OPEN EDUCATION, OPEN EDUCATIONAL RESOURCES, MASSIVE OPEN ONLINE COURSES, OPEN EDUCATIONAL PRACTICES

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Abstract: The paper focuses on the issues of open education, open educational resources, massive open online courses and open educational practices. Technology introduces fundamental structural changes that may be essential to achieve significant improvements in the growth of knowledge accumulation. Used to support both teaching and learning, technology infuses classrooms with digital learning tools. In the context of the global situation affected by the covid pandemic, when school became home, while educational institutions had to quickly adapt to this reality and find new ways to ensure continued access to education for all pupils and students, teaching staff started looking for various tools, apps, platforms and online resources that are accessible to everyone. To overcome these challenges, which must be answered by all those who educate and/or train, new didactic approaches and new strategies are needed. In conclusion online education offers unlimited possibilities to the educational act, but the presence of children and teachers face to face in order to achieve permanent feedback, in real time, in an institutionalized environment, remain essential factors in training the future adult.

Keywords: open education, open educational resources, massive open online courses, open educational practices, open educator, online learning

1. Introduction

Technological progress has transformed almost every aspect of modern life, and perhaps none more essential and complex than the practice of education. With the passing of time, new technological developments appear, offering today's students unparalleled advantages and profoundly differentiated learning opportunities. From adaptive digital learning platforms, communication systems and a host of other solutions, technology in the classroom is evolving at an unprecedented pace. In the midst of this explosion of innovation, schools can become overwhelmed by all the technology options, approaches, and philosophies available to them. In order to overcome this challenge and make the most of technology in the classroom, professional guidance is needed to provide us with general information, but also personalized information for each individual school. It is necessary to gain valuable knowledge about how technologies have been used over time, what tools are available, what criteria we should use to evaluate them, how to successfully navigate implementations, what pitfalls to avoid, and what we can do to optimize education. Today's students live in a very different world than those who learned in the past.

Technology has completely changed the way they play, learn and interact with each other. From instant access to unlimited sources of information to evolving expectations of personalization and control, technological advancements have permeated nearly every aspect of daily life—education is no exception. Technology enables teachers to deliver information more effectively and empowers students to explore, research and learn more effectively.

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Technology introduces fundamental structural changes that may be essential to achieve significant improvements in the growth of knowledge accumulation. Used to support both teaching and learning, technology infuses classrooms with digital learning tools such as computers and handheld devices, expands course offerings, experiences and learning materials, supports learning 24 hours a day, 7 days a week, builds 21st century skills and competencies, increases student engagement and motivation, and accelerates learning (Dejica, 2012; Rozenfeld, 2017; Rozenfeld, J & S. Tomaščíková, 2023). Technology also has the power to transform teaching by introducing a new connected teaching model. This model connects teachers to their students and content, providing professional resources and systems to help them improve their own instruction and personalize learning. This transformation has also enabled a fundamental change in access to information. While teachers were once the main holders of access to information and therefore the sole sources of knowledge - educational technology has made possible for students to access knowledge very easy.

Carefully chosen and relevant technology platforms and materials give teachers more time for personal, in-depth interactions with students. Students are used to technology in every aspect of their lives and see technology as something personal or fulfilling their individual needs and interests forming part of their everyday experience, potentially becoming a personalized learning manual. What educational technology does not have is a really fancy and expensive substitute for pencils. It is not just a way for students to independently complete the same worksheet on their laptops as they would on a piece of paper. Devices should be used to enhance student collaboration on projects or presentations, should connect students to an authentic audience through self-created blog posts, podcasts, or movies, provide instruction and practice through quality digital content. Educational technology is not a substitute for teachers, for lessons created and led by them. It is a tool that supports these goals and helps encourage successful learning outcomes.

In the context of the global situation affected by the covid pandemic, when school became home, while educational institutions had to quickly adapt to this reality and find new ways to ensure continued access to education for all pupils and students, teaching staff started looking for various tools, apps, platforms and online resources that are accessible to everyone. To overcome these challenges, which must be answered by all those who educate and/or train, new didactic approaches and new strategies are needed. In this context, to provide authentic, engaging and interactive teaching experiences, a possible solution is the use of open educational practices and open educational resources.

