Digital University - Issues and Trends in Romanian Higher Education

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Abstract

Today's students, known as digital natives, are living a paradox. Although they grew up with technology, there are many studies which underline that students' digital skills are not what they might seem. Thus, even if they are more familiar than professors or parents with functions and options available on the most used social networks and applications like Facebook, Instagram, Snapchat, YouTube etc., they still need "support with some areas of digital practice, particularly in an academic context" (JISC, 2015).

But are these perceptions / expectations of students' digital skills based on reality? Moreover, what should we do as their professors?

Firstly, we should not forget that not all students have equal access to digital resources. Some of them need to be trained more concretely/effectively and most of them need to refine and update their digital skills and competencies in order to become more employable, ready to cope with the digital jobs of the future.

Secondly, they need to benefit from staff well equipped with digital skills, who can design and deliver courses with technology integrated, able to pass on the relevant digital skills to their students and colleagues.

Thirdly, they need a proper and adequate digital environment.

Given this approach, we formulated our research questions as follows:
- What are the challenges in creating the right environments for digital learning?
- What are institutions doing in order to equip professors with digital skills?

The aim of the present paper is to review existing evidence on what a digital university means. What is it? What actions should we take towards becoming a digital university? Thus, we conducted a small-scale study within the Romanian higher education space in order to investigate the aforesaid research questions and to emphasize what concrete steps, actions, responsibilities and measures should be taken to drive forward a digital university vision.

Keywords: Digital University; Digital Teacher; Digital Competences; Digital Skills.

1. Higher Education in the digital age

Nowadays, the role of higher education is changing because the world itself is changing more rapidly. As a result, each of us is confronted with more complex problems. However, a university's main role is still to facilitate knowledge and education. That is why there is common

agreement among individuals, communities, business organizations and governments, in recognizing the critical role of education in supporting personal development and fulfillment, economic growth and productivity, as well as political and social cohesion.

In addition, universities are under continuous pressure from other societal trends such as: *globalization* (which means a competition in terms of visibility and fundraising), *demographic challenges* (urbanization, ageing society and decreasing natality) and *a shift towards a more technological society*. Thus, universities are caught in the middle between *merging students' needs and expectations, operating in a global (digital) context* and *linking national policies and strategies* (implicitly, the curriculum) with the students. It follows that we need to address such complex issues by balancing teaching (making technology and digital innovation the norm), research (making it relevant for communities and thus sustainable) and practice (equipping students with employability skills). Without a doubt, these are demanding times for higher education and especially for professors as "never before have so many wanted so much from professors: new skills, new jobs, new capacity to cope with rapid change, new perspectives for leading fulfilled lives – from cradle to grave. This growing demand for continuos education has prompted new efficiencies: course modules shared within university clusters, online and artificial intelligence-based teaching, specialization within institutions public and private" (Borch et al., 2015).

Taking into consideration the above-mentioned issues, such complex matters cannot be rushed, they need to be addressed appropriately through authentic lifelong learning, innovative teaching and cohesion between policies, labor market and curriculum. They also have to be seen as a sustained and conjugated effort done by each educational actor. Consequently, in this paper, we will focus only on a small but important part of this educational eco-system, namely analyzing technology and digital use in higher education contexts by academic staff.

2. Integrating the digital into the university

Day by day, we are experiencing more and more intensely the impact of digitization, robotics and automation on our lives. Students arrive at universities carrying at least a smartphone, a tablet, or a laptop and having some knowledge of how to use these devices. The so-called "digital natives" grow up in a technology-driven society. However, there are experts wondering about the perceptions of students' digital skills and capabilities (Margaryan, Littlejohn & Vojt, 2011): Are they based on reality? If not, then today's generation of students definitely need a new digitally-based learning environment, provided by a new type of higher education institution, namely a Digital University.

So, what's behind this concept? The term "digital university" is mainly related to the widespread deployment of computing and digital communications technologies and infrastructure, as well as with their integration into daily university activities. Despite using the notion of a Digital University more frequently, the meaning is still a diffuse one, sometimes leading to misunderstandings. Some claim that a Digital University is a reaction to the massive shift towards using new technology, "as Digital is here and it's here to stay and evolve tremendously more deeply" (MacNeill & Johnston, 2013). Central to the notion of a Digital University are Digital Strategies – needed for universities to stay relevant and competitive in the digital age. In fact, "these universities fail to appreciate that they don't need a digital strategy – just a business strategy that is fit for the digital age" (pWC, 2015). Moreover, today's students are "customers who bring their own digital world expectations into the classroom" (pWC, 2015). Therefore, a Digital University can be a consumer-friendly business with millions of young consumers who are keenly aware of their expectations and of how their money is being spent.

No matter how we call it (digital strategy, business strategy for the digital age, consumer-friendly business etc.), the important fact is that a Digital University is an evolving concept, a complex system that involves digital infrastructure for digital learning, digital capabilities of the academic staff and digitally savvy consumers (students), as well as coherent policies. By exploring the term Digital University, specialists can tackle "central issues for strategic development in a more holistic manner" (Johnston & MacNeil, 2013).

