLIGHTS FOR THE CONFERENCE

Students' perception of ICT uses regarding different dimensions of teaching and learning

In this section we present the results about the students' perception of the use of technologies by comparing both groups with regards to each one of the dimensions or components previously identified. The next charts show the comparison between the mean values for the level of agreement (from 1 to 5: totally disagree, disagree, neither agree nor disagree, agree, totally agree) expressed by the students regarding ICT usefulness. Each chart corresponds to one component.

For uses included in component 1 (social support 1) the Figure 1 shows that agreement with the assertions is higher between students in the online university, especially regarding communication with peers and social outreach. It's important to take into account that face-to-face/blended students are close to disagreeing with the assertions.
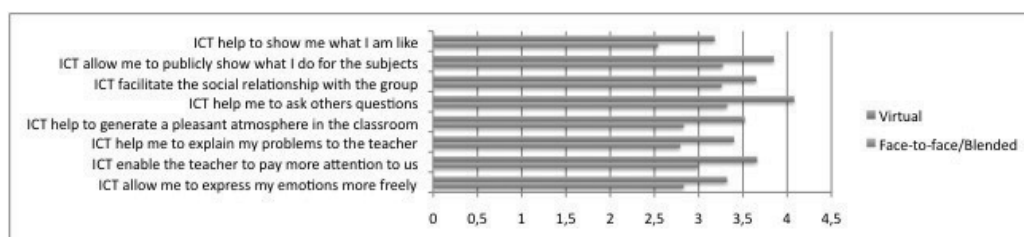
Figure 1. Perception of ICT uses in virtual and face-to-face/blended contexts.
Social support 1

The perception of usefulness of ICT regarding the component 2 (didactic support) is quite high in both groups although it is notably higher among the students at the online university in a quite homogeneous way (Figure 2).
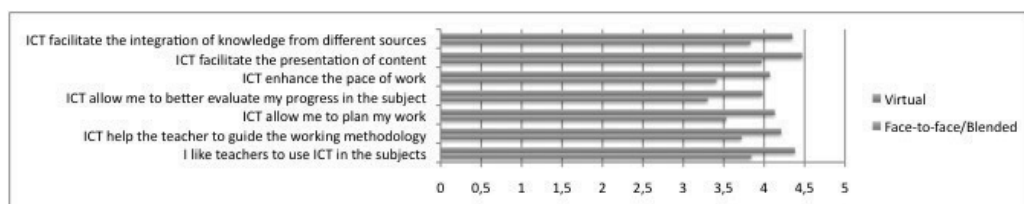
Figure 2. Perception of ICT uses in virtual and face-to-face/blended contexts.
Didactic support

HIGHLIGHTS FOR THE CONFERENCE

In the case of the component 3 (cognitive support 1) the level of agreement is very high in both groups except for the assertion "*ICT help me to do my homework better*", where the level of agreement of online students is quite lower than in the other group (Figure 3).
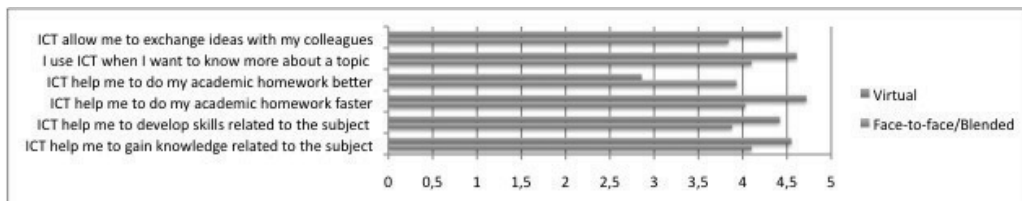
Figure 3. Perception of ICT uses in virtual and face-to-face/blended contexts. Cognitive support 1

Component 4, related to students' perception of learning and self-regulation issues, registers very high levels of agreement in both groups and especially in the case of students in the online model.

With regards to social support 2, considering interaction with the teacher or with peers, we can see the same situation again. All ratings are quite high in general, but the students at the online university express a higher level of agreement than the other group.

Finally, in order to confirm the statistical significance of these differences, a Student's t-test has been applied in order to compare the perception of ICT use between both groups of students regarding the university model (face-to-face/blended and online) for each of the 5 emergent components. The results (in Table 5) show significant differences between both groups in all components except for the third one (marked in red), corresponding with cognitive support 1 (efficiency in the development of knowledge and skills). The mean values allow us to confirm that the differences point to higher values in the responses by students at the virtual university.

Table 5: Students' perception of ICT uses in virtual and face-to-face/blended universities. Student t-test results.

Components	T-Student	Virtual univ. (factorial mean score)	Blended univ. (factorial mean score)
1. Social support 1	(t (1,040) = 4.942; p<0.001)	0.329	-0.070
2. Didactic support	(t (1,040) = 4.641; p<0.001)	0.309	-0.065
3. Cognitive support 1	*(t (1,040) = -0.653; p>0.05)*	*-0.044*	*0.009*
4. Cognitive support 2	(t (1,040) = 8.654; p<0.001)	0.563	-0.119
5. Social support 2	(t (1,040) = 9.476; p<0.001)	0.613	-0.130

HIGHLIGHTS FOR THE CONFERENCE

Discussion and conclusions

This research confirms many of the general points found in studies outside of Spain in relation to the level of technology access and use. Students use mainly the Internet to search for information and their universities' virtual campuses as a gateway to the learning material for their courses [15,16]. They perceive themselves as fairly competent in most areas (communication, creation, etc.) although the data do not indicate that these competences are necessarily reflected in their regular performance of academic tasks, which is much more restricted.

Out of the academic context, general types of technology (computers, mobile telephones and the Internet) are used for rapid communication and convenient access to services and information. However, if we look beyond these technologies and well-established tools, we find considerable variation in patterns of access, use and preference for a wide range of different technologies [10]. This evidence seems to suggest that although most university students have a basic set of technological abilities, these do not necessarily translate into sophisticated skills in the use of other technologies or information literacy in general.

Although access to and use of ICT is widespread, the influence of university model seems to be an important factor to take into account. For academic purposes, students seem to respond to the requirements of their courses, programmes and universities. In all cases, there is a clear relationship between the students' perception of usefulness regarding certain ICT resources and the teachers' suggested uses of technologies. The most highly rated technologies correspond with those proposed by teachers. Here we concur with the study by Margaryan and Littlejohn [17], which argues that there is little variety in the use of ICT for learning and that these uses are conditioned by teachers' suggestions.

On the other hand, there are differences between students at face-to-face/blended universities and at online universities, both in terms of technology use, levels of perceived competence and utility in these uses. While the students in virtual environments use technologies mainly for informative and educational purposes, students in face-to-face/blended environments tend to use ICT for leisure and communication. Furthermore, the results obtained demonstrate significant differences between the online students and those at face-to-face and blended universities. The perception of ICT support from the cognitive, social and didactic perspective is generally more positive among the students at the virtual university. It could be argued that the results are connected to the fact that online students are heavily dependent on ICT in order to do their courses, however it is interesting to note that differences are not significance regarding the perception of effectiveness in ICT support in developing knowledge and skills. Moreover, greater

HIGHLIGHTS FOR THE CONFERENCE

use of technology in academic settings seems to condition the students' informal use and not just the reverse.

It is also interesting to remark that social dimension in component 2 (related to general communication, expression of emotions and working climate) is valued lower than the other dimensions by both groups of students. It remains to be found out if the reason is their minor interest in this kind of ICT support during learning processes or the lack of adequacy of university virtual environments to bring support to these social aspects.

The results obtained cannot favour the idea of online learning environments being superior to blended learning environments in terms of development of students' digital competence, as more research should be carried out into the educational model used in the different universities. However they do lead us to suggest the need to consider that technology-rich learning environments foster students' digital competencies (and not the other way round). Namely, it seems that we shouldn't rely on students' digital competences to foster ICT supported learning practices at the university.

References

1. Fraser, J.F. (2002). Learning environments research: yesterday, today and tomorrow. In S. Goh and M. Khine (2002). *Studies in educational learning environments: an international perspective.* Singapore: World Scientific.

2. Johnson, L.; Smith, R.; Willis, H.; Levine, A. and Haywood, K. (2011). *The 2011 Horizon Report.* Austin, Texas: The New Media Consortium.

3. Harasim, L. (1990). Online Education: An environment for collaboration and intellectual amplification. In L. Harasim (Ed.): *Online education. Perspectives on a New Environment.* Preager, New York. (pp. 39-66).

4. McIsaac, M. S.; Gunawardena, C N. (1996). "Distance Education". In D. H. Jonassen (1996). *Handbook on Research for Education Communications and Technology.* New York, McMillan.

5. Bersin, J. (2004). *The Blended Learning Book. Best Practices, Proven Methodologies and Lessons Learned.* San Francisco: Pfeiffer.

6. Thorne, K. (2003). *Blended Learning. How to integrate online and traditional learning.* London: Kogan

7. Ardizzone, P. and Rivoltella, P.C. (2003). *Didáctica para el e-learning. Métodos e instrumentos para la innovación universitaria.* Málaga: Aljibe.

HIGHLIGHTS FOR THE CONFERENCE

8. Bullen, M.; Morgan, T.; Belfer, K. and Qayyum, A. (2008). *The digital learner at BCIT and implications*. Research Workshop of the European Distance Education Network (EDEN), Paris, October 20–22.

9. Romero, M. et al. (2011). The digital learners in higher education international research project, in *European Journal of Open, Distance and E-Learning, Best of 2010 Special issue*, http://www.eurodl.org/materials/special/2011/Romero_Bullen_Morgan.pdf.

10. Kennedy, G.; Judd, T.S.; Churchward, A.; Gray, K. and Krause, K.-L. (2008). First year students' experiences with technology: Are they really digital natives? in *Australasian Journal of Educational Technology, 24(1)*, (pp. 108-122).

11. Kirkwood, A. and Price, L. (2005). Learners and learning in the 21st century: What do we know about students' attitudes and experiences of ICT that will help us design courses? in *Studies in Higher Education, 30(3)*, (pp. 257-274).

12. Selwyn, N. (2008). An investigation of differences in undergraduates' academic use of the internet. in *Active Learning in Higher Education, 9(1)*, (pp. 11-22).

13. Helsper, E. and Eynon, R (2009). Digital natives: where is the evidence? In *British Educational Research Journal, 36 (3),* (pp. 503-520), http://eprints.lse.ac.uk/27739/

14. Garrison, D.R.; Anderson, T. and Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. In *The Internet and Higher Education, 2(2-3)*, (pp. 87-105).

15. Caruso, J.B. and Kvavik, R. (2005). *ECAR study of students and information technology 2005: Convenience, connection, control, and learning*. EDUCAUSE. http://connect.educause.edu/Library/ECAR/ECARStudyofStudentsandInf/41159

16. Jones, C.; Ramanau, R.; Cross, S. and Healing, G. (2010). Net generation or digital natives: Is there a distinct new generation entering university? In *Computers and Education, 54 (3)*, (pp. 722-732).

17. Margaryan, M. and Littlejohn, A. (2008) *Are digital natives a myth or reality? Students' use of technologies for learning*. Caledonian Academy, Glasgow Caledonian University, UK.

Acknowledgements

HIGHLIGHTS FOR THE CONFERENCE

HYBRIDISATION OF AGENCY: PARADOX

Caroline Stockman, University of Leuven, Belgium

Abstract

Teachers play a key role in formal education. This position has been historically fixed, endorsing itself through the teacher's expertise on both the subject as well as pedagogical practice. This cultural capital is, however, threatened by the inherent potential of computer technology. The computer as a tool and source of information, especially in combination with artificial intelligence, exceeds human capabilities. Therefore, when integrated in a classroom, it easily questions the characteristics which have previously established the teacher's exclusive position. Some physical clues can be distinguished to indicate the underlying cultural dynamics of this confrontation. The teacher's position is threatened, despite the fact that the nature of digital means resonate well otherwise with current educational beliefs. But if teachers are meant to be actors in the digital (r)evolution of our education system, would they not be undermining their own importance?

Relating this view to the notion of cultural capital as conceptualised by Pierre Bourdieu, it also becomes apparent that the characteristics of the computer cannot be objectified by the teacher to re-assert his role. Agency of the machine undermines this, whether this 'capacity to act' is built purposefully in the development of artificial intelligence, or psychologically experienced. Evidence of this perception shows itself through intentional narratives.

This paper does not intend to provide answers to the cultural paradox which is manifesting itself in modern classrooms, but hopes to distinguish some of the underlying dynamics of technology integration, from the teacher's point of view.

Educational DNA

The culture of formal education is bound by a strictly regulated social setting. Students and their teacher form the actors on the micro-level of classroom practice, continued by expanding layers of other stakeholders such as administrative staff, parents, heads of the school, the IT department, … These groups are not only significant from a sociological point of view, their cultural implications are also crucial to the integration of technology.

HIGHLIGHTS FOR THE CONFERENCE

In the history of formal education, the teacher has always established himself as the authoritative leader of learning. His superior position is frequently symbolised by a raised physical space, situated at the front of the classroom or lecture hall. He is allowed to stand and move through the space of learning by his own free will; a privilege which is not by default bestowed upon the students. The seats of the students are typically organised towards this focal point of learning at the front of the room, and noise levels should remain low to optimise learning. The noisy classroom is not the best classroom, or so it is engrained in our cultural beliefs. Though "sage on the stage" gradually gave way to "guide on the side" methodologies, our practice of formal education is undeniably rooted in the earlier ways of teaching and learning which have been in practical existence for a much longer time than contemporary educational theories asserting the values of student-centred, self-paced learning. In the great majority of educational institutions for example, students still walk into classrooms *expecting* the teacher or lecturer to initiate the lesson. Culture as the organising force of this landscape dictates the superior agency of the teacher, an exclusive position with strong historic roots.

Today, noise levels must still remain to a minimum, even in case of group work which is highly valued in modern pedagogy. Drill-and-practice may have evolved to more (socio)constructivist activities, but those exercises are still orchestrated by the teacher. Physical clues further demonstrate that classroom learning has not changed essentially: as a guide on the side, the teacher is no longer fixed at the front, but often navigates through the classroom. Yet typically, he still is the only one allowed the freedom of physically moving through the space of learning without prior consent. His role as a teacher, as an agent of learning, is still very strong and exclusive.

Advent of the intelligent tutor

The internet is built on visions of endless information storage and retrieval (Licklider 1960). The wisdom of crowds is collected in this ever-flowing fountain of knowledge, to which one can easily gain access with minor efforts. Next to this, with the many theoretical and practical developments of the last half-century also came the possibilities of artificial intelligence. Computer technology now provides opportunities for self-directed, student-centred learning through an adaptive, intelligent machine. Software is built to *think* like an expert; to understand a human's input, to adapt, to produce tailored output, to 'remember' a learner's personal profile on each interaction. This type of bespoke tutoring for every learner is an educational utopia, and goes far beyond use of the computer in learning in accordance with Skinner's theory of operant conditioning. Both educational beliefs

HIGHLIGHTS FOR THE CONFERENCE

as well as technological possibility have evolved and have come to the point of alignment.

The consolidated position of the teacher as primary agent of the learning process is thus threatened by the invasion of an alien actor: the machine. Much of the teacher's cultural superiority in this setting depends on his status as authoritative expert. This was historically obvious by the fact that a teacher typically was someone with exclusive access to books: information, and knowledge, in a rare material form (Lawson & Silver, 1973). The printing press clearly had consequences for the cultural capital, in the objectified state, of books, but the world wide web and general availability of internet-enabled devices made information even more widely and publicly available. Search engines like Google permanently provide access to much more information than one human being ever could hold.

If subject knowledge is endangered as the endorsement of the teacher's position, perhaps pedagogical expertise can deliver the necessary cultural capital? Licensed teaching began mid-sixteenth century, though it has known brief periods of dissolution (Lawson & Silver, 1973). Even today, teaching as an institutionalised capital is questioned (Mulholland, 2012). In the context of teaching with technology, one may ask how useful a teacher still is to a class of ten, thirty, a hundred or more learners if a machine adapts and tailors more easily to each one of them anyway? Growing class sizes pose the natural difficulty of mixed-ability and multi-skilled learners, yet the bigger the group, the less a teacher is able to tailor to individual needs. Something which an adaptive program could accomplish more easily; its range and resilience is clearly beyond the human capabilities of one teacher, faced with an ever-increasing number of students. A computer never grows tired, or stressed, or frustrated.

Many are convinced, however, that a computer could never replace the empathy and personality of a teacher (Tucker, 2012), but even computer programs can be developed to, for example, produce original music (Lewis, 2000), exhibiting identity and feeling both in composition as in its delivery. If the boundaries of - allegedly human-only – artistic sensitivity are convincingly pushed by a machine, perhaps even the humanity of the teacher won't be enough to survive the confrontation in this changing cultural landscape?

Physical clues in the organisation of this digital evolution in classrooms can also be found in current practice. The computer not only forms a conceptual difference for teaching and learning; it has a very clear material presence. Many schools nowadays have one or more computer rooms. These rooms have the familiar look and feel of the traditional, typically square or rectangular-shaped classroom, but the difference is the twenty or more desktop computers which populate the space. (Laptop

HIGHLIGHTS FOR THE CONFERENCE

trolleys or tablet devices are much less integrated still – though their physical invasion is no less significant when the mobile cabinet in which they're kept is wheeled in and each device handed out to the students.)

The lay-out of computer rooms can differ. Sometimes, desks are aligned parallel to the walls, so the students are faced away from the teacher's usual position. This requires the teacher to either draw extra attention to himself to assert his position, or to communicate through the machine. Sometimes computers are still organised in the usual rows of desks facing the front, but even then, the direct interaction between teachers and students is still broken by the physical obstruction of hardware. Again the teacher must re-assert himself, or communicate in digital ways.

Crossing the line

The inherent qualities of computer technology are in perfect accordance with reigning educational theories. But the practice of education has upheld the exclusive cultural role of the teacher. This position has historically gone unchallenged, based on the teacher's expertise both in subject knowledge as well as pedagogy. These characteristics form the core of his cultural capital which granted him superior agency in the classroom.

Yet now societal pressures have encouraged institutions to integrate technology and indeed, many forms of digital means have been acquired and placed in modern classrooms. In the preceding paragraphs, some physical indications have been used to highlight the cultural confrontation this entails, but the actual effects of this development is most strongly experienced on a more subtle level.

The pedagogical possibilities and superior information storage of the computer endanger the position of the teacher as authoritative expert and agent of the learning process. Agency of the invading entity is even more strongly felt in the classroom because of the nature of artificial intelligence designs. The interface of some programs is so well-built that it anthropomorphizes its qualities in the eyes of the beholder, and narratives of intentionality express this process (Zhu & Harrell, 2012). Suddenly, the computer is no longer regarded as an inanimate object, but an acting presence. This experience is heightened in the classroom when technical errors occur. Teachers have varying levels of IT competence and confidence, and especially for those uncertain about technology, a computer may sometimes *appear* to generate different results than anticipated. Even with programs which are not built to seem intentional or humanoid, it is not unusual for a teacher to exclaim: "I don't understand what it is saying!", "Don't click there, it will get confused.", or "I don't think it wants to do that today…"

Agency in computer programs, whether this is an intentional manifestation or psychological experience, can greatly benefit the learner, but question the core of the teacher's position. From his perspective, another actor entered the scene, which has superior qualities, and which seems to occasionally and voluntarily step out of the teacher's control. A teacher's regulating power in the classroom is crucial in formal education. Not only control over the learning process or knowledge transfer must be kept, but also over the behaviour of other agents in the room, which, until now, were only the students. The bad teacher is the teacher who doesn't have his class under control – this is the underlying cultural belief which has historically grown, and which is the societal expectation placed upon today's teachers.

Moreover, this new entity also seems to encourage a shift in control over the learning process from the teacher to the learner. This is in perfect sync with ideals of personal learning discovery, self-paced learning, intrinsic motivation, problem solving learning tasks… All concepts which resonate through modern educational theory; but which further leave the teacher at a bit of a loss when this learning process is sparked by and stimulated through a machine. The culture of formal education *expects* the teacher to be in control, to assume the position of supreme leader of learning and subject expert, yet this other entity simply seems to hold more of this embodied capital than the teacher does (Bourdieu, 1986). A teacher can't objectify this capital to reinforce his own position, as the agency of the object contradicts his own, and therefore, his superiority in the classroom. Books were less problematic to be objectified as cultural capital; they were never meant to appear, or otherwise perceived as, animate objects. Also their rare availability and non-invasive material presence confirmed the teacher's status rather than challenged it.

Computer technology, in particular artificially intelligent software, thus challenges the endorsement of the teacher's position. It is interesting to note that not every technology used in education sparks the same intensity of cultural confrontation. For example, interactive whiteboards have been acquired by schools throughout the UK as the result of a government initiative, providing funding for over £50 million between 2003 and 2005 (Smith et al, 2005). The effect of their material invasion is, however, minimised by the fact that they have quite literally replaced the old blackboard on the wall. This is located behind the teacher, and therefore does not intervene with his position at the front of the room, nor his students' orientation towards him. The teacher is in full control of the whiteboard's use, and students can only share in this use on prior invitation by the teacher. Indeed, in the narrative surrounding this technology, their similarity to the old blackboards has been presented as a positive trait, even 'for technophobic teachers' (TechLearn, 2003, p.1).

HIGHLIGHTS FOR THE CONFERENCE

However, if this new medium is so similar to the old one that it does not require any fundamental change in teaching or learning, has it actually been worth the investment? No significant learning results seem to have been generated (Nightingale, 2006), and classroom practice certainly has not undergone any dramatic changes. The true change is manifesting itself in a paradox caused between the increasing potential and apparent agency of the computer, and the old and familiar ways of the educational setting in which the teacher plays a crucial role. Tugging at the strings of his identity means possibly unravelling the entire system.

Conclusion

The aim of this writing was to indicate the cultural difficulty of the teacher's changing role in the use of educational technology, within the consolidated reality of formal education. Though our beliefs concerning valid teaching methods have changed, actual practice has only skimmed the materialisation of these ideals. The teacher still plays a pivotal role in the learning process, even if educational beliefs of today emphasize such concepts as student-centred, self-paced learning. Computer technology brings this contradiction to the surface through its inherent qualities, which invite greater implementation of presently favoured views on didactics. Yet if we really materialise this invitation, we would possibly overthrow culturally established ways by endangering the position of a key agent in this scene. Questioning their role solicits a review of the entire system.