In this paper we will make references to different definitions for the terms Open Educational Resources - OER, Massive Open Online Courses - MOOC and Open Educational Practices - OEP and we will provide an overview of the history of the concept of Open Education - OE and the philosophy behind it.

In recent years, we have seen increasing interest in the openness of education, mainly related to open educational resources and massive open online courses. While OER and MOOCs are important developments, they tend to overshadow other developments in open education, such as OEP, which are likely to have an even greater impact on education as a whole. Therefore, to have an overview not only of OER and MOOCs, but of open learning in general, it is necessary to understand the significance of these but also of other developments in open education, as well as their impact on teaching and learning, now and in the future.

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2. Open education

Open education is a relatively new concept in the public space. We know that education is an ongoing process, it happens throughout life, in formal and informal contexts and in many forms and practices. Therefore the difficulty of defining open education comes precisely from the complexity of the subject. Although there are many definitions for OE, the one we consider in this chapter is the one from the report of the service dedicated to scientific research and knowledge of the European Commission, Joint Research Center (JRC) report: "open education is a way of delivering education, facilitated by digital technologies, aimed at widening access and participation. It offers multiple ways of teaching and learning, the collaborative construction of knowledge, and a variety of pathways to formal and non-formal education. Open education means access to content, courses, support, assessment and certification in ways that are flexible and responsive to diverse needs". (Inamorato dos Santos et al. 2016, p. 6)

The JRC takes an additional step in defining open education, assigning it ten dimensions, derived from the specifics and particularities of the various goals and objectives pursued. The ten dimensions practically sum up a set of fundamental pedagogical values, grouped into six basic dimensions (access, content, pedagogy, recognition, research and collaboration) and four cross-cutting ones (strategy, technology, leadership and quality).

Starting from these dimensions, Bates (2019) shows that open education can be objectified in several forms:

- Quality education for all: free or low-cost education (from kindergarten to university), available to all people in a given jurisdiction, usually funded by the state. In this case we are talking about open learning, that approach to education that aims to remove all unnecessary barriers to learning, while giving students a reasonable chance of success, in an education and training system centered on their specific needs and in several learning areas;
- Open access to programs leading to full, recognized qualifications. These are generally offered by national open universities (for example, Open University in the UK, UDIMA in Spain or Open University in Hong Kong) or by various organizations such as the Open Education Consortium;
- Open access to courses or programs that do not formally offer credits, although it may be possible to obtain various certifications through virtual badges (open badges) or certificates for their successful completion (MOOCs are a good example);
- Open educational resources that any educational actor can use for free (an example is MIT's Open Courses, OpenCourseware, which offers videotaped lectures and/or other support materials for online consultation and download free of charge);
- Open textbooks, online textbooks that are free for pupils and students;
- Open science content. Research papers become available online to the general public for free download. In this case, we are also talking about a globalization of the scientific community, ways of carrying out research that facilitate new work models, new social relations, increased transparency and collaboration;
- Open data, i.e. those data made available to anyone interested in using, re-using and redistributing them, subject only, at most, to the requirement of attribution and sharing under identical conditions.

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The interdependence of these forms of open education, with all that this entails (characteristics, particularities, elements of similarity, differences, advantages, limits) raises a series of questions about how they should be articulated, complemented, realize these ways, in order to have maximum efficiency in the act of education. At the same time, because of the dynamic nature of technologies, it is important to ensure that OE is not left behind in the larger discourse of education. Therefore, we are witnessing a dual role of open education: as a prerequisite for the realization of OERs, as well as as an objective in itself. Although open education is not a panacea and will not solve all problems in education, there are many ways in which it can be achieved. One of those ways is OER.

3. Open educational resources

In 2001, the renowned Massachusetts Institute of Technology (MIT) university allowed open access to its courses, including text, video, assignments, through the dedicated open courseware portal http://ocw.mit.edu, which led to a wide academic movement to open content, in the creation of the OCW Consortium, which later became the Open Education Consortium. All this provided the opportunity for educational actors everywhere to be able to consult quality materials, to have terms of comparison, to be able to inform and improve. By calling the Way Back Machine, the application of the Internet Archive (Internet Archive - http://archive.org), an open resource portal, we can see what the Open Courses section of MIT (http://ocw.mit. edu) in 2001 and track the evolution over time – just as we can do for a multitude of other sites, analyzing the content but also the technologies used.

