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Transforming Higher Education in the Digital Age

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Abstract: The purpose of the presented study was to analyse the implementation of digital systems in higher education in the digital age. Such transformations have to meet several goals, such as reducing costs, increasing efficiency, equity and quality of learning. The methods used to collect data included a thorough review of the cultural theory literature, original texts, and secondary literature research from SCOPUS, Google Scholar, and Research Gate. The findings indicate that while online

learning has its advantages, it is also important to consider the limitations that depend on the specific methods of use. In the context of the digital transformation of higher education, students enjoy a variety of opportunities and autonomy, but face limitations that largely depend on the form of learning. The role of a trainer or facilitator becomes important to ensure the quality and effectiveness of learning, especially in a virtual environment where the relationship between teacher and student is of particular importance. Given the challenges posed by the Covid-19 pandemic and the conflict in Ukraine, a combination of face-to-face and distance learning is becoming key to ensuring flexibility and avoiding the effects of the crisis. E-learning includes the creation of digital platforms that are becoming an integral part of digital transformation, which is being intensified by the need for remote work and study. We conclude that successful e-learning requires a careful analysis of the student's context and a shift from teacher-centred to student-centred pedagogy. As the choice of the best digital tool is complex, it is important to analyse each tool repeatedly and critically. All of these aspects point to the complexity of the modern educational environment and the need to implement optimal pedagogical approaches that take into account the technological capabilities and needs of modern students.

Keywords: digital technologies, online education, e-learning, innovative educational methods, course adaptation, open online courses, blockchain in education, artificial intelligence in education, curriculum flexibility, digital literacy

Introduction

The digital age is transforming higher education. The traditional asynchronous method of learning was limited to sending materials such as documents and files addressed to students. Thanks to technological developments, students have access to richer resources and information from anywhere in the world through technological tools such as dedicated websites, forums, chats and video conferencing (Viloria et al., 2020).

In the digital age, many opportunities have emerged: students no longer need to send their work in person to the institution to be checked by the teacher, but can upload it to a platform containing various resources (Zinchenko et al., 2022). Time and geographical constraints become less important in the context of e-learning, although other limitations may arise. Instructors can post course materials on a platform accessible to students, allowing them to work independently and control their time (VanScoy, 2019).

The digital age has given rise to a remote form of learning, known as e-learning or online learning, which is the use of information and communication technologies for education (Tsekhmister et al., 2021). This approach is one way of integrating technology into the learning process. It is also described as any learning method that uses the Internet for distribution, interaction or communication (Reed & Jahre, 2019).

In the digital age, higher education is moving towards the use of new multimedia Internet technologies to improve the quality of learning. This is achieved by facilitating access to a variety of resources and services on the one hand, and enabling remote exchange and collaboration on the other. Thus, e-learning encompasses a variety of tools and methods, and can vary in practical application.

Research Problem

In the context of the digital transformation of higher education, students experience both significant benefits and limitations. The role of the trainer/facilitator becomes important to ensure the quality and effectiveness of learning, especially in a virtual environment. In the context of the pandemic

and the crisis in higher education, the combination of different forms of learning becomes key to ensure flexibility and avoid consequences. Overall, successful digital learning requires attention to different contexts and methods of use. Thus, the digital transformation of higher education poses a number of challenges and opportunities that require careful analysis and attention to achieve optimal results.

Research Focus

Emphasis is placed on the advantages and limitations of digital learning in higher education, and the importance of considering both advantages and disadvantages from a learning perspective.

Research Aim and Research Questions

The purpose of the study is to highlight and summarise the advantages and limitations of the digital transformation of higher education, as well as to consider different methods of using digital tools. The research questions are related to the efficiency, quality, equity and costs of implementing digital systems in higher education, as well as possible ways to optimise the process.

Literature Review

The development of digital resources has transformed higher education by opening up online learning, allowing for synchronous (real-time) mode, not just asynchronous (deferred) mode, which has significantly increased interactivity and, consequently, learning effectiveness. The synchronous mode allows for live exchange between students and the teacher, similar to face-to-face communication, through written, audio or visual communication (Petrenko et al., 2020).

Digital advancements have expanded the possibilities of higher education, allowing for a variety of learning modalities, both synchronous and asynchronous, both in tutoring and in combination with multimedia. However, on their own, they do not always meet the pedagogical conditions necessary for an effective learning process. Both forms of tele-teaching, both synchronous and asynchronous, can be used both individually and in a group setting. The collective form promotes motivation. According to Malimon et al. (2022), digital development opportunities are based on student initiative, ingenuity and perseverance. Due to its pedagogical methods based on the social constructivist model, in the digital age, control of learning is largely transferred from the teacher to the student.

