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# DIGITOOLS PROJECT - USERS PERSPECTIVE ON THE CURRENT STATE OF DIGITAL EDUCATION

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## Summary

The project DIGITOOLS – Innovative Tools for Enhancing E-Learning Solutions in Universities (the Erasmus+ KA 226 Partnerships for Digital Education Readiness Project. Project Number: 2020-1-IE02-KA226-HE-000781) is a project aimed at introducing enhanced digital tools and methods to help university staff deliver quality education through online means. The project supports and cultivates innovative pedagogies and methods for teaching, learning and assessment, encouraging educators and learners to use digital technologies in creative, collaborative and efficient ways to help them to quickly adapt to this fast evolving and complex situation caused by this global pandemic. One of the outcomes of the project is the research of the current state of the digital education in the partner countries. The results of the preliminary research from Croatia are presented in this paper. The research is focused on the perception of online learning from all the stakeholders: students, teacher and librarians. The results show positive attitudes towards e-learning and identify the need for further investment into digital competences of both teachers and students.

## 1. Introduction

The crisis generated by the COVID 19 pandemic has forced European universities to move their teaching activities to the online environment. Although most universities have implemented e-Learning platforms years ago and developed blended learning courses and programs, the teaching staff has experiencing difficulties in using these platforms and in creating and adapting the course content, as it needed to be quickly adapted to a fast evolving and complex situation. The problem that arose is that previous implementations were either e-learning or blended learning but pandemics brought another type of teaching and learning called emergency remote teaching. There is a huge difference between those two concepts but they are unfortunately not understood and the term e-learning is often used for the emergency remote teaching. As Muthuprasad et al. (2021) emphasise that the questions about the preparedness, designing and effectiveness of e-learning is still not clearly understood. And we are still puzzled by the question: are teachers and students ready for the e-learning to take place? Readiness from student's perspective, according to Werner et al. (1998) is based on three aspects: student's preference for online delivery; student's confidence in the utilizing the electronic communication for learning, and capability to engage in autonomous learning. If we transfer these to today's competency setting than our students need to have two competences: digital competence and learn how to learn. The majority of the current research found in the body of literature is focused on the student's perspectives on learning during pandemics (Ismaili, 2021; Nikou 2021). Although there are positive and negative aspects of e-learning the majority of the research identifies that students like the flexibility of the e-learning environment but lack full teachers' support that they receive in the traditional environment. Still, we should not ignore the negative aspects that the pandemic has brought such as the issues of deepening of the digital divide (Bordoloi, 2021) which are rarely discussed. On the other hand, the attitudes towards e-learning from teachers are also divided. Researchers such as Joshi et al. (2021) are reporting that teachers have experienced "that lack of technical infrastructure, limited awareness of online teaching platforms and security concerns" which were mainly due to the lack of technical knowledge or the negative attitude towards ICT. So, these were of more subjective than the objective nature. This raises the question of the technology acceptance in education as a prerequisite to the full digital transformation of higher education. Adoption of new technology is known to be a major contributor to the self-efficacy of both students and teachers, so it is important to avoid the unintended consequence of increased anxiety when selecting the number and nature of technological tools to be used with students" (Eutsler, 2021). There is a great need for teacher's update of competences especially their digital competences. Although, EU has proposed the Digital Competence Framework there is still a lot of work to be done in developing the digital competences in teachers. Another segment that is still a bit ignored is the role of the supporters of the learning – libraries and librarians. In the traditional education environment, they had a central role. The question that arises now is how they have adapted to the new environment overnight and how they can be integrated into the new digital educational environment. How Still, there is a need for further research and development of the topic of development of teachers digital competences as well as the role of university libraries in digital education. crucial in the electronic environment and thus one of the focuses of the DIGITOOLS project.