In their attempt to become Digital Universities, many institutions have already invested heavily in IT systems. Still, those financial efforts have not delivered the anticipated benefits and outcomes, continuous and long-term investments being necessary, both in equipment and in developing the right virtual environment (learning experiences and spaces which meet the needs of future students). As this problem does not seem to have an easy and clear-cut solution (the learning environment does not seem to be fixed and moreover, technology is far from static), now the key problem is to move towards equipping academic staff with digital skills, which is also a long-term commitment. In order to provide a proper digital learning environment, a Digital University needs to prepare "well-trained, fully-engaged members of staff who can design and deliver courses with technology embedded in them" (Knight, 2017). Furthermore, this approach is suitable for a sustainable Digital University as it "fosters a climate of digital fluency that diffuses throughout the university, from students to chancellors and everyone in between" (Knight, 2017).

According to Johnston & MacNeil (2013), a Digital University (Figure 1) incorporates the following interrelated elements:
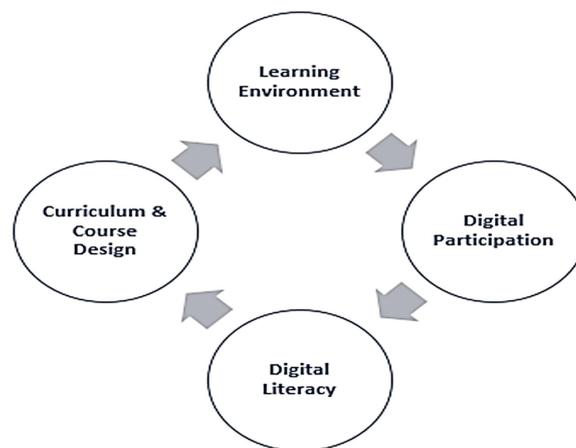

Figure 1. The proposed model of constructs and interrelations for a Digital University by MacNeill & Johnston (2013)

- **Learning environment** – the entire technological and educational infrastructure that a university should provide. As technology is here to stay and to contribute more and more to different aspects and activities of our everyday life, its impact is expected to change significantly in the next decade, too. According to Public Sector Research Center report (pWC, 2015), "new and emerging technologies such as smart mobile/wearable devices and sensors, cloud-based IT and advanced analytics are changing business and operating models across all sectors including Higher Education. These technologies present new opportunities to improve or redefine the university experience and campus through activities including teaching and learning, research and working on complex projects with other universities and partner organizations." In the same report, it is underlined that "advanced analytics is also transforming what universities can do for students, professors and tutors. Universities that are able to harness the potential of data by analyzing it intelligently and using it to deliver outcomes, such as improved academic performance, employability rates or student retention, will give themselves a considerable advantage." A digital environment for learning can and should also contribute to reducing the costs and associated fees students are currently paying. In addition, a digital environment should also be linked with facilities and opportunities **for opening up higher education** (dos Santos, Punie & Castaño-Muñoz, 2016).
- **Digital participation** involves, on the one hand, ensuring easy and complete access to the digital resources and learning repositories facilitated through the learning environment. On

the other hand, digital participation is related to community engagement and how this could be enhanced beyond the professional and personal networks in which we usually activate. Digital participation is also related to technological affordances in order to foster a better digital inclusion, pointing out at the same time why many are left behind, remaining offline. Digital participation is linked to the principles of civic roles and responsibilities associated with digital citizenship (digital identity and other elements that are determinant for a digital persona).

- **Digital literacy** is not only about acquiring digital skills and competencies, but also about critical reflection on how they can be used, combined and applied by individuals to be fully engaged in the digital society and economy. Digital competence, part of digital literacy, is one of the eight key competencies for lifelong learning identified by the European Commission[5] to support education and training in Europe and beyond, being related to "knowledge, skills, and attitudes needed by all citizens, for personal fulfilment and development, employability, social inclusion and active citizenship" (Digital Agenda Scoreboard, 2015[6]). Since most of the future jobs will require digital skills, students must become digitally savvy, able to move from being information literate to critically access, use, analyze and create digital content. They are in a continuous need for digital competences beyond the educational and professional life, as it is also underlined in different European documents and reports (see the initiatives Learning and Skills for the Digital Era[7], Employability and social inclusion[8], Digital Living[9], Learning to swim in the Digital Ocean[10] etc.). Therefore, we should see digital literacy as an extension of information literacy not only for students but also for academics and other educational practitioners. As technology is not static, each of the educational actors and stakeholders should understand digital literacy as an evolving concept and a life-long practice.
  The advent of open education artifacts, especially of MOOCs, creates conditions for participatory learning, defining an ethos of new literacies that accompanies it. This is what Stewart (2013) calls digital participatory literacies as "unintended consequence of the combination of massiveness and open learning opportunities".

- **Curriculum & course design.** In a Digital University, another compulsory component is continuously (re)designing curricula and courses. This should be in accordance with policies and digital strategies to offer new course modules and an updated curriculum to better address the needs of employability. Such a course redesign and such changes into curricula should be consequences of the learning analytics of existing digital courses and practices, keeping and reusing suitable digital content for ensuring a sustainable education. Digital learning and course designing should combine theory and practices in flexible ways that contribute to and foster digital scholarship opportunities for students. A digital university should be able to facilitate online and mobile access to the courses that are built based on fluid curricula models and that can support community engagement and digital participation not only of students and professors but also of alumni and other relevant stakeholders. Nowadays, the vast majority of the teaching that takes place still relies on traditional pedagogical models, with some using virtual learning environments for providing notes and submitting assignments. The real challenge is to train the academic staff adequately in order to be able to design and deliver courses with technology integrated. Moreover, as MacNeill and Johnston (2013) observed, "employers are increasingly looking for cross-disciplinary

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[5] EC (17 January 2018). COMM 2018. *Proposal for a Council Recommendation on Key Competences for LifeLong Learning*, Available at https://ec.europa.eu/education/sites/education/files/swd-recommendation-key-competences-lifelong-learning.pdf.