Starting from this approach to open content, the following year, 2002, during the "Forum on the Impact of Open Courseware for Higher Education in Developing Countries" event in Paris, UNESCO defined the concept of open educational resources (ED), then updated in 2019: „OER refers to any learning, teaching and research materials, which are available in any format and medium, in the public domain or under open licenses, and which allow free access, reuse, adaptation and redistribution". (UNESCO, 2002 , 2019).

Open educational resources can have different characteristics:

- reduced size: school programs, homework, tests, projects, audio and video clips, animations, images;
- large size: online courses or open digital textbooks;
- very large size: Massive Open Online Courses (MOOC).

On the other hand, Weller (2010) classifies them into big and small (Big and Little OERs), stored in specialized directories or on social networks and which address specific needs: connecting educators with pupils and students, accessing various resources, tools, applications and platforms, which are not commonly available in educational institutions, supporting the continuous professional development of educational actors in a flexible way.

The great potential of OERs is that they allow the achievement of an inclusive education, so that all students, and those with various special educational needs and requirements (or disabilities) have equal opportunities in accessing resources, services and learning experiences in general. We are talking about equal opportunities and access to quality education for a greater number of people and all types of learners. Using OER can save time in preparing learning materials as well as reduce costs. Thus,

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in order to solve the problems related to home isolation of teachers, pupils and/or students during this period, as well as for effective pedagogical approaches to keep learners active and engaged, teachers should build their courses around OER and requires participants in the learning act to find content to solve problems, write reports, or do research. Other advantages are found in increasing the community's interest in education, increasing the quality of education through peer-evaluation, stimulating innovation. Among the fears reported by educators, we mention: the difficulty of OER quality control, the insufficiency of viable business models based on OER.

In the specialized literature we find (UNESCO, 2015) five types of activities attributed to OER:

1. Restraint: creates, owns and maintains control over own creation;
2. Reuse: use in a variety of ways an original, revised or remixed version of the resource, respecting the rights;
3. Review: edit, translate, adapt, adjust and modify the version of the resource used;
4. Remixing: combining the original or revised version of the resource with other existing material to create something new;
5. Redistribution: Distribute copies of the original, revised or remixed version to others, thereby adding a new level of value.

4. MOOC: Massive Open Online Courses

In addition to OER, the second pillar of open education is massive open online courses. The term Massive Open Online Course (MOOC) was introduced by David Cormier, in 2008, to describe the course "Connectivism and Connective Knowledge", held at the University of Manitoba, Canada, by the well-known eLearning specialists, Stephen Downes and George Siemens (Cormier, 2008; Siemens & Downes, 2018). The course, in which 25 master's students were formally enrolled, was opened to hundreds of participants from around the world, interested in the proposed topics, who became co-creators of the course, and the content, communication and collaboration were hosted and distributed on a large typology of social platforms.

Massive open online courses are "courses designed for a large number of participants, which can be accessed by anyone, from anywhere, through an internet connection, they are open and free" (OpenupEd, 2015). In 2012, a year that can be considered the year of the MOOC, this phenomenon evolved at an unprecedented pace, fueled by participants such as prestigious universities (MIT and Stanford) and dedicated platforms (Coursera, edX and Udacity). In 2013, the MOOC movement also registered a growth in Europe, through platforms such as FutureLearn, iMOOX, Miriada, FUN or projects such as OpenupEd, Home, EMMA, EcoLearning, MOOCKnowledge or BizMOOC.

Some of the most important characteristics of MOOCs are participant-centeredness, open access, and scalability. Developed by the world's top universities together with renowned companies, the massive courses are facilitated by experienced lecturers, often with topics that have not yet entered university curricula. They have quality materials, incorporating new technologies, they contain 8-15 minute video clips, in order to hold the attention of the participants, usually with the parallel scrolling of the transcript, which can be translated collaboratively. Other multimedia presentations, guest lecturers, livestreaming, ancillary resources, quiz assessments, essays, projects,

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discussion forums, collaborative group projects on different mobile platforms, peer review, make up the picture of a MOOC with thousands of participants from around the world. The courses can be offered individually or grouped and completed with a complex project, thus offering specializations, micromasters, nanodegrees, study programs, which are not free, but have prices much lower than those of many university programs.