It is an issue which confronts all individual teachers directly in their daily practice, and us all in a society in which we are used to a specific type of formal organisation of learning. The sense of change we feel in education might not be a digital matter in the first place, but a cultural paradox.

References

1. Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.) *Handbook of Theory and Research for the Sociology of Education*, New York, Greenwood, (pp. 241-258). Via http://www.marxists.org

2. Lewis, G. (2000). Too Many Notes: Computers, Complexity and Culture in Voyager. In *Leonardo Music Journal, Vol. 10*, 2000, (pp. 33-39).

3. Lawson, J.; Silver, H. (1973). *A Social History of Education in England*. Methuen & co, London.

4. Licklider, J.C.R. (1960). *Man-Computer Symbiosis.* Via http://openlib.org. Last consulted 18/07/2012.

HIGHLIGHTS FOR THE CONFERENCE

5. Mulholland, H. (2012). *Michael Gove tells academies they can hire unqualified teaching staff*. Via http://www.guardian.co.uk/education. Last consulted 15/08/2012.

6. Nightingale, J. (2006). *Whiteboards under the Microscope.* Via http://www.guardian.co.uk/education. Last consulted 13/09/2012.

7. Skinner, B.F. (1958). Teaching Machine. In *Science, Vol. 128*, (pp. 969-977).

8. Smith, H.; Higgins, S.; Wall, K; Miller, J. (2005). Interactive Whiteboards: Boon or Bandwagon? A critical review of the literature. In *Journal of Computer Assisted Learning, Vol. 21*, (pp. 91-101).

9. TechLearn (2003). *Interactive Whiteboards in Education. JISC report.* Via http://www.jisc.ac.uk. Last consulted 10/09/2012.

10. Tucker, C. (2012). *Blended learning: Will the New Definition Alienate Teachers?* Via http://catlintucker.com, last consulted 08/09/2012.

11. Zhu, J.; Harrell, D.F. (2012). Narrating System Intentionality: Copycat and the Artificial Intelligence Hermeneutic Network, In *Leonardo Electronic Almanac, Vol. 17.*

HIGHLIGHTS FOR THE CONFERENCE

WHY DO LEARNERS COOPERATE?
HINTS FROM NETWORK SCIENCES ON MOTIVATION FOR COLLABORATIVE LEARNING

Fabio Nascimbeni, MENON Network, Belgium

Abstract

The present paper starts from the rationale that, if we want learners to take an active role along their lifelong learning process, they should not only sit on the "driving seat" but they should "drive together", meaning they should learn in a collaborative way. In parallel, we consider that educational research and practice should look at some interesting findings coming from networks science to understand what lies behind the different cooperative attitudes of learners. We propose two general conceptualisations. First, starting from the work of Novak, we describe some mechanisms that foster the adoption of cooperative behaviours within networks: direct reciprocity, indirect reciprocity, kin and spatial influence, and multilevel influence; we believe that understanding these dynamics can be very useful if we want to sustainably foster cooperation within learning communities. Second, we propose some conditions that should be taken into account when planning collaborative learning support strategies; issues like confidence, commitment, divergence and decentralisation are briefly described and commented from an educational point of view. Finally, we briefly explore the concept of collaboration leaders within networks, stressing the importance on building on those to foster collaborative attitude of a learning community. The success of any collaboration venture, within learning as well as in other contexts, depends on the capacity of the parties to work towards a common objective, sharing concerns and working out common solutions: the paper hints to some findings on collaboration motivations and conditions that can foster meaningful network-thinking within education.

Instilling more "network thinking" within education

The concept of network is gaining ground as a key buzzword of our times; concepts such as information society and knowledge society are increasingly used by sociology, economics and other disciplines as a way to describe and understand our world and its dynamics built on connections, nodes, and communication fluxes. In particular, the term *network society* describes a social endeavour where the internet is becoming a critical technical and social infrastructure of everyday life, crucially

HIGHLIGHTS FOR THE CONFERENCE

enabling individuals to communicate in new ways that reconfigure and enhance their interaction capacity (Castells, 1996). Of course, networks have always been there, "what is different is the density, extension and complexity of contemporary global networks and their propensity to channel increasingly diverse flows" (Bebbington and Kothari, 2005, p. 863).

The centrality of the concept of network is facilitating the emergence of a diffused *network thinking*, both in science and in society at large, through which we are starting to understand the characteristics of our world by focussing on the relations among the elements of the systems and not only on their characteristics: "network thinking is poised to invade all domains of human activity and most field of human inquiry" (Barabási, 2002, p. 222). Even if it is probably early to say if we are witnessing the beginning of a knowledge revolution that will urge us to radically change our social paradigms, it is clear that, to properly understand an increasingly network-based societies, we need to get equipped with tools and approaches able to professionally look into the networks we are increasingly immersed in[1]. In other words, we need to get equipped with the capacity to *network-think,* that is to grasp the increasingly networked nature of virtually any human and social phenomena, if we want to take advantage of the benefits that networks can bring to many areas of society, including education.

The level of *network thinking* within education varies considerably depending on the sector we look at. As noted by the Learnovation Report (Dondi et al., 2009), learners and professionals from corporate education and informal learners are more used to work and learn in collaborative fashions, by adopting peer learning practices and by constantly adapting their teaching and learning methods to the growing availability of (social) networking tools. On the other hand, embracing networking and collaborative tools and methods in formal learning setting such as school, university or vocational training is made more difficult, even in the few cases when the need is expressed by learners and accepted by teachers and trainers, by the slow adaptation dynamics of these systems to innovation processes.

In addition, when networking practices are adopted to facilitate teaching and learning, for example by using social media such as Facebook or Twitter or by applying peer learning and peer assessment practices, this is done starting from the incontestable belief that working in collaboration (most of the time with the support of ICT) will have a positive impact on the motivation of students and will increase their attainments. Nevertheless, most of the time this reasoning is not

---

[1] Literature on networks is multidisciplinary, with contributions from physics, management, political and social sciences, computer sciences, innovation studies, telecommunication studies, and communication sciences. See for example Newman et al, 2006.

HIGHLIGHTS FOR THE CONFERENCE

grounded on a sound understanding of the dynamics that govern cooperation among the components of a given network – the pupils of a class or the members of a learning team – and it only rarely takes into account the available research findings on networks behaviour coming from network sciences. In other words, most of the times educators and educational researchers are looking at learning networks without the appropriate "networking lenses". On the other hand, we believe that increasing the level of *network thinking* within education practices is fundamental if we want to understand the motivation factors which lay behind the different cooperation attitudes of learners, and ultimately if we want to take the maximum benefit from any collaborative learning experience.

Why do learners collaborate, at the end of the story?

We believe that a necessary condition to be met, if we want learners to "sit in the driving seat" of the learning process, is to foster their motivation to be active learners. For this to happen, apart from the important changes that need to take place at the system level which are being tackled by a number of studies and research projects and apart from the necessary support in terms of digital literacy[2], it is fundamental to take action to improve the capacity of learners to work in a collaborative fashion, at all education levels. In other words, we need to work on the motivation of learners to meaningfully collaborate through their lifelong learning path. This, we consider, is an area where educational sciences can learn a lot from network sciences, by adapting important findings on how networks work, evolve and flourish to the specific case of education.

An interesting conceptualisation of the motivational reasons behind cooperation dynamics is provided by evolutionary biologist Martin Novak, who claims (2011) that collaboration has been an important mechanism for life evolution – along with natural selection and mutation – and that the extent to which the members of a network are able to collaborate can tell us how the network will be able to prosper and to reach its aims. If applied to learning, this means that – for example – the *cooperation capacity* of a classroom is a fundamental component to reach the aim of the classroom itself, which is not only to educate its pupils in the best possible way by using the limited available resources but also to sustainably develop transversal and lifelong learning skills.

Novak starts from the assumption that adopting a cooperative approach has a cost, which can be for example the time needed for discussion in a learning community or the effort needed to help a fellow learner. This costs is sometimes forgotten by

---

[2] See for example the work of IPTS at http://ipts.jrc.ec.europa.eu/activities/information-society/e-applications.cfm or the VISIR project at www.visir-network.eu.

HIGHLIGHTS FOR THE CONFERENCE

educational researchers, who tend to consider collaboration as a "natural" attitude of individuals. We believe on the other hand that every collaboration process is based on a specific decision by the individual, and that this decision is based on whether the motivation to cooperate is able to overtake the cost of collaboration. By using the "prisoner dilemma"[3], Novak demonstrates that the natural tendency of humans, when faced with a repetitive number of cooperation decisions, is to adopt a "win stay, lose shift" approach, meaning that, as long as a cooperative behaviour of an actor is rewarded by corresponding cooperative behaviours of others, the actor keeps on being cooperative, but when the counterparts are not behaving in a cooperative way, he or she tends to adopt a non-cooperative behaviour. In theory, this attitude should result in a dynamic where non-co-operators would tend to outnumber co-operators and where the network would lose its cooperation chances. On the other hand, some "motivational" mechanisms exist that push people to collaborate within networks to achieve their goals: we believe that understanding these mechanisms is important to grasp what lies behind collaborative learning decisions, and ultimately to increase the level of *network thinking* within education.

A first mechanism is *direct reciprocity*, and is based on the repetition of a cooperative behaviour along the logic "I scratch your back and you scratch mine": an actor will adopt a cooperative behaviour towards another actor in all cases when he has received a cooperative behaviour from the counterpart. Within learning settings, this is the case for example of a student who decides to help a fellow because this fellow has been supporting him in a previous occasion. This simple dynamic, which is possibly the first step towards cooperation that humans have taken in their history, does raise an important concern, since, as we have seen, adopting a cooperative behaviour has a cost, and therefore "cooperation always comes with the threat of exploitation" (Novak, 2011, p. 26). That is why, for direct reciprocity to work in complex systems such as schools or universities, two conditions must be in place. First, a flexible attitude towards non-cooperative behaviours must be adopted, where the reward mechanisms towards cooperative attitudes are mirrored by tailored recovery (and not punishment) mechanisms for non-cooperative attitudes; second, it is necessary that the actors are repeatedly in contact and that they are provided with subsequent and comparable occasions to cooperate.

The mechanism of *indirect reciprocity*, which goes along the logic "I scratch your back and someone will scratch mine", is based on the reputation that an actor is able to build within a network, and is easily observable within online communities

---

[3] The prisoner dilemma is a classic example utilised by game theory to show different results in case of cooperative and non-cooperative behaviours of individuals. See Novak, 2011.

HIGHLIGHTS FOR THE CONFERENCE

such as eBay or CouchSurfing. In these communities, cooperative or non-cooperative behaviours are made public to the community; on the base of this, actors are rewarded or punished by the community members, who decide to adopt a more or less cooperative behaviour towards them depending on their reputation. "If, thanks to endless chat and intrigue, the world knows that you are a good, charitable guy, then you boost your chance of being helped by someone else at future dates" (Novak, 2011, p. 54). Reputation is a key driver for cooperation in learning settings, and it influences both cognitive and affective learning (Russo and Koesten, 2007) as well as group cohesion (Refaffy and Chanier, 2003). Nevertheless, for reputation to guide cooperative attitudes within a learning community, mechanisms must be in place to allow "enough transfer of information about who did what to whom" (Novak, 2011, p. 60) within the network. If this is easy in web-based communities where collaborative behaviours are recorded over time, within offline learning settings this is not always the case: to take advantage of reputation dynamics, a communication effort must be made to make sure that information on best cooperation behaviours flows within the network reaching all the involved actors.

Spatial influence and *kin influence* are mechanisms that affect the cooperative behaviour of an actor depending on the proximity of the actors they could collaborate with. Typically, the choice is made to collaborate with actors that are close to us within the network, for example with actors with a similar background or a closer geographic origin with respect to ours. These mechanisms, which are at the basis of the creation of *clusters* and *hubs* within networks, are based on very simple assumptions but are not easy to be measured and fostered. Spatial and kin influences are important motivational drivers in learning settings, especially in the case of cooperation within small collaborative groups which are part of larger communities: a recent research on the eTwinning schools network[4] has shown that pupils tend to cooperate more easily with others which are close to them, for example in the same school or in the same country, or with students with similar social and scholastic background, but that cooperation beyond these circles is more sporadic and less continuous (Breuer et al., 2009).

A last mechanism is *multilevel influence*, and has to do with how much a network is able to build a common cooperation strategy that goes beyond the behaviour of the single group components. This mechanism typically deals with issues such as self-regulation and self-discipline of networks, and is very important in learning

---

[4] eTwinning is a European initiative aiming at allowing staff (teachers, head teachers, librarians, etc.), working in a school in one of the European countries involved to communicate, collaborate, develop projects, share with counterparts in other countries. More at www.etwinning.net.

HIGHLIGHTS FOR THE CONFERENCE

contexts. We must take into account that networks are composed of humans and are therefore imperfect, since for different reasons – a mistake or a bad day for example – an actor can decide not to respond to a cooperative behaviour with a positive attitude. Novak (2011) defines this problematic as "noise of cooperation" and notes that even a small unpredicted behavioural change by an actor within a community can have a devastating impact on the network general attitude. This is the case for example of a student which does not adopt a cooperative behaviour where he would be expected to, and initiates a cascade effect of non-cooperative actions by his peers, decreasing the wealth of the whole learning community.

Supporting meaningful collaborative learning

These motivational mechanisms are very important to understand the way a network works and therefore to increase the capacity of the network to support the activities of its members. Most of the times, collaborative learning strategies give these dynamics for granted and do not start from the inner reasons for cooperation in building support activities, with the well-known results of achieving poor cooperation results due to a low motivation of the participating learners: on the other hand, we should start from these basic dynamics and build on them from the very planning of any strategies for supporting collaborative.

Nevertheless, understanding the mechanisms behind cooperation is not enough, since supporting collaborative learning – as supporting collaboration in many other fields – is a difficult and demanding exercise, and must be based on some clear conditions and criteria. Starting from the work by Surowiecki (2005) and Van Zee and Engel (2004), we propose a few conditions that should be taken into account when planning collaborative learning support strategies.

A first condition is that network participants need to have *confidence* in their work and must *dare to share* it with others. An open atmosphere where mistakes are allowed and where the group can learn from these mistakes is the ultimate condition to build trust within the learners' own capacities. A second condition is that learners must be *committed* to the collaboration activities and must consider them as priorities within their learning activities, and not as ancillary, and they must recognise a clear added value in their collaborative work. Third, *divergence* must be allowed within the learning community. Any divergent opinion should moreover be used as a starting point for discussion, where each learner must have the right to defend his opinion and the facilitator must make sure that, even when the objective is to reach a consensus around a specific issue, learners' opinions aren't determined only by the opinions of those around them. A good collaboration facilitator should be able to move along the line from full consensus – typical in communities with strong kin influence for example – to full disagreement, but

should always make sure that the collaborative learning experience is not merely an adaptation process where the ideas and beliefs of the groups adapt along a mainstream solution. Finally, *decentralization* is important, since the strength of a learning community with respect to its learners taken individually stands in its capacity to valorise the content produced locally by the leaners, as demonstrated by the eTwinning analysis (Breuer et al., 2009).

All these criteria are strictly connected to the motivational mechanisms previously presented, and with the basic fact that within any collaborative learning community different attitudes will appear, with learners who tend to build a higher number of collaboration relations than others. Some "collaboration dynamisers" will typically emerge, who "engage in networking tasks and employ methods of coordination and task integration across organizational and personal boundaries" (Alter and Jerald, 1993, p. 46). The characteristics of these collaboration leaders are, coherently with what stated by social network scientists, "a learning mind-set, the ability to be flexible, adaptive, and to simultaneously consider other people's points of view" (Lynn and MacAvoy, 1995, p. 130) complemented by "skilful social entrepreneurship, flexibility and imagination, and the ability to learn on the fly" (Reinicke et al, 2000, p. xi). Identifying these collaboration dynamisers is very important if we want to support a learning community development. Starting from the fact that every member of the community has a given capacity and interest in actively participating in the proposed collaborative activities and that some actions can be taken to foster the participation of specific actors within the network, in general two ways exist to foster fruitful collaboration within the community. The choice is to either focus our support on the actors which show a strong starting collaboration capacity, facilitating the emergence of community leaders with a strong collaboration reputation and with the capacity of "amplifying collaboration" (Novak, 2011), or on the other hand to target the actors that appear more hesitant to engage in collaboration activities, aiming at reaching a more balanced growth of the community. It is not only a matter of finding the best way to activate existing collaboration capacities, but a choice which normally gives an imprinting to the community evolution. Focusing on the collaboration leaders has the benefit of working with a few hubs relying on their capacity to engage the other nodes, but at the same time is a risky solution since, in case a collaboration hub would stop behaving collaboratively, the whole community connectedness is put in danger, with the effect of disengaging the learners which were relying on that particular leader. Focusing on the collaboration followers has the advantage of being able to directly reach all the actors of the community and can facilitate the discovery of hidden collaboration energies, but it is more effort-consuming and risks to uncover existing resistances to collaboration, with a negative effect on the community development.

HIGHLIGHTS FOR THE CONFERENCE

Conclusions

The success of any networking venture depends on the capacity of the involved parties to successfully negotiate the aspects of their cooperation, and on how much the parties are able to work towards a common objective, openly sharing concerns and problems and working out solutions in a collaborative way. This is a fundamental condition to be met, we believe, if we want learners to comfortably "sit in the driving seat" of their lifelong learning process, and if we want them to take advantage of the collaboration and possibilities offered by ICT. At the same time, the fact that all networking activities depend on negotiation and consensus building among human beings increases the creativity potential of the network but also its unpredictability, and therefore a sound understanding of the mechanisms and of the conditions which lay behind a successful collaboration experience must guide any collaboration support activity.

The scientific community is paying increasing attention to the study of networks (Newman et al., 2006). "Very few people realize, however, that the rapidly unfolding science of networks is uncovering phenomena that are far more exciting and revealing than the casual use of the word network could ever convey" (Barabási, 2002, p. 7). Network-based approaches, and especially Social Network Analysis (SNA), can be used to understand networks from a different point of view, since they "inquiry into the patterning of relations among social actors, as well as the patterning of relationships among actors at different levels of analysis, such as persons and groups" (Breiger, 2004, p. 1): in the education field, network science can help uncovering the patterning of learners' interactions. The application of SNA to education, especially in the case of distance learning, can allow understanding the patterns of interactions between learners systematically (De Laat et al. 2007). For example, in their study on collaborative interactions in an online classroom, Russo and Koesten conclude that SNA offers an opportunity to understand how communication among members in an online learning environment influences specific learning outcomes (Russo and Koesten, 2007). In addition, SNA and network sciences can offer to education studies new approaches to understand learners' collaboration, as demonstrated by the work of Reffay and Chanier (2003) who adopted from SNA a measurable definition of group cohesion that did not exist in education science.

We believe that the findings coming from network sciences that we have briefly presented in this paper can be extremely useful for educational researchers and practitioners when it comes to supporting meaningful collaborative learning. These issues would deserve further exploration and adaptation to real life cases within education. Specifically, it would be important to substantially apply Social Network

HIGHLIGHTS FOR THE CONFERENCE

Analysis techniques to learning networks, as suggested by Breuer (2009), hence looking at collaborative learning with the appropriate level of *network thinking*.

References

1.   Alter, C. and Jerald, H. (1993). *Organizations Working Together*. London: Sage.

2.   Barabási, A.L. (2002). *Linked: The New Science of Networks*. Cambridge: Perseus Publishing.

3.   Bebbington A.; Kothari, U. (2006). Transnational development networks, *Environment and Planning, 38(5)*, (pp. 849-866).

4.   Breiger, R.L. (2004). The Analysis of Social Networks. In M. Hardy and A. Bryman (eds.), *Handbook of Data Analysis*. London: SAGE. (pp. 505-526).

5.   Breuer, R. et al. (2009). Social Network Analysis of 45,000 Schools: A Case Study of Technology Enhanced Learning in Europe, in *Learning in the synergy of multiple disciplines, 5794/2009*, (pp. 166-180).

6.   Castells, M. (1996). *The Rise of the Network Society*. Oxford: Blackwell.

7.   Cullen, J. et al. (2009) *Informal learning in the era of Web 2.0, in ICT and lifelong learning for a creative and innovative Europe*, Barcelona: P.A.U. Education.

8.   De Laat, M.; Lally V.; Lipponen, L.; Simons, R. (2007). *Investigating patterns of interaction in networked learning and computer-supported collaborative learning: A role for Social Network Analysis*. Springer.

9.   Dondi, C.; Aceto, S.; Proli, D. (2009). *Learnovation Foresight Report*. MENON Network.

10.   Lynn, I. and MacAvoy, T. (1995). Strategic Alliances. In D.A. Ready (ed.) *In Charge of Change*. International Consortium for Executive Development Research.

11.   Novak, M. (2011). *Supercooperators*. Simon & Shuster.

12.   Newman, M.; Barabási, A.L. and Watts, D. (eds.) (2006). *The structure and dynamic of networks*. Princeton University Press.

13.   Reffay, C.; Chanier, T. (2003). *How Social Network Analysis can help to measure cohesion in collaborative distance-learning, in Designing for change in networked learning environments*. In international conference on computer support for collaborative learning, (pp. 343-352).

14.   Reinicke, W.H. et al. (2000). *Critical Choices: The United Nations, Networks, and the Future of Global Governance*. IDRC.

HIGHLIGHTS FOR THE CONFERENCE

15. Russo, T.C; Koesten, J. (2005): Prestige, Centrality, and Learning: A Social Network Analysis of an Online Class, in *Communication Education, 54(3)*, (pp. 254-261)

16. Surowiecki, J. (2005). *The Wisdom of Crowds.* Anchor Books.

17. van Zee, A.; Engel, P. (2004). *Networking for learning what can participants do?* Zeist.