[6] EC (18 June 2015). *Digital Agenda Scoreboard 2015: Most targets reached, time has*, Available at https://ec.europa.eu/digital-single-market/en/news/digital-agenda-scoreboard-2015-most-targets-reached-time-has-come-lift-digital-borders.

[7] EC (2017). *Learning and Skills for the Digital Era*. Available at https://ec.europa.eu/jrc/en/research-topic/learning-and-skills.

[8] EC (2017). *Employability and social inclusion*. https://ec.europa.eu/jrc/en/research-topic/employability-and-social-inclusion.

[9] EC (2017). *Digital Living*. Available at https://ec.europa.eu/jrc/en/research-topic/digital-living.

[10] EC (12 May 2017). *Learning to swim in the Digital Ocean: new DigComp report develops proficiency levels in details*. Available at https://ec.europa.eu/jrc/en/science-update/new-digcomp-report-develops-proficiency-levels.

skills, and students need ways to illustrate their skills beyond traditional certification. Employability, creativity and digital literacy are increasingly being recognized as key graduate attributes. The development and recognition of these competencies require not only enhanced understanding and provision of learning environments, as outlined above, but also newer approaches to curriculum and course design".

Taking into consideration that equipping staff with digital skills is considered a crucial step in the process of creating a digital university, in this paper, we present the results of a small-scale research we carried out on professors' needs in the Romanian academic environment in / for the use of various digital tools and applications in their activities.

3. Methodology background

The "Digital Skills for a Digital Nation" report (2018) of New Zealand provides a consistent description of what digital skills are and how they impact society. As everybody already knows, digital technologies are expanding at great speed into all areas of our lives. Today's society values those digital skills "needed to find, evaluate, utilize, share and create content using information technologies and the Internet". The speed at which industries and companies are adopting digital technologies means demand for people with advanced digital skills is growing, too. Traditionally, advanced digital skills were required of ICT professionals. But in the future, these skills will be vital for many other jobs, hence university professors must play a central role in training today's students and tomorrow's workforce "to take full advantage of the possibilities offered by a digital society" (DigiComp, 2015). In a word – *to be a digital teacher*.

Therefore, the purpose of this study is to find out what digital skills today's university professors (those who train learners) have. The goal of our research was to better define professors' needs regarding the use of new technology in order to design and digitally deliver courses. The tool chosen was the online survey available at https://tinyurl.com/analyza-nevoi-academia. The invitation was distributed on Romanian academic networks and by email between July and September 2017. 156 university professors filled in the questionnaire. The paper briefly presents this approach and extends an invitation to further reflect on the topic of equipping staff with digital skills as a "key to providing the right digital environment" (Knight, 2017).

4. A look at the data

The sample was built to include as many higher education institutions (public and / or private) from Romania as possible, as well as actors from the educational system (from professors to research assistants) from different regions of the country and from various specializations and education levels.

The sample is a convenience one, with a structure that targeted as variables: the institution where the respondents work, the positions they occupy, the teaching experience they have and the experience they accumulated in digital / online environments, the field of specialization, their age and gender. No *a priori* sampling scheme was developed, but the study was intended to be an exploratory one for Romania, precisely because of the novelty of the concept.

Table 1. Distribution of respondents according to their academic position and gender

Gender	PhD Student	Assistant	Lecturer	Associate Professor	Professor	Researcher	Total
Female	6	6	32	27	10	3	84
Male	4	4	20	20	23	1	72
	10	10	52	47	33	4	156

The low number of respondents (N = 156) does not allow the generalization of results at the level of the entire population of teaching staff in higher education. However, the results we will

present below put into perspective certain trends that require contextualization and future exploration.

5. Some interim results and discussions

We live in a society labeled as a knowledge one, with individuals who are increasingly committed to continuing to learn anywhere, anyway, anyhow. The new technologies have produced changes in all areas and it was expected that, at some point, this progress would also influence the teaching-learning process. Hence, in order to cope with the current technological challenges, professors need to make efforts towards continuous professional development.

Professors are now in the position to choose between maintaining conservative educational approaches and using traditional methods, thus ignoring the tendencies towards change, or accepting the challenge and, at the same time, implementing the new technologies in their didactic activities.
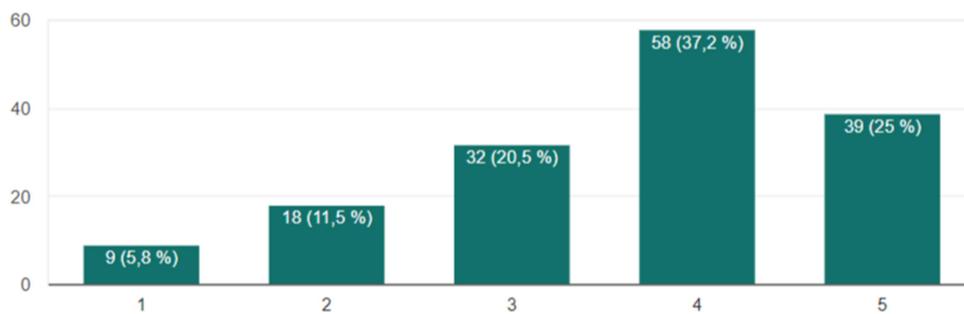

Figure 2. On a scale from 1 to 5 (to a very small extent; to a small extent; to a certain extent, to a large extent, to a very large extent), Figure 2 shows the percentage distribution of answers to the question: "To what extent do you consider online learning as an alternative to traditional learning?"