According to Klapkiv and Dluhopolska (2020), in a changing digital environment, learning modalities need to be adapted, and this can be influenced by the device designer, who can influence the variety and combination of different learning modalities. These forms may include collaborative work, cooperative learning, individual learning or self-directed learning.

The combination of theoretical input and practical application can be used to broaden the range of skills to be developed. This allows for the identification of the various skills that a trainer needs to create a 'digitalised' learning system. These skills may include conceptual, methodological, ICT technical, information and communication, organisational, problem-solving, conflict, innovation and creativity, as well as social and civic skills.

For the student, it is primarily a matter of developing key skills that are fundamental to most learning processes. These skills include an understanding of conceptual and technical knowledge (information management, synthesis ability), as well as the ability to put it into practice in the context in which it is used (autonomy, analysis and decision-making), as well as conceptualisation, creativity and critical thinking skills. In addition, Kavitha and Dhanalakshmi (2019) point out that learning can take place on two levels: “direct learning” through experience and interaction and “indirect learning” or indirect learning through observation and imitation.

In any case, the choice of a learning strategy should be based on the skills sought and expected from the target audience.

The effectiveness of e-learning with various digital tools lies in their ability to use the acquired knowledge in a practical context (e.g., in one's work situation) (Huwer et al., 2019). We could talk about the usability of the tools and their transferability to other contexts. They also need to meet the needs and expectations, and above all the skills, expected of future users.

According to Hussar et al. (2020), the hypothesis that digital natives are more comfortable using ICT in the context of education has not been confirmed. Indeed, it is not young people aged 25 to 35 who use digital technologies the most, but people aged 35 to 45 (Estrella, 2022). While young people are constantly using digital technologies outside of the school context, this is not the case for digital tools in the context of education. The more or less effective nature of the knowledge acquired through different digital tools will be related to the degree of integration of collaboration or role-playing. Thus, communication skills, which are an important element of putting professional knowledge into practice, are enhanced through remote interactions between peers, teachers or in the context of collaborative work, which requires a more formal approach than spontaneous interventions.

Other advantages of these tools are often mentioned: the ability to learn at one's own pace, adaptation of the course to the needs of users at different levels, empowerment of students, and inclusion of game elements that stimulate motivation and self-esteem (Bennett et al., 2020).

Finally, the principles of feedback and collaboration, which are usually defined in the above criteria of interactivity and effectiveness, are also important in the context of evaluating the effectiveness of digital tools in higher education (Table 1):

Table 1

Criteria for interactivity of digital tools and ability to integrate

Criteria for interactivity of digital tools	Ability to integrate
Digitalisation and e-learning	High-quality theoretical content
Modelling the phenomena under study	Simplified/ "framed" but realistic/clear representation of the observed reality
Creativity	Uncertainty and complexity
Practice, experience	Use of analytical, management and decision-making tools
Interaction	Working together
Makes you think	Interdisciplinarity (transversal skills)
Interest, motivation	Stimulating engagement
Social and emotional skills	Management skills (technical and cognitive)
Process monitoring	Collective regulation, socialisation, empowerment
Feedback and self-control	Correcting and identifying understanding and difficulties
Constructivist learning	Co-construction of knowledge. Evaluation by process (ongoing) more than by results (at the end)

Source: Author's development.

In order for these fundamental principles to be effectively implemented in practice, the pedagogical model (the tools used) must be able to integrate a certain number of requirements that could be described as design and animation principles (Atamanyuk et al., 2021).

The future of e-learning depends on continuous technological innovation. Some of the approaches currently used in higher education may quickly become obsolete. However, technology, even if it leads to the obsolescence of tools, does not necessarily call into question the teaching methods and the relevance of the principles of pedagogical animation that allow for the development of distance learning (e.g. game-based methods, blended learning formats, flipped classrooms, etc.).

Materials and Methods

This paper analyses the literature. A review of the scientific literature on cultural theory, original texts and secondary literature studies from SCOPUS, Google Scholar and Research Gate was conducted. This analysis allowed us to understand the key principles and trends in the implementation of digital systems in higher education. The typological analysis made it possible to identify the advantages and limitations of different teaching methods and digital tools.

