



Shaping the Key Competencies for Romanian HEIs' Teachers in Using Gamification as Innovative Tool in Education: MEDIIA Project Experiments

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Abstract: The regular training of teachers on the latest developments in the ICT-assisted education sector is becoming a necessity, generated by the digital revolution and driven by the pandemic crisis. Among the current technological opportunities to improve the quality of the learning process and to make it more flexible in direct correspondence with the training needs and with the personal pace of learning, we find gamification. Improving teaching methods as well as the curriculum, especially by implementing gamification techniques in the teaching process, requires a high level of digital literacy among teachers so that they can (re)design their educational materials in digital format. This was achieved within the Danubius University of Galati (Romania), through the MEDIIA project (project code POCU/320/6/21-122859) carried out between 2019-2021, a project that will be the subject of the case study of this paper.

Keywords: European knowledge-based society; digital technology; quality of teaching and learning

JEL Classification: P46

1. Introduction

Updating teachers' competencies in educational methodologies is an ongoing process, and specialization courses allow teachers to innovate educational methodologies so that students become more involved in the learning process, with the end result being increased learning quality and skills development.

In the period 2019-2021, Danubius University of Galati (Romania) developed the MEDIIA project (Educational Methods for the Development of Innovative Entrepreneurial Education) – project co-financed by the European Union from the European Structural and Investment Fund through the “Human Capital” Operational Program 2014 – 2020 (project code POCU/320/6/21-122859). This project aimed, among other things, to innovate teaching methodologies in order to develop the

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educational offer in accordance with the requirements of society. The main challenge in carrying out this project was the outbreak of the pandemic crisis which led to an extremely rapid adaptation to the restrictions imposed in the education sector by the health crisis.

2. Main Objectives

The aim of this paper is to present how MEDIIA project has contributed through the innovation of teaching methodologies to the diversification of the educational offer, to the improvement of the teaching staff skills and last but not least, to the development of knowledge among students.

Although at the time of its writing, the pandemic crisis was unimaginable, the project aimed at adapting the training and learning process in line with the new trends generated by the digital revolution, along the way, the MEDIIA project facilitated much faster adaptation to new realities in the educational environment generated by Covid-19, and for this reason, I have chosen to present a small segment of this project, namely the integration of gamification techniques in the teaching process, as part of updating teaching methods.

3. Methods

The regular training of teachers on the latest developments in the ICT-assisted education sector is becoming a necessity generated by the digital revolution and accelerated by the pandemic crisis. Among the current technological opportunities to improve the quality of the learning process and to make it more flexible in direct correspondence with the training needs and with the personal pace of learning, we find gamification.

A precursor factor to the use of gamification in the educational process is the training of teachers in reorganizing the learning environment by introducing gamification techniques in teaching. In this approach, a series of studies were carried out on:

- (i) identifying the Romanian educational offer on training courses for teachers – courses aimed at modernizing the teaching-learning process by using methodologies and techniques of gamification in the training process;
- (ii) identifying the current competencies and the necessary competencies of the teaching staff regarding the implementation of gamification techniques in the process of training and learning of students.

At the same time, the field of concrete application of innovative methodologies has been established and an implementation plan has been developed. Also, training plans

were organized and specialization courses were organized for teachers in order to redesign the contents of the disciplines in the sense of guiding learning through gamification techniques to the accumulation by students of the targeted skills.

Finally, the practical application of methodologies was observed under the framework of transnational laboratories and their value was directly experienced through pilot projects.

3.1. Professional Development of Teachers in the use of Gamification Techniques: Evidence from Romania

Education based/oriented on the development of skills involves the reorganization of the entire education system in Romania. Our society needs creative and innovative people, and for the effect to be visible we need a drastic improvement in the quality of the educational process.

The rapid development of new technologies has generated new methods of work and training, so that, in the recent years, we see how the international academic environment has increasingly implemented online teaching-learning methodologies in their educational offer.

In the same sense, in the context of the creation of a European knowledge-based society, the European Commission is supporting this form of education, especially at university level. The Council of the European Union also recommends “promoting a wide range of learning methods and environments, including the appropriate use of digital technologies in education, training and learning”.