As can be seen from Figure 2, more than half of the respondents (62.2%) are undoubtedly influenced by the use of digital technologies and consider to a large or very large extent that they offer alternatives to traditional learning. A relatively low percentage (17.3%) is skeptical of their potential to bring an essential change in learning.

The discussion on online learning becomes even more interesting in relation to recent studies on digital natives and the skills/abilities they develop while using new digital technologies (Becker et al., 2017; ESPC, 2017; OCDE, 2018; UN 2018; Davies, Mullan & Feldman, 2018). The process of accepting and integrating ICT into teaching must be permanently experienced in order to achieve two well-defined objectives: improving learning outcomes and students' employability in the labor market, and professors' development of efficient skills, so that training and education can lead to successful lives.
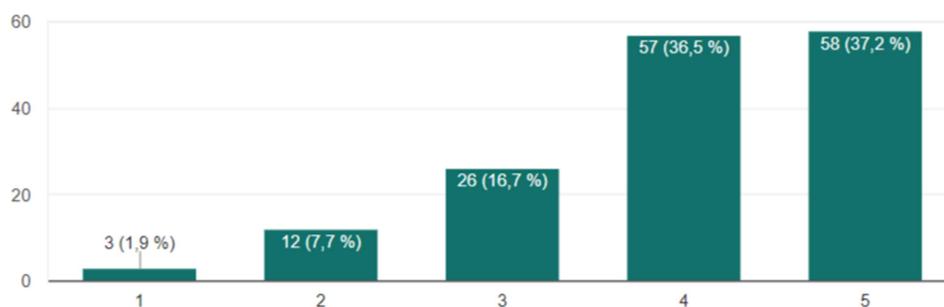

Figure 3. On a scale from 1 to 5 (to a very small extent; to a small extent; to a certain extent, to a large extent, to a very large extent), Figure 3 shows the percentage distribution of answers to the question: "Do you consider it necessary (useful) to integrate online learning into traditional learning?"

The preoccupation for the way technology influences the learning process and human development as a whole is not a recent one (Friedenberg, 2016). Our data support, at least partially at this point, these assertions: 115 out of 156 respondents found it useful and very useful to integrate online learning into the traditional one.

The need to diversify ways of providing training programs emerged simultaneously with the social and individual need for continuous teacher training. An example is the expansion of massive open online courses (MOOC) that has led to the modernization of the concept of continuous training through the assimilation, in this area, of the benefits of new information and communication technologies.

Therefore, continuous teacher training is not just an imperative generated by social evolution, but a process that must be updated and adjusted to the expansion of modern media (see the latest release of Duplex technology from Google Assistant).

In this regard, we tried to find out to what extent academics integrated various platforms and digital / online applications in their professional activities, as well as what kind of professional development opportunities they identified in relation to these tools.

For each range of applications / services / technologies, we calculated the averages to obtain a classification. As shown in Figure 4, the top 10 positions are occupied by File-sharing applications, Document / Books sharing, Professional social networks, Video sharing, Mobile communication, Presentation-sharing, e-learning platforms, Blogs and microblogs.
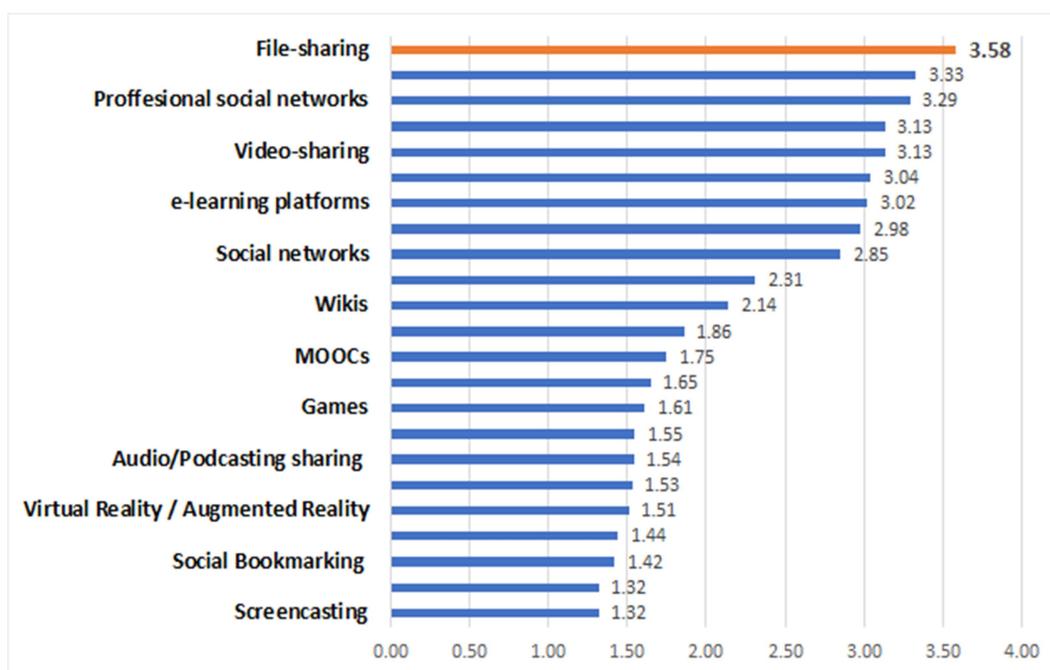

Figure 4. Ranking of digital applications / services and technologies used by academic staff
Figure 4 shows the averages (on a scale from 1 to 5) of the answers to the question: "To what extent do you use the following types of platforms / online applications in your professional activity?"

