

CHAPTER III: E-LEARNING IN THE DEVELOPMENT OF KEY AND SOFT COMPETENCES

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THE IMPACT OF EDUCATIONAL TRENDS ON THE DIGITAL COMPETENCE OF STUDENTS IN UKRAINE AND POLAND

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Abstract: *The rapid development of technology is having an effect on the processes of communication and collaboration in society, which requires the transformation of education and training of the citizen of the digital society. This article presents European experience in the transformation of education, in particular an analysis of legislative initiatives in Ukraine and Poland in the field of digital society formation. The authors look at world trends and educational trends which are considered part of the modernization and digitization of the education system of the two countries.*

A survey was carried out, in the international project Erasmus + K2 MoPED, on current educational trends, educational technologies and their impact on the digital competence of students. The study showed a high level of interest among students in the presented educational trends, which shows the need to build students' digital competence. The authors demonstrate the effect of the absence or lack of digital skills on the citizen's overall life chances. The article deals with the influence of the type of intelligence on the learning

process, presents students' new educational needs, highlights innovative pedagogical technologies and methods that will allow us to take into account educational trends and follow the modern requirements for digital transformation of education.

Keywords: digital competence, educational trends, transformation of education, innovative teaching technologies, digital tools.

INTRODUCTION

Digital technologies are driving global change in our lives – professions are disappearing, people are being replaced by artificial intelligence, and the flow of information is steadily increasing. Technologies have become an important part of our daily lives, they surround the modern man at home, at work, in transportation, on vacation, in education. Due to the rapid development of technologies, there is a change in the processes of communication and cooperation in society. Previous research in this area focused on the phenomenon known as the digital transformation (Henriette, Feki, Boughzala, 2015). The educational system in the information society must be an anticipatory system. The transition from a conservative education system to an advanced one should be based on the formation

of an information space corresponding to an e-system, where the student will feel free in the digital space due to the widespread use of information technologies and the introduction of new infrastructure solutions. One of the possible ways to achieve these goals is to digitize the educational process of institutions of higher education, because higher education institutions are the focal points for the design of the latest technologies and serve as a launching pad for innovation, which generally ensures the development of any human activity and promotes socio-economic growth. Digitalization of education means modernizing, reforming and transforming it as well as solving problems and making decisions using digital technologies. Digital technology must be integrated into all areas of education, teacher training, educational infrastructure, methodology (pedagogy), educational resources and leadership management at all levels and in all sectors of the education system (Morze, Vasylenko, Gladun, 2018).

1. TRANSFORMATION OF EDUCATION

The European experience in the transformation of education is the introduction of specific initiatives. The EU digital education system is being implemented within the framework of the EU 2020 Strategy and its leading initiatives: the Digital Agenda for Europe, the Agenda for New Skills and Jobs, and the Innovation Union. In 2015, the European Framework Program

for Digital Educational Organizations (Kampylis, Punie, Devine, 2015) was developed and in 2016 the European Platform of Digital Competences for Citizens was updated, which is the framework structure for describing digital competences to be used by business entities and educational institutions in defining directions of training specialists in the modern labour market and determining the content of their training. Digital teaching and learning is also considered within the framework of the strategic programme Education and Training 2020. It addresses the issues of engaging teachers in enhancing their digital competence and how to stimulate this process. All these initiatives contribute to the development of digital competences, lifelong learning on the Internet and opportunities for all; aimed at building an innovative society, an open and secure digital environment; solve cybersecurity problems; contribute to attracting investment in education infrastructure and supporting specific teacher training programmes and upgrading their skills; promote the adoption of new legislation for the Digital Single Market, the European data economy, and the online market.

The article analyses the impact of educational trends on digital competence formation in two countries: Ukraine and Poland.

Analysis of Poland's legislative initiatives to form a digital society.

The current relevance of the article is also determined by numerous national and foreign documents regarding the development of the information society and the knowledge society as well as the related transition to a global competence society in which both global economics and the status of education are changing: Strategy for the computerization of the Republic of Poland - ePoland. Proposed directions of development of the information society in Poland until 2020; A strategy for smart, sustainable and inclusive growth. Communication from the Europe 2020 Commission; Digital Poland OP PC 2014–2020; Digital Agenda for Europe. A Europe 2020 Initiative (2014); Higher education development programme to 2020 and others.