MOOCs bring a new impetus to reform, research and innovation in the academic environment, being part from the wider context of open education, the globalization of education and come as a response to crisis-constrained budgets. These courses offer pupils, students, teachers, researchers and practitioners the opportunity to continuously learn, improve professionally, acquire new knowledge and skills related to new directions and educational technologies. They also allow teachers to experiment with different possibilities of integrating MOOC elements into formal, academic courses for any cycle of studies.

Integrating MOOCs into blended learning

Emerging more than ten years ago, the blended learning paradigm that, at least in part, overlaps with the flipped / mirrored classroom model, is increasingly being embraced by teachers around the world. This pedagogical approach means a mix of classroom activities (face-to-face), with online activities and the integration of synchronous and asynchronous communication and collaboration tools to ensure effective learning processes.

The blended learning model can be achieved by introducing MOOC technology into traditional classrooms or amphitheatres, thus ensuring the transformation, democratization and improvement of education. Approximately 100 blended courses have been successfully run on the EdX platform since the summer of 2013, leading to their labeling as next-generation textbooks.

On the other hand, Daphne Koller, one of the founders of Coursera and promoter at Stanford University of the flipped classroom paradigm, supports the idea that an essential element is learning and interacting with the material at one's own pace, outside of time of the course, by watching the videos and the automatic assessment, accessible in a MOOC space. “Another important element refers to interactive activities in the course, explanations and support given by the teacher for a deeper understanding of the subjects, group projects and based on real problems”. (Young, R. Jeffrey 2018, p.68)

The digital skills acquired by teachers during this period represent useful acquisitions for future teaching activity, as they wish to continue using the digital tools and resources they used during this period in their face-to-face teaching activity. The use of new technologies in learning activities has led teachers to rethink the teaching process in order to make it compatible with the new way of communication facilitated by digital platforms. "There are studies that show that the future is blended learning, i.e. a mixture of face-to-face learning, in the classroom, with online methods. The students' minds have changed. “The permanent interaction with digital technologies changes the minds. Students have much more to gain from a mixture, from a blend, from a hybridization of face-to-face methods with online methods". (Selingo 2019, p.96) It is true that the virtual school experience can often be overwhelming, but let's not forget that, from a biological point of view, the human being is endowed with the ability to adapt, even more so children have resources, often unsuspected by adults, of adaptation and resilience in difficult situations.

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5. Open educational practices

The proliferation of Web 2.0 technologies and the new skills, knowledge and digital skills acquired by pupils, students, teachers, practitioners in the creation and use of social media, have determined the acceleration of the movement related to open access and open educational resources. Through social media, the focus has shifted from the resources themselves to Open Educational Practices (OEPs), practices associated with the creation, use and management of OER. Ehlers defines OEP as "practices that support the (re)use and production of OER through institutional policies, promote innovative pedagogical models, and respect and empower students as co-creators on their lifelong learning paths". (Ehlers 2011) Open educational practices are therefore closely related to OER and are seen as a whole "spectrum of practices around the creation, use and management of OER with the intention of improving quality and innovating education". (OPAL 2011).

Specifically, open educational practices - including open pedagogy, open collaboration and open assessment - should be implemented to keep learners (pupils, students) motivated and engaged in online learning. The specialized literature identifies several factors that contribute to the adoption of OER by teachers, namely: attitude, motivation, willingness and ability to invest in open education. With the rapid evolution of the open education concept, researchers have shifted their attention from content-centric approaches that focus on educational resources (creating, sharing, etc.) to practice-centric ones that foster collaboration between learners and teachers for creating and sharing knowledge. On the other hand, the recommendations on OER approved by UNESCO, also stipulate that: „the judicious application of OER, in combination with appropriate pedagogical methodologies, well-designed learning objects and the diversity of learning activities, can provide a wider range of innovative pedagogical options to engage both educators and students to become more active participants in educational processes and content creators as members of diverse and inclusive knowledge societies". (UNESCO 2019)