A comparative analysis of various pedagogical approaches and digital tools has determined their effectiveness and feasibility in the context of the presented research topic.

A prospective analysis of the trends in digital technologies and their impact on higher education has made it possible to understand the future prospects of digital transformation.

Sample and Participants

The study was based on a thorough review of the scientific literature on cultural theory, original texts and secondary literature research from SCOPUS, Google Scholar and Research Gate. The study was based on the work of scholars and experts in the field of digital transformation of higher education.

Instruments and Procedures

The data were collected from scientific articles, books, studies, and various publications from relevant databases. Procedures included a systematic literature review, data analysis, synthesis and interpretation of results.

Data Analysis

The data analysis method involved identifying and summarising the benefits and limitations of the digital transformation of higher education. The data were analysed in terms of their relevance to the goals of implementing digital systems in higher education, such as reducing costs, increasing efficiency, equity and quality of learning.

In particular, the advantages and limitations of online learning, the importance of the role of a trainer/facilitator in a virtual environment, and the need to combine different forms of learning to ensure flexibility and avoid the consequences of crisis situations are considered.

Results

According to Laufer et al. (2021), the implementation of a digital system should meet several objectives, such as reducing unit costs, efficiency in terms of success or achieving professional goals, fairness and quality in terms of user satisfaction. In the light of the available related literature and our

own experience, the advantages, disadvantages and limitations of online learning can be summarised in the following table (Table 2):

Table 2

Advantages and disadvantages of online learning

Advantages.	Disadvantages.
Independence and flexibility in time management.	Loss of contact with people. Autonomy can lead to isolation and abandonment.
Combating failure and improving skills.	ICT is often limited to simple content. Technical adaptation to digital tools can be an obstacle for some students.
Improving the quality of learning through a variety of forms and content of training at any time.	The medium is viewed as a simple tool that does not affect the content of the information transmitted or the quality of educational animation.
Equity in education (open to all).	Economic discrimination persists.
Savings, a source of economy and cost-effectiveness in terms of opportunities in terms of volume, richness and diversity of content and methods of learning.	Economic aspect. The cost-effectiveness ratio is often questionable (especially in relation to the tariffs that are sometimes applied in relation to the richness and quality of materials, tools and teaching methods).
Data availability (democratic component).	"Too much information kills information" (information relevance).
Free information available online.	The relative and unverified relevance of this additional information in the public domain is not guaranteed.
No geographical restrictions.	In many parts of the world, there is still no internet connection or at a sufficient speed.
The possibility of an individualised relationship with the tutor (additional input and content, individual answers/advice, etc.).	Frustrations related to the reluctance felt by the teacher and the real possibility of an individualised relationship.
The involvement and quality of synchronous/asynchronous facilitation by the instructor are important and sources of student engagement and learning effectiveness.	The engagement and quality of the teacher's animation in the context of the requirements imposed by the tools. Otherwise, the wealth of available resources becomes a constraint that is difficult to manage individually and reduces student engagement and performance.
An innovative system is a potential source of attractiveness and engagement.	An innovative system that is a potential source of access restrictions and adaptation difficulties.
Improving the image of training organisations and increasing the supply.	The multiplicity of actors and devices. The whimsy effect (the problem of choice and evaluation) is questioned.
Motivation and satisfaction related to the attractiveness of digital technologies.	Attractiveness, motivation, and satisfaction can quickly decline if the goal setting, method, and animation are insufficient.

Source: Author's development.

While the benefits of eLearning for higher education are clear in terms of innovation, skills development, brand image and often cost, the advantages and limitations for students are manifold (Kutu & Olajide, 2020). Some of them may be considered "de facto", but this table shows that most of the limitations in terms of learning are related to specific methods of use. Indeed, the positive or negative assessment of a tool depends on the conditions of its use, as is often the case in pedagogy. Therefore, it is more appropriate to talk about advantages and limitations rather than advantages and disadvantages.

Furthermore, the advantages of e-learning for learners mainly come from the opportunities offered by digital transformation (diversity, autonomy, attractiveness), while its limitations and disadvantages are largely determined by the choice of learning mode (not necessarily determined by content), which is more or less adapted to the objectives set as well as to the conditions of their application (Hylén, 2021). The role of the trainer/facilitator and his/her involvement are key in this context for the quality and effectiveness of the learning, perhaps even more so than in face-to-face learning, which is usually more structured and more "self-regulated".