These European and international initiatives should help to renew the education and training in Romania but, unfortunately, the transition from the information society to the knowledge society (knowledge to which everyone can have access, regardless of the area in which they are located and the level of prior training) is a great unknown for the Romanian educational system. Thus, the use of e-learning tools is diminished by the insufficient number of platforms at national level and constrained by the reduced flexibility in the generation and use of digital educational content. According to the SWOT Analysis on the use of ICT in education, presented in the National Strategy on the Digital Agenda for Romania 2020, “pedagogical and methodical training of teachers on the integration of ICT in education, achieved through initial training, is modest.” (pg. 138). The same document states “the lack of transparency and coherence for the initial and continuing education of educators.” (p.139). In this context, it is clear that the entire higher education system should be reconfigured to suit the digital age.

The progress of modernizing the Romanian education and training system for those interested in teaching career is timid.

- The Analytical Programs of the different specializations that operate under the aegis of the Department for Teacher Training within the different higher education institutions, do not include in the thematic content references about the methodology and techniques of gamification of the teaching material.
- There are only a few European-funded projects on teacher training in the use of ICT tools in the teaching-learning-assessment process; Of these, the most eloquent at the time of elaboration of the study were: Gamify Your Teaching – the project aims to develop the vocational skills of entrepreneurship teachers and trainers by using gamification; Beaconing – the project develops a state-of-the-art digital platform for several target groups: teachers (to create gamified lesson plans and study analytical reports about their students); students over the age of 15, whether they are fully functional or have mild or moderate disabilities (to play different scenarios at any time and in any context) and learning content designers (to create new scenarios); Borderline Boardgamesv which is a digital platform containing two board games: Real iDeal and MissionZ intended for teaching financial education, but also for developing conflict management skills.
- There is the possibility of assimilating the knowledge on the essence, forms and functions of gamification in education, through self-improvement courses available online on various international educational platforms, such as: Byju's , Coursera , Khan Academy , TEDEd , Udemy .
- There are virtual platforms for educational collaboration and online centralization of information, which contain various digital tools based on the gamification technique available internationally, to which Romanian teachers have access: Classcraft; ClassDojo; CourseHero; Duolingo; EPALe; GoalBook; Kidblog; Minecraft; MinecraftEdu.

The modernization of the Romanian education and training system in order to respond to the challenges generated by globalization and digitalization but also to strengthen the relevance of national qualifications in the context of the international labour market, presupposes, first of all, thorough training, through initial and continuous training programs of people interested in teaching career.

Efforts in this regard are fragmented and there is no coherent and integrated national strategy for teacher training in relation to the educational needs of today's society.

Another important aspect worth noting is the fact that the e-learning area is gradually taking over the role of reference leader in education systems, self-training through online courses being currently the safest option for teaching development in the field of gamification. But, we must mention that these training courses on the design of courses using gamification methods are available on these platforms, in international languages and not in Romanian, which may restrict teachers' access to education. Moreover, beyond language barriers, the creation of learning experiences using

gamification techniques in the design of courses requires, on the part of the teacher, the possession of digital knowledge and skills.

Another challenge in this process of self-training of teachers is the cost of different courses and the lack of the possibility for them to be paid by the educational units. There is also the possibility to access certain courses free of charge, but at the end of the training period, only a certificate of participation is obtained and not a certificate that attest the acquired skills, which is needed in order to be recognized by the relevant ministry in Romania.

The essence of the gamification of learning activities involves the acquisition of knowledge on the selection, application, implementation and integration of game design elements in the educational context in order to facilitate the learning process. But all these operations take a long time to understand the whole process and to make it accepted by the decision-makers in the educational institutions. The reluctance to the new teaching methods and tools is quite high, fact highlighted by the restrictive norms of the Romanian legislation on online education. Also, familiarizing teachers with gamification techniques is not enough because the application of gamification may not be applicable to all subjects. Otherwise, the potential of gamification in facilitating student learning in different settings is proven, and various gamification techniques such as points, prizes, badges, rankings, charts, challenges, levels and feedback can be used on certain topics in these disciplines.

However, beyond these attempts, the professional development of teachers must be a constant priority and concern, because the level of teacher training generates the level of training of students.

3.2. Educational reality through gamification from the perspective of teachers' skills

Rethinking education in line with the new pressures of globalization and technology implies a radical transformation of the teaching ideology. Added to this are the major differences between generations and the way they perceive and use digital technology. Although many of them are familiar with the Internet and various social media applications, we cannot say that they are necessarily digitally literate.