HIGHLIGHTS FOR THE CONFERENCE

INCLUSIVE OPEN EDUCATIONAL PRACTICES: HOW THE USE AND REUSE OF OER CAN SUPPORT VIRTUAL HIGHER EDUCATION FOR ALL

António Teixeira, Universidade Aberta & University of Lisbon, Portugal,
Carlos João Correia, Filipa Afonso, University of Lisbon, Portugal,
Antonio García Cabot, Eva García López, Salvador Otón Tortosa, University of Alcalá, Spain,
Nelson Piedra, Universidad Técnica Particular de Loja, Ecuador,
Luciana Canuti, Jacqueline Guzmán, Universidad de la República de Uruguay, Uruguay,
Miguel Ángel Córdova Solís, Universidad Continental de Ciencias y Ingenieria, Peru

From Open Educational Resources (OER) to Inclusive Open Educational Practices (IOEP)

One of the most important trends in education in recent years has been the creation of a vast integrated network of experts and institutions which are generating high quality validated content for use and reuse by everyone in the world. Open Educational Resources (OER) are digital resources with potential educational value for educators, students and self learnerswhich have been published on the web with an open license or are in the public domain (D. White, M. Manton, 2011). Evidence demonstrates OER can be of different types and sizes, ranging from simple educational resources, readings, images, open textbooks, videos, links, up to complete courses called OpenCourseWare (Downes S. 2007). See Figure 1.

Although OER were seen at first as informal instruments to widen participation in Higher Education through the facilitation of access to quality content, throughout the years have been increasingly used in educational formal practices as well. In fact, from an academic perspective, OER hold an educational value and pedagogical structure. Educational resources developed in open environments can be continuously improved and adapted for use by a wider community of educators. Thus, the use of OER enhance educational innovations by rapidly disseminating new ways of teaching and learning. Indeed educational resources that can be reused promote collaboration and participation by all. Therefore, OER call for the notion of open educational practices which relates to any educational activity involving the creation, use, or dissemination of an adaptive open learning resource.

HIGHLIGHTS FOR THE CONFERENCE
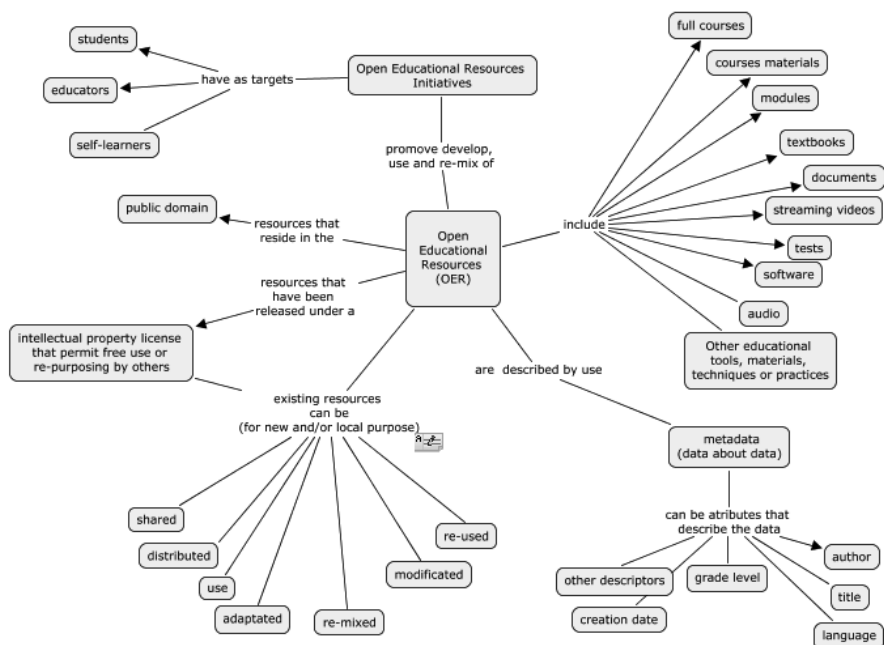
Figure 1. Ontology Concept map on OER / OCW (Piedra N. et al, 2010)

However, even if OER are increasingly available across the globe, evidence shows their use is not proportional. This is due to the fact that the production of free access digital resources alone is a necessary but not sufficient condition to widen participation in Higher Education. In order to achieve this goal we need to develop strategies that effectively integrate the use of these materials in the daily practice of teachers and students, as well as improve the visibility of existing resources. This new emerging concept of open educational practices (OEP) can be best defined as practices which support the (re) use and production of OER in the framework of educational policies that promote innovative pedagogical models, and respect and empower learners as co-producers on their lifelong learning process. After concentrating on building infrastructure and tools, researchers and practitioners have learned how critical for success it is to move now to the design of improved learning experiences and innovation in educational settings, particularly formal ones. Beyond access to open learning architectures, the focus of open education is now on learning as a process that can be built and shared in an inclusive way.

In this paper we submit the idea that online open education needs also to fully integrate a third pillar apart from technology and pedagogy, which is ethics. In order to be fully open, virtual education needs to be inclusive. And, to assure this objective, it needs to articulate learning tools and methods with values.

The 2012 Paris OER Declaration paves the way for IOEP

Since the 2003 World Summit on the Information Society Declaration of Principles, the online education community has assumed the commitment to build a people-centred, inclusive and development-oriented Information Society. One where everyone can create, access, utilize and share information and knowledge. The recent 2012 Paris OER Declaration follows the same path by explicitly recommending all national states to "promote and use OER to widen access to education at all levels, both formal and non-formal, in a perspective of lifelong learning, thus contributing to social inclusion, gender equity and special needs education" (Unesco, 2012).

Indeed every human being has equally the right to learn. However, this universal right calls for a differentiated realization. In fact, opposite to common belief, widening participation in Higher Education is not achieved by simply providing mass-access to quality content. On the contrary, the universal validation of that generic right critically depends on the possibility of each and everyone access content according to his/her own differentiated needs. When considering learners with disabilities, the issue of accessibility becomes more complex indeed. Different kinds of special needs may be involved (physical, sensitive, cognitive). This notion of different kinds of accessibility makes it imperative therefore to use a holistic approach to the design, use and reuse of OER. This is an approach which promotes inclusive open educational practices.

Given the international regulatory framework on the rights of learners with disabilities, each country has established special laws for securing these rights. These regulations seek to ensure equal opportunity, non-discrimination and universal accessibility for people with disabilities. In the context of technology and distance education a number of standards and guidelines have been developed to help ensure that digital resources produced/used in the field of education are accessible for all. In general these studies consider the accessibility only in relation to the design of resources. However, as discussed in this paper, at the time of measuring the accessibility of resources it is critical to ensure guidelines for OER use and reuse which consider the different types of disabilities and educational aspects involved in an integrated way.

Accessibility Standards for OER

The concept of OER is commonly associated with sharing open content in public repositories. This concept of OER is independent of the format used for files, which can be PDF, HTML, etc.. One way to classify these OER would be based on whether or not they meet accessibility standards. For example, in the case of web-based

resources OER could be classified according to web accessibility standard WCAG 2.0. WCAG is the acronym for Web Content Accessibility Guidelines, developed by the WAI (Web Accessibility Initiative, a branch of the W3C (World Wide Web Consortium) which monitors the web accessibility.

Whereas "equal opportunity" not only refers to the accessibility of the resource but also covers the conceptual content accessibility of the resource, it is proposed to extend the principles of perception and understanding of the WCAG [16] to the content of the resource (pedagogical / cognitive accessibility), and classify the resources from evaluations by users, experts and end users, considering the different types of disabilities and educational resource pedagogical purpose.

The WCAG [16] standard specifies guidelines in the production of web resources in order to assure they are robust, understandable, operable and perceptible to people with disabilities. These patterns guide the web design, and each pattern contains a set of checkpoints with different priorities (priority 1, 2 or 3). Compliance with all priority points 1 states that the design of the web resource will have a level of accessibility, i.e. complies with all that HAS to be accessible. If the application meets all checkpoints of priority 1 and 2 then the resource achieves an AA accessibility level, i.e. complies with all that HAS and NEEDS to. And finally fulfilling all priority points 1, 2 and 3 AAA accessibility level is reached, indicating that the resource meets all checkpoints that HAS to, NEEDS to and SHOULD comply with. In short, WCAG 2.0 accessibility focuses on web design resources, and accessibility levels (A, AA and AAA) are established based on the fulfilment of all checkpoints of priority 1, 2 and / or 3. Such guidelines for accessibility of OER design are not limited to web resources, but extend to other formats of educational resources, such as PDF [18], [19] and Macromedia Flash [20].

In recent years several evaluation projects and proposals of metrics assessing the accessibility of web resources have been developed. Some of these works focus on the measurement / assessment of online learning environments considering education as an integrated, interrelated and dynamic process where technical aspects (platforms, resources) and pedagogical ones (such as educational processes, cognitive styles) interact. Other works focus on the measurement of web resources, many of which based on the WCAG standard (Vigo M., Arrue M., Brajnik G., Lomuscio R., Abascal J., 2007; Brajnik G., Lomuscio R., 2007; Freire A., Fortes R., Turine M., Paiva D., 2008). In these last two works in particular two considerations appear repeatedly: (1) it is not enough to simply measure WCAG 2.0 checkpoints compliance, and (2) the importance of complying or not with the checkpoints is related to the educational purpose of the resource and the type of disability which affects the user.

HIGHLIGHTS FOR THE CONFERENCE

Brajnik G., R. Lomuscio (2007), present a very interesting problem that can be related directly with our case. It is whether the metrics describe if a website is more accessible for certain user groups than others. The authors propose a methodology for measuring accessibility that combines automatic evaluations based on WCAG, with the expert reviews which should consider the types of disabilities and objectives. They advocate a mapping between WCAG checkpoints and types of barriers related to the types of disabilities.

Most research has considered the pedagogical aspects related to learning objects, the user's profile and the context of use, using metadata for describing educational aspects of the object or resource, and scents or judgments made by the community (experts, end users, and others). Different styles of assessment range from very simple mechanisms as an indication by the user if the resource was helpful to more sophisticated forms as LORI used by the project eLera [21] filled by experts. Therefore, a possible way to classify OER may be considering the level of understanding of the content of the resource perceived by different user profiles, determined by the type of disability, while taking into account the pedagogical objective of the resource.

The WCAG 2.0

WCAG was first published in 1999 in its version 1.0. A second version (WCAG 2.0) was published in 2008. In the first version the standard established general principles of accessible design. It is divided into 14 guidelines that provide design solutions and using as an example common situations in which the design of a page may cause problems of access to information. The guidelines also contain a series of checkpoints (65 in total) that help detect errors.

Each checkpoint is assigned to one of three priority levels set by the guidelines:

- Priority 1: are those aspects which a web designer **has** to comply with because, otherwise, certain groups of users could not access the website information.

- Priority 2: are those aspects which a web designer **needs** to comply with because, if it were not so, it would be very difficult to access information to certain groups of users.

- Priority 3: are those things that a web designer **should** comply because, otherwise, some users may experience some difficulties in accessing information.

HIGHLIGHTS FOR THE CONFERENCE

According to these checkpoints pursuant levels are set:

- Conformance Level "A": all checkpoints of priority 1 are satisfied.
- Conformance Level "Double-A": all checkpoints of priority 1 and 2 are satisfied.
- Conformance Level "Triple-A": all checkpoints of priority 1, 2 and 3 are satisfied.

As for WCAG 2.0, it is an official W3C recommendation which is based on the1.0 version. It bases on four fundamental principles: **Perceivable**, **Operable**, **Understandable** and **Robust** (in reference to the features of an accessible Web document).

- Perceptible: The information components and the user interface should be presented to users in a way that can be perceived.
- Operable: The components of the user interface and navigation must be operable.
- Understandable: Information and the management of the user interface must be understandable.
- Robust: Content must be robust enough to work with current and future technologies.

Each of these principles divides in various patterns to a total of 12. Each of these patterns in turn is atomized into "success criteria" (Success Criteria) that form validation and which total 61 (in concept, equivalent to the 65 checkpoints of the WCAG 1.0). W3C recommends that new and updated content apply WCAG 2.0 instead of 1.0.

A proposal for accessibility classification

In light of the principle of "equality of opportunity" in education, one may wish accessibility should have an educational component related to the level of understanding the users may have of the OER content. We therefore propose a classification based on the references described in the previous section which addresses in an integrated way the educational objectives of OER, the difficulty level of understanding of the content of the resource, and the user profile determined by the type of disability.

On one hand it is proposed to classify the level of OER according to the WCAG 2.0 accessibility level achieved, by the pedagogical objective of the resource and the

HIGHLIGHTS FOR THE CONFERENCE

types of contexts of use (user profile and / or characteristics of the environment) determined by the types of disabilities. For this, we will use the method proposed by Brajnik G. and R. Lomuscio (2007), presented in the previous section, according to which a mapping between the checkpoints of the WCAG 2.0 and the types of barriers is used [22]. Experts determine how to classify the resource according to the type of disability and educational purpose. In our case we suggest to ask experts to indicate the degree of importance (high, medium, low) of each barrier. In this sense a resource will have a:

- level of "pedagogical accessibility A" if it meets all checkpoints listed as "highly" important by experts;
- level of "pedagogical accessibility AA" if it meets all checkpoints listed as of "high" and "medium" importance;
- level of "pedagogical accessibility AAA" if it meets all checkpoints, that is the ones listed as of "high", "medium" and "low" importance.

We note that a resource not meeting WCAG AA level, could nevertheless be classified with level "educational accessibility AA" according to this classification if the non complied checkpoints affect only aspects which are irrelevant to the pedagogical objective of the object or to the context of use. This is because in both cases these aspects are of low importance.

In addition we propose to classify OER regarding the understanding of content achieved by the different user profiles. We call this "pedagogical content accessibility" of OER for different types of disabilities. Basic assessments of "the information contained in the application" (very easy to understand, was understood, difficult to understand) made by end users grouped according to their disability profile will make possible to classify OER by level of content understanding in each type of disability. This type of evaluation allows that classification of OER in what regards understanding of content for different disabilities is determined by users themselves using the resource and will be increasingly accurate.

Table 1: Classification according to "Pedagogical Accessibility to Content"

	Very Easy to Understand	Easy to Understand	Difficult to Understand
Problems of Sight			
Problems of Earring			
Problems of Moving			
Cognitive Difficulties			
…			

Classifications proposed here follow a similar direction to the concept managed by the IMS (IMS, 2002) when linking OER with comparability. Because it is possible for different OER to share a same pedagogical objective although having been developed using different technologies each offering features by type of disability (video, text, etc..). In short, they may have been designed for specific user profiles or contexts of use.

As shown in the discussion, pedagogical aspects are critical to determine OER accessibility. In light of this, we have presented a set of procedures that make possible to include them in the evaluation and classifications of OER. The proposal presented in this paper combines important elements in the evaluation of resources or learning objects. These include automatic assessments, community assessments (end users, experts), WCAG, types of disability and educational objectives. We must determine the level of detail of the types of disabilities that will be used in the project. It could disaggregate large groups as 'hearing problems' into more specific groups such as "deafness", "hard of hearing", etc.. This type of classification manages to bridge the points of view of design and pedagogy, articulating them in an ethical framework.

Conclusions

It is critical for every author and web designer of OER to be aware of the ethical and legal aspects which justify delivering accessible academic content. In fact, the educational value of OER use depends on how these resources allow access to quality learning experiences for all. This is why OER authors and web designers should be trained in the technical aspects needed to provide educational content in an accessible format. Keeping in mind however that in order to adapt or create material that is accessible to people with special educational needs (ex: physical disabilities) may require in several cases the assistance of qualified personnel, whether related professionals or specialized institutions.

Creating accessible OER is as important as measuring the degree of accessibility achieved; not only from a technological point of view but pedagogical as well. Therefore, it is necessary to have evaluation processes which take into account standards, pedagogical goals, users' profiles and contexts of use. These kinds of evaluations require the participations of authors, experts, reviewers, and end users, who provide feedback that can be used in the evaluation processes.

There are formats and technical platforms which are more accessible than others, allowing more easily to change the language or parts of the document. Thus, the realization of the universal right to access quality content by all individuals,

HIGHLIGHTS FOR THE CONFERENCE

including the ones with special needs, is basically an ethical responsibility of all content providers of open education resources.

Finally, a note should also be presented regarding the critical aspects of searching and finding OER, as well as accessibility of content for all. The later also constitutes a part of the ethical responsibility of open education providers. In fact, all open digital resources must be described using metadata and should be interchangeable. However, even in the cases this feature is met, differences in the programs may make it difficult to search through different education systems. This is another ethical challenge of the global OEP community.

References

1. Atkins, D.E.; Brown, J. and Hammond, A. (2007). *A Review of the Open Educational Resources (OER) Movement: Achievements, Challenges, and New Opportunities.* http://www.hewlett.org/uploads/files/Hewlett_OER_report.pdf

2. Camilleri, A.F.; Ehlers, U.D. (2011). *Mainstreaming Open Educational Practice. Recommendations for Policy.* OPAL Consortium

3. Brajnik, G.; Lomuscio, R. (2007). *SAMBA: a Semi-Automatic Method for Measuring Barriers of Accessibility.* ASSESTS'07, Proceedings of the 9th international ACM SIGACCESS conference on Computers and Accessibility. (pp. 43-50). Arizona USA.

4. Brajnik G. [http://sole.dimi.uniud.it/~giorgio.brajnik/projects/bw/bw.html#nv_d7e325]

5. Burgos, J.V.; Ramírez, M.S. (2011). Movilización de Recursos Educativos Abiertos: Enriqueciendo la Práctica Educativa, *Revista Digital "La Educación"; No.146; Diciembre, 2011.* http://educoas.org/portal/la_educacion_digital/146/pdf/EXPR_vladimirburgos_ES.pdf

6. Commonwealth of Learning (2011). *Guidelines for Open Educational Resources (OER) in Higher Education.*

7. Conole, G.; McAndrew, P.; Dimitriadis, Y. (2010). The role of CSCL pedagogical patterns as mediating artefacts for repurposing Open Educational Resources. In F. Pozzi and D. Persico (Eds), *Techniques for Fostering Collaboration in Online Learning Communities: Theoretical and Practical.*

8. Downes, S. (2007). Models for Sustainable Open Educational Resources. In *Interdisciplinary Journal of Knowledge and Learning Objects, vol. 3.*

HIGHLIGHTS FOR THE CONFERENCE

9. Iiyoshi, T. and Vijay Kumar, M.S. (eds.) (2008). *Opening Up Education: The Collective Advancement of Education Through Open Technology, Open Content, and Open Knowledge.* Cambridge, Mass., The MIT Press.

10. IMS (2002). *Guidelines for Developing Accessible Learning Applications*, IMS Global Learning Consortium. Available at: http://www.imsglobal.org/accessibility

11. Lane, A. (2012). *Design and Development of OER: A Student Perspective*, UNESCO, 2012.

12. OPAL (2011). *Beyond OER: Shifting Focus from Resources to Practices The OPAL Report 2011.* Available at: http://duepublico.uni-duisburg-essen.de/servlets/DerivateServlet/Derivate-25907/OPALReport2011-Beyond-OER.pdf

13. Piedra, N.; Chicaiza, J.; López, J.; Martinez, O.; Tovar, E. (2010). *An approach for description of Open Educational Resources based on semantic technologies.* Education Engineering (EDUCON) 2010 IEEE, Madrid, España, April 2010. DOI=10.1109/EDUCON.2010.5492453

14. UNESCO (2012). *2012 Paris OER Declaration: Fostering Governmental Support for OER Internationally.* Available at: http://oercongress.weebly.com/paris-declaration.html

15. Vigo; M., Brajnik; G. (2011). Automatic web accessibility metrics: where we are and where we can go. *Journal Interacting with Computers. 23(2),* (pp. 137-155).

16. Web Content Accessibility Guidelines (WCAG) 2.0 http://www.w3.org/TR/WCAG/

17. White, D.; Manton, M. (2011). *JISC-funded OER Impact Study*, University of Oxford, 2011.

18. http://www.adobe.com/enterprise/accessibility

19. http://www.adobe.com/accessibility

20. http://www.macromedia.com/macromedia/accessibility

21. http://elera.net/eLera/Home/Articles/LORI%201.5.pdf

22. http://sole.dimi.uniud.it/~giorgio.brajnik/projects/bw/bw.html#nv_d7e325

Acknowledgements

HIGHLIGHTS FOR THE CONFERENCE

USING SOCIAL MEDIA TO ENGAGE AND DEVELOP ONLINE LEARNERS

Lisa Marie Blaschke, University of Maryland University College and
Carl von Ossietzky University of Oldenburg, Germany

Abstract

Social media technology provides educators with an opportunity to further engage learners in the online classroom, as well as to support development of learner skills and competencies. This case study research project explores the role of social media in promoting cognitive and meta-cognitive learner development and in creating more self-directed and capable learners using a heutagogical teaching approach. Research was conducted using questionnaires and interviews and incorporated the perspectives of both students and instructors on the use of social media in the online classroom and how social media has influenced interaction and learner development. In addition, e-portfolios – created by students using social media – were reviewed to determine evidence of acquired competencies and reflective practice. This paper presents the findings from the case study, as well as general guidance to instructors for incorporating social media in the online classroom.

Introduction

Heutagogy is the study of self-determined learning where responsibility for the learning path is placed in the hands of the learner, and the learner is "the major agent in their own learning" (Hase & Kenyon, 2007, p. 112). Initial research in heutagogy has shown that the approach can support development of lifelong learning capacity, as well as aid learners in managing and solving complex problems within changing working environments (Ashton & Newman, 2006; Bhoryrub, Hurley, Neilson, Ramsay, & Smith, 2010; Canning & Callan, 2010). Because of the high level of learner maturity and autonomy required in self-determined learning, a heutagogical approach is considered a form of adult learning. A renewed interest in heutagogy is partially due to the adoption of social media within education, as social media is characterized by certain affordances that support a heutagogical educational approach (McLoughlin & Lee, 2007). The combination of an adult-learning focus and social media makes the topic of heutagogy highly relevant to distance education, as technology use for education delivery and adult learner audiences are both characteristics of distance education.

HIGHLIGHTS FOR THE CONFERENCE

The heutagogical educational approach is also considered to be "a natural progression from earlier educational methodologies… [which] may well provide the optimal approach to learning in the twenty-first century" (Hase & Kenyon, 2007, para. 1) and a "net-centric" theory for today's emerging technologies (Anderson, 2010, p. 33). The author's research interest in this field is in investigating how a heutagogical teaching and learning approach, assisted by active use of social media, can engage learners in their individual learning process and support the development of learner competencies and capabilities, and as a result, better equip students for the workforce.