Despite the fact that OEP can improve learning outcomes, there are also some limitations. The challenges are multiple. From an institutional perspective, schools and universities may find it difficult to adapt their pedagogical methods to the OEP framework. Additionally, they do not recognize OEPs in their promotion and hiring policies. From the teachers' perspective, some teachers fear that they will lose control over the teaching process when they invite students to be active participants by co-creating and contributing to course activities. Some of them also lack the necessary skills and competencies to incorporate OEP into their courses. From the students' perspective, they are more familiar with traditional learning approaches, therefore it would be difficult for them to self-regulate and adapt to a structured OEP course. Therefore, OEP essentially requires open practitioners, active participants and innovators.

The open educator – competences, qualities and roles

An open educator is defined as the teacher who chooses to use open approaches, when possible and appropriate, with the goal of removing all obstacles to learning. Collaborate and leverage peers and students to use and create open content, including OER and/or MOOCs, open applications, and social media in learning. In other words, learn continuously.

So far we have talked about open educational resources, massive open courses, and open educational practices. The one who gives them life, the one who learns using

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them, and who later integrates the community of students, pupils, colleagues, is the open teacher. But how do we recognize an open educator? There are four essential qualities that make a teacher an open educator, namely:

1. An open educator is an architect of openness, receptive to the new, who openly shares and validates course design ideas and curriculum through social media.

2. An open educator is an expert in teaching-learning with OER: he/she uses open educational content, open licenses, facilitates and shares his/her own resources, uses and reuses OERs created by others in his/her activities.

3. An open educator is a facilitative teacher, open to change, adopts open pedagogies that favor the co-creation of knowledge and OERs by pupils/students through online and offline collaboration.

4. An open educator is an open assessor. Implement open assessment practices such as peer and collaborative assessment, virtual badges, open badges and digital portfolios. (Carey 2015)

We therefore observe that the activity of an open educator intervenes in all elements of running a course, not necessarily an online course, from the design, content creation, teaching and learning assessment side. On the other hand, developing the skills of an open educator can be done by participating in quality massive online courses. These are learning paths and journeys to openness; they are starting points on a lifelong learning journey; useful for every pupil, student, teacher or employee, but also for institutions or organizations, which adapt their training programs and policies.

In the last ten years of the 21st century, by improving information and communication technology, by equipping schools and by renewing contents, as the main exponential factor of the educational process, the modern teacher brings together a series of skills, qualities and roles. The notion of a teacher is associated in the mind, for each of us, with the portrait of a certain person who embodies everything that we think represents the teacher model, or with a series of traits, selected from the multitude of examples offered on during the school years. The need to transform the teaching profession was imposed by the fact that at the level of each state, and in particular the Romanian state, education is a national priority, which has as its main objective the elaboration of an educational policy, based on which it is made the preparation for life, at any age, of human beings. „The educational activity is complex, adapted, oriented, dynamic and flexible, in order to stimulate the ideal of each human being, expressed by to be and to become, concisely: it achieves the preparation of a peron as an active element of social life".(Francois 2018, p.82) Modern education aims at the conscious development of the formation of a personality type required by the present and prospective conditions of society. The didactic activity of the modern teacher goes beyond the highlighting of his personal qualities, appreciated by the terms: vocation, talent, mastery, by the fact that it involves the acquisition of a complex system of theoretical knowledge, the formation of skills, abilities.

Over time, specialists have tried to outline the model of the ideal teacher, which presents in a synthetic way all the traits and personal qualities necessary for a good specialist. It was emphasized that, in addition to the innate and acquired character of the teaching staff, it is also necessary to acquire a complex system of skills, which makes it possible to obtain added value in his/her teaching-learning activity. The most frequently applied criterion for establishing the model of the ideal teacher is that of efficiency in the teaching-learning activity, defined in terms of the behavior expected and achieved by the students.