Education through gamification involves, among other things, a rethinking of the role of each party involved in the teaching-learning process – the relationship between the issuer of knowledge (teacher) and its beneficiary (student), from the perspective of the degree of responsibility; decision-making autonomy, freedom of action; of (self)control, (self)evaluation, etcetera. At the same time, the actors involved in the learning process through gamification must demonstrate some minimum digital literacy skills. Having minimal operating skills with the new technologies is a necessary condition for activating this way of doing education. Also, for an efficient

use of the opportunities offered by gamification, both teachers and students must understand the importance of communication skills in achieving the exchange of information, knowledge, experiences, values, attitudes.

Learning facilitated by gamification is a new hypostasis of the education act, which involves a unique relationship between students, but also between teacher and students.

Learning through gamification is based on a digital medium, which influences in a different way, the ability to sense stimuli. The contents that are delivered through gamification support a specific processing, the architecture of the educational services, in the case of gamification, being extremely flexible. In this endeavor, it is necessary to encourage teachers to be as autonomous as possible in thinking, in the way they organize and process their information. Gamification involves a certain intervention on the content of knowledge. They are required to be compatible in order to be transposed into a specific format. The content that is delivered through the new technologies must be redefined and resized so that through the new educational path, the students can use what they have learned in their current activity. In this regard, it is necessary to train teachers to understand the new training needs of students, generated by the rapid pace of technological change.

Gamification involves a change in the functionality of the methods, another way of performing them, a new “face” of the contents, a redefinition and a recomposition of the technical elements, which preside over the activity of incorporating some values. In this context, teachers need to be trained to become promoters of educational change and innovation.

4. Results and Discussions

4.1. A Desirable Competence Profile for Teachers in Higher Education Involved in Using Gamification Techniques in the Educational Process

Starting from the common European vision regarding the teaching profession, transposed into the relevant Romanian legislation, a profile of the teaching staff in higher education can be drawn.

The teaching staff must prove the competencies provided by the doctoral study programs, as follows:

- *professional competences* (content, cognitive and research) specific to the field: advanced knowledge in the field; the ability to identify, formulate and solve research problems; mastery of advanced research methods and techniques; knowledge of research project management; mastery of new research procedures and solutions; skills in documenting, elaborating and capitalizing on scientific papers; language skills at the academic level in languages of international circulation necessary for the

documentation and elaboration of scientific papers; understanding and ability to apply the principles and values of scientific research ethics in the field;

- *transversal competences*: communication skills, written and oral, in the field of science and culture; advanced language skills in international languages; use of information and communication technology; inter-relationship skills and teamwork; knowledge of human, material and financial resources management; leadership skills; knowledge of career management, as well as the acquisition of job search and job creation techniques for others; knowledge of risk, crisis and failure management; knowledge of the use of intellectual property rights legislation; economic, technological and social entrepreneurship skills.

The teaching staff must prove the competencies provided by the university study programs in the field of Education Sciences, provided by the Teaching Staff Training Department:

- *professional competencies*: training and development of cognitive competencies in the field of educational psycho-pedagogy; designing the educational instructional process for various age/training levels of students; carrying out the activities specific to the instructive-educational process in pre-university education; assessing students' learning processes, outcomes and progress.

- *transversal competencies*: application of the principles and norms of professional deontology, based on explicit value options, specific to the specialist in education sciences; effective cooperation in professional, interdisciplinary work teams, specific to the development of projects and programs in the field of education sciences; the use of effective lifelong learning methods and techniques for continuous professional development and training.

General competencies for teachers should include the key competences for sustainable learning that teachers need to develop among students in order to facilitate their integration into more diverse, digitalized and globalized societies.

All these competencies can also be considered targets of training programs in the process of "lifelong learning" (professional development). But the intelligent dissipation of knowledge involves the compatibility of technology with the exigencies of education.

According to the European Key Competences Description, digital competence is translated into:

- *knowledge* – understanding and knowledge of the nature, role and opportunities of information society technology (ITS) in everyday contexts: in personal, social, professional life.

Includes main applications such as: word processor spreadsheets, databases, information storage and management; understanding the opportunities and potential

risks of the Internet and electronic communication (e-mail, network) in contexts of: work, leisure, exchange of experiences, networking, learning, research; understanding how ITS supports creativity and innovation, awareness of the validity and authenticity of available information, and the legal and ethical principles involved in the interactive use of ITS.