A good example of implementing the university's computerization strategy is the University of Silesia in Katowice. As part of its own activities in the field of science, research, innovation, cooperation, it has launched national and international projects, implemented various initiatives in the use of e-learning in lifelong learning, and taken care of the development of the digital environment. These initiatives bring concrete results at the University of Silesia: The Distance Learning Centre at the University of Silesia (CknO (DLC) US) has its goals, concepts as well as the methodology of implementing e-learning at the University of Silesia. The Centre for Distance Education is a university-wide organizational unit of the University of Silesia, conducting activity in the field of electronic education and the use of internet technologies for this purpose. The Centre's activities include:

- Assistance in creating a distance learning system (SKO) at the University of Silesia, configuration of the e-learning platform made available to University of Silesia units, training and consultations related to its operation.
- Creating an IT infrastructure for SKO.
- Server administration and maintenance.
- Providing SKO resources to units of the University of Silesia.
- Participation in the development, launching and implementation of improvement courses in electronic education studios.
- Technological consultations regarding the organization of work of training centres via the Internet.
- Organization of conferences, workshops and training for SKO users and designers.
- Participation in the work of regional information society centres and in the work of inter-university SKO development units.
- Participation in the implementation of conceptual and implementation projects as part of cooperation with other entities (<http://www.cko.us.edu.pl/informacje -o-uprzedce.html>).

The university's information strategy is based on a very important state document "Strategy for the development of digital society in Poland until 2013" (<http://www.mswia.gov.pl/strategia/>), which aims to improve the situation in terms of ability to acquire, gather and use information as a result of dynamic development of information and communication technologies (information and communication technologies - ICT). In addition, the university bases its activity on such strategic documents as "Digital Poland OP PC 2014-2020", "Proposed directions of development of the information society in Poland by 2020". In accordance with the assumptions of the state documents, university strategic documents related to the development of the digital environment were prepared. Some other examples of creating and implementing the information and education environment at partner universities as well as initiatives of the University of Silesia have been described in (Smyrnova-Trybulska, 2018).

Analysis of regulations, laws and agreements signed between Ukraine and the European Union clearly show that the main goals of the information society in Ukraine gradually converged with the vectors of Europe (Morze, Vember, Gladun 2019). One of these very important documents is: the initiative "Digital agenda for Europe"; European economic development strategy "Europe 2020: A strategy for smart, sustainable and inclusive growth". These documents formed the basis of the Digital Agenda for Ukraine 2020 project,

which was presented by the Cabinet of Ministers of Ukraine and defines the main priority positions of building the information society in Ukraine on the basis of integration into the world processes of "digitalization" (Alpakova 2015).

The process of digitalization of facilitating the educational process, makes it more flexible and adapted to the realities of the modern day, which in turn ensures the formation of competitive professionals. In education, digitalization is driving new trends. In the study, the concept of "educational trend" is used for interpretation: changing the direction of educational technology. Educational trends, in turn, directly influence educational technologies as the newest means of achieving educational goals.

The Joint Research Centre European Commission in cooperation with the Institute for Prospective Technological Studies conducted a study "School's Over: Learning Spaces in Europe in 2020: An Imagining Exercise on the Future of Learning". The report examines trends that are divided into several conditional levels - macro, meso and micro (Figure 1).