## **2. The DIGITOOLS project**

The project DIGITOOLS - Innovative Tools for Enhancing E-Learning Solutions in Universities (the Erasmus+ KA 226 Partnerships for Digital Education Readiness Project. Project Number: 2020-1-IE02-KA226-HE-000781) (DIGITOOLS, 2022) is run by Technological University of the Shannon (TUS): Midlands Midwest, Ireland as a project coordinator. Partners on the project are: MB Think Tank, SRL (Romania), Universitatea Transilvania din Brasov (Romania), Instituto Politécnico do Porto (Portugal), University of Zagreb (Croatia), Universitat Politècnica de Valencia (Spain) and University of Crete (Greece). The project is aimed at introducing enhanced digital tools and methods to help university staff deliver quality education through online means. It supports and cultivates innovative pedagogies and methods for teaching, learning and assessment, encouraging educators and learners to use digital technologies in creative, collaborative and efficient ways to help them to quickly adapt to this fast evolving and complex situation caused by this global pandemic. In particular, the project promotes effective digital-age learning and digitally competent educational organisations actively building on the European Framework for Digitally Competent Educational Organisations. Digital technologies are enablers of a step change in learning and teaching practices. The DIGITOOLS project helps to consolidate progress and ensure scale and sustainability, helping education institutions in the EU to review their organisational strategies, in order to enhance their capacity for innovation and to exploit the full potential of digital technologies and content. The DIGITOOLS project promotes and rewards excellence in teaching and skills development, including through encouraging training of academics and exchange of good practices and collaborative platforms, developing new and innovative pedagogies, including multi-disciplinary approaches, new curriculum design, delivery and assessment methods. The project enables partners in Ireland, Romania, Greece, Croatia, Portugal and Spain to provide a wider variety of (online) courses to full-time, part-time or lifelong learning students, linking education with research and innovation, fostering an entrepreneurial, open and innovative higher education sector and promoting learning and teaching partnerships actively supporting the implementation of the Erasmus+ in the EU. The project is effectively tackling skills gaps and mismatches particularly with regard to preparedness to teach in an online environment promoting more flexible and innovative learning. The project supports the Commission's renewed EU agenda for higher education ensuring that higher education equips graduates with the right skills for today's economy, builds inclusive higher education systems, bridging the innovation gap between higher education, research and business and ensures that different parts of higher education systems e.g. libraries and academic departments work together effectively and efficiently. The main objective of DIGITOOLS Project is to provide the teaching and support staff from HEIs with the opportunity to improve and adapt their teaching curricula and to create high quality digital content for education purposes. Last but not least, DIGITOOLS aims to involve librarians in the project, in order to develop Resource Centres in the field. The library staff will be trained to deliver both information on the documentation resources and initial training for students. The DIGITOOLS project will develop five Intellectual Outputs which will support the teaching staff and librarians to acquire the skills and competencies needed to create and deliver high quality online courses, including blended teaching.

## **3. Current state of digital education in higher education institutions**

Prior to developing educational programs, the analysis of the current state at each country had to be done. The research on the current state of digital education in HEIs was done in each of the partner countries (Ireland, Portugal, Spain, Croatia, Greece and Romania) and results presented in the National Reports. These reports gave insight into perceptions of online learning from three stakeholders: students, teacher and librarians. Each partner has researched the current state of digital education in HEI and prepared a presentation of their research. In the following chapters some results from the Croatian study will be presented.

## **4. Methodology**

The goal of the research was to investigate students and teachers' perceptions and future attitudes towards e-learning and thus digital transformation. The questionnaire was prepared by project partner Instituto Politécnico do Porto (Portugal) and translated into Croatian language. It was distributed via Limesurvey and invitation e-mail sent via institutions (Faculty of Humanities and Social Sciences, University of Zagreb) mailing list. The results were processed in SPSS and presented in the template that was provided by the partner responsible for the questionnaire. Data from country survey was exported to IBM SPSS (using the syntax file provided by Limesurvey when exporting data to SPSS). Qualitative variables Q00 and Q02 were automatically recoded into numerical form. All string variables with Likert scales were transformed into numerical variables, using the "automatic recode"

feature of IBM SPSS. Cronbach's Alpha for each construct was computed, to check the reliability of the questions measuring these concepts. The correlations between constructs were analysed and linear regressions were estimated to evaluate the research hypotheses. Originally, 121 responses from students, teacher and librarians were received but during data analysis 40 responses were found to be partial so they were excluded from the analysis. The survey was filled by 34 students, 44 teachers and 3 librarians of which 57 female and 23 male respondents.