Literature review

According to the Pearson Social Media in Higher Education Survey (2010), over 80 % of faculty is using social media, with 52 % of faculty using social media in the classroom. However, use of social media in the classroom is primarily passive, or consumptive (e.g., in the form of watching an online video). Only 10 to 12 % of faculty uses social media in an active way (e.g., in the form of learners interacting and creating own content). Weisberger (2010) suggests that active use of social media may be more pedagogically beneficial (as cited in Educational-Portal blog, 2010). Weisberger's hypothesis is supported by preliminary research by Blaschke, Porto, & Kurtz (2010), which indicates that, from a student perspective, the active use of social media may increase interaction levels (student-student, student-instructor, and student-content) and promote the development of cognitive and meta-cognitive learning skills, such as reflection, critical thinking, construction of knowledge, and understanding of one's individual learning process. McLoughlin & Lee (2007, 2008, and 2010) report on the pedagogical benefits of social media and identify specific affordances of social media – connections and social rapport, collaboration (information finding and sharing), learner-generated content, and accumulation of knowledge and information – that contribute to the cognitive development of learners. McLoughlin & Lee (2008) also propose that the inherent design of social media supports the development of learner self-directedness, a capability that is essential in preparing lifelong learners for the complexities of today's workforce (Canning, 2010). While the current literature discusses general pedagogical benefits of social media usage in the classroom (Minocha, 2009), there is limited research into the pedagogical benefit of *actively* using social media in the online classroom, for example, by using social media to encourage learner interaction and to create own content, and the role this can play in making learners more self-directed and competent.

A heutagogical educational approach emphasizes learner-centeredness and the development of learner capabilities, which need to developed "as a complementary set of attributes to competency" in order to create a culture of lifelong learning

67

(Gardner, Hase, Gardner, Dunn & Carryer, 2008, p. 257). Capability is thus an extension of competency (knowing in familiar environments) in that the learner is able to apply what she or he has learned to complex situations (knowing in unfamiliar environments). Examples of capabilities include: knowing how to learn, working well with others, creativity, critical thinking, empathy, active and experiential learning, autonomy, self-efficacy, self-confidence, active citizenship, and deliberative dialogue (Gardner, Hase, Gardner, Dunn & Carryer, 2008; Walker, 2008). A review of the literature demonstrates that there is limited research into heutagogy as an approach for development of learner capabilities (Blaschke, 2012).

As development of meta-cognitive learning skills through double-loop learning is characteristic of heutagogy, there could be a connection between active use of social media and capability development using a heutagogical approach. This possible connection is further supported in research by McLoughlin & Lee (2008, 2010) and Cameron & Tanti (2012). However, missing in the current literature is research into how the combination of a heutagogical educational approach and the use of social media – in an active rather than passive way – can support development of learner competencies and, by extension, capabilities. The question explored in this research was: What role can social media play in engaging learners and in promoting cognitive and meta-cognitive learner development? This question is part of a larger context in understanding the role of social media (active usage) in developing learner competencies and capabilities, particularly when social media is used to support a heutagogical teaching and learning approach.

Methodology

This case study research was conducted during the spring 2012 semester at the University of Maryland University College (UMUC) within the newly revised *OMDE601 Foundations of Distance Education and E-Learning* online course of the Master of Distance Education and E-Learning (MDE) program. In the summer and fall of 2011, the OMDE601 course underwent an extensive redesign intended to help new students build a stronger foundation of knowledge and skills in preparation for their MDE graduate studies.

In conducting the research, a holistic design-based research approach was undertaken. Using the backward design, or results-based, approach to course design (Wiggins & McTighe, 2005), the author and another MDE faculty, Jane Brindley, identified the desired outcomes at both course and program level and then worked backward in developing learning activities and course content that would support development of those outcomes (Figure 1).

HIGHLIGHTS FOR THE CONFERENCE
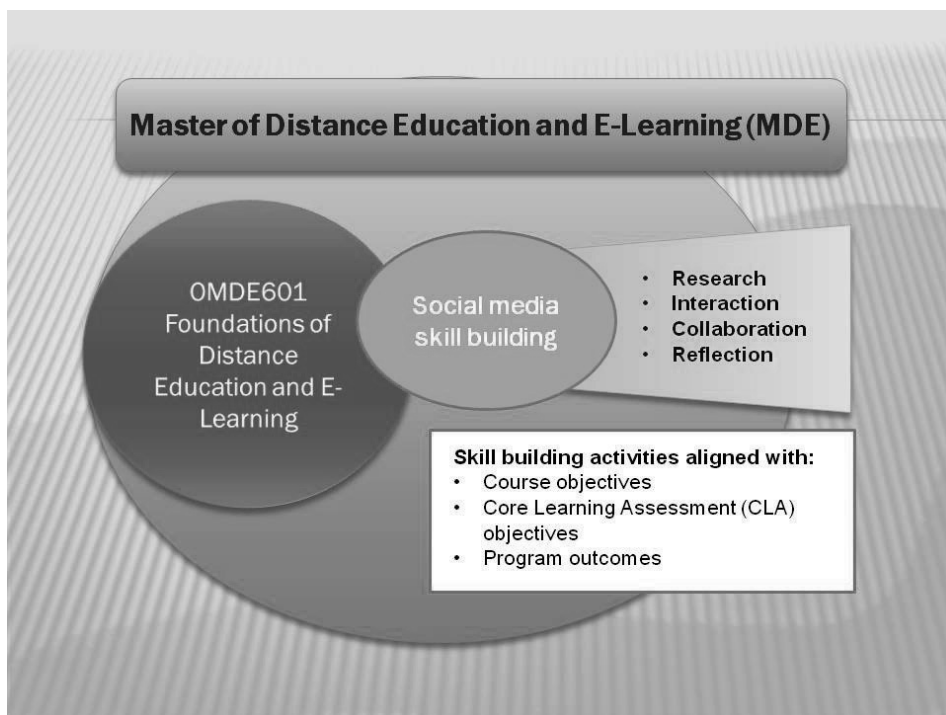
Figure 1. Holistic Approach Using Backward Design

Specific aspects of a heutagogical teaching approach were also incorporated into the new design, for example:

- Considering students' level of learner autonomy and adjusting accordingly (through learner questionnaires)

- Building learner skills while allowing them to determine and reflect on their learning path (through scaffolding of learning activities and learner-directed questions for reflection)

- Incorporating activities for self-reflection, self- and information-discovery, and collaborative information creation (through learning journals and collaborative group work)

- Assessing learner achievement by negotiating the assessment process (using formative and summative assessment)

Digital skill building activities, which incorporated social media tools for research, interaction, collaboration, and reflection, were developed as part of the redesign. The new version of the course made extensive use of social media technology, which students used for collaboration purposes and to create new content. These activities were closely tied with course and program objectives, as well as UMUC's

core learning area (CLA) objectives. In addition, the activities took into consideration strategies for encouraging deep learning and reflection on one's own learning process (double-loop learning) (Kimber & Wyatt-Smith, 2006). Course learning activities that incorporated social media are shown in Table 1.

Table 1: Skill Builders Using Social Media

Skill Builder	Social Media Used
Post a biography in WebTycho and "pin" location on a class Google Map (icebreaker activity).	Google Map
Join Twitter and follow OMDE601 course and a distance education scholar. Retweet an interesting article by the scholar.	Twitter
Contribute to a class wiki of e-portfolio best practices.	Wiki
Create online mind map with key words that represents initial and ongoing definition of distance education.	Mind Mapping
Using Google Docs, develop a group grid depicting evolution of distance education across waves of development as part of an ongoing collaborative group project.	Google Docs
Conducting research within the UMUC library, select a scholarly article, and write and post an annotation to the class Diigo account.	Diigo
Create an individual web site using a wiki, blog, or other web tool as an e-portfolio, including pages for a reflective learning journal and artifacts (group grid, bibliography, annotation, mind map).	E-portfolio (e.g., wiki, blog, other)

Data gathering techniques included student and instructor interviews (qualitative) and a survey on student perceptions regarding the use of social media in the classroom. The pre-course student survey gathered data about students' familiarity with online learning and social media, ways in which they used social media, their preferred ways of learning, and their confidence level in research and writing. The end-of-semester survey gathered data about students' experience using social media in the OMDE601 course and their perceptions on how social media influenced 1) their sense of connectedness in the classroom (e.g., with other students and the instructor) and 2) development of their individual cognitive and meta-cognitive skills, such as critical thinking, knowledge construction, reflection, empathy, understanding of own learning process, and application of social media competency in other contexts (current work environment).

The instructor survey gathered information about the instructor's perceptions on the active use of social media and its influence on student engagement levels and development of student cognitive and meta-cognitive skills. In-depth student interviews were planned as a follow-up to the student surveys; however, only two students volunteered for the interviews. One interview took place, but the second interview did not. Student e-portfolios and reflective learning journals that were

HIGHLIGHTS FOR THE CONFERENCE

created within the OMDE601 course were also reviewed to determine evidence of acquired competencies and reflective practice.

Results

Two sections of OMDE01 were offered in spring 2012, with 23 students in cohort 9,040 and 22 in cohort 9,041 (N=45). Pre-course survey findings showed that 100 % of the students had previously taken an online course (N=40, with 5 non-participants). In terms of familiarity with social media, students were most unfamiliar with (never used) mind maps (75 % in 9,040; 90 % in 9,041) and Twitter (55 % in both sections). Students were most familiar with blogs (60 % in both sections), Google Docs (50 % in 9,041), and Facebook (90 % in 9,040, 84 % in 9,041), although Facebook was not used in the course. Primary uses of social media were: connecting with friends and family (85 % in 9,040; 90 % in 9,041), learning new things (80 % in 9,040, 61 % in 9,041), and making business and academic connections (60 % in 9,040; 37 % in 9,041).

At the end of the semester, 27 of 45 students were still registered in the two sections. The end-of-semester surveys (N=18, with 9 non-participants) showed that students felt they were competent in all social media tools used in the course, albeit in differing degrees. The exception was 9,041, where one student stated that s/he was not competent (never used) with wikis (1) and blogs (1). The **e-portfolio/learning journal, Google Docs**, and **mind map** tools seemed to have been most effective in helping students develop cognitive and meta-cognitive skills (e.g., over 75 % of students agreeing that the tool helped them construct new knowledge, reflect on course content, and better understand their individual learning process). Students perceived that the use of **Twitter** contributed the least to development of cognitive/meta-cognitive skills. Use of **Google Maps** differed significantly between the two sections, with students in 9040 agreeing with most of the statements, and students in 9041 disagreeing to most statements. Students' sense of connectedness with teaching staff also differed between sections, which could indicate that level of interaction with teaching staff perceived by students may be more influenced by the instructor than the tool. Use of **Google Docs** in one section seemed to promote empathy in one section (7 out of 10 students agreeing), while in the other it did not (6 out of 8 students disagreeing); this could indicate that the sense of empathy may be dependent on group constellation rather than upon the media used. In both sections, use of **Google Docs** helped students feel more connected to other students, more so than any of the other social media tools used.

In the student interview, the student noted that generational gaps made it difficult to keep up with the new media, and, although she was able to successfully

HIGHLIGHTS FOR THE CONFERENCE

complete the activities, they were very time consuming. She also noted that **Twitter** and **Diigo** helped her to follow and create and explore her own trails of learning, as well as aided her in becoming more self-directed in her learning.

From the instructor perspective, which aligned with the student findings, the **e-portfolio/learning journal, Google Docs, and mind map** activities were found to be helpful in development of critical thinking and knowledge construction (although mind maps only partially). Specifically, the **e-portfolios and learning journals** were found to provide "a broader and at times deeper picture of a learner", although journals were "low to average" in terms of reflective quality (C. Walti, personal communication, April 22, 2012). The instructor also found that students were not prepared to participate in social media, which may be due to an older course description appearing as the official course description in institutional publications. In general, the instructor of 9,041 did not find the social media tools to be instrumental in development of cognitive and meta-cognitive skills such as empathy, creativity, student autonomy, and the students' understanding of their learning process. However, the instructor noted that there is potential for ongoing development of these skills across courses and in the program and recommended tracking students as they progressed through the program. The instructor also found the tracking of student activities within the social media tools to be very time-consuming.

In a general evaluation of the course **e-portfolios**, the researcher found that students demonstrated basic competencies in using the e-portfolio to:

1. establish an online presence using a form of web 2.0 media (e.g., wikis, blogs, or Weebly);

2. present two or more examples of work that represented competency in using social media as part of a learning activity or skill builder (e.g., online mind map of personal definition of distance education, Google Docs group grid of the evolution of distance education, Diigo annotation);

3. and in most cases, reflect upon the individual learning experience (e.g., how a student's understanding of distance education changed as s/he progressed through the course and what specifically influenced the student's thinking).

The dropout rate in both sections was relatively high. In 9,040, 11 out of 23 students withdrew, with 12 passing the course. In 9,041, nine out of 22 students dropped, with 13 passing the course. Research data was not available on student reasons for dropping the course. Additional research could explore whether there is a correlation between student technology skills and/or preparedness for graduate level studies and the relatively high dropout rate.

HIGHLIGHTS FOR THE CONFERENCE

Discussion

Based on the research conducted in this case study, generalizations cannot easily be made regarding the use of social media to engage students and develop their cognitive/meta-cognitive skills. To a large degree, the ability to achieve learner engagement and development is not only dependent upon course design (e.g., alignment with learning objectives) and delivery, but also upon the individual leaner and his/her level of autonomy and maturity. Evidence of capability was also challenging to identify. While students felt they were competent and also exhibited competency in using social media, instances where capability was clearly demonstrated were minimal. Within the collaborative group work, there was some evidence of capabilities such as empathy and the ability to work with others. Students also exhibited self-confidence upon gaining a competency (e.g., using Twitter to tweet more often and using new tweet formats). In the student interview, the student gave an example of applying what she had learned to a new situation (e.g., using Twitter to follow political candidates in order to gain a better understanding of a candidate's platform). That there was minimal evidence of capability could be due to the students' inability to achieve full competency in using social media tools, and as a result capability could not emerge as an extension of the competency. It could also be the case that a capability evolved, but was not observed within the online classroom environment where the research was conducted, or that learners within a beginning graduate course do not yet have the level of learner autonomy and maturity to move from competency to capability. Further research could explore the role of social media in development of learner competency and capability during the course of the learners' graduate studies, both inside and outside of the classroom, as part of a longitudinal analysis, for example, by evaluating student e-portfolios by coding for evidence of achieved competency or capability. Other areas of research could include investigating individual social media and their ability to promote engagement and support learner capability development (such as the Twitter research by Welch & Bonnan-White, 2012).

HIGHLIGHTS FOR THE CONFERENCE

Recommendations

Based on this case study, here are general recommendations for using social media in the online classroom:

- Incorporate social media in a holistic way, clearly aligning its use with overall course goals and objectives and learning activities, and taking into consideration the pedagogical benefits of the tool.
- Plan for possible gaps in learner skill level; for example, provide learner support and additional informational resources.
- Provide guidance – sometimes extensive – on tool use and mirror desired behaviour where possible
- Be prepared for students who are fundamentally opposed to social media due to privacy issues.
- Make expectations about the use of social media clear.
- Encourage students to create social media accounts/e-mails for academic purposes only - separate from personal accounts.
- Allocate time for managing social media use and be prepared to spend significant time tracking student activity.
- Strive for establishing competency and building capability by helping students become competent and provide them with opportunities to use social media in new and original ways.

Conclusion

Heutagogy, or self-determined learning, provides a potential theoretical framework for use emerging technologies such as social media to creating learner-centred educational environments. The inherent design of social media supports a self-determined learning approach, offering learners possibilities to connect with each other, as well as to further engage in their individual learning process and determine own paths to learning. By helping students achieve competency in social media use, we can empower our students to find new ways of acquiring knowledge, as well as equip them with skills for adapting to changing and complex environments.

HIGHLIGHTS FOR THE CONFERENCE

References

1. Anderson, T. (2010).Theories for learning with emerging technologies. In G. Veletsianos (Ed.), *Emerging technologies in distance education.* Edmonton: Athabasca University Press. Retrieved from: http://www.aupress.ca/books/120177/ebook/02_Veletsianos_2010-Emerging_Technologies_in_Distance_Education.pdf

2. Ashton, J. and Elliott, R. (2007). Juggling the balls – study, work, family and play: Student perspectives on flexible and blended heutagogy. In *European Early Childhood Education Research Journal, 15(2)*, (pp. 167-181).

3. Blaschke, L.M. (2012). Heutagogy and lifelong learning: A review of heutagogical practice and self-determined learning. In *The International Review of Research in Open and Distance Learning.* Retrieved from: http://www.irrodl.org/index.php/irrodl/article/view/1076/2087

4. Blaschke, L.M.; Porto, S. and Kurtz, G. (2010). *Assessing the added value of web 2.0 tools for e-learning: The MDE experience.* In Proceedings of the European Distance and E-learning Network (EDEN) Research Workshop, October 25-27, 2010. Budapest, Hungary.

5. Bhoryrub, J.; Hurley, J.; Neilson, G.R.; Ramsay, M. and Smith, M. (2010). Heutagogy: An alternative practice based learning approach. In *Nurse Education in Practice, 10(6)*, (pp. 322-326).

6. Cameron, L. and Tanti, M. (2011). Students as learning designers: Using social media to scaffold the experience. In *E-Learning Papers, 27.* Retrieved from: http://www.elearningpapers.eu/en/download/file/fid/23947

7. Canning, N. (2010). Playing with heutagogy: Exploring strategies to empower mature learners in higher education. In *Journal of Further and Higher Education, 34(1)*, (pp. 59-71).

8. Canning, N. and Callan, S. (2010). Heutagogy: Spirals of reflection to empower learners in higher education. In *Reflective Practice, 11(1)*, (pp. 71-82).

9. Educational-portal blog (2010). *Social media in the college classroom: Professor Corinne Weisgerber talks about the educational value of new media*. Retrieved from: http://education-portal.com/articles/Social_Media_in_the_College_Classroom_Professor_Corinne_Weisgerber_Talks_About_the_Educational_Value_of_New_Media.html

10. Gardner, A.; Hase, S.; Gardner, G.; Dunn, S.V. and Carryer, J. (2008). From competence to capability: A study of nurse practitioners in clinical practice. In *Journal of Clinical Nursing, 17(2)*, 250-258. DOI: 10.1111/j.1365-2702.206.0188.x

HIGHLIGHTS FOR THE CONFERENCE

11. Hase, S. and Kenyon, C. (2007). Heutagogy: A child of complexity theory. *Complicity: An International Journal of Complexity and Education, 4(1)*, (pp. 111-119). Retrieved from: http://jtp.ipgkti.edu.my/map/resource/ppismptesl/refer-edu-tech_htm_files/40028168-Heutagogy-A-Child-of-Complexity-Theory.pdf

12. Kimber, K. and Wyatt-Smith, C. (2006). Using and creating knowledge with new technologies: A case for students-as-designers. In *Language, Media and Technology, 31(1)*, (pp. 19-34).

13. McLoughlin, C. nd Lee, M.J.W. (2007). *Social software and participatory* learning: Pedagogical choices with technology affordances in the Web 2.0 era. In Proceedings from ascilite, December 2-5, 2007. Singapore. Retrieved from: http://www.ascilite.org.au/conferences/singapore07/procs/mcloughlin.pdf

14. McLoughlin, C. and Lee, M.J.W. (2008). *Mapping the digital terrain: New media and social software as catalysts for pedagogical change.* In Proceedings from ascilite, November 30, December 3, 2008. Melbourne, Australia. Retrieved from: http://www.ascilite.org.au/conferences/melbourne08/procs/mcloughlin.pdf

15. McLoughlin, C. and Lee, M.J.W. (2010). Personalised and self regulated learning in the Web 2.0 era: International exemplars of innovative pedagogy using social software. In *Australasian Journal of Educational Technology, 26(1)*, (pp. 28-43). Retrieved from: http://www.ascilite.org.au/ajet/ajet26/mcloughlin.pdf

16. Minocha, S. (2009). Role of social software tools in education: A literature review. In *Education + Training, 51(5/6)*, (pp. 353-369).

17. Pearson Social Media in Higher Education Survey. (2010). Retrieved from: http://www.prweb.com/releases/2010/05/prweb3960844.htm

18. Walker, M. (2008). A human capabilities framework for evaluating student learning. In *Teaching in Higher Education, 13(4)*, (pp. 477-487). DOI: 10.1080/13562510802169764

19. Welch, B.K. and Bonnan-White, J. (2012). Twittering to increase student engagement in the university classroom. In *Knowledge Management & E-Learning: An International Journal, 4(3)*, (pp. 325-345).

20. Wiggins, G. and McTighe, J. (2005). *Understanding by design.* Alexandria, VA: ASCD.

Acknowledgement

HIGHLIGHTS FOR THE CONFERENCE

VIRTUAL SCHOOLS AND COLLEGES IN EUROPE: LOOKING FOR SUCCESS FACTORS

Ilse Op de Beeck, Wim Van Petegem, KU Leuven,
Anthony F. Camilleri, Marie Bijnens, EFQUEL, Sally Reynolds, ATiT, Belgium,
Paul Bacsich, Giles Pepler, Sero, United Kingdom

Introduction

Practically everyone has the same understanding of a school or college as a place where students go to learn. But what about the students who find it difficult to go to a place of learning? What if they are scared of school, ill or unable to access school for some other reason? What about students who want to take subjects which they can't access in their local school or college or young people who are incarcerated and who want to find a way into further or higher education to increase their life chances?

Schools will be changing and it is clear that ICT can play a role in order to set up more open and pupil-centred models of schooling. As the demand for more flexible learning paths grows, virtual schools and colleges are becoming an increasingly important alternative and are becoming more and more prevalent all over the world. However, little is known in Europe about how they operate or what makes them successful. Many people are suspicious of these new structures particularly when they are offered as a replacement for compulsory level-education. Yet, a lot of virtual schools and colleges now exist and have been the subject of a recent investigation within VISCED, a project supported in part by the European Commission.

In this paper we first provide the reader with the definition and characteristics of virtual schools and colleges and a selection of different examples to illustrate the types of virtual schools and colleges that already exist. Then, we elaborate on a number of factors that were identified during our research which help to make virtual schools and colleges successful.

Definition of virtual schools and colleges and prevalence in Europe

Virtual schools and colleges are usually defined as institutions that teach courses entirely or primarily online. These courses are generally similar (in purpose and outcome) to those taken by school or college-age students. In a virtual school pupils learn mainly at a distance over the internet and any activity in a classroom

HIGHLIGHTS FOR THE CONFERENCE

takes no more than around 15 % of study time (1 day per week in a full-time school). The pupils will normally be based at home.