One can easily see that most respondents tend not to use digital tools. More than half said that they had never used or rarely used social bookmarking, photo-sharing, mindmaps, virtual / augmented reality or curation apps in their activities. About a third did not use blogs and microblogs (37.18%), social networks (30.13%) or dedicated e-learning platforms (25.64%). The most used were sharing applications: files, documents or video along with professional social networks (LinkedIn, for example). All of the applications / platforms we suggested were selected by respondents to a lesser or greater extent, with digital stories and screencasting having the least chances to be integrated in professional activities. On average, one in five professors used digital
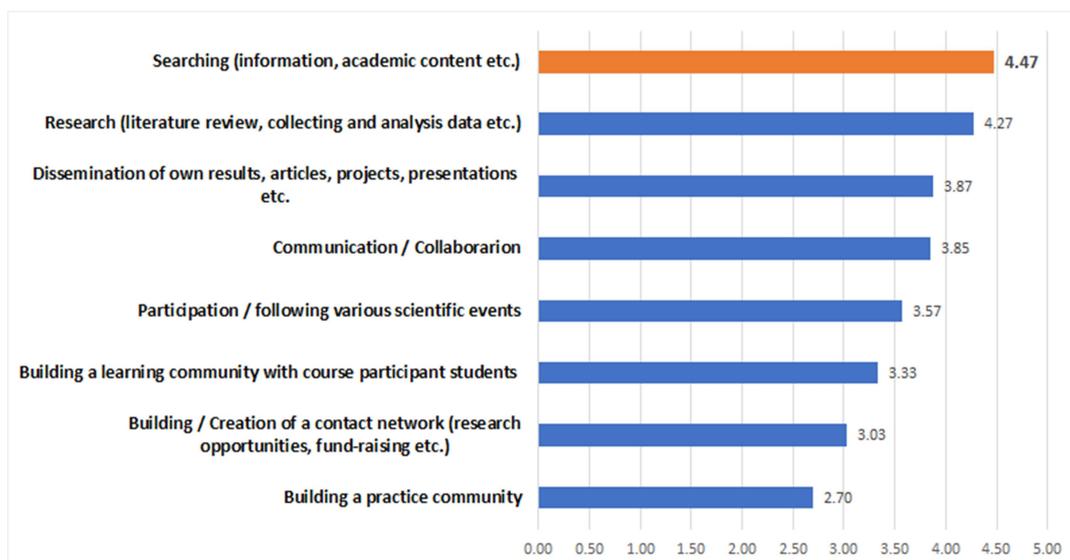
tools in professional activities, ranging from an average of 3.58 for those using file sharing, to an average of 1.32 for those using the art of digital storytelling as a teaching-learning method.

As can be seen from the Top 10 applications (Figure 4), the most popular were those for content sharing, followed by mobile-specific and networking. This makes us think that academic community members prefer sharing information and educational resources (from teacher to student, course support, seminar, etc. or between colleagues) as well as using social media, on mobile devices in particular.

Depending on the purpose of the activities, other tools that can play complex roles in support of the teaching-learning-evaluation and / or research process (see Figure 5) were also used. Thus, in the respondents' answers we often found test and evaluation applications (GoogleForms, Kahoot, Doodle, JotForm), cognitive maps (MindMap), presentation apps, mostly accompanied by animations (PowToon), project management (Asana) as well as various learning management platforms (Moodle, Edmodo, Google Classroom) or plagiarism checkers (Turnitin). In addition, MOOCs and online social learning platforms were mentioned quite frequently (FutureLearn is most often indicated).

Figure 5. Digital instruments according to the purposes of the activities in which they are used by higher education professors. Figure 5 shows a word cloud based on the answers to the question: "What other online applications / software / platforms do you use?"

We also notice a slight difference in average regarding the needs for new learning techniques (3.17) and the use of many of the latest Internet technologies, such as virtual reality, augmented reality, cloud computing, big data, Internet of Things, advanced robotics, artificial intelligence or machine learning (3.02). Although digital technologies for education have reached a high level of maturity, their assimilation is still uneven, not only within universities but also from one individual to another.

In the following paragraphs, we will discuss the professors' experiences in digital environments / online spaces, as well as their training needs concerning the integration of digital tools in their professional activities.

It is well-known that the Internet has changed the hierarchical relationship teacher-student. The role of the teacher is no longer just to provide content, but rather to work with students to explore the new dimensions of the subject being taught. As can be seen from Figure 6, the degree to which various technologies / applications were used by our respondents when talking about personal needs is generally moderate.

Figure 6. Ranking of current activities in which tools, applications and online platforms are used
Figure 6 shows the averages (on a scale from 1 to 5) of the answers to the question: "What are the current activities in which you use online tools, applications and platforms?"