Finally, given the Covid-19 pandemic and the full-scale war in Ukraine, which have caused a huge crisis in higher education (Kotyk et al., 2021), we consider a combination of face-to-face learning, which is marked by interaction, and distance learning, which provides flexibility and the opportunity to avoid the effects of the tragedy of war.

E-learning involves the creation of a digital platform that is part of the overall digitalisation process that underpins the transformation of the way our society functions. Recently, this process has been particularly accelerated by the need to work remotely due to the health crisis (initially due to population restrictions to contain the spread of the Covid-19 virus, and then due to military operations, shelling and alarms). Although there are several definitions, a digital platform in the context of education is considered as "a set of technologies used to modify the curricula and teaching methods offered in higher education institutions" (Stukalo & Simakhova, 2020).

The transformation of higher education in the digital age also concerns the way of teaching, the way of learning and, in general, the supply and demand for learning. Because of the distance, the relationship between teacher and student becomes crucial. According to the position of pedagogical constructivism, in which e-learning is a priority, the goal of learning is to encourage the student to construct their own knowledge rather than to receive it (Sutisna & Vonti, 2020). From this perspective, pedagogical activities should take into account the specific reality of the student (subject, not object). Thus, the model moves from "teacher-centred pedagogy" to "student-centred pedagogy" (Syarifah et al., 2020).

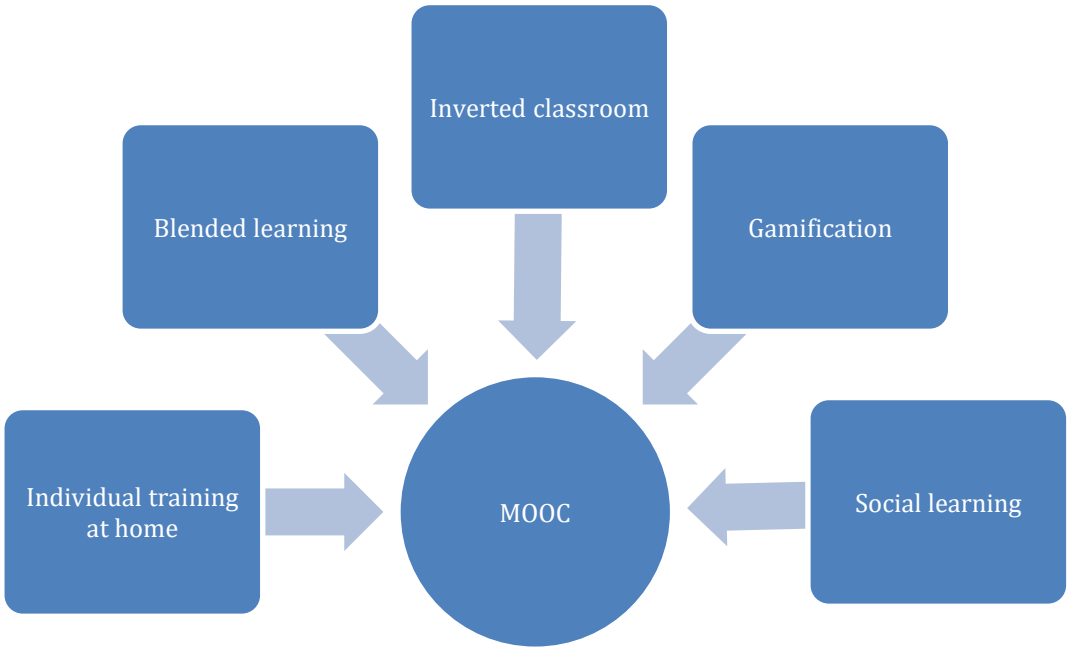
However, e-learning refers to a wide range of tools and facilitation methods. A brief presentation of these is necessary to be able to assess their requirements.

In the field of higher education in the context of digital development, a wide range of tools and methods of teaching using digital technologies are available. Therefore, there is no single answer when choosing the most effective tool (Yang & Spitzer, 2020). Each of them offers its own advantages in terms of completeness, variety, complexity, interactivity, efficiency, skill development, effectiveness, etc. These are all criteria that require repeated and critical analysis.