In our research the main focus is on secondary level education aimed at the 14-21 age group as well as colleges providing opportunities for students including those moving between school and higher education. We have found that virtual schools are not that common in Europe and in many countries there are simply none (this is particularly the case in countries which prohibit or strongly discourage home-schooling). Currently, almost 70 have been identified in Europe distributed across 18 different countries[1]. However, we are aware of virtual primary schools and other related virtual initiatives aimed at young people and if these are taken into account, the number of institutions in Europe would probably rise closer to 100. In contrast, virtual schools are quite common in the United States – there are several hundred and also already large numbers of them are operating in other parts of the world.

Examples and characteristics of European Virtual Schools and Colleges

Within the VISCED project, an overview has been made of currently operational examples of virtual schools and colleges across the world and several in depth case studies were also written. Examples include amongst others Bednet (a regional project in Flanders set up in 2005 whereby students suffering from long term and chronic diseases follow lessons and interact with their own class through videoconferencing), Nettilukio – Otava Folk High School (Otava Folk High School in Finland launched in 1996 the project Internetix and within this project Nettilukio, a fully virtual upper secondary school), "Ensino a Distância para a Itinerância" – previously known as "Escola Móvel" (a distance learning project of the Portuguese Ministry of Education and Science aimed at ensuring regular schooling of travelling children whose families work in circuses and fairs), Sofia Distans (established in 1994 to enable expatriate Swedish students to study within the Swedish school system),…

This small selection of examples already shows that a lot of the European virtual schools initially came into being to address issues of pupil inclusion:

- Students who are long-term sick and/or hospitalised
- Students with disabilities
- Young parents or pregnant young women
- Travellers
- Students who have been bullied or are school-phobic

---

[1] see http://virtualcampuses.eu/index.php/Category:Virtual_schools_in_Europe

HIGHLIGHTS FOR THE CONFERENCE

- Students with behavioural problems
- Students who left school with no or few qualifications
- Students who are imprisoned
- Geographically isolated students
- Students with specific language needs (immigrants with poor host-nation language skills)
- Expatriates – often the children of diplomats or executives in multi-national companies
- Elite performers – e.g. athletes, sportsmen, child entertainers.

Also in the United States there currently is a huge variety of students involved in virtual schooling, including for example those that are medically fragile or those in rural communities. However, it is interesting to know the initial impetus in many places came actually from the need to provide virtual schooling for gifted children (Patrick, 2012).

To classify the many different types of initiatives and organisations a five level description was used within VISCED:

1. Fully virtual school/college: this includes brick-and-mortar schools offering a full distance education in parallel with face-to-face classes.
2. Semi-virtual school: extra learning available outside school timetable.
3. Virtual school-in-school: a virtual school within a school or college which does not offer a full curriculum.
4. E-mature school or college making good use of blended learning.
5. Informal school/college: organisations such as Notschool or Mixopolis.

Within these five levels, virtual schools and colleges are tagged along five main dimensions:

1. Geography especially continent, country and region.
2. Catchment area (international, national, state, school district etc.).
3. Full-time or supplementary.
4. Ownership and flow of funds (state, foundation, company etc.).
5. Size band.

HIGHLIGHTS FOR THE CONFERENCE

On the basis of the evidence and research available at present, the split between those established by *public* or *private* providers is estimated to be approximately 50:50. Almost all the *private* organisations are non-profit.

The typical size of European virtual schools, where enrolments are quoted, is around 450-500 students; the smallest identified has 25 students and the largest has over 16,000. A significant proportion of these schools offer a full, or broad, curriculum and in several European countries there appears to be a growing interest in virtual schools providing supplementary or specialist courses and/or revision lessons.

There is a broad pedagogical spectrum – from 100 % online through to significant face-to-face interaction – and a variety of communication tools including Skype and commercial videoconference systems, e-mail, telephone and learning platforms. In many cases the virtual schools reflect local or national circumstances – either in support of policy priorities or to meet demands not sufficiently catered for in their host region.

All in all, the examples and case studies demonstrate that European virtual schools form a very diverse constituency – ranging from quite sophisticated and high-tech through to what many would consider fairly basic, low-tech solutions and through the spectrum of blended learning (from significant face-to-face to primarily online) to pure online learning. What seems to be in common though is that they almost all have developed pragmatic solutions to meet existing learner needs.

Success factors

If e-learning initiatives in schools and colleges are to be sustainable and cost-effective, it is of the utmost importance to identify those factors that are contributing to that sustainability and that will enable setting up successful virtual schools and colleges in the future. The more online education and virtual schooling shifts from small-scale experiments to large-scale, mainstream operation, the more important these factors will become.

During our research, a number of factors which help to make virtual schools and colleges successful were identified. The outputs of the review of virtual schools and colleges have been analysed and compared to identify relevant parameters and success factors for classifying and comparing these initiatives. The aim was to create a set of critical success factors and key success factors to cover activities in the area of strongly ICT-imbued schools and colleges such as virtual schools, notschools, e-matures schools etc.

HIGHLIGHTS FOR THE CONFERENCE

Since the virtual schools sector bears strong similarities with virtual campuses in higher education, the approach being taken was to develop a scheme for virtual schools integrated with the existing Re.ViCa scheme for virtual universities and colleges. Re.ViCa "Reviewing (traces of) European Virtual Campuses" (2007-2009), the predecessor project of VISCED worked towards producing a list of critical success factors in this sense, with the explicit purpose of being short enough to be useful for strategic management functions within virtual campuses in higher education (Schreurs, Bacsich, Bastiaens, Bristow, Op de Beeck & Reynolds, 2009). A critical success factor is defined there as "an element that is necessary for an organization or project to achieve its mission" (Wikipedia, 2012). This differentiates it from other factors, which are "important" or "nice to have" but not *necessary*. Benchmarking in e-learning typically looks at a wider range of factors, and quality systems for e-learning at an even wider range. This is sometimes represented as a "pyramid of factors" (Bacsich, 2009).

As a starting point for defining a list of *potential* success factors for virtual schools and colleges the set of Re.ViCa critical success factors was thus used[2], to be adapted and reworded to fit more the schools and colleges sector (Schreurs, Bacsich, Bastiaens, Bristow, Op de Beeck & Reynolds, 2009).

Being already the main source for the Re.ViCa critical success factors, also for VISCED the Pick&Mix criteria were reconsidered. Pick&Mix consists of a core set of performance criteria, scored on a scale of 1-5 for application in higher education institutions, and tailored towards institutional benchmarking (Bacsich, 2005)[3].

In general, there has been substantial literature on success factors for e-learning. Also benchmarking and quality schemes contain relevant information on what is important in e-learning. A number of those e-learning quality, certification and benchmarking schemes and methodologies were looked at in order to compare the list drawn from Re.ViCa and Pick&Mix with the success factors elucidated in those other schemes, so as to (a) ensure consistency of style, (b) harmonise of similar factors and (c) identify lacunae in the coverage of the original set of critical success factors. Descriptions of the schemes (e.g. ACODE benchmarks, e-Learning Maturity Model, UNIQUe,…) that were examined for VISCED are available on the VISCED wiki, brought together under the "Methodologies" category[4].

Each scheme has its own particular approach and focus, some more relevant than others in view of the VISCED work. The majority of benchmarking or quality

---

[2] see http://virtualcampuses.eu/index.php/Critical_Success_Factors

[3] The full list of criteria can be found at http://www.matic-media.co.uk/benchmarking/PnM-2pt6-beta3-full.xlsx

[4] see: http://virtualcampuses.eu/index.php/Methodologies

HIGHLIGHTS FOR THE CONFERENCE

schemes are however focussing on higher education. On the other hand, schemes and methodologies that are specifically addressing virtual schools and colleges are scarce. One important exception is the iNACOL National Standards. iNACOL, the International Association for K-12 Online Learning is a US-based non-profit membership association facilitating collaboration, advocacy and research to enhance quality K-12 online teaching and learning. They have issued National Standards for Quality Online Courses, Teaching and Programs[5] which provide quality standards for evaluating online courses, teachers and programs with common benchmarks.

For the school sector also interesting to mention are Quality Matters – a peer review process to certify quality of online and blended courses in higher but also primary/secondary education and tools such as MIICE – Measurement of the Impact of ICT on Children's Education (a tool developed by the University of Edinburgh, by which schools can measure their progress in the quality of learning and teaching incorporating the use of ICT) and NCTE e-learning Planning (a tool developed by the National Centre for Technology in Education in Ireland to assist schools in developing their e-learning plan).

Based on the extensive desk research of the different schemes a master list of success factors was created. Each of the success factors was then measured against SMART criteria, i.e. refining each criterion to ensure it is specific, measurable, attainable, realistic and time-bound. Based on the evaluation of the SMART indicators, a shortlist of critical success factors is currently being composed, consisting of success factors matching each of the SMART indicators.

The applicability of each factor was considered, as well as any requirements for new ones, by the project partners in consultation with an International Advisory Committee, made up of experts from around Europe and beyond, who are specialised in the domain of virtual schools. Outcomes from the previous meetings were recorded and success factors mentioned during those gatherings are considered strongly in the final selection of success factors. Feedback from them will be asked once again in the coming months.

In the following, a preliminary list of factors that appear to be *key* to success is presented. In the final months of the project, these will be refined into a set of approximately ten factors which are *critical* to the success and the sustainability of virtual schools and colleges, and which can be used in defining monitoring indicators and performance benchmarks within institutions. They will be useful

---

[5] see http://www.inacol.org/research/nationalstandards/index.php

HIGHLIGHTS FOR THE CONFERENCE

both in monitoring internal processes as well as benchmarking institutional performance against other actors in the field.

Usability of the system being used to support students, teachers and others involved.

It is clear from our investigation into virtual schools and colleges that the technical infrastructure they put in place has to meet very high standards of usability, even though the technology employed may be relatively old and simple. There are many different systems in place, sometimes tailor made by the schools themselves, including a wide variety of online learning platforms and video conferencing systems. No one system dominates the market and practically all the schools and colleges that were investigated used a mix of synchronous and non-synchronous with a blended approach being the dominant learning model. Whatever the system, the extent to which it is user-friendly and fit for purpose is a key consideration.

Extent to which a clear e-learning strategy is in place

A complete commitment to e-learning is core to the rationale of the school or college and not only does it define the school or college as being different but it is also fundamental to how it operates. Arguably without the e-learning aspect, many of the virtual schools and colleges we investigated simply would not exist. E-learning provides the means and the basis for the success of the school; the strategy may be implicit, rather than explicit and frequently operates on a pragmatic basis – the strategic elements relate to usability and accessibility.

Appropriateness of recruitment and training policies

Many of the job roles in virtual schools and colleges are multi-faceted and complex, demanding a mixed set of skills and competences as well as high levels of empathy and understanding related to the specific nature of the students involved. Virtual schools and colleges have to identify staff that brings together not only professional skills and empathetic attitudes but also strong technical skills and competences. The most successful approach chosen by those charged with recruitment seems to be to choose staff with the relevant professional background and experience and to provide on-the-job training and support in respect to the technical aspects. Regular updating of skills is very important for most schools and colleges who often depend on a high level of peer support amongst staff.

HIGHLIGHTS FOR THE CONFERENCE

Extent to which regular evaluation is in place

Given the highly innovative nature of the virtual schools and colleges we encountered, it is hardly surprising to note that most of them are engaged in the regular evaluation of all their processes, particularly learning/teaching processes and curricula. They tend to use a variety of different approaches including feedback from stakeholders and involving outside agencies where appropriate; often evaluation is conducted implicitly and informally, completely unlike the formal processes in universities and large colleges.

Robust and reliable technical infrastructure

To be successful, virtual schools and colleges all agree that their technical infrastructure needs to be extremely dependable. For many the quality of the technical support needs to be particularly high when it comes to dealing with users as they are generally not technically expert and may require sensitive management when it comes to their local technology set-up.

Strong leadership skills and competences

Many of those involved in virtual schools and colleges are pioneers, comfortable with overcoming challenges and breaking down barriers. Most have strong beliefs when it comes to topics like equity in education and the importance of lifelong learning and it is clear from our work that strong leadership skills and beliefs and a value-system that enjoys overcoming challenges are vital components when it comes to creating successful virtual schools and colleges. These leaders need to also be able to make clear decisions regarding staffing, student issues, and virtual school administration which command support across the organisation.

Strong emphasis on learning outcomes – often on an individual basis

Given the fact that many virtual schools and colleges provide learning opportunities for individuals who do not for various different reasons fit into the main stream, it is logical that learning outcomes will receive considerable attention. Most of the organisations we investigated were able to describe clearly defined learning and development goals, which can be assessed, where appropriate, for purposes of certification and progression.

HIGHLIGHTS FOR THE CONFERENCE

Availability of appropriate digital learning resources

Some virtual schools and colleges create their own digital learning resources while a few either buy in commercial materials or use a mix of both. What is core to all is the accessibility of the material and the extent to which it meets the curriculum needs. There is an increased interest (from a very low base) amongst this sector in OER and some are now implementing systems based on Open Educational Resource (OER) principles.

Clarity of the organisational system underpinning the operation of the school or college

Everyone involved in virtual schools and colleges needs to have a clear idea of the rules governing the school, the different progression options offered by different learning pathways and of the relationship of the curricula to national or state requirements, especially as many do not cater for what can be considered main stream students. All of the successful schools and colleges that we investigated made very explicit what students could expect in terms of achievement and progression and set meaningful goals based on these projects on an individual basis.

Conclusion

Virtual schooling has huge potential to widen choice for learners, to contribute to improved attainment and to reach learners who may otherwise be unable or unwilling, to access high-quality education.

In this paper we have provided the reader with the definition and characteristics of virtual schools and colleges. The next paragraph laid out the procedure for isolating, elucidating and defining key and critical success factors, through a process of reflection, research and consultation and presented also a number of key factors that were identified which help to make virtual schools and colleges successful.

In the coming months, a key outcome of the project will be the Virtual Schools and Colleges handbook which includes a summary description of virtual schools worldwide as well as a detailed description of the case studies gathered and the piloting work of innovative ICT practices supported during the project lifetime. It also contains chapters on teacher training, success factors and policy recommendations and is a useful resource for anyone who would like to learn more

about virtual schools and colleges. Furthermore, VISCED also supports a website[6], where all public project outcomes and the latest news are gathered, and a research wiki[7], open to all interested researchers and policy makers to share information about developments in virtual schools, colleges and universities around the world.

References

1. Bacsich, P. (2009). *The UK approaches to quality in e-learning -as seen from the HE Academy/JISC benchmarking programmes.* ENQA Workshop on Quality Assurance of e-Learning. Sigtuna, Sweden. http://www.enqa.eu/files/ENQA%20PaulBacsich%20final.pdf

2. Bacsich, P., (2005). *Benchmarking e-Learning: An Overview for UK HE.*

3. Bednet (Belgium): http://www.bednet.be

4. Critical Success Factor – definition. Wikipedia (2012): http://en.wikipedia.org/wiki/Critical_success_factor/

5. Ensino a Distância para a Itinerância (Portugal): http://www.dgidc.min-edu.pt/ensinodistancia/

6. iNACOL, International Association for K-12 Online Learning: http://www.inacol.org

7. MIICE Measurement of the Impact of ICT on Children's Education: http://www.miice.org.uk

8. NCTE e-learning planning: http://www.ncte.ie/elearningplan/

9. Nettilukio – Otava Folk High School (Finland): http://www.nettilukio.fi/fi/sisalto/

10. Patrick, S. (2012). *North America and K12 Online Learning.* Presentation at the VISCED Colloquium for Virtual Schools, 22 May 2012, Sheffield, UK. http://www.virtualschoolsandcolleges.info/presentation/north-america-and-k12-online-learning-susan-patrick

11. Quality Matters Program: http://www.qmprogram.org

12. Re.ViCa "Reviewing (traces of) European Virtual Campuses" project website: http://revica.europace.org/

---

[6] see http://www.virtualschoolsandcolleges.info
[7] see http://virtualcampuses.eu

HIGHLIGHTS FOR THE CONFERENCE

13. Schreurs, B.; Bacsich, P.; Bristow, S.F.; Op de Beeck, I.; Reynolds, S., (2009). *Reviewing the Virtual Campus Phenomenon: The rise of large-scale e-learning initiatives worldwide.* Leuven: EuroPACE ivzw. http://revica.europace.org/Re.ViCa%20Online%20Handbook.pdf

14. Sofia Distans (Sweden): http://www.sofiadistans.nu

15. VISCED project website: http://www.virtualschoolsandcolleges.info/ and VISCED wiki "Researching Virtual Initiatives in Education": http://virtualcampuses.eu/

Acknowledgement

HIGHLIGHTS FOR THE CONFERENCE

STUDENTS' ATTITUDE TOWARDS ICT LEARNING USES: A COMPARISON BETWEEN DIGITAL LEARNERS IN BLENDED AND VIRTUAL UNIVERSITIES

Iolanda Garcia, Universitat Oberta de Catalunya,
Anna Escofet, Begona Gros, University of Barcelona, Spain

Teaching uses of ICT in university virtual campuses have been widely studied. However, less is known about how students perceive ICT uses in relation to their role as learners in higher education. In this paper we examine students' digital culture relative to different dimensions of ICT use to support different teaching and learning processes – social, cognitive and didactic. Our study aims to gain a deeper understanding of the role that ICT plays in learning processes associated with academic tasks. In this sense this paper focuses on the influence of the university model – virtual or blended – in students' uses and attitude towards technology for learning purposes.

The research methodology consists of a questionnaire based on a Likert scale applied to a sample of 1,042 students from five universities with different models – virtual and blended– and also from diverse areas of knowledge. A statistical factor analysis is done to identify dimensions of ICT use and support. Statistical segmentation analysis and means comparison are applied in order to compare both groups of students (from virtual and face-to-face/blended universities) with respect to their uses and perception about the usefulness of ICT as a learning mediator and support.

In general, students claim to have quite a high degree of empowerment in relation to ICT and they identify uses of technology as useful in relation to their academic performance. However, results show different ICT user profiles in terms of attitude towards technology, level of digital competence, etc. depending on specific variables. Our study presents some evidence about differences between students from blended and virtual environments. Students from the virtual university tend to assign a higher value to ICT uses with respect to social, cognitive and teaching dimensions of support, although this trend seems to be lower regarding the role that ICT plays in supporting the development of knowledge and skills in the courses. These results seem to highlight the importance of certain factors, such as the model of university, when determining the uses of technology associated with learning by students. Somehow, greater use of technology in academic settings seems to condition the students' informal use and not just the reverse.

PAPERS

We believe this study has important implications for higher education. At a time of growing interest in the characteristics of digital natives, it is important for universities to have a clear understanding of students' digital culture in order to ensure that the decisions taken regarding how to improve students' learning experiences through the use of technology are based on evidence and empirical data.

PAPERS

EXAMINING A LEARNER-DRIVEN RELATIONSHIP OF INQUIRY: DISCERNING EMOTIONAL PRESENCE IN ONLINE MATH COACHING

Stefan Stenbom, KTH Royal Institute of Technology, Sweden, Martha Cleveland-Innes, KTH Royal Institute of Technology, Sweden, Athabasca University, Canada, Stefan Hrastinski, KTH Royal Institute of Technology, Sweden

This study explores emotional presence in a student-student online coaching setting. In this learner-driven, online exchange, students enrolled in a teaching program assist K-12 math students using an online relationship of inquiry model.

The online community of inquiry model argues that students and instructors create a valuable educational experience online through social, cognitive and teaching presence. In a previous paper, we adapted this online community of inquiry instrument to an online one-to-one coaching setting, which we referred to as a relationship of inquiry. The adapted model was used to gain a better understanding of the practice of online coaching by exploring the extent to which cognitive, social and teaching presence exist. In this paper, we extend this work by exploring the possibility of a role for emotional presence in online coaching.

This descriptive case study measures indicators of emotional presence in a relationship of inquiry in a project called Math Coach. Math Coach (www.mattecoach.se) offers K-12 students help with their mathematics homework by coaches that are available online via Instant Messaging. We use the term student-student online coaching to describe this type of learning situation, defined as "an online service where a student gets support on a specific subject matter from a more experienced student". To guide this exploration of emotion in an online learning environment, we use the following definition of emotional presence: Emotional presence is the outward expression of emotion, affect and feeling, by individuals engaged in a relationship of inquiry, as they relate to and interact with the learning technology, course content, and each other. Adapted from the online community of inquiry model, one-to-one online interaction is studied for multiple types of online presence and, in particular, the existence and possible effect of emotional presence.

A relationship of inquiry survey instrument reformulated from the community of inquiry survey instrument to a one-to-one environment has been developed. The survey was distributed to all teacher students working in the Math Coach project in spring 2012 in order to collect data describing the respondents and their

PAPERS

perceptions of cognitive, social, teaching and emotional presence in online coaching. All coaches completed the survey (N = 41). Conversation transcripts were selected from the 1,832 chats in spring term 2012. We picked 36 conversations and analyzed them manually looking for emotional presence

Emotional presence was identified using the survey instrument but the mean score of emotional presence was lower than the scores of teaching, cognitive and social presence. The survey instrument also indicates that coachees are often expressing emotions, while the coaches do not do this very often. A correlation test was done to examine correlations between the four elements of presence for comparison to the coaches' descriptive data. Some significant correlations were found. There were no correlations between emotional presence and coach characteristics, suggesting a uniform perception of emotional presence. In an initial open analysis of the conversation transcripts four typical types of emotional presence were identified. In the end of a conversation positive emotion is often expressed by the coachee. Coachees shows negative emotion during problem solving about their own ability and skill in math and negative emotion related to exams and homework. Coaches show positive emotions to encourage the coachee to move on with the work.

In further studies of emotions in the student-student online coaching area it would be valuable to do a more detailed conversation analysis and compare this to statistical tests of the four presences. Limitations include the fact that results are based on a small population of coaches. Our findings should be regarded as preliminary and need further exploration.

Emotion exists in an online relationship of inquiry. This exploration of emotional presence identifies that emotional presence exists as a separate experience in the online coaching exchange, but scores lower than other types of presence. Initial conclusions are the following:

1. There is an outward expression of emotion, particularly on the part of coachees, as they relate to and interact with the course content and the coaches.

2. Emotional presence exists as an individual element of an online relationship of inquiry, but is less salient than the other three presences.

3. No matter the age, gender or location, coaches express similar responses to emotional presence; this warrants further investigation, given the large standard deviation of emotional presence means.