We notice that search / documentation / information remained the most used activity. Although the Internet and the computer are still the most used technological pair for communication, collaboration and dissemination, there is a need to build learning and active communities to acquire (in)formally a range of skills and abilities needed by a modern professor.
Figure 7 shows the continuous training priorities, as they appear in our research.
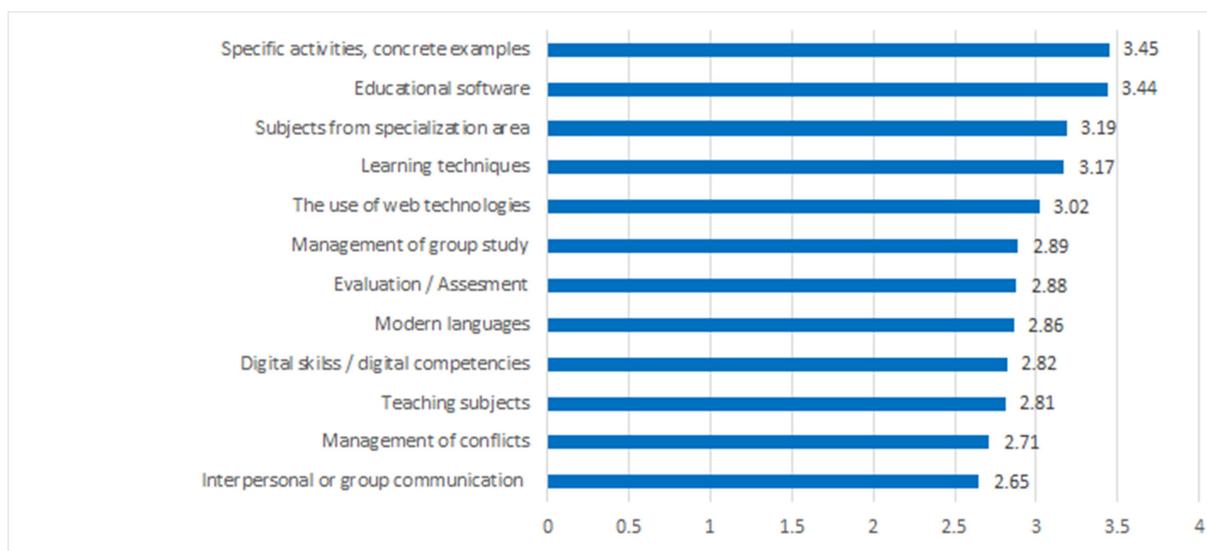
Figure 7. The hierarchy of training priorities of university teaching staff.
Figure 7 shows the averages (on a scale from 1 to 5) of the answers to the question: "To what extent do you think you need training for the following issues?"

According to this hierarchy, the most important professors' needs were educational software and specific applications, including specialized practical examples. Professors drew attention to the fact that there is a lack of professional development and training in this direction. On the other hand, digital skills, interpersonal or group communication as well as conflict management were not deemed important obstacles.
Taking into consideration the training needs, online courses, in particular massive, free-access ones (MOOCs) represent, perhaps, one of the most modern concepts of training pedagogy,

although they are less used by Romanian university professors for their professional development. Only in the last 5 years have we witnessed an increase in the number of studies proving how such courses contributed to success in the didactic career.
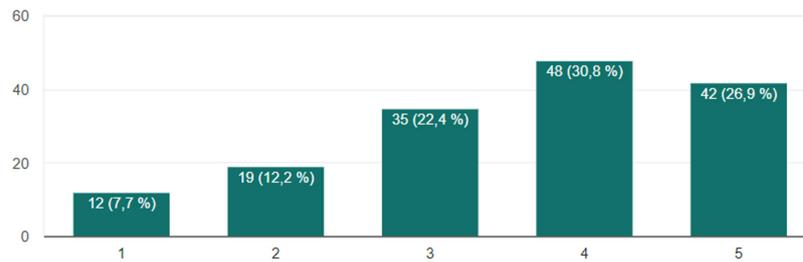

Figure 8 shows the percentage distribution of responses to the question: "Do you think online training is a viable alternative to the professional development of academic education in the university?" (on a scale from 1 to 5: to a very small extent, to a small extent, to some extent, to a large extent, to a very large extent)

Although there are a number of teacher training areas and networks, they are not, however, dynamic structures for professional development (Fat, 2010). As can be seen from Figure 8, more than half the sample (57.7%) estimated that online courses can be convenient and innovative alternatives for training and career development, while 22.4% were only to some extent convinced of the usefulness of such an approach which would take place on social platforms and within online communities.

Our findings indicate that professors were somewhat interested in the ways in which technologies could facilitate their own online and on-campus teaching strategies. The fact that professors used the opportunities offered by open education (OER and MOOC), whether in the development of skills or knowledge at work, as a support of university education, or simply to find out something new, related to a personal interest, indicates a reconsideration of their role as professors and a preoccupation for continuous training, acquiring new knowledge and skills, not just regarding the use of technology.