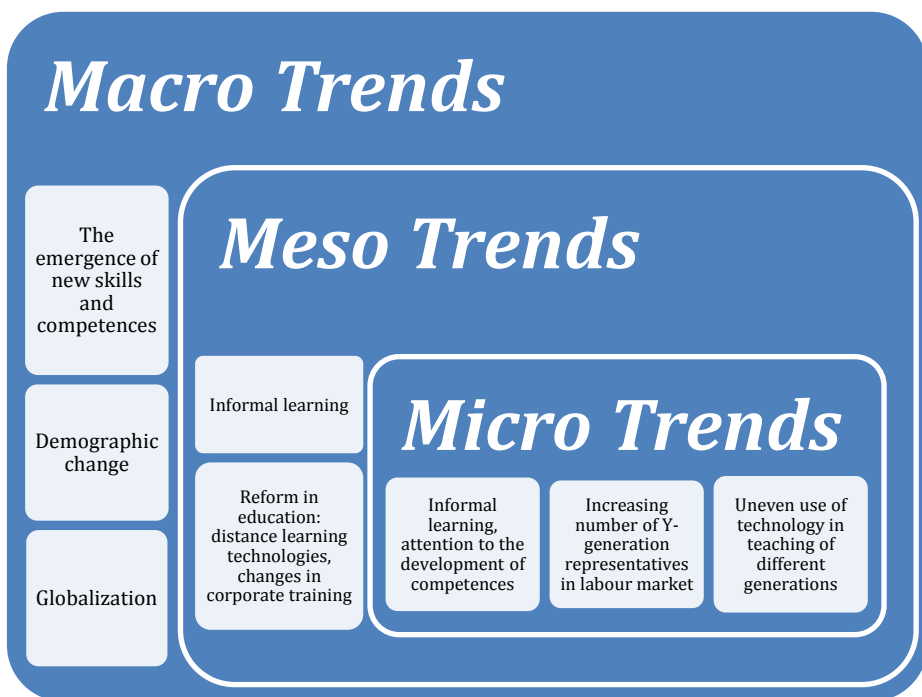


Figure 1. Trend levels

Source: Own work

The impact of new technologies on education is viewed from different angles. The Educause Horizon Report 2019 Higher Education Edition, which was published in April 2019, forecast trends, challenges and development of technologies that affect higher education. In particular, the new trends include:

- Long-Term Trends
 - Rethinking How Institutions Work
 - Modularized and Disaggregated Degrees
- Mid-Term Trends
 - Advancing Cultures of Innovation
 - Growing Focus on Measuring Learning
- Short-Term Trends
 - Redesigning learning spaces
 - Blended Learning Designs

The report describes the significant challenges impeding technology adoption in higher education: Improving Digital Fluency, Increasing Demand for Digital Learning Experience and Instructional Design Expertise, The Evolving Roles of Faculty with Ed Tech Strategies, Achievement Gap, Advancing Digital Equity, Rethinking the Practice of Teaching (Alexander, Ashford-Rowe, et al., 2019).

Taking into account the world and educational trends, which are considered in the framework of updating and digitization of the education system of Poland (https://centrumcyfrowe.pl/wp-content/uploads/2016/10/cyfryzacja-polskiej-edukacji_final_EN.pdf) and Ukraine (National Qualifications Framework <https://mon.gov.ua/en/tag/natsionalna-ramka-kvalifikatsiy>), the following trends have been identified:

- STEAM-education
- Formation of competences (professional and life competences)
- Personalization of learning, adaptive learning
- Outcome-oriented practice-oriented learning
- Development of entrepreneurial, research and critical thinking
- Gamification
- Development of non-formal education, openness and accessibility of education
- Mobile learning
- Changing the role of the teacher

The survey was conducted within the framework of the international project Erasmus + K2 MoPED (Modernization of pedagogical higher education by innovative teaching instruments MoPED - №586098-EPP-1-2017-1-UA-EPPKA2-CBHE-JP). 2118 students from Polish and Ukrainian universities took

part in the survey (63 and 2055 respectively). Students filled out questionnaires asking them to rate the importance of educational trends that directly influence educational technology; whether they are experiencing changes in education approaches; components of digital competence; use of digital tools in training and etc.

Respondents were asked to rate the significance of these trends from 1 to 10 (1 is not important, 10 is very important). The average score for each trend is presented in Figure 2.