4. It is reasonable to expect coaches will acknowledge and address emotions being experienced by coachees; further exploration of practice techniques is required.

RESEARCHING THE TIME PROFILES OF WORKING DISTANCE LEARNERS

Bill McNeill, The College of Estate Management, United Kingdom

Over recent decades major changes have taken place that have transformed the manner in which distance education is designed and delivered globally. These have been particularly significant for working students as workplace practices, issues of work-life balance, the expansion in mobile technologies and increased online communications place more and more pressure on an individual's time. Understanding the time pressures is vital if study is to be centred on the actual student and not simply built around a mythical average student. Researching time is, however, not as straightforward as it may seem and this paper considers some of the main difficulties and solutions.

PAPERS

HYBRIDISATION OF AGENCY: PARADOX

Caroline Stockman, University of Leuven, Belgium

Teachers play a key role in formal education. On its micro-level of classroom practice, teachers still typically determine the lesson activities and learning paths, despite an increased focus on student-centred, self-paced learning in educational models. This greatly involves taking control over the learning process and classroom events. This assignment of purpose to the job is deeply engrained in our society: students still walk into classrooms *expecting* teachers to initiate and orchestrate the lessons. The teacher who does not have his class under control is considered the *bad* teacher, someone who is not performing his assigned cultural role very well.

This position has been historically fixed, endorsing itself through the teacher's expertise on both the subject as well as pedagogical practice. Both of these characteristics form the essence of a teacher's cultural capital, a concept developed by Pierre Bourdieu (1986). In his view, cultural capital is a set of appropriated characteristics which symbolically identify the culturally privileged. The perpetuation of this capital reinforces inequalities in society, which is necessary to maintain our hierarchical organisation of formal learning. However, applied to the context of a technology integration, it seems cultural capital may create paradoxical issues.

Subject expertise and pedagogical know-how certainly determine the teacher's cultural capital, and his proficiency in its performance grants him the exclusive role within a classroom. However, the inherent potential of computer technology threatens this capital, and therefore the related privileged position. The computer as a tool and source of information, especially in combination with artificial intelligence, exceeds human capabilities. Its adaptiveness and constant encyclopaedic availability empowers students through the potential of personalised learning. Therefore, when advanced technology is integrated in a classroom, it will easily question the characteristics which have previously endorsed the teacher's exclusive position. Some physical clues can be distinguished to indicate the underlying cultural dynamics of this confrontation. The teacher's position is threatened, despite the fact that the nature of digital means resonate well otherwise with current educational beliefs. But if teachers are meant to be actors in the digital (r)evolution of our education system, would they not be undermining their own importance by embracing technology in the classroom?

Further relating this view to the notion of cultural capital, it also becomes apparent that the characteristics of the computer cannot be objectified by the teacher to re-assert his role. Agency of the machine undermines this, whether this 'capacity to act' is built purposefully in the development of artificial intelligence, or psychologically experienced. Evidence of this perception shows itself through intentional narratives.

This paper does not intend to provide answers to the cultural paradox which is manifesting itself in modern classrooms, but hopes to distinguish some of the underlying dynamics of technology integration, from the teacher's point of view.

PAPERS

TRANSFORMING COMMUNICATION WITH ICT

Gytis Cibulskis, Danguole Rutkauskiene, Evaldas Karazinas,
Kaunas University of Technology, Lithuania

Introduction

Paper presents the ideas of Eureka project "Virtual Communication and Meeting Centre (ViCaMC)" and its current development and implementation at Kaunas University of Technology. Project aims to develop a distributed platform that would enable migration of all aspects of conferences, lectures or meetings to a virtual environment as well as to enhance traditional events with innovative collaboration, content authoring, knowledge sharing and semantic web technologies.

Summary

Scenarios for the physical meetings such as lectures, conferences, seminars or workshops has evolved during decades and proved to be effective for communication among different groups of people.

Rapid development of information technologies and broadband Internet services creates new possibilities to communicate on-line and to transform physical meetings in many ways. For example, video conferences has been used for few decades as an alternative for physical meetings, Internet broadcasts and on demand video allowed to extend auditorium of participants dramatically, on-line collaboration tools made it possible to work on joint projects and to collaborate while authoring common paper or any other digital content. On the other hand there are many systems developed for accommodation of physical event organizational aspects such as user registration, paper submission, peer-review process, etc. In this way we are facing problem of scattered information across various repositories and different tools. In ViCaMC project we propose to create a platform, which would offer integration services for separate repositories and could allow creation of new services on top of them. Additionally, it would offer an easy tool for managing data and users from one location.

PAPERS

The idea of the project is to go beyond capabilities of event management system or separate on-line collaboration tools and to create a platform that would provide services for both organisations and individuals:

- for organisations (learning providers or event organisers) system will enable to extend their audience from physical to virtual participants or even to move whole event on-line,

- for individuals system will allow to use on-line collaboration and presentation tools both for virtual and physical events by extending audience of participants and building his on-line community of interests by collecting all digital artefacts authored by him in one virtual shared portfolio,

- for all participants system will allow to take part in live events as well as to search and watch for recorded presentations, lectures or interactive meeting sessions.

The integration between those services will create new possibilities to get additional benefit not only from separate, but also from overall collected and integrated digital assets – through relations, where different type of media, generated and connected together will represent some Units of Knowledge which would support knowledge sharing and will promote its higher quality.

PAPERS

ACTIVITY-BASED COMPETENCE MODEL – AN APPROACH FOR 21ST CENTURY LEARNERS

Sonia Hetzner, Innovation in Learning Institute, University of Erlangen-Nuremberg, Germany, Christina M. Steiner, Knowledge Management Institute, Graz University of Technology, Austria, Stan Karanasios, AIMTech Research Group, University of Leeds, United Kingdom, Roland Hallmeier, Innovation in Learning Institute, University of Erlangen-Nuremberg, Germany, Marcel Berthold, Knowledge Management Institute, Graz University of Technology, Austria

This paper describes an activity-based competence definition and assessment approach. We argue that in a fast evolving world with increasing competence development necessities, training concepts need to target the performance of a single or integrated set of activities. The activity-based competences definition model for adult learners presented here aims at supporting the process of deriving key competences in line with the activity to be performed or improved. The model combines the concepts of Activity Theory, with andragogical principles and Self-Regulated Learning approaches with the revised version of Bloom's Taxonomy. Additionally, it integrates modern learning theories (Connectivism) and concepts that emphasize knowledge networks and enquiry strategies as the key element of the modern knowledge society. We outline a Competence Model that supports the development of pedagogically sound authentic training activities, such as for simulation-based training activities or any other e-learning element for distance education.

We identify the following pertinent generic training requirements for enhancing workplace training in the 21st century:

1. Training should be process-oriented, i.e. the trainee gets the training in the situation s/he is needs it for performing a certain task or job.

2. Activity-based and authentic learning, i.e. solutions that support the effective transfer of knowledge created within the training into the work domain.

3. Recognizing individual and organizational learning motives and constraints and integrating previous knowledge and experiences,

4. Enhancing the learning competence of individuals, groups and organizations by supporting the development of learning strategies,

5. Supporting the development of 21st century skills and in particular is important to know whom, how and where to ask for information

6. Identifying ways of approaching assessment for monitoring the effects of the training and attributing causes. Assessment is based on the demonstration principle (e.g. in a simulation environment).

And developed a competence model for responding to these requirements. The ImREAL (activity-based) Competence Model (ICM) is an analytical, pragmatic model that supports the definition of key competences and associated skills, attitudes and knowledge for the performance of a certain task or task group (e.g. job interview; understanding non-verbal cues in dyadic communication processes). It starts from the activity i.e. the job analysis and the necessity of developing or improving certain competences to perform it (based on an initial user needs analysis). It supports the definition of learning goals and the respective competence to be developed or improved. And it links the activity with the respective competence or competences in the focus of the training. The use of an advanced storyboarding environment that allows users to map the activity, the associated competence and skills with multimedia objects (videos, audio, and text) and community comments on these elements, which are retrieved from the social web. This information supports instructional designers in the development of authentic simulations (or other e-learning resources), which in turn supports the development of the competence needed for a certain activity. Furthermore ICM links the competence definition with all aspects of self-regulated learning and adult learning as described above. ICM is a generic approach to competence modeling and instructional design, which is applicable to different knowledge domains and types of skills (e.g. communication skills in medical or business settings, self-regulated learning skills).

PAPERS

USING SOCIAL MEDIA TO ENGAGE AND DEVELOP ONLINE LEARNERS

Lisa Marie Blaschke, University of Maryland University College and Carl von Ossietzky University of Oldenburg, Germany

Social media technology provides educators with an opportunity to further engage learners in the online classroom, as well as to support development of learner skills and competencies. This case study research project explores the role of social media in promoting cognitive and meta-cognitive learner development and in creating more self-directed and capable learners using a heutagogical teaching approach. *Heutagogy* is the study of self-determined learning where responsibility for the learning path is placed in the hands of the learner. As a learner-centred educational approach, heutagogy has been shown to support development of capacities for lifelong learning and has also been identified as a potential theory for application in learning environments that use emerging technologies. The special affordances of social media seem to support a heutagogical approach to teaching and learning, and this case study research explores the role of social media in engaging learners and in promoting cognitive and meta-cognitive learner development. This question is part of a larger context in understanding the role of social media (active usage) in developing learner competencies and capabilities, particularly when social media is used to support a heutagogical teaching and learning approach. Research was conducted using questionnaires and interviews and incorporated the perspectives of both students and instructors on the use of social media in the online classroom and how social media has influenced interaction and learner development. In addition, e-portfolios – created by students using social media – were reviewed to determine evidence of acquired competencies and reflective practice. This paper presents the findings from the case study, as well as general guidance to instructors for incorporating social media in the online classroom.

INCLUSIVE OPEN EDUCATIONAL PRACTICES: HOW THE USE AND REUSE OF OER CAN SUPPORT VIRTUAL HIGHER EDUCATION FOR ALL

António Teixeira, Universidade Aberta & University of Lisbon, Portugal,
Carlos João Correia, Filipa Afonso, University of Lisbon, Portugal,
Antonio García Cabot, Eva García López, Salvador Otón Tortosa, University of Alcalá, Spain,
Nelson Piedra, Universidad Técnica Particular de Loja, Ecuador,
Luciana Canuti, Jacqueline Guzmán, Universidad de la República de Uruguay, Uruguay,
Miguel Ángel Córdova Solís, Universidad Continental de Ciencias y Ingenieria, Peru

Although the number of available open educational resources (OER) is increasingly higher, evidence shows their use and especially reuse is not proportional. This is because production of free access quality digital resources alone is not sufficient to assure widen participation in Higher Education. In order to achieve this goal we need to develop innovative strategies that effectively makes the use of OER a part of the daily practice of teachers and students. Apart from improving the visibility of existing resources as well. Beyond assuring access to open learning architectures, we need to focus on learning as a process of inclusion. Inclusiveness should be thus considered a prerequisite for open online education.

Open educational practices (OEP) calls also for the close articulation of learning tools and methods with ethical values. Following the recommendation of the 2012 Paris OER Declaration, promotion and use of OER should aim at widening access to education at all levels, both formal and non-formal, in a perspective of lifelong learning, thus contributing to social inclusion, gender equity and special needs education. Given the different kinds of special needs of students with disabilities (physical, sensitive, cognitive), this aim implies a holistic approach to the design, use and reuse of OER. However, this hasn't been the case so far. In fact, throughout the years a number of standards and guidelines have been developed to help ensure that digital resources produced/used for/in education are accessible for all. But, in general these studies have considered accessibility only in relation to the design of resources.

In this paper we discuss how critical it is at the time of measuring the accessibility of resources to ensure OER use and reuse follows guidelines which consider in an integrated way the different types of disabilities and educational aspects involved. In order to assure "equal opportunities" in education, accessibility should have an educational component related to the level of understanding the users may have of the OER content.

PAPERS

In this paper we submit a proposal for classification which addresses the educational objectives of OER, the difficulty level of understanding of the content of the resource, and the user profile determined by the type of disability in an integrated form. On one hand it is proposed to classify OER levels according to the WCAG 2.0 accessibility level achieved, by the pedagogical objective of the resource and the types of contexts of use (user profile and / or environment characteristics) determined by each type of disability. For this, we will use the method proposed by Brajnik G. and R. Lomuscio (2007), according to which a mapping between the checkpoints of WCAG 2.0 and the types of barriers is used. Experts determine how to classify the resource according to the type of disability and educational purpose. In our case we suggest to ask experts to indicate the degree of importance (high, medium, low) of each barrier. Finally, we propose to classify the OER according with the understanding of content achieved by the different user profiles (very easy to understand, was understood, difficult to understand). We call this "pedagogical content accessibility" of OER for different types of disabilities.

As we show in the discussion, pedagogical aspects are critical to determine OER accessibility. In light of this, we present a set of procedures that make possible to include them in the evaluation and classifications of OER. The proposal presented in the paper combines important elements in the evaluation of resources or learning objects. This type of classification manages to bridge the points of view of design and pedagogy, articulating them in an ethical framework.

PAPERS

UNIVERSITY STUDENTS' ATTITUDES TOWARD CELL-PHONE BASED LEARNING

Yaacov J Katz, Bar-Ilan University, Israel

Latest technology based distance learning and mobile learning delivery platforms include cell phone based SMS technologies that provide access to learning materials without being limited by space or time. Sophisticated technological advances in the domain of pedagogical delivery have led to motivated, flexible, user-friendly, controlled and adaptive learning using cell phone delivery platforms.

In the present study three groups of first year university students who studied Jewish concepts in an elective 15 week long (semester) course were exposed to three different modes of concept delivery. The first group of students received weekly lists of Jewish concepts sent via SMS messages to their cell-phones, the second group received weekly lists of Jewish concepts sent via email messages to their inboxes, and the third group of students received weekly snail mail lists of Jewish concepts. The definitions of Jewish concepts studied by SMS, email and snail mail were identical and the students received 20 Jewish concept definitions on a weekly basis (except for weekends) for a period of 15 weeks. At the end of this period the students in the three groups were tested on a standardized Jewish concepts achievement test and responded to a questionnaire that examined the levels of learner curiosity, learner self-efficacy and learner technological self-confidence as perceived by the students' in the three groups.

Results of the study indicate that there were no significant differences between the achievement scores on the standardized Jewish concepts achievement test attained by students in the SMS to cell-phone delivery group, the email delivery group and the snail mail delivery group. However, there were significant differences between the students in the three different delivery groups regarding their levels of learner curiosity, learner self-efficacy and learner technological self-confidence. The students who received Jewish concepts via SMS messages attained a significantly higher level of learner curiosity than their counterparts who received lists of concepts via email messages who in turn exhibited a significantly higher perception of learner curiosity than students who received concepts via snail mail. Students in the SMS group also had a significantly higher level of learner self-efficacy than their counterparts in the email and snail mail groups. No significant differences were found between students in the email group and those in the snail mail group on the learner self-efficacy factor. Lastly there were no significant differences in the perceptions of students in the SMS and email groups on the

PAPERS

learner technological self-confidence factor. However, students in both SMS and email groups were significantly higher than students in the snail mail group on this factor.

The results of the study indicate the potential evident in SMS based cell-phone technology regarding enhancement of students' attitudes toward learner curiosity, learner self-efficacy and learner technological self-confidence. Thus cell-phone based SMS messaging can in fact become a viable technological mobile delivery system in the university learning process and serve as a routine platform for the delivery of relevant learning materials.

EMOTIONAL PRESENCE AND MOBILE LEARNING: LEARNER-DRIVEN RESPONSES IN A WIRELESS WORLD

Martha Cleveland-Innes, Mohamed Ally, Norine Wark, Athabasca University,
Tak Fung, University of Calgary, Canada

This study examines the use of mobile devices among online graduate students, and what effect, if any, this use has on emotional presence. We suggest that emotion exists as part of the online experience, just as it does in all human experience. The intensity of graduate study and the benefit of increased interaction through online communities may be a catalyst for both increased use of mobile communication devices to support learning and a stimulus for emotional presence. Results demonstrate that half the online graduate students use mobile devices in support of their learning. Emotional presence does exist for online graduate students but it is not influenced by mobile device use. However, there is a significant gender difference in the measurement of emotional presence.

Few studies have focused on the use of mobile communication devices as learning tools. A recent systematic review of literature found just 44 studies directly concerned with the use of such devices in an educational setting. There is very little known about the use of mobile internet devices in place-based or virtual graduate-level programs. Sound research adds knowledge onto the edges of current theories, models and premises in light of changing contexts and new technologies for learning.

The Community of Inquiry model has been well-researched in reference to online learning, but is only now being applied to the extensions of online learning, such as mobile learning. The CoI framework provides a process-oriented, comprehensive theoretical model that can inform both research in online learning and the practice of online instruction. It assumes that effective online learning requires the development of a community supporting meaningful inquiry and deep learning.

In an inquiry-based, graduate-level online learning environment, student self-managed exploration is more prevalent than direct instruction. Graduate study itself implies the development of self-managed learning and knowledge development. Rather than expecting to be spoon-fed knowledge and provided with answers to challenging questions, we expect that graduate students studying online are 1) more likely to use mobile devices to self-manage and enhance their learning and 2) that the intensity of self-management and advanced level study at the graduate level may intensify emotional presence.

PAPERS

Based on this assessment of the characteristics of online graduate study, we anticipated that:

1. Students in this sample will use mobile devices in support of their learning and
2. Those using mobile devices will experience greater emotional presence.

These predictions were tested as part of a larger research study of online learning and the use of mobile communication devices. This research employed a quantitative survey design, using a validated instrument measuring the four presences of a community of inquiry, controlling for the use of mobile devices, the use of mobile devices for learning and the demographic variables age and gender. The unit of analysis is the individual student and the time-frame is a single snap-shot assessment. Self-administered questionnaires were received from a purposeful sample of online graduate students studying in multiple programs at a uni-modal distance and online university. This sampling yielded an N of 406 students from 30 courses over three semesters. The response rate averages to 29 % over all semesters.

The majority of online graduate students, as represented by this sample, use mobile devices generally. Just over one-half use mobile devices in support of their formal learning. Emotional presence scores do not vary by mobile device use, whether the student was identified as a general user, or one who uses their device specifically for learning. The individual influence of gender on emotional presence is significant. This result is the same when controlling for mobile device use and age; gender has an impact on emotional presence scores in either case.

Key findings identify that:

1. Emotional presence emerges as a separate factor from the other three presences of a CoI;
2. Mobile device use is prevalent, but only half of the students use it for learning;
3. Mobile device use is not influenced by age or gender; emotional presence is influenced by gender but not age;
4. Mobile device use influences social and cognitive presence, but not teaching or emotional presence.

PROFESSIONAL LEARNING ON-THE-MOVE: TIME TO MOVE-ON

Elena Avatangelou, EXODUS S.A., Greece, Ildiko Mazar, EDEN, United Kingdom,
Aristotelis Alexopoulos, ALBA Graduate Business School, Greece,
Emanuela Ovcin, COREP, Italy, Victoria Damyanova, ITD, Bulgaria

Introduction

Adult learners' re-entry into the learning environment, in many instances, requires a leap of courage, and yet their learning success is integral to the health of communities and the economy. These learners, whether busy parents, young adults or seniors who would like to stay professionally active, can only (re-)enter or stay in the workforce by becoming life-long learners.

Learning on-the-move holds a promise for providing opportunities for adults to stay in-line with their career, personal and educational goals, to keep pace with professional and societal changes and with the new formal requirements in the modern labour market. Learning at the "non-place" refers to learning which takes place in spaces of temporary, transient activity (such as airports, supermarkets, hotel rooms, highways, waiting queues, etc.), generally in time and place that would normally be mostly "downtime" for a person. On the other hand, the tendency of more and more adults carrying powerful portable devices provides a well-exploitable opportunity for learning.

The MOVE-ON project (under the LEONARDO DA VINCI Lifelong Learning Programme (LLP) of the European Commission, Education and Culture DG) aims at designing, developing and validating new vocational education possibilities ready to be offered in short episodes (max 10 minutes each) during "non-place" events with the goal to increase the overall volume of participation of adults in vocational education.

The present paper presents the overall goals of the project, the basic MOVE-ON educational model and the architecture and user roles supported by the system. The project started in January 2011 and expected to end in December 2012.

PAPERS

More information about the project

For more information on the project's progress, related events and publications, and to get involved in the MOVE-ON community, please visit our website: move-on.exodussa.com, or our Facebook page www.facebook.com/MOVEON.LLP and register to our Newsletter.

Project partners

- EXODUS S.A. (Coordinator) – GR (www.exodussa.com)
- ALBA Graduate Business School – GR (www.alba.edu.gr)
- COREP – Consorzio per la Ricerca e l'Educazione Permanente – IT (www.corep.it)
- Institute of Technology and Development Foundation – BG (www.itd-bg.eu)
- EDEN – European Distance and E-Learning Network – UK (www.eden-online.org)

Disclaimer

This project has been funded with support from the European Commission under the LEONARDO DA VINCI Lifelong Learning Programme (LLP) of the European Commission, Education and Culture DG. This communication reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

ONLINE, FACE-TO-FACE OR BLENDED– WHAT TUTORIAL DELIVERY DO STUDENTS WANT IN DISTANCE EDUCATION?

Lorraine Delaney, James Brunton, Eamon Costello, Seamus Fox, Anne Morrissey, Noeleen O'Keeffe, Elaine Walsh, Oscail, Dublin City University, Ireland

In Ireland, distance education has moved increasingly towards online delivery, with some courses delivered entirely online. Given the growth in the availability and use of technology, it is hardly surprising that the demand for online delivery of courses has increased both from students and from governments, who identify technology as an additional tool in helping to broaden access to education.

Virtual classrooms create the possibility of delivering off campus education in innovative and dynamic ways. They also address another problem for distance education providers – that of low attendance at face to face tutorials. However, little is known about student preference regarding tutorial delivery. This study begins to address the research gap by examining the views and preferences of students regarding tutorial delivery. This paper considers two academic years; 2011-2012 when online synchronous tutorials were employed for the first time on all Oscail programmes, both at undergraduate and postgraduate level. We outline the findings of a survey regarding student experience of engaging with online tutorials during 2011-2012. We then review statistics from the 2012-2013 academic year when all undergraduate students were asked to choose between three tutorial delivery options; completely online, blended or face to face. Returning student preferences are analysed in the light of their experience of online tutorials in the previous academic year. Their preferences are then compared and contrasted to the preference of new students, who have little if any experience of online course delivery.