The development of any typology is complicated by the fact that tools and methods can sometimes be used in combination (e.g. learning through play in a blended learning context) and the boundaries between them are not always clearly defined. For this reason, the different forms of animation and digitisation are presented below (Figure 1):

Figure 1

Variety of forms of digitalisation



Source: Author's development

These forms may include, to varying degrees, synchronous or asynchronous telelearning, as well as face-to-face learning in shortened, advanced or enriched form of distance learning. This conceptual schematisation, which is not hierarchical, allows us to attempt categorisation, if not classification, according to various criteria, including:

- level of interactivity;
- efficiency (and effectiveness of the process);
- the degree of skills developed;
- "effectiveness" of knowledge.

The transformation of higher education in the digital age also involves consideration of various assessment factors. The assessment of the internal capabilities of digital tools according to the various criteria identified earlier can be summarised through a schematic illustration (Abubakar, 2020). This is, of course, only a first approach, which may contain questionable criteria and their scores. Later, these criteria will be carefully considered and presented in the exhibition.

Another important factor is the level of interaction. It depends on the form of learning and facilitation. While engagement may be less prominent in the case of fully online e-learning, it tends to increase when learning is delivered in the context of a social community (Aghion et al., 2021).

The level of interaction can be increased in the context of flipped classrooms. In such classes, students are sent course materials, including theoretical concepts, via a digital platform before class. During the presentation of their work, peer-to-peer exchanges can take place, especially in the initial

stages. For this approach to be successful, individual and collective motivation is required, which is stimulated by the facilitator (Bakhmat et al., 2022). It is worth noting that this form of learning, which combines the transfer of material and student participation, is possible without the use of digital tools. The flipped classroom format used in higher education is consistent with these principles. It is a kind of "individual" learning, where students independently select and adapt the material, developing and implementing a new hybrid learning strategy based on the flipped classroom.

Massive open online courses (MOOCs) allow for various opportunities such as free access to resources, video conferencing, chat interviews, and test-taking (Cherng & Davis, 2019). There are MOOCs that have different designs and use different pedagogical concepts. Their success, which has been widely discussed in the media, promised a digital wave in the world of education and led to expectations that they would revolutionise higher education (Fuad et al., 2020). However, as the first reviews emerged, voices were raised that questioned the extent of this phenomenon, especially in relation to the illusion of university accessibility for all. Nowadays, MOOCs have become the subject of controversy, especially at the pedagogical level, due to their limited interaction caused by their "mass" nature. Other criticisms relate to the high dropout rate and the profitability of the economic model of these virtual universities.

Game-based learning (or gamification) and serious games belong to interactive pedagogies, which researchers refer to as "devices that make learners visibly active in manipulating knowledge, technology, information tools, and in exchanging information with their peers or with third parties" (González et al., 2020).

According to Griban et al. (2019), learning through serious games, such as simulation tools, i.e. practical tools in a fictional environment, must meet certain fundamental principles in terms of interactive animation to be effective.

Constructivist learning is based on the active participation of the learner in interaction with a reimagined learning environment (Hamzah et al., 2021). The effectiveness of this methodology is enhanced by group use (which stimulates interaction) and a hybrid approach that combines real-time and deferred sessions. For example, combining periods of learning and sharing of ideas and tools with periods of independent work and experimentation. This approach can include both remote and face-to-face sessions, allowing for on-site observation or analysis and collective feedback (reflective approach).

Blended learning is an innovative type of training that combines traditional face-to-face training with the use of digital distance learning tools in virtual classrooms. This combination allows learners to follow training courses at their own pace, while benefiting from the experience and interaction with the instructor (Heck et al., 2020). The flexibility of this hybrid format makes it possible to follow a training course with audiences whose time and travel constraints vary.

Digital transformations therefore open up opportunities for blended learning formats that retain the benefits of traditional learning while ensuring that key concepts and methods are explained, misunderstandings are addressed, and that the teacher is actively involved where necessary. Ultimately, digital changes allow higher education to use different forms of learning, such as synchronous, asynchronous or face-to-face learning. The combination of these two forms is a relevant strategy, as a blended learning programme can include different aspects such as online/offline, individual/group, formal/informal content, theory/practice, etc. (Howard et al., 2021).

Blended learning is currently in vogue for digital higher education, also for cost reasons, while digital learning in the strict sense seems to be slowing down. As such, MOOCs are now seen as a product

of attraction or complementarity: students prepare a subject online and delve deeper into it face-to-face with a teacher in a “flipped classroom”.