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The synthesis of the results of the research carried out, regarding the characteristics and competences of the effective teacher is as follows:

- clearly establishes the educational objectives to be achieved with the students;
- presents the students with the highest achievements to be achieved;
- identifies and designs the learning activities that are relevant to everyday life;
- shows concern to adapt to the diversity of students;
- creates and maintains a working climate in the classroom conducive to learning;
- encourages social interaction in the classroom;
- offers students a work structure that is likely to guide their learning efforts;
- facilitate the processing of information by students by using various didactic methods and strategies;
- develops the capabilities of essentializing information by students;
- stimulates the intellectual development of students by structuring learning tasks, by training them in various situations of working with information;
- carries out a permanent monitoring of the students' progress in meeting the proposed objectives. (Rosenburg 2019)

At the international level, over the years, a variety of institutions, organizations or foundations, such as UNESCO, OECD or the European Union, have been concerned with launching programs and projects related to open education and especially OER, providing also financial support. Some of the current initiatives, which act as driving forces for the transformation of education at all levels, are Open Education Europe (opening up education through new technologies), the UNESCO Coalition for OER, HE Innovate.

Romania appears active in the OER movement, mainly through institutions, groups or individuals involved in specific projects or programs, but also through open educational policy proposals at governmental level, through support in the innovative integration of Web 2.0 and open educational resources in education. We have a Coalition for Open Education Romania, a platform of the Ministry of Education and Research for accessing manuals in digital format (manuale.edu.ro), communities of involved and dedicated teachers (didactic.ro, digitaledu.ro etc.), directories of resources and best practices maintained by companies (digitaliada from Orange, scoaladinvaliza.ro from Vodafone), town halls, various NGOs (indreptardigital.ro) or parents' associations, platforms on which MOOCs run (UniCampus al Politehnica University of Timișoara, the OER course developed by the West University of Timișoara, UEFISCDI, etc.). And, of course, we have CRED: Curriculum Relevant for all (http://educred.ro, 2017-2021), the most ambitious project developed by the Ministry of Education and Research in the last ten years, through which it committed to deliver training in the field of open education and to equip more thousands of teachers with competencies and digital skills specific to OER development.

6. Conclusions

Open education is an umbrella term that has multiple facets: access to quality resources adapted to learning, an educational process linked to the online environment or an appropriately set program and, most importantly, coherent strategies. It is clear that it can manifest itself in various ways, being considered and approached differently by different people. What is important, however, is the recognition that, in order to progress in the new digital society and economy, we need new knowledge and skills, which we

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have to master, in order not to face digital barriers, especially in conditions of crisis, like the times we live in now.

Each student at some point in school has an unique level of background knowledge that affects how they will understand a certain concept. Different types of technology in the classroom can play roles in helping students learn, based on whatever platform is most effective for them (e.g. game-based apps, e-textbooks, quizzes, online engagement systems, and more). There are also different depths of learning: understanding, analysis, creation. Some educational technology solutions focus primarily on the level of understanding, while other products are more successful in analyzing or developing creativity. Technology in the classroom can help address early learning depths, allowing teachers to have more time and create activities for deeper learning. Carefully chosen and relevant technology platforms and materials give teachers more time for personal, in-depth interactions with students. Students are used to technology in every aspect of their lives and see technology as something personal or fulfilling their individual needs and interests forming part of their everyday experience, potentially becoming a personalized learning manual. Devices should be used to enhance student collaboration on projects or presentations, should connect students to an authentic audience through self-created blog posts, podcasts, or movies, provide instruction and practice through quality digital content, and provide quickly and easily to teachers data through digital formative assessments. Educational technology is not a substitute for teachers, for lessons created and led by them. It is a tool that supports these goals and helps encourage successful learning outcomes.

Online learning, by its very nature, requires a degree of student independence and problem-solving skills. Working outside of school, away from teachers and peers, means that students must take on greater responsibilities if they want to succeed in online courses. In addition, there is a perception that students are encouraged to take on more responsibility for their own learning in order to meet the expectations of employers and the community. Self-assessment, peer assessment, discovery learning, reflection and articulation are just some of the methods by which students are encouraged to manage their own learning and assessment. Other methods include options for discussing assessment activities, mode of presentation, length of assessment and decisions about scoring or grading. The challenge that remains is to find measurable results to demonstrate the acquisition of the desired competencies and skills.

Online education offers unlimited possibilities to the educational act, but the presence of children and teachers face to face in order to achieve permanent feedback, in real time, in a suitable/institutionalized environment, remain essential factors in training the future adult.

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