On the other hand, the professors who responded to our investigation were aware of the drawbacks in lifelong learning and perceived them as a vulnerability. In response to such a need, online training through MOOCs can be a modern and flexible training opportunity that supports and develops authentic teacher professionalism. Thus, we asked the participants to assess on a scale from 1 to 5 the advantages they expect (see also Figure 9) when enrolling in such a course:

- being provided with immediate, specific content, that they can fit into their own schedule and study at their own pace
- choosing from a variety of courses created by different educational institutions
- spending less on online courses (because they involve lower costs than traditional training) and having a shorter span
- receiving guidance towards reflexive practice and the use of multiple perspectives in learning
- addressing learning as a collaborative effort between teacher-trainer and trainee
- finding the basis for their own direction and lifelong learning
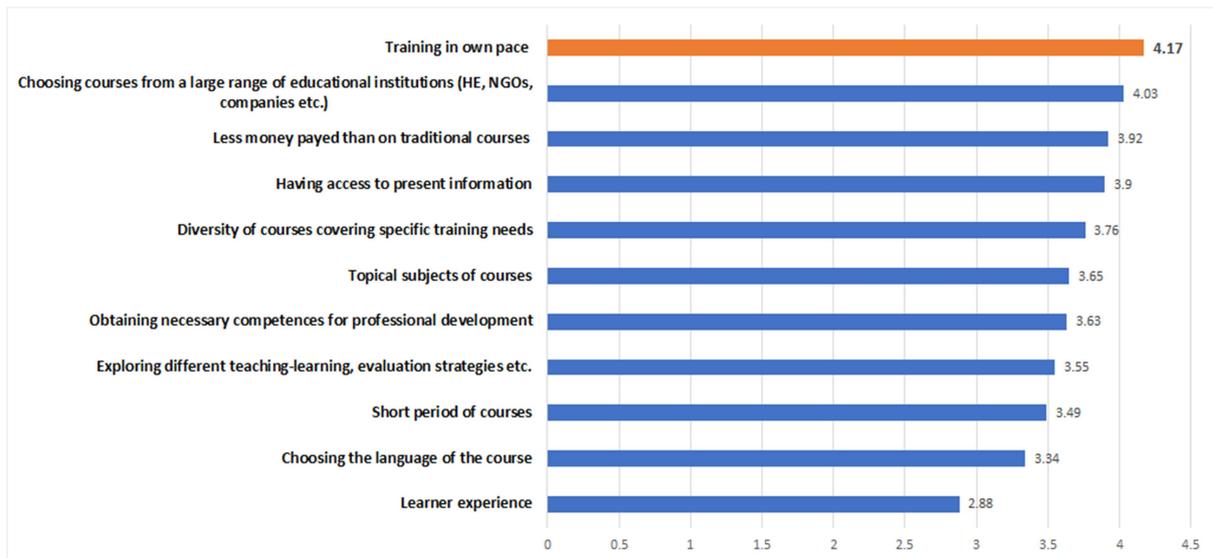- taking advantage of their own professional experience.

Figure 9. The hierarchy of the advantages of online courses in continuous training
Figure 9 shows the averages (on a scale from 1 to 5) of the answers to the question: "Please evaluate the following <advantages> of online courses"

Overall, online courses were perceived as able to recreate learning conditions close to natural ones that set the scene for authentic learning experiences. So, they create a learning environment, or an ecology in which / knowledge is socially built and shared.

6. Conclusions and recommendations

In a world that is constantly changing, "traditional" digital literacy is no longer sufficient for a skilled digital educator. Competence 5 (problem-solving) of the European Commission Framework for Developing and Understanding Digital Competence (DIGICOMP), highlights the need for continuous evaluation and improvement of digital literacy so that European citizens, especially professors, remain well-trained and competitive. When it comes to basic digital skills, Romania has not made any significant improvement in the past year. According to DESI (2018), Romania occupies the last position (see Figure 10).
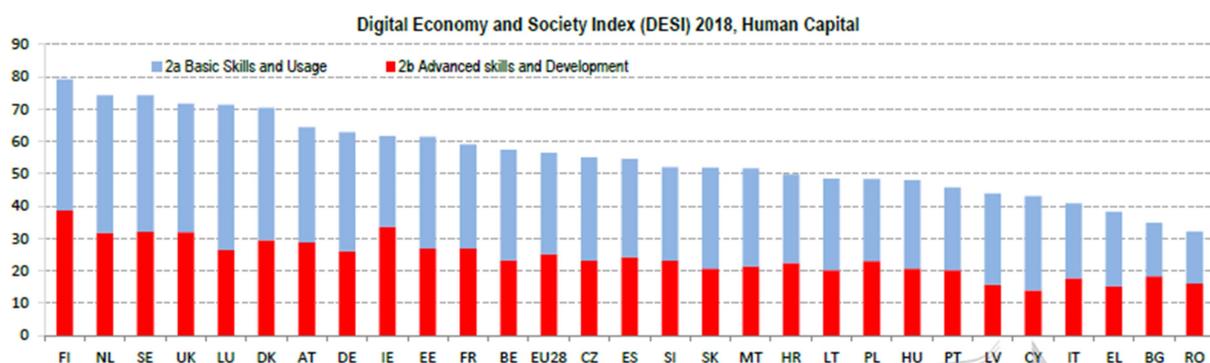

Figure 10. Individuals with basic or above basic skills (source: DESI, 2018)