## 5. Results

First question was about the technology they used during distant learning. An array of typical electronic devices was offered, such as: smartphone, tablet or Ipad, laptop and desktop. The most widely used by all three groups was the laptop (Figure 1). Out of these three groups, teachers were the only ones that were using all four devices while librarians were using only computers (equally laptop and desktop). For students the second choice was smartphone which shows that they are easily shifting devices and environments according to the situation

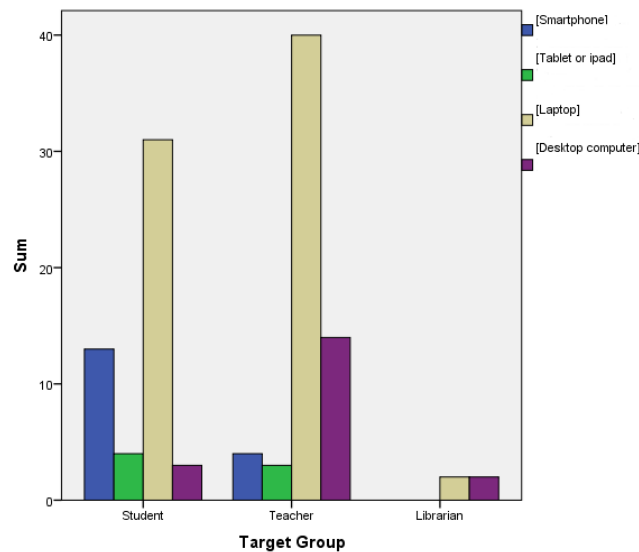


Figure 1. Usage of devices to access e-learning

This result showed that there is a great need to focus on accessibility of both e-learning platforms and learning materials. When developing learning materials teachers should be aware that the final product should be accessible on both mobile devices and computers.

### 5.1. Experience with e-learning – student's perspective

When asked about their experience with the distance education, future interactions with the e-learning environments and perceived benefits students have mainly positive remarks (Figure2). We have to keep in mind that some students did not have any prior experiences with e-learning or have been using blended learning as a support to traditional learning. With the pandemics they have only experienced emergency remote teaching which was an ad hoc solution.

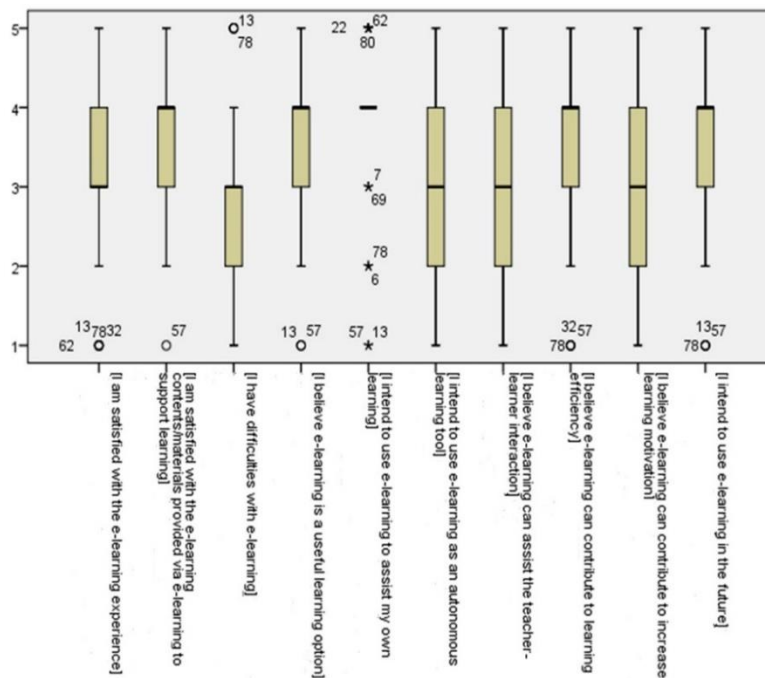


Figure 2. Students perception of e-learning

Looking at the students' perceptions of the whole e-learning experience we should look closer at the two elements: their belief that e-learning will enhance learning and their future intentions to use it. We approached this issue using two constructs of technology acceptance model (Davis 1989) – perceived ease of use and perceived usefulness. The results (Figure 3.) again show that situation is far from perfect but we have to take into account all the circumstances.