Tutorials provide an invaluable opportunity for social interaction in distance education. We know, both intuitively and from the literature, that social interaction can help to overcome isolation and support retention. Social interaction also facilitates knowledge construction. However, we also know that distance education students have many demands on their time and the reason they cannot attend face to face tutorials can be the very same reason why they cannot attend live online tutorials (work, family commitments). A major challenge for distance education therefore, is to encourage tutorial attendance in order to support communication, collaboration and learning.

PAPERS

The research findings illustrate that, while students have a preference for face to face tutorials, they acknowledge they will have difficulty in committing to attendance. They like the fact that online tutorials are recorded and archived. However students will only attend live online tutorials if they are structured in a way that they, as learners, find engaging. This has implications for social interaction, knowledge construction and learning in distance education. In the final analysis, returning students opt for blended tutorial delivery. New students, on the other hand, opt almost entirely for online tutorial delivery. While this research is preliminary it has implications not only for how tutorials are provided in distance education but also how to best structure tutorials in order to enhance attendance and learning.

This paper begins with a discussion of the role of tutorials in distance education and how the availability of online synchronous web based technology has the potential to transform tutorial provision. We review the literature in relation to communication and collaboration in education and acknowledge that there is a need to address the dearth of literature in relation to student preferences for tutorial provision in distance education. We outline our research methodology together with the conclusions and implications drawn from the research.

ASSIST AS A TOOL TO EVALUATE COURSE DESIGN

Maria Svedin, Olle Bälter, KTH Royal Institute of Technology, Stockholm University,
Kerstin Pettersson, Max Scheja, Stockholm University, Sweden

To get students to adopt a deep approach to learning is often considered as the finest achievement in teaching, but how do we know whether our course design encourage or discourage this? We have used a short version of the Approaches and Study Skills Inventory for Students (ASSIST) to analyse the course design in two online university courses in mathematics and programming. The questionnaire consists of 18 items that students score on a 1 – 5 scale, which results in a three sub scores, each with a total between 6 and 30. The three sub scores correspond to the three approaches: deep, surface and strategic. Both courses are preparatory courses and have self-paced learning. The intended students are the same for the two courses and students in Sweden who apply for university programs with mathematics prerequisites are invited to both courses. The courses were selected due to their differences in completion rate: for the programming course 69 % and the mathematic course 37 %.

An invitation email was sent to all students who signed up and acquired an account for either course during the time period June to July 2010. The email informed the students of the purpose of the study and the volunteer participation. A few hours later another email was sent containing both a link to the web questionnaire and a link that registered the student as declining participation in the study. Non-respondents were reminded up to three times one week apart. This resulted in 493 respondents, representing a 24 % response rate.

The results show that the programming course design encourages a surface approach and discourages a deep approach. Since introduction courses consist of learning facts and principles, the results may be a combination of the level of the course and the disciplinary setting, as well as a deep approach to learning being a hinder in order to be able to complete a course at that level in time.

For the mathematics course, both deep and strategic approaches are discouraged in that the probability to pass descends the higher the score on deep or strategic is. This may be because of the current disposition of the course. As of today, there is only one way to go through the course; the students are steered from the beginning to the end. This leaves no room for the students to think about the layout for themselves; there is no room for a strategic approach.

PAPERS

When designing online courses to support a deep and strategic approach among the students, it is important to take into consideration that it is much easier to lead them into a surface approach, with as little as one poorly designed element. This makes it more important to remove those factors that promote a surface approach, rather than training the students in how to adopt a deep approach.

With the results from this study in mind, we will remove obstacles that encourage a surface approach among the students so that they are better prepared for their future university studies.

The indications from the study are a contribution to the discussion on disciplinary differences in approaches to studying as well as in disposition of online courses.

DEVELOPING PROFESSIONAL FOR ICTs IN EDUCATION AND EDUCATIONAL TECHNOLOGIES: WHOM, WHAT AND HOW TO TEACH

Maria Tatarinova, Moscow University of Economics,
Statistics and Informatics, Russian Federation

The presentation will make the audience aware that new approaches to education require re-thinking the systems and skills for creating and sustaining change. They will also learn that in the Russian context, the Instructional Designer is a new role and is very much a catalyst in the transition from classroom teaching to distance learning.

Attendees, those who are involved in similar projects will be able to discuss and learn the basic competences for instructional designers and of the ways in which we are selecting and training professionals for this role. We will also discuss preliminary results of this program and we'll be able to find the possibilities for cooperation in providing students' academic mobility and exchange and joint researches in the field of Instructional Design.

The paper outlines practical outcomes of this project and specifies what it did. In particular, this initiative brought a change and offered the innovative program for Russian higher education meeting the demand of growing eLearning market thus ensuring quality and competitiveness of Russian eLearning.

The project was undertaken as we needed to respond to the challenges of the time and education and to start preparing the specialists for the sphere of eLearning with the integrated knowledge and skills of Pedagogy and Computer Science.

As a result Master's Degree Program for Applied Informatics in Education majoring in Instructional Design and Distance Learning was developed and 2 pilot groups of 6 students each defended their Master's dissertation in 2011-2012 and carrying out projects for the real educational institutions and companies which undertake eLearning initiatives. All the graduates managed to combine work and studies and are satisfied with the knowledge and skills received. Now the Bachelor Degree program for ICTs in Education is being developed and student are being recruited for 2012-2013 academic year.

PAPERS

The educational programme in question is very specific as, primarily, it is new to Russian educational context in the times of e-learning economic sector being formed and demand for this kind of specialists being stronger felt that ever before, and, secondly, because the educational aims are at the same time the learning content and methods used by professors for postgraduate students as they should learn the profession by doing.

That is why the concept of student centred approach and constructivism, problem-based, project-based approaches and activity methods were chosen to both build integrated course curriculum and activities, and to teach and learn the course content.

In conclusion the main conclusions drawn and future perspectives discussed. The initiative was welcomed by Russian educators and it stimulated introduction of this program in other Russian universities. New program profiles started to be developed. Last year the program was quick scanned by E-xcellence, Quality Assurance in eLearning (EADTU) and achieved the label of Associates in Quality.

WHY DO LEARNERS COOPERATE?
HINTS FROM NETWORK SCIENCES ON MOTIVATION FOR COLLABORATIVE LEARNING

Fabio Nascimbeni, MENON Network, Belgium

We believe that in order for education to embrace the needed change to make it fit for the future, learners should not only sit on the "driving seat" of the learning process, as suggested by the title of the 2012 EDEN Research Workshop, but they should "drive together", meaning that collaborative learning should be encouraged as much as possible, along the possibilities offered by social media and ICT. In order to support meaningful collaborative learning practices, we would need to understand what lies behind the different cooperative attitudes of learners. The proposition of the paper is that – to do so – educational research and practice should be looking at some interesting findings coming from networks science.

We propose two general conceptualisations. First, starting from the work of Martin Novak, we describe four mechanisms that foster the adoption of cooperative behaviours within networks: direct reciprocity, indirect reciprocity, kin and spatial influence, and multilevel influence. We believe that understanding these dynamics can be very useful if we want to sustainably foster cooperation within learning communities. Especially, reputation is a key driver for cooperation in learning settings, since it influences both cognitive and affective learning as well as group cohesion. Nevertheless, for reputation to guide cooperative attitudes within a learning community, mechanisms must be in place to allow "enough transfer of information about who did what to whom" within the network. Second, we describe some conditions that should be taken into account when planning collaborative learning support strategies; issues like confidence, commitment, divergence and decentralisation are briefly commented from an educational point of view. Finally, we briefly explore the concept of "collaboration leaders" within learning networks, stressing the importance on building on those to foster collaborative attitude of a learning community.

The success of any collaboration venture, within learning as well as in other contexts, depends on the capacity of the parties to work towards a common objective, sharing concerns and working out common solutions: the paper hints to some findings on collaboration motivations and conditions that can foster meaningful network-thinking within education. The scientific community is paying increasing attention to the study of networks, and education should also do so. Network-based approaches such as Social Network Analysis (SNA) can be used to

understand networks from a different point of view, since they "inquiry into the patterning of relations among social actors, as well as the patterning of relationships among actors at different levels of analysis": in the education field, especially in the case of distance learning, network science can help uncovering the patterning of learners' interactions and of knowledge collaborative production. These issues would deserve further exploration and adaptation to real life cases within education: specifically, it would be important to substantially apply Social Network Analysis techniques to learning networks, as suggested by Breuer, hence looking at collaborative learning with the appropriate level of *network thinking*. We believe that increasing the level of *network thinking* within education practices would be fundamental to understand the motivation factors which lay behind the different cooperation attitudes of learners, and ultimately to take the maximum benefit from any collaborative learning experience.

STUDENTS' ATTITUDES TOWARD SOCIAL NETWORKING

*Vilma Musankoviene, Vaidas Astrovas, Daina Gudoniene, Julita Piguleviciene,
Kaunas University of Technology, Lithuania*

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. Facebook seems to have become a pervasive element of students' lives; as such, the potential exists for it to have a significant impact on social practices in academic environments. Some teachers are also creating accounts and communicating with students on Facebook.

Social computing tools (Web 2.0 technologies) are expected to enhance learning processes and outcomes in a number of ways. Firstly, it is believed they will respond better to the changed cognitive processes and learning patterns that have evolved due to the ubiquity and widespread use of information and communication technologies, thus facilitating knowledge acquisition. Moreover, social computing tools recognise the diversity of users and are thus expected to contribute to the personalisation of educational experiences, offering opportunities for flexible, distributed learning. Social computing applications are expected to promote independent, autonomous and self-directed learners endowed with a variety of social skills that enable them to connect, interact and collaborate successfully with a variety of people on different tasks and in diverse environments.

In the framework of the EUREKA project "FFCC – Friend, Family, Colleagues connection", we build a social networking site for University usage based on ELGG – bendrauk.ktu.lt. This networking site invited students and faculties members to join the social network for communication and collaboration, for social learning activities, for sharing information and learning material.

The aims of the research: to investigate the students' attitudes toward social networking and learning possibilities within social networking sites and to find aspects of social network services that motivate students to actively participate in discussions, social networking procedures etc. in this context of studying at their university.

PAPERS

Research methods used:

1. questionnaire;
2. statistical processing of responses;
3. students' reflections.

The respondents are 72 Master degree students from Faculty of Informatics and Faculty of Economics and Management at Kaunas University of Technology. The research was done in autumn 2011 and spring 2012.

Facebook is a tool that aids students in developing their identities and finding their "fit" within a university community. Helping students connect and stay in contact with old and new friends is touted as one of the significant benefits of Facebook. Making connections on campus (bendrauk.ktu.lt) which help them feel that they belong may be an important factor in student retention. In the context of university the system could increase the feeling of fellowship and solidarity.

Students' attitudes toward social networking are positive. To activate students in the social network it is essential to have easy access to information about peers' activity. This also enhances networking not only on a personal level but also through common interests. Positive feedback for students on their actions increases user motivation on different levels.

Obviously tools provided by social media are attractive to students and making those tools a part of studying and learning is rational. Thus the universities are challenged to provide modern systems and methods for supporting studying in social levels if multilevel interaction with students' lives has a priority at university.

ENABLING AN ENVIRONMENT FOR STUDENT GENERATED CONTENT

Satish Patel, Linnaeus & Umeå University, Sweden

Before the advent of the internet, there was little choice as regards who generated content and who created forms of assessment. Using Web 2.0 applications and learning platforms, the student role can be recreated as being a producer of learning objects, as opposed to being only a passive consumer. Tutors can now facilitate their students in the creation of digital content for presentation, practice and assessment, thus creating a social constructivist environment necessary for most learning, but absolutely critical for attaining the higher levels of Bloom's taxonomy.

Despite being a country with a well developed infrastructure for net-based learning (i.e. availability of fast internet, computer access & ownership, the normative learning & teaching environment in most educational establishments in Sweden (at all levels) is that of students having to consume content made by others. Although students have always generated their own content by way of essays, papers, lab reports, etc. this form of generated content is, for the most part, used for testing and examination purposes. Very little is actually shared among students for socially constructed newer meaning. In effect, student generated content (henceforth SGC) before the advent of the internet and more specifically web 2.0 was only of a one-directional – from student to teacher. More recently, a growing number of educational establishments advocate the usage of ePortfolios. Yet even here, such usage serves as little more than educational showcasing of finished creations as opposed to the joint production and sharing of learning objects.

This presentation justifies (and exemplifies the production of learning objects (quizzes, lectures, games, interactive online material) BY students and FOR students thus releasing tutors to facilitate the learning environment and to engage in dialogue with their learners who articulate/ express their understanding through material shared via an interactive learning platform. In effect, a flipped classroom model is the aim: a classroom allowing for a more active "learning by doing" role for the student and a greater facilitative role for the tutor engaged in "getting students to do the doing". The learning objects in this flipped classroom model are planned within a framework model for Constructive Alignment.

PAPERS

USER CENTRED DESIGN OF LEARNING APACES

Ulf Hedestig, Mikael Soderstrom, Umea University, Sweden

Design of learning spaces has to correspond to users' needs and goals, how current and future practices evolve in them and users' appropriation of new technologies. Financial constraints, increased diversity among students, more and more students taking part-time and flexible learning options, etc. have created new challenges for the design of learning spaces in higher education. In this new context innovative technologies are also emerging and the ways people communicate, coordinate and collaborate are continuously transforming and changing, which of course also affect learning space design.

In this paper we adopt Michael Brown's definition of learning space: "Learning spaces encompass the full range of places in which learning occurs, from real to virtual, from classroom to chat room". The developments in the blended learning area have led to a situation where more and more learning spaces comprise both virtual and physical elements, which make the design of them an even more complex matter. Regardless of whether the learning space is virtual, physical or blended we believe that it is important to take a student and teacher (as users of learning spaces) perspective into account. This must include users' habits and the communication patterns they have developed through the appropriation of technological artefacts.

In order to investigate the importance of the user perspective we conducted a pilot project with students and teachers at our university. Our purpose was to inquiry if a user centred approach can be useful in the design of future learning spaces. The method we used was focus group interviews in which the participants conducted two brainstorming sessions. Our approach is influenced by the Georgia Institute of Technology who used a similar method when redesigning their library. The first session considered the physical part of the learning space, and the second the virtual learning environment.

The students described their ideal physical space using concepts as: water; waterfalls, brooks, streams, fountains; colour; warm colours, interesting wallpapers, colour themes in each classroom; sound/audio; a combination of silence and sound (people talking, music, birds, etc.); plants; flowers, green plants, plastic flowers; tempting furniture; sofas, round tables, round rooms; accessibility; computers and printers, wireless, information and service centre in the middle of campus. The directors of studies had similar reflections on the physical space, but organised their expressions around the following themes: pale and open spaces; flexible spaces

that is easy to rearrange according to teaching and more informal learning; mobility and wireless communication.

Both directors of studies and students describe the virtual learning space as more complex than the physical learning space. Their descriptions most often involve an integration of private spheres and public spheres outside the educational context with the virtual learning space. The students describe an integration of private and formal technologies and behaviours and communication patterns that probably have evolved through appropriation of personal technologies, for instance mobile phones, instant messaging and web 2.0 technologies such as Facebook, Flickr, YouTube, blogs, etc.

Based on the results of the focus group interviews we designed three different learning spaces supporting classroom teaching as well as more informal learning; one computer lab, one classroom and a large learning space located in the University library. All spaces allow students to perform both individual, group or class activities. The learning spaces described are not yet evaluated, but we can already observe that all spaces are used quite a lot by both students and teachers.

We believe that the appropriation of a learning space is a complex process. Therefore, we have to investigate what kind of interdependencies and dependencies that already exist or may be created when users appropriate a certain learning space. If the learning space does not correspond to users' needs and goals they enter other spaces that are more appropriate. Hence, when evaluating the use of learning spaces it is essential to understand users' practices, their needs and goals and their use of learning resources.

PAPERS

VIRTUAL SCHOOLS AND COLLEGES IN EUROPE: LOOKING FOR SUCCESS FACTORS

Ilse Op de Beeck, Wim Van Petegem, KU Leuven,
Anthony F. Camilleri, Marie Bijnens, EFQUEL, Sally Reynolds, ATiT, Belgium,
Paul Bacsich, Giles Pepler, Sero, United Kingdom

Schools are changing and it is clear that ICT can play a role in order to set up more open and pupil-centred models of schooling. As the demand for more flexible learning paths grows, virtual schools and colleges are becoming an increasingly important alternative and are becoming more and more prevalent all over the world.

Virtual schooling has huge potential to widen choice for learners, to contribute to improved attainment and to reach learners who may otherwise be unable or unwilling, to access high-quality education (e.g. students who are long-term sick, travellers, students who have been bullied or are school-phobic, elite performers, etc.). However, little is known in Europe about how they operate or what makes them successful. Yet, a lot of virtual schools and colleges now exist and have been the subject of a recent investigation within the EU-supported project VISCED.

Virtual schools and colleges are usually defined as institutions that teach courses entirely or primarily online. These courses are generally similar to those taken by school or college-age students. In a virtual school pupils learn mainly at a distance over the internet and any activity in a classroom takes no more than around 15 % of study time. In our research the main focus is on secondary level education aimed at the 14-21 age group as well as colleges providing opportunities for students including those moving between school and higher education. We have found that virtual schools are not that common in Europe and in many countries there are simply none. Currently, almost 70 have been identified in Europe distributed across 18 different countries.

Examples and case studies reviewed in the VISCED project, demonstrate that European virtual schools form a very diverse constituency – ranging from quite sophisticated and high-tech through to what many would consider fairly basic, low-tech solutions and through the spectrum of blended learning to pure online learning. What seems to be in common though is that they have developed pragmatic solutions to meet existing learner needs.

The outputs of the review of virtual schools and colleges have also been analysed and compared to identify relevant parameters for classifying and comparing these initiatives. The aim was to create a set of critical success factors and key success factors that are contributing to the sustainability. The more online education and virtual schooling shifts from small-scale experiments to large-scale, mainstream operation, the more important these factors will become. Through a process of desktop research (looking at relevant literature on success factors for e-learning, and quality and benchmarking schemes), reflection and consultation the following preliminary list of factors that appear to be *key* to success was identified:

- Usability of the system being used to support students, teachers and others involved
- Extent to which a clear e-learning strategy is in place
- Appropriateness of recruitment and training policies
- Extent to which regular evaluation is in place
- Robust and reliable technical infrastructure
- Strong leadership skills and competences
- Strong emphasis on learning outcomes - often on an individual basis
- Availability of appropriate digital learning resources
- Clarity of the organisational system underpinning the operation of the school or college

In the final months of the project, this list will be refined into a set of approximately ten factors which are *critical* to the success and the sustainability of virtual schools and colleges, and which can be used in defining monitoring indicators and performance benchmarks within institutions.

More information can be found in the upcoming Virtual Schools and Colleges handbook, a useful resource for anyone who would like to learn more about virtual schools and colleges. Furthermore, VISCED also supports a website (www.virtualschoolsandcolleges.info), and a research wiki (virtualcampuses.eu), open to all interested researchers and policy makers to share information about developments in virtual schools, colleges and universities around the world.

PAPERS

SECOND LEVEL TEACHER'S TRAINING IN THE USE OF ICT: THE DAY AFTER

Miltiadis Tsoulis, Costas Tsolakidis, Costas Vratsalis, University of Aegean, Greece

This work examines the impact of in service training for teachers in the use of Information and Communication Technologies (ICT) in Greece. Teacher training in the use of ICT in Greece includes two consecutive levels. At the first level (A' level of training), consisting of 48 hours, teachers acquire the basic, necessary skills to use ICT. On the second level of training (B' level of training), that lasts 96 hours, they are applying ICT in class. This is set up with the use of educational software and the design of learning scenarios that integrate ICT in teaching. The basic research questions were (a) does B' level of training contribute to an increase in the frequency of ICT use in the teaching/learning process and (b) does gender affect such frequency?

A quantitative research approach was selected using a questionnaire as a basic research instrument. This allowed the measurement of frequencies in the use of ICT (a) by teachers for the preparation of their work, (b) by teachers in the classroom and (c) by students under teacher's supervision in the classroom. The sample consisted of 123 teachers, who work in schools of Imathia (a county on northern Greece). 62 of them, (29 men and 33 women) had a certificate from A' level of training and 61 (31 men and 30 women) had completed successfully the B' level.

The main results of the research revealed that both the training level and gender play a significant role in ICT use. Indicatively:

Table 1: Teachers' use of ICT in relation to training level

(a). Use of ICT by the teacher for preparation	A' level: 58.64%	B' Level: 67.08%
(b). Use of ICT by the teacher in class	A' level: 44.35%	B' Level 52.50%
(c). Use of ICT by the students in class	A' level: 28.50%	B' Level 41.73%

Table 2: Teachers' use of ICT in relation to gender

(e). Use of ICT by teachers for preparation	Men: 67.03%	Women: 67.14%
(f). Use of ICT by teachers in class	Men: 54.20	Women: 50.75%
(g). Use of ICT by students in class	Men: 46.71%	Women: 36.60%

Furthermore it was found that, contrary to the scopes and the aims of the B level training, teachers use ICT in a teacher-centric mode. They use ICT more as a contemporary visual medium and do not encourage its use by students. In this way teaching remains wedded to the traditional model of knowledge transfer from teacher to student-spectator. The findings of this study are related to the results of other surveys who lead to similar conclusions.

Taking the above results into consideration, it is proposed to encourage the entire population of teachers (and mainly women) to join B' level ICT training since this is expected to have a positive impact on the integration of ICT in the learning process. It is also proposed to investigate in depth the factors that prevent teachers from completing B' level training. The design of more flexible training programs that meet teachers' interests and guide then to a more extensive use ICT in class could be a realistic proposition.

Of course the above results partially determine the degree of utilization of ICT in the learning process. For a complete research other factors should also taken into account such as teachers attitudes towards ICT, the availability of educational software and technical support, the role of school leadership and the content of curricula. These remain interesting subjects for further work.