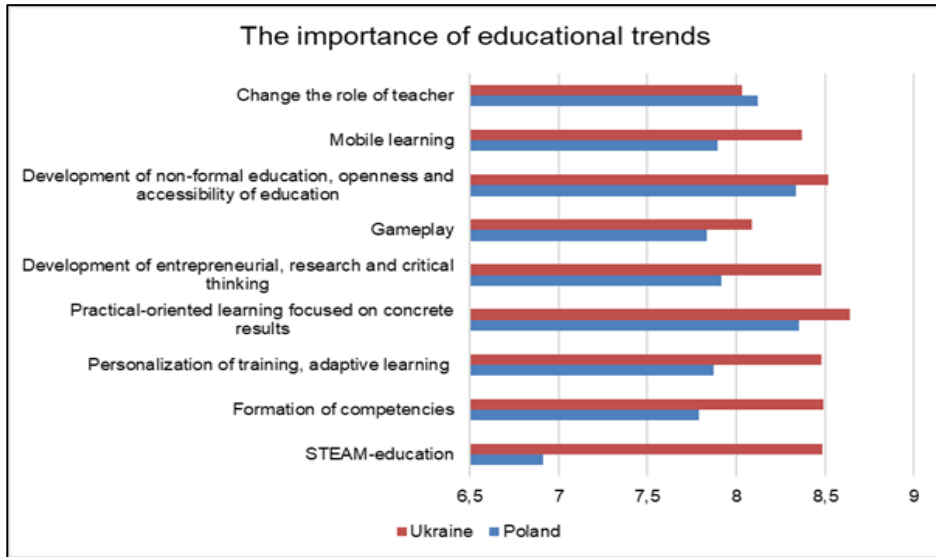


Figure 2. The importance of educational trends for students

Source: Own work

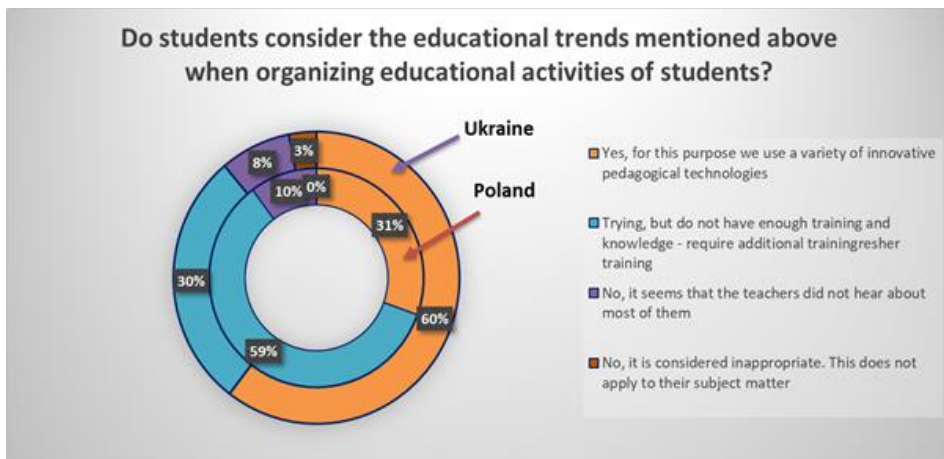


Figure 3. Results of the poll "Do students take into account educational trends?"

Source: Own work

Choosing from the proposed trends, students from Ukraine and Poland highlight the importance of «Practical-oriented learning focused on concrete results» and «Development of non-formal education, openness and accessibility of education». However, there is a gap between students' assessment of some trends; such trends as STEAM-education, formation of competences, development of entrepreneurial, research and critical thinking were considered by students from Ukraine as more important than students from Poland.

It was interesting to compare the views of students from different countries when asked if teachers consider these trends in their professional activities (Figure 3). Particular attention is drawn to a difference in percentage, where teachers are trying to take into account the educational trends - respectively 60.4% (Ukraine) and 31% (Poland), and those that do not take into account trends in education - 3.1% (Ukraine) and 0% (Poland).

2. DIGITAL COMPETENCE. FEATURES OF STUDENTS BASED ON THE THEORY OF GENERATIONS

The study shows the students' high interest in the presented educational trends, the emergence of which has become, in particular, the digitization of society and education. Why is digital competence so important today?

Digital competence is a new concept that describes the skills associated with technology. Several terms have been used to describe digital skills such as ICT skills, technological skills, 21st century skills, information literacy, digital literacy and digital learning skills. These terms are also often used synonymously, including digital competence and digital literacy (Adeyemon, 2009, Krumsvik, 2008).

The DigComp framework is a reference system to support the development of citizens' digital competence in Europe. It describes what competences are needed today to use digital technology in a confident, critical, collaborative and creative way to achieve work, learning, leisure and participation goals in the digital society. Digital competence is recognized by the EU as one of the 8 key competences for a fulfilling life and activity.

Lack of digital skills can have a profound effect on people's overall life chances, competitiveness and ability to work. About 40% of the European Union (EU) population lack digital skills - 22% of them have none at all. These are often elderly, under-educated youth, low-income families and migrants. Moreover, 32% of the EU workforce lack digital skills, and 13% believe they lack digital skills. It should also be noted that across the EU, 42% of citizens who do not have computer skills are inactive in the labour market.