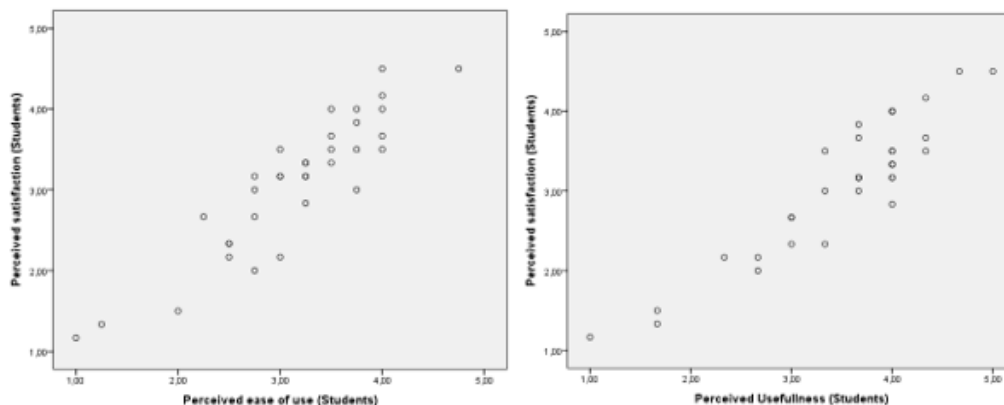


Figure 3. Perceived ease of use and usefulness

## 5.2. Experience with e-learning – teacher's perspective

Teachers were asked to give their insight into perceived benefits of e-learning responding in the scale where 5 is Strongly agree and 1 Strongly disagree (Figure 4). The statement offered was:

- As a teacher, I am pleased to use e-learning environment due to 1) flexibility; 2) wide range of tools; 3) ease of use; 4) increases engagement and enjoyment for students; 5) an improved relationship with students; 6) increased autonomy, motivation, self-determination and self-regulation.

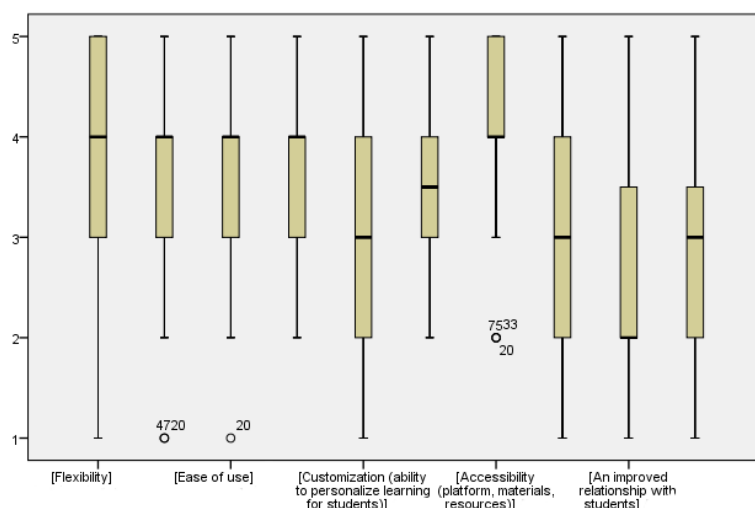


Figure 4. benefits of e-learning environment

The results show that teachers value almost all of these aspects but the flexibility and increased autonomy, motivation, self-determination and self-regulation are evaluated the highest.

The next question was about the main challenges switching to online/e-learning. They were offered the following statements: 1. Teachers' access to technology (computers, software, stable internet connection, 2. Lack of training to deliver education in an online environment, 3. Students' access to technology, 4. Communicating with students, 5. Involving students, 6. Keeping students motivated and engaged, 7. Supporting students with special needs or disabilities, 8. Converting activities and content for use in e-learning, 9. Authentically assessing students' progress, 10. Availability of clear guidelines regarding online learning from the school board, 11. Increased workload and stress working from home, 12. Time management and organization, 13. There have been no challenges. The results (Figure 5) show that teachers are unite in the disagreement with the statement that there have been no challenges. What they perceive as major obstacles are: students access to technology, involving students, and keeping them motivated and engaged.