PAPERS

FACILITATING PRE-INDUCTION SOCIALISATION FOR DISTANCE EDUCATION PROGRAMMES

James Brunton, Noeleen O'Keeffe, Eamon Costello, Seamus Fox, Elaine Walsh, Lorraine Delaney, Ann Morrissey, Oscail, Dublin City University, Ireland

This poster will report on a pilot project that has utilised a virtual learning environment (Moodle) to create a space where individuals who had applied to become undergraduate distance education students could begin their socialisation into the distance education context a number of months before they would formally become students and be inducted into their programmes. The aim of this project is to increase retention and progression in first year, undergraduate distance education students by exposing them, at as early a point as possible, to a socialisation programme made up of elements described by the existing literature and research as positively impacting on successful student identity-creation and academic success. The project aims to put these learners into the driving seat as early as possible.

This pilot project had a number of goals: to create a student-focused process; to create a positive impression of Oscail – DCU Distance Education; to reduce the anxiety of new students; to facilitate socialisation; to inform students of their rights and responsibilities; introduce students to the academic and organisational skills needed to succeed in third level education; and, most importantly, to support the student in their transition to higher education. These goals became the focus of the project because the existing research and literature indicates that this focus will facilitate successful socialisation in, and identification with, the new context into which the students are entering, and specifically from an educational perspective, that retention and student success can be improved.

A Moodle page was created to which applicants who had indicated serious intent to become undergraduate distance education students were directed through an email invitation containing a description of the page, its purpose and instructions as to how to log in. The elements making up the Moodle page were designed to facilitate an initial, positive socialisation into the distance education context, which could then be reinforced by the start-of-year induction processes. Thirty-five applicants logged into the page, exploring its contents and interacting with each other and/or a distance education tutor in discussion forums.

POSTERS

The thirty-five applicants, who are now going through start-of-year induction processes on two distance education undergraduate courses (the BA in Humanities and the BSC in Information Technology), will be surveyed about their experience of the pre-induction socialisation Moodle page over the next three months and the data analysed. The results of this data analysis will inform the next iteration of the Pre-induction Socialisation Moodle Page.

PAPERS

PROBLEM BASED LEARNING (PBL) AS A METHOD OF LEARNING: HOW SIMULATION BASED LEARNING (SBL) IMPROVES THE EFFICIENCY OF OUTPUT GOALS IN HEALTHCARE HIGHER EDUCATION

Ildikó Szögedi, National Institute for Quality- and Organizational Development in Healthcare and Medicines, István Csollák, Semmelweis Hospital, Miklós Zrínyi, Teva Hungary Ltd., Hungary

Introduction

The last decade has witnessed a rapid expansion of biomedical knowledge. Furthermore, fashions in medical education over the same period have shifted away from factual (didactic) teaching and towards contextual methods or Problem Based Learning (PBL). This paradigm shift has been justified by studies showing that simultaneous utilization of both PBL and Simulation Based Learning (SBL) improves reasoning and communication and patient safety at the hospital. The problem based learning (Problem Based Learning, hereinafter: PBL) was created as a learning method and curriculum form more than four decades ago first at North - American medical universities in Canada, and in Australia. The essence of the change was that the teaching process, i.e. the curriculum moved from the teacher centred approach towards the student centred, interdisciplinary approach. The spread of the problem based learning stems from the simple recognition that the students have very little knowledge following the traditional teaching methods and it is even hard for them to apply it competently. The PBL method offers a learning environment for the students and teachers, in which the students can reveal their prior knowledge, can use their experiences based on their own empirical learning in close-to-life coherence, can transfer their gained experiences to each other and develop their skills in individual or small group work. The international researches and publications of 2010 strengthen the fact that the PBL learning form can be complemented with other infocommunication learning techniques, such as simulation based learning (Simulation Based Learning), which increases the efficiency of PBL in reaching training output objectives.

Aims

Why is there a need for knowledge change? The goal of lifelong learning is the following: in the centre of professional education there should be the development of skills, interdisciplinary competencies (such as digital literacy, intelligent learning, e-learning and PBL-SBL). The competencies need to be developed as well (problem solving skills, communication skills, social and life coaching skills). The aim of our research was to explore what types of skills are being developed by different learning methods that could be useful for the future career.

Methods

A retrospective and comparative analytical approach was used. The data collection took place between in February – June 2012, in Hungary.120 Hungarian students participated in the own pilot study. The data analysis was done with Chi-square and ANOVA using SPSS 16.0.

Results

Students who received PBL-SBL training had better final CPR (Reanimation) exam grades than traditionally trained peers. The SBL training is based on the e-learning method mostly, but it is also compatible with other learning methods such as the PBL. When developing the CPR skills we utilize a METI simulator. We were also measuring the input and output knowledge of CPR students. It is possible to indicate significant differences in the perception of the development of problem solving skills between the two learning methods with the help of the Khi square trial (khi2=17,974; f=3; p<0.01).The purpose of this research was to evaluate whether PBL/SBL teaching methods were superior over traditional ways of learning. In line with expectations, PBL/SBL students achieved significantly higher grades on final CPR tests than their traditionally trained peers.

Conclusions

Compared to their traditional and the mixed PBL – SBL learning methods, more Hungarian students thought that this method is more efficient in developing problem solving skills. By alloying the methical tools of problem-based learning with simulation-based learning the output goals of SBL will be measureable more significantly in the students' clinical practice.

POSTERS

ARGG! – AUGMENTED LEARNING RING IN GRADARA AND GABICCE MARE

Giovanni Torrisi, University of Urbino, Italy

The concept of Augmented Learning is already well established in theory. What is missing in action is the opportunity to put it into practice. New pedagogy models are emerging, but it is not easy to translate them in the everyday learning methods that can be used in schools.

In order to deal with such complexity, a ring of institutions, which would work closely together, was needed. Local institutions and municipalities for organization and fundings, universities for research and study, enlightened editors to prepare and test schoolwork materials for new devices and methodologies, good-willing schools and teachers to beta test the new pedagogy models.

Once we created the ring of institutions, "ARGG!" was the first expression that came to our minds to describe the situation we were putting ourselves in. We were floated with different information and devices, but no way of giving real sense to them.

Nevertheless, the municipality of Gradara and Gabicce Mare, in the province of Pesaro and Urbino, were determined in giving the project a real possibility of success. The University of Urbino, and CriSEL (Research Center for ELearning) in particular, began a very strict collaboration with the schools and the other agencies involved, in order to provide the much needed action-research theoretical experience on the new technologies for learning. At the same time, the secondary schools of Gradara and Gabicce Mare offered their availability in testing both the pedagogical models and the technological devices. In addition, the library networks, which included libraries from both Urbino University and the Pesaro-Urbino province, were involved in the project with the double objective of providing the schoolteachers with up-to-date literature on one side hand and the students with an incredible electronic source of reliable information on the other.

Moreover, in order to enrich such a network, the Telecommunication Police Department of the Marche Region was involved, as they could bring into the Ring some key information about norms, laws, sense of legality end awareness of the perils that dwell the wild fields of this new frontier, which is the Web.

"ARGG!" from a simple expression of frustration, became the acronym for defining our project: "Augmented Learning Ring in Gradara and Gabicce Mare".

POSTERS

This project will focus on the following actions:

- supporting the research of a new methodological, pedagogical and organizational pattern to build a new learning environment that:
  - encourages the birth of pedagogical paths that involve a systematic use of the new technological devices, which are, nowadays, so commonly used by students ;
  - improves the ease of use of these new devices developed by the students with new competences in valuating the sources, selecting information, revising and re-using them in a critical way, learning to tackle the constant change of languages and the spread of knowledge;
  - valuates the impact and the consequences in the use of pedagogical interactive technologies on the social climate and their effects in the co-operative learning methods;
- elaborating a useful documentation to enhance the transferability of good practice;
- promoting the establishment of a local network to act as an learning community;
- promoting the sharing of good practice on-line;
- favouring an interdisciplinary dimension of knowledge and the cross-using of skills and competences;
- training and sensitizing teachers, families and students about the dangers that may occur using the web in an inappropriate and bad-conceived way.

The Augmented Learning Ring in Gradara and Gabicce Mare is now ready to acquire a European dimension, including in the Ring new partners and new languages, enlarging the learning community to other European regions.

POSTERS

TEACHING AND LEARNING ON AN INSTITUTIONAL VLE IN A UNIVERSITY

Pauline Aquilina, University of Malta, Malta

This conference paper is based on the data analysis of a qualitative case study research conducted at the specific context of the University of Malta. Data was obtained by interviewing academics and strategic managers of the institution. To differentiate between the two groups, Educator (E) was used to refer to academics whose workload was more weighted towards teaching than administration. The word Manager (M) was used to refer to central managers who still taught but had a heavy administration commitment. Managers were selectively chosen while academics were randomly chosen from across all the departments of all the faculties, who had activated their respective study unit MOODLE® site. Data analysis indicates that academics need pedagogical as well as technical skills to navigate the institutional Virtual Learning Environment (VLE), irrespective of their qualifications.

The University of Malta, like its many international counterparts, has implemented a VLE to complement or supplant traditional teaching. ELearning was evident in use by all the academics (including the managers) for both purposes but differentiation between the two subgroups was not evident and different terminologies used to describe this teaching and learning method, with blended and supplementary learning used interchangeably. Some educators, especially and noticeably those who had done an e-learning course, utilised time and energy in moderating Computer Mediated Conferencing (CMC). Irrespective of whether technology was used or not; all academics appeared committed towards the student's academic growth. The three teaching perspectives of developmental, transmission and nurturing emerged as key teaching methods, which could be applied through VLE usage.

This was reflected as well in the various teaching strategies applied by the educators' application of the VLE which was used to construct tools for learning, connectivity, evaluation, peer learning, encouraging students' Self Directed Learning (SDL), screening of eresources as well as the upload of notes. Moreover, the data indicated that VLE could be implemented for various teaching and learning activities for both theoretical and practical aspects of learning; such as fieldwork, lectures, projects, dissertations, case study approach, seminars and tutorials. Independent study and online learning and students' performance was indicative as being the most quoted by academics. Although group learning, as achieved through CMC, emerged as a method of learning on the VLE, it wasn't as

strong as independent learning, possibly due to students' acculturation about learning.

The academics that moderated CMC found it onerous since students seem to achieve, and approach, tertiary education with minimal effort not von Humboldt preparation, of validating knowledge by research practices. Student groups varied in their contributions in CMC both between undergraduate and postgraduate groups, as well as among the groups themselves. There is the need for more research in how the possibilities of technology can foster group learning and Humboldtian practices, how this can be facilitated for both the teachers and the students. Teaching and learning complement each other and one affects the other, so taking one out of the equation can lead to disequilibrium. Further research is required to identify how CMC can be successfully implemented to achieve equilibrium for both parties involved, the teachers and the students. This includes aspects of group task setting, with CMC being similar to Problem Based learning as well as the assessment strategy. These are the new research objectives of this researcher to study more in depth what VLE teaching and learning involves.

POSTERS

I-TUTOR – INTELLIGENT TUTORING FOR LIFELONG LEARNING

Gigliola Paviotti, University of Macerata, Italy, Andras Szucs, EDEN, United Kingdom

All domains of education and training have adopted forms of online learning from delivery of contents to highest levels of social learning through web 2.0 tools. Organisations have to modify their processes and structures to better answer to new needs and approaches.

Cognitive research has shown that the learning process is much influenced by individual needs and preferred learning styles. Simultaneously, learning populations have undergone major demographic shifts.

Student support and tutoring in online education play crucial role in facilitating learning. Tasks teachers, trainers and tutors need to engage in include:

- monitor, track and assess what the student does within the learning environment (i.e. pages and documents consulted/downloaded, activities done);
- analyse students' work, reactions, progress;
- manage knowledge sources by, for instance, building representations of knowledge through conceptual maps or taxonomies;
- watch the network of formal and non-formal relationships as it develops within the learner group, (class), fosters its strengthening and supports the inclusion of all individuals; and give formative evaluation and feedback.

For a small number of students this is relatively easy for tutors to do. For larger classes this quickly becomes infeasible and there are dangers that the quality of the educational experience is seriously diminished.

The aim of the I-TUTOR project is to investigate how a multi-agent based, intelligent tutoring system can be used to monitor, track, analyse and give formative assessment and feedback to students within their learning environment and also give inputs to tutors and teachers involved in online learning to better their role during the process of learning. The work includes case reviews of the educational use of artificial intelligence, the design and development of the intelligent tutoring tool, and the training of human tutors in order for them to pilot the tools. The pilots will be conducted using Moodle.

I-TUTOR aims at supporting learners, individually and in group, directly (interaction machine-students), and indirectly (interaction machine-tutors/trainers/teachers) - like in quizzes, online tests with automated answers.

Rapid prototyping (a group of techniques aimed at supporting the development of a scale model that includes a recursive feedback from the final users): a first round of focus groups with online tutors/trainers/teachers has been carried out in higher education and training settings. The outcomes of this work served as basis for the first design of the architecture, based on the needs expressed by the users. A focus group between educational scientists and computer scientist has been carried out to refine the architecture draft

The development of the beta version of the software agents has started: alpha testing will be carried out with a sample of final users, the number of testing will be decided according to the needs.

The architecture foresees

- The development of a gateway interface allowing the agents to deal with Moodle and the data herein contained;
- The development of the software agents, external to the Moodle platform, but fully implementable in the LMS functions in 4 languages (EN, HU, GR, IT)
- The development of a chatbot in its beta version to support students from an organizational/informative point of view: at the beta development stage

POSTERS

INCREASING STUDENT SATISFACTION WITH DISTANCE LEARNING – GETTING ON THE RIGHT TRACK

Andrea Foley, Katja Gauci, University of Portsmouth, United Kingdom

The theme of the workshop concerns student satisfaction with a course studied by distance learning. The words "student satisfaction" have become a cliché but in the changing higher education environment institutions are striving to enhance the student experience as a means of raising students' perception of their course and the institution.

The workshop should appeal to practitioners who wish to find out more about enhancing the learning experience of distance learning students and how that contributes to student motivation and the student perception of their course. At the practical level, research about students' expectations and teaching online can help inform our professional practice.

This is a collaborative and interactive workshop, presented by a distance learning student (in person) and an academic. They bring their experience of a distance learning course that is evolving from "correspondence course" to wholly online. Workshop participants will be able to draw on their own knowledge and experience and contribute to devising practical ways of putting learners in the driving seat.

WORKSHOPS

EMPOERING STUDENTS AND ACADEMICS THROUGH LARGE-SCALE OPEN CONTENT INITIATIVES

Gabi Witthaus, Grainne Conole, Ming Nie, University of Leicester, United Kingdom

The OER movement has made vast numbers of high quality educational resources freely available to students and academics over the past ten years. However, the majority of academics are not aware of the opportunities OER offer to enhance the learner experience. Academics are also unaware of the key findings from existing large-scale OER initiatives. **EmpOERing Students and Academics through Large-Scale Open Content Initiatives** is a workshop led by the University of Leicester, UK that offers the opportunity for both awareness-raising and a spirited debate about the potential value of OER to students and academics. The objectives of this workshop are:

- To be aware of open educational resources (OER) and the large-scale OER initiatives taking place in different countries
- To debate ways in which these OER initiatives might impact positively on students and academics across Europe
- To identify opportunities for workshop participants to contribute to OER initiatives at institutional or national level

This 90-minute workshop is structured into four sessions:

1. "OER 101" (15 minutes): In the first session, participants will be asked to give their definitions and experiences of OER. Presenters will clarify any misunderstandings of the concept if needed.
2. Presentation (15 minutes): In the second session, the presenters will give an overview of the major current national and institutional OER initiatives in Europe, based on the research from the POERUP project (http://www.poerup.info) – a research project funded by the European Commission's Lifelong Learning Programme.
3. "Moving debate" (30 minutes): In this session, participants will have the opportunity to debate about the potential impact of OER on students and academics, facilitated by the presenters.
4. Brainstorm and discussion (30 minutes): In this final session, participants will discuss ways in which they can help their students to benefit more from the OER initiatives in their own countries or institutions.

WORKSHOPS

This workshop will be delivered face-to-face, and will also be available for remote participation through a web-conferencing system. Outputs from the workshop will be aggregated and made available in the Cloudworks website (http://www.cloudworks.ac.uk) which will also provide a back channel for participants, both face-to-face and remote, to add their own contributions and resources.

PREPARING FUTURE LIFELONG LEARNERS AT SCHOOL: WHAT DO WE KNOW ABOUT THE NECESSARY TEACHER COMPETENCES?

Claudio Dondi, SCIENTER, Italy, Fabio Nascimbeni, MENON Network, Belgium, Daniela Proli, SCIENTER, Italy, Nikos Zygouritsas, MENON Network, Belgium

Speaking of more learner-driven education and lifelong learning practice involves a necessary reflection on teaching. Teachers play a key role in any innovation process which is likely to transform school education and impact on the way people experience learning at an early stage in life, including the attitudes (and "habits") they develop towards learning.

But which are the key competences which teachers need to have to make sure school education prepare future Lifelong Learners?

The LLWings project – *helping teachers in building Wings for lifelong learning for their students* – has been reflecting for two years now on the key teacher competences to equip pupils with autonomy and ownership of their present and future learning journey and motivate them to learn all along their life. The Consortium has started from existing national and international teacher competences frameworks and local practices to identify a set of competences which are relevant to all European teachers to innovate school and make it more oriented to autonomous and joyful learning.

In particular, the project has mapped teacher competences around the loop of the "teaching life-cycle", including four key phases:

5. identification of needs;
6. design;
7. implement;
8. assess/evaluate.

For each of these phases, LLWings has identified a set of competences which are specifically relevant for the objectives of developing learning to learn skills in students and enhance their motivation, valuing the informal learning dimension. Among those, the project has selected four key competences and developed ad hoc learning material to develop them.

WORKSHOPS

LLwings is now developing a proposal for a European certificate which will offer European teachers the opportunity to have their competences in the field assessed and certified. Current experience shows in fact that International Teacher Competences Frameworks (i.e. UNESCO) are particularly useful to align teaching towards common standards and informing principles. They can support teachers mobility and mutual trust between education systems. The belief of the Consortium is that sharing consensus on key teacher competences for lifelong learning in school and valuing them through certification adds value to the process of school innovation in Europe.

Starting from the results of the LLwings project, the workshop is aimed at discussing together with researchers and practitioners the relevance of the teacher competences identified so far, so to collect further input and move a step forwards towards a shared framework which is validated by stakeholders in Europe. Furthermore the workshop is aimed at reflecting jointly on the viability of a European certificate for teacher competences in the field of students' motivation and development of learning to learn skills.

WORKSHOPS

TRANSITIONS INTO HIGHER EDUCATION: CAN SOCIAL NETWORKING SUPPORT LEARNING TO LEARN COMPETENCIES?

Martina Salm, University of Bremen, Germany, Ildiko Mazar, EDEN,
Neil Taylor, Alison Hudson, University of Dundee, United Kingdom

As lifelong learners, it is highly likely that many of us will face a number of transitions throughout our lives, moving from secondary school to university, entering employment, moving back into training or education to reskill or upgrade competencies.

Such transitions represent a challenge for any learner – adapting to new physical and virtual environments, different teaching and learning approaches, learning to live, learn and work within new communities. And not every learner succeeds, in particular in the transition from secondary education (SE) to higher education (HE), as illustrated by the high dropout rates in the early years of HE in countries as diverse as France and Finland. While a number of efforts to bridge the gap between SE and HE are being made across Europe, the vast majority exist mainly in pockets and at disciplinary level (remedial support in mathematics, access to university lectures for 6th form pupils). Similarly, other initiatives focus on practical support (open days, virtual campus guides).

Research and needs analysis carried out by the members of the **eLene2learn** network strongly suggests that an approach based on the development of learning to learn competencies could contribute largely in equipping learners to deal with these transitions more effectively. Furthermore, approaches such as ePortfolios, blogs, social networks, online video and serious games have enormous potential to support the development of learning to learn competencies and to accompany citizens in transitions throughout their learning lives. Given the EU strategic priorities of increasing access to HE and developing transversal competencies such as digital literacy and learning to learn, mirrored by national education priorities and actions across the Member States in the partnership, the **eLene2learn** network selected this particular area for attention over a number of others.

eLene2learn thus proposes a multi-stakeholder network, exploring and promoting the contribution of ICT and digital media in supporting the development of learning to learn competencies in lifelong learning transitions. **eLene2learn** involves schools, higher education institutions and other networks in the

WORKSHOPS

identification of current practice, in pilot implementation of a variety of approaches and in drawing out the lessons learnt.

The approach taken by the network of nine European partners and the results of the first phase of the three year project will be presented as part of the workshop which will be enhanced by an online webinar. The introduction and illustrations drawn from the results of the first phase will be followed by a debate which will be led by two experts in the field on the strengths and challenges of using social networking to support transition into higher education. The participants attending the workshop and the participants taking part in the webinar will be able to share their views and contribute to the debate face to face and on-line during and after the event. The workshop/webinar will conclude with an overview of planned research related activity planned to take place in Phase 2 of the project and an invitation to participants to become associate partners of the network.

BECOME A GUARDIAN OF CVET QUALITY!

Airina Volungevičienė, Estela Daukšienė, Danutė Bačinskienė, Vytautas Magnus University, Lithuania, Denes Zarka, Budapest University of Technology and Economics, Hungary, Gabor Cser, EDEN, United Kingdom, Anthony Camilieri, Marie Bijnens, EFQUEL, Belgium, Claudio Dondi, Scienter, Italy

Are you aiming at quality? How can ICT contribute to the quality of teaching and learning? to the quality of institutional management? or to the quality of professional skills development? Do these questions interest you? These are the issues Revive VET project (www.reviveproject.eu/VET) partners are also addressing at and investigating.

The scope of Revive VET project

REVIVE VET project aims to review and revive VET practices applying innovative ICT integration methodologies and building online communities of VET professionals, who collaboratively work together, seeking to improve the quality, attractiveness and accessibility of VET services.

The project consortium has already been working for a year and implemented various activities. One of the project results, which is also publicly available at project website www.reviveproject.eu/vet – is the "Analysis of existing practices, available methodologies and institutional needs on ICT application". It showed that the areas of ICT usage ant the educational institution vary a lot; however, the most popular ones are – modernization of education services and curriculum development. It also showed that most of educational institution representatives just do not know online networks and professional communities that would help with the ICT integration into education. The analysis results also revealed the need for more information on the methodologies of curriculum development using ICT, case development and peer review. So the partnership has been working on the issues.

Revive VET project partners and their involved internal and external experts have identified quality criteria for the application of ICT on the 3 levels:

- institutional integration,
- curriculum and
- professional skills development.

WORKSHOPS