Many citizens lack the opportunity to harness the full potential of digital technology in their daily lives. In addition, there is no common understanding

of what digital skills are or how to evaluate them. The problem is also that the students are representatives of the Z-generation, while the representatives of the Y and X generations teach them.

The now popular "Generation Theory" emerged at the intersection of a number of disciplines: economics, demography, history, psychology (Strauss, Howe, 1997). "Z-generation" is a term used in the West for the generation of people born between the 1990s and the 2000s (Tapscott, 2008). Everything that the previous generations called "new technologies" or "technologies of the future" is already present for the Z-generation. Children born in this period are special, they are "others". According to the characteristics of people of the digital generation, Natalia Morze (2013) distinguishes the features of students in the perception of information: rapid response, non-linear approach, giving preference to graphical information, processing information that flows continuously in multiple streams.

The teacher is no longer the bearer of knowledge that (s)he tries to impart to the student. Her /His main task is to motivate students to show initiative and independence. The teacher is becoming an organizer of independent activity where everyone could realize their abilities and interests, create conditions, develop environment in which it becomes possible to develop the personality, to acquire knowledge and skills necessary for life in the digital society. It should be noted that one of the trends in education is that the student should be at the centre of the educational process. The purpose of the teacher is to direct the student, and the purpose of the student is to "create".

The old educational needs are replaced by new ones:

- Standardization - The ability to find creative solutions.
- Agreeableness (consent) - Autonomy with responsibility.
- Centralization - Joint decision making.
- Lecturer - Teamwork.
- Teacher - the only source of knowledge - Ability to find the right sources of information.
- Standard lesson - Using the project method, problem-based, inquiry-based learning, flipped learning using digital resources.
- Knowledge control - Formative assessment.
- The same type of material - Sorting educational materials and tasks by type of multiple intelligence of student (Gladun 2014).

3. EDUCATIONAL TECHNOLOGIES. CHANGES IN LEARNING APPROACHES

Taking into account the peculiarities of the students and the educational trends identified above, innovative pedagogical technologies and methods were highlighted. Their use will allow us to take into account these trends and to follow the modern requirements for digital transformation of education:

- Integrated learning (a combination of several principles of science)
- IBL (Inquiry Based Learning - research studies).
- PBL (Project Based Learning - project method).
- Collaborative learning.
- Flipped classroom.
- Virtual, mixed and augmented reality.
- 3-D printing.
- Technologies for the formation of media literacy.
- Computational thinking.
- Problem-oriented learning.
- Mixed learning.
- Billing (dual) training.
- Peer to peer assessment - assessment equal to each other.
- Make-up - educational technology based on students creating their own hands some products.
- Storytelling - pedagogic technology enables you to transmit various information through storytelling.
- Inclusive Education Technologies.
- Microlearning - The utilization of short educational videos.
- Distance Learning Technologies.
- Technology of formation of critical thinking.
- BYOD (Bring Your Own Device) - using their own technology gadgets.
- Technology of formative assessment.
- Use of e-learning game environments.

The average score of significance of each of the mentioned modern pedagogical technologies for students is presented in Figure 4.

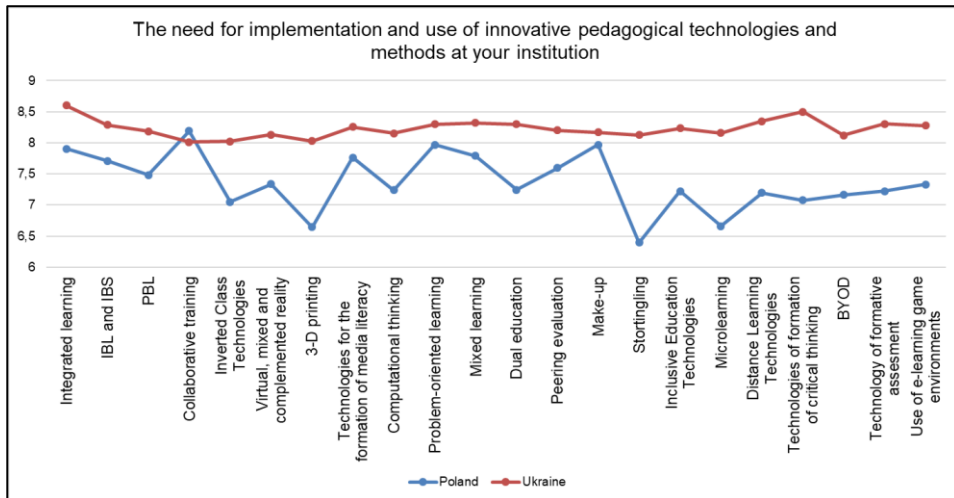


Figure 4. The significance of modern pedagogical innovative technologies for students