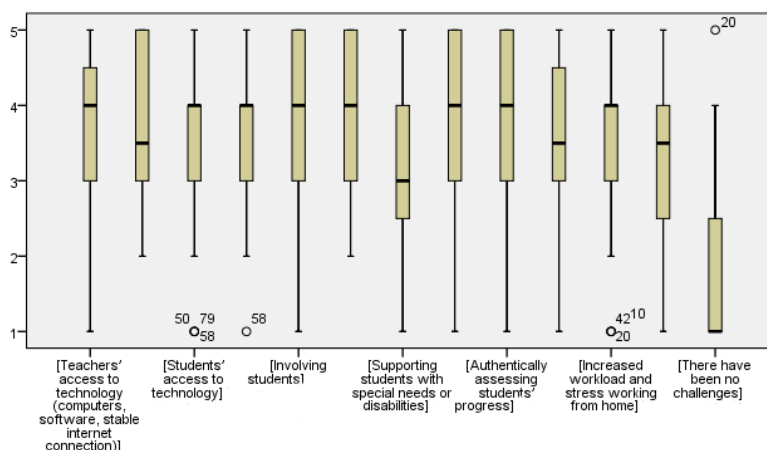


Figure 5. obstacles in e-learning

### 5.3. Experience with e-learning – librarians' perspective

The one aspect that was not heavily investigate due to the small response rate is the librarian's perspective in e-learning. We feel that this needs to be addressed through interviews and not survey as qualitative results will give better insight into this problem. This needs to be further investigated in order to draw some conclusions and investigate the position of the library in e-learning.

## 6. Discussion

Both students and teachers see the advantages in the implementation of the e-learning but there is a lack of systematic support. The results indicate need of another more systematic approach to educational environment if

we are to have a successful digital transformation and respond to the need of all the stakeholders. The results from this survey show that as biggest obstacles teachers perceive: the lack of training to deliver education in an online environment; converting activities and content for use in e-learning; and authentically assessing students' progress. Interestingly, as obstacles they see the conversion of activities to e-learning and assessing students' progress. As these obstacles can be connected to the lack of education and training in both digital competences and e-learning these results identify necessity to provide teachers with training programs. Similar comments can be found in the survey done by Agency for science and higher education (2020) where teacher have identified following problems with e-learning: the organization of personal workspace at home, lack of communication and socialization with colleagues and students, and variety of technological issues. Regarding technological issues, apart from identified infrastructural problems the complexity of different platforms and software was seen as an obstacle and source of frustration. The question of developing digital competences and continuous teacher training is long discussed. In the pandemic time and under the emergency remote teaching this has been identified as one of the solutions to better acceptance e-learning. We could say that it is a prerequisite of a successful e-learning or even blended learning. This research shows that the time teachers spent very little time in ICT training. The results showed that only 5 respondents had training while 39 did not participate in any training. When asked about the hours spent on the training the number are equally distributed between 6 hours to up to 20 hours. When asked to specify where was this training offered the responses again vary from in house to webinar. The need for further training and development of teachers' digital competences to enhance e-learning can be found in several studies. Cabero-Almenara (2021) identified that basic-intermediate level of digital competences is no longer enough for complex environments. Pongsakdi et al. (2021) showed that educating teachers in developing digital competences lower their negative perception of e-learning. Using a pre-training and post-training tests he identified a positive change in teacher perceptions of the usefulness of technology.

The results of this survey show that there is a need to fully transform the whole educational environment. Therefore, we need to work on systematic approach to digital transformation of educational environment starting from education of teachers and then moving to all other stakeholders. The training in digital competence in higher education teachers is a key piece to a quality education (Cabero Almenara, 2021)

## 7. Future work

What this research proves is there is definitely no coming back to the traditional way of teaching. We have shifted into the middle of digital transformation, not by our choice but due to the global crisis. What our next steps need to be is creation of an environment that will enable future growth of both students and teachers. This is certainly not an easy task and need a lot of energy from the individual but also from the management and politics in order to support an easy transition.

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