Another EU report, entitled "The European Framework for Digital Competence of Educators" (DigCompEdu), highlights the idea that society has increasingly higher expectations from professors (regardless of the level at which they teach). Professors should be both specialists in the discipline and continuously develop not only pedagogical but also digital competencies. Moreover, in the same report, the use of digital applications and the online environment becomes a new feature of professionalism in professors' education, with a set of 22 competencies being identified for the "competent digital educator" (Figure 11).
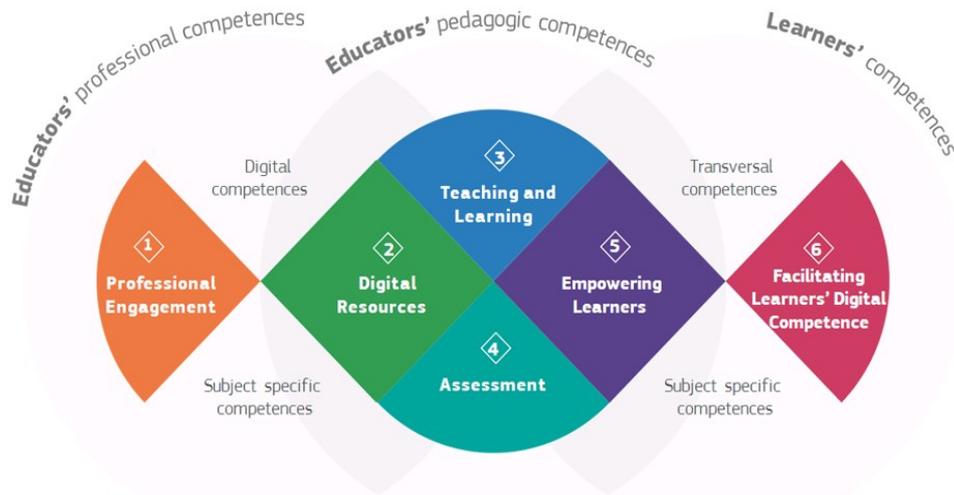
Figure 11. DigiComp Areas (source: DIGICOMPEDU, https://ec.europa.eu/jrc/en/digcompedu)

Our data analysis revealed a number of interesting perspectives on the training of Romanian university academic staff on their way to becoming true 21st century professors. The majority of respondents considered that their continuous training cannot ignore the problems related to the increased impact of new technologies. With the help of new technologies, professors are more efficient in solving administrative tasks, have more opportunities for professional development, participate more in collaborative educational projects and manage to create more interactive, participatory activities for their students. On the other hand, if students are more involved in activities that include online applications, thus understanding better the content, and are more creative, the question is whether universities are prepared to convince professors to participate in training programs (online or offline). Based on our data, we can turn a series of elements revealed by the participants in curriculum development suggestions for the training programs offered by higher education institutions.

The results of this need analysis of the 156 Romanian university professors lead us to believe that their need for online training is just emerging. With Open Education becoming a widespread movement in the last decade, supported and adopted by institutions, organizations, and governments from all over the world, an important factor in shaping a framework for a digital university is seen through the potential of Openness, mainly Open Educational Resources and Practices (OERs and OEPs) and their offspring, Massive Open Online Courses (MOOCs). In this respect, our approach was based on the model of constructs and interrelations in a Digital University proposed by MacNeill & Johnson (2013):
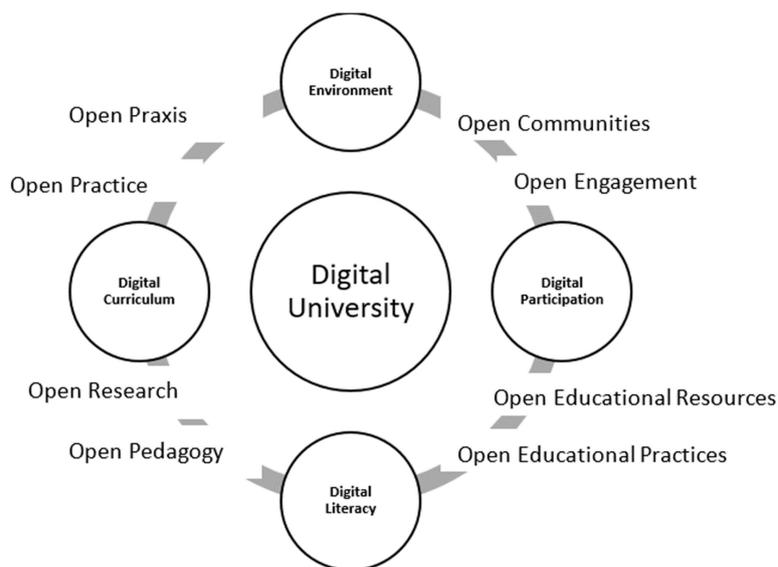
Figure 12. A possible model for a Digital University in the context of openness
(adapted from Johnson, MacNeill & Smith, 2018)

This model is flexible enough to be adapted to any specific institutional context, since it offers a set of organizing principles, rather than fixed structures and formulas.

What is more, our small-scale investigation can be continued and aligned to other analyses concerning the training of academics. For example, a possible direction for further exploration would be to determine the extent to which these online, flexible and audience-friendly training courses (MOOCs) are converging or overlapping with similar initiatives in the country. Everything suggests that, in the long run, a national open access learning center for professors is an option worth considering. Last but not least, resources would be needed to carry out a nationally representative research on this topic, amid some suspicions about the quality or usefulness of certain courses offered to professors.

In conclusion, as Jandric and Peters (2018) postulate, "The Digital University is not a place, technology or way of thinking. The digital university is simply what professors and students do in the digital age.". Only by means of a holistic approach that includes digital learning environment, digital participation of both professors and students, but also other relevant educational stakeholders, a continuous concern for updating and redesigning courses and curriculum and self-awareness of the lifelong learning need for digital literacy, can we contribute to create a more sustainable digital university".

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