Source: Own work

It is worth noting that the Ukrainian students showed strong interest in using the proposed technologies. At the same time, the interest of Polish students is not focused on all technologies, in particular, in the use of technologies such as 3D-printing, Storytelling, Microlearning, Flipped classroom. This may be due to a lack of material resources, such as 3D printing, and a lack of familiarity with the techniques used in the educational process. Particular attention should be paid to the shared interest of students from the two countries in the following technologies: Integrated learning, Collaborative training, Problem-oriented learning, Make-up, which demonstrates the need to change approaches to conducting classes.

The study also determines the level of students' interest in digital tools and their ability to use them effectively in the educational process (Figure 5).

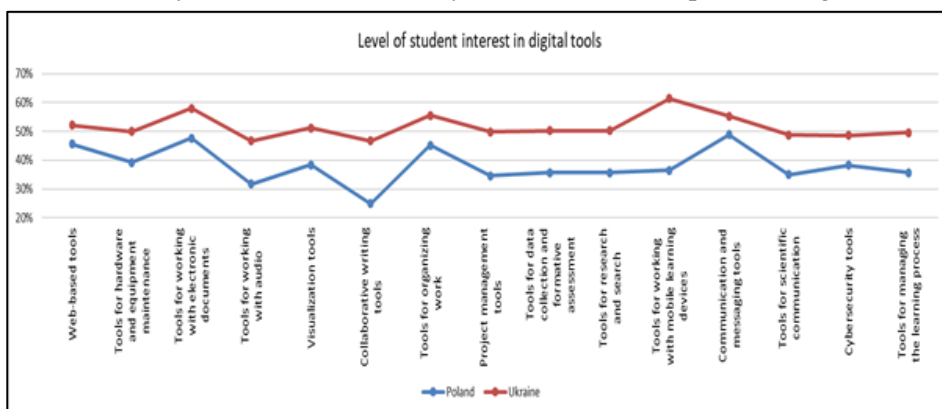


Figure 5. The interest of students to use digital tools

Source: Own work

The results show that the percentage of students interested in Tools for working with audio, Collaborative writing tools are low because they already know how to use them well. But groups such as the digital tools: Web-based tools, Tools for working with electronic documents, Tools for organizing work, Communication and messaging tools require implementation and use in education to improve the quality of training.

The conducted research can serve as a benchmark for changing the approaches to student learning. In particular, the results show a high level of attention to the students' use of digital tools in their training and formation as professionals. Approaches to organizing the educational process should be transformed so that students learn digital tools of the web, work with electronic documents, visualization, research, work with mobile devices for learning, communication and messaging, scientific communication and collaboration in the process of teaching ICT disciplines and immediately practiced using digital resources and digital tools to gain competences: media literacy, digital communication and collaborative responsible using ICT, creating digital content, solving ICT problems while studying all other disciplines. In view of the results of the survey and their analysis, universities should improve work programmes of all disciplines, e-learning courses, focus on more involvement of these tools to achieve the educational goals of the disciplines of practical, professional and general direction.

CONCLUSIONS

The survey confirms and indicates that digital society citizens have access to knowledge that is common but in need of rapid on-demand search, as data is constantly updated by millions of members daily on global Internet sites (Web-based tools). The student should be able to analyse and work with big data (Tools for working with electronic documents). In addition, the growth of social networking technologies has enabled people with similar learning interests to come together as a group to share knowledge about a specific topic that can create a deeper, more intense and immersive learning experience in a community of like-minded people (Communication and messaging tools). The speed of change and multitasking require the student to be multifunctional and organized (Tools for organizing work).

All of these digital learning trends have a dramatic impact on an important segment of the software industry used for corporate learning and the development of an outdated learning management system that does not update and does not address the need for change.

Therefore, further research should be aimed at exploring the necessary plug-ins and updates in the Learning Management System (LMS) to take into account educational trends, student characteristics and students' digital competence.

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