- *skills* – the ability to search, collect and process information and use it in a critical and systematic way, appreciating its relevance, differentiating between real and virtual and recognizing the links between them; skills to use digital tools to produce, present and understand complex information; the ability to access, search and use internet-based services; using ITS to support critical thinking, creativity and innovation.

- *attitudes* – critical and reflective attitude towards available information, responsibility in the use of interactive media, interest in involvement in communities and networks for cultural, social and/or professional purposes.

Moreover, the digital age and the globalized society bring to the fore the need for computer and digital literacy of teachers, which involves the analysis, approach, management, integration, evaluation and creation of information in various environments.

The incorporation of gamification techniques in the educational process oriented on the development of students' competencies implies the "creative" adaptation of the specifics of the didactic work: the detection of the content, the setting of objectives, the methodological design, the organization of learning situations, and etcetera.

Understanding how to modify courses in order to include gamification techniques in the teaching process involves recalibrating the classical principles of teaching-learning, because education through gamification involves:

- individualization and personalization of the training path – learning experiences are differentiated according to the preferences, interests, pace and possibilities of the learners (students);

- multi-level construction of the contents – the content is constantly changing, depending on the needs of the participants, the interaction between them and between them and the teacher, the experiences that arise during the training process. Thus, the content has a non-linear structure and is permanently available to students, and can be accessed whenever needed. At the same time, the degree of difficulty must be flexible, the student having the opportunity to move to a higher level of difficulty, when deemed necessary;

- cooperation and interactivity in establishing the informational content – the reference of knowledge must be permanently extended according to the needs of the users; completeness of information sources is a necessary condition that is achieved by "sending" users to additional resources – additional readings;

- the sequentiality of the contents – the content elements must be well delimited, and the learning difficulties, fragmented, so that the student can go through almost the whole material, the new content elements being gradually introduced;
- observance of the individual training rhythm - the informational resources can be accessed by the user whenever he wants;
- self-observation of the learning process – allows students to continuously self-assess their progress;
- prompt and up-to-date feedback – immediate verification of given answers allows students to correct the knowledge acquired in real time.

In this context, the training of the teaching staff involved in the use of gamification techniques in the training and learning process of the students must ensure:

- skills in effectively identifying digital resources that best fit the learning objectives, student group and teaching style;

The teacher must know how to deal with the specific learning objective, context, pedagogical approach and group of students, when selecting digital resources and planning their use. At the same time, the teacher must be able to evaluate the usefulness of different gamification techniques in developing students' proficiency levels.

- knowledge on how to structure digital materials, to establish connections and logical sequences of information in order to achieve the teaching-learning objectives;

The teacher must know how to explore digital resources and select those resources that are useful in the process of gamification of the course. They must acquire skills in adding and developing digital content to support their teaching process through the technique of gamification. Summarizing, the teacher must know how to organize and edit digital content in the learning context.

- knowledge of how to use and manage digital content responsibly, complying with both copyright rules when using, modifying and distributing resources, and rules on personal data protection, such as online testing and notes;

The teacher must learn about the correct compliance with the rules of privacy and copyright regarding the educational resources available on the Internet.

- knowing how to distribute their own digital content using gamification techniques on educational platforms.

The teacher needs to know how the online platforms that allow educators to upload courses work, platforms from where students can later access these courses and learn online.

In conclusion, the teacher must acquire the necessary skills to be able to develop educational content using gamification techniques in the teaching activity.

5. Concluding Thoughts

Improving teaching methods as well as the curriculum, especially by implementing gamification techniques in the teaching process, requires a high level of digital literacy among Romanian HEIs' teachers so that they can (re)design their educational materials in digital format.

Detecting the performance obtained in the teaching-learning-assessment process, as a result of experimenting with new teaching methodologies, is essential to determine whether the new teaching methodologies have the expected effect and whether they should be used further in teaching or whether readjusted, when certain modifications are required.

The results of this study converge with the conclusions of Passey et al. (2018) regarding the need for teachers to be aware of using digital tools with responsibility. Knowledge of the digital world and its ethical issues, understanding concerns and ensuring security and privacy, as well as, understanding the impact of one's digital activities, represents important skills that should be continuously developed among HEIs teachers, in order to increase the quality of teaching and learning by using digital technology, contributing in this way in building a reliable model of European knowledge-based society.

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