The exclusive nature of online learning certainly provides an opportunity for direct and unlimited access to information, but there is a risk of getting lost in the mass of online resources if the study is not controlled. In the context of asynchronous learning, when resources are used sequentially, interactivity with the teacher is even more important.

Synchronous distance learning, which can be translated as “simultaneous”, originally took place via telephone or video conferencing, but now is delivered via chat and interactive audio-video. In this context, information can also be exchanged asynchronously through complementary activities such as open forums outside of sessions, email exchanges, and sending of supplementary materials. The level of interaction depends on the alternation of synchronous and asynchronous forms of learning (Aghion et al., 2021). Interaction can take place individually, collectively with targeted subgroups, or in the presence of the whole group.

Discussion

In the context of digital innovation in higher education, efficiency is one of the goals of any learning system. Efficiency reminds us of the importance of the preconditions related to the ultimate effectiveness of the learning regime, which plays out on several levels. According to Shevchenko (2019), in the context of digital learning, special attention should be paid to the quality (academic, experiential, facilitative) of teachers.

According to Riyanda et al. (2022), social presence, socio-emotional support, adapted learning, appropriate logistical support, budgetary constraints are all correlated with digital development.

In a similar study, Raes et al. (2020) argue that with the advent of ICT, the fundamental role of the teacher, whose demands for involvement and interactivity in animation are increasing, must be mentioned first and foremost. Their relationship with the student, as well as the organisation of learning, has changed radically. It's no longer just about participating in research and transferring knowledge. We agree that since the pedagogical and administrative structure is remote and “invisible”, the teacher, as the only interlocutor of his students, is the facilitator and mediator of the first line. His role goes beyond traditional teaching, of which he is sometimes not the creator. He/she experiments with the digital tools and pedagogical methods at his/her disposal to develop the necessary skills (technical, methodological, relational, operational and cognitive). This approach is consistent with the findings of Qureshi et al. (2021). This categorisation is also followed by Pacheco et al. (2018), who identify seven general categories of competences related to the professionalisation of the teaching community:

- Organisational and administrative skills;
- Methodological skills (teaching engineering);
- Technological skills;
- Communication and facilitation skills during training;
- Strategic skills;
- Theoretical conceptual skills;
- Psychological and pedagogical skills.

In a similar study, Nørgård and Hilli (2022) note that a teacher may be reluctant to use ICT to plan their teaching, while they need to acquire the knowledge available to their students and develop the technological skills necessary to use it in e-learning. In the same context, according to Pacheco (2021), transactional presence (social presence, socio-emotional support) is necessary to be effective. We agree, because remote and asynchronous interactions are likely to be impersonal and overly generic in themselves. Students need to feel present and accessible, and even, despite the desired autonomy, supervised by the teacher. Nashir and Laili (2021) define pedagogical distance as the level of interaction and structuring of a course.

Indeed, it is important that the pedagogical method matches the needs and capabilities of the target audience. If the level of interaction is high, but the course content is poorly structured, students will have to put in more effort.

It is also important to adapt the learning strategy to the needs and limitations of the target audience, and the use of digital tools is aimed at overcoming the transactional distance. According to Namestyuk et al. (2020), in the context of digitalisation, it is important to take into account the perceptual and communicative gap between the teacher and the student when designing courses and classes.

Academic achievement as well as financial constraints will be taken into account when assessing the effectiveness of the chosen learning model, just as the use of technology will affect engagement and success. In summary, the main criticisms of higher education and learning opportunities in the digital age relate to the low attendance and cost of massive and open courses. While they may not be very effective in democratising initial training, they can still be economically viable for further learning. The flexibility of online courses is best suited to professional audiences, where motivation tends to be higher.

Finally, it is important to remember that the availability of feedback has a significant impact on the effectiveness of the learning process. Any missing or limited feedback can lead to a loss of motivation among students (McIntyre et al., 2021). Of course, students are used to receiving certificate grades that indicate their skills. However, formative assessment is an important element from a pedagogical perspective. During these stages, the teacher accompanies the students, facilitating their development of various skills, critical thinking and providing feedback throughout the project process.

According to Lavrysh et al. (2022), assessment is a systematic approach aimed at identifying the "value" of student learning and giving it meaning. Similarly, we believe it is appropriate to distinguish between, on the one hand, certificate assessment, which certifies the success of learning, and, on the other hand, formative assessment, which improves learning.

Thus, the effectiveness of the e-learning process in higher education in the digital age requires the presence and communication of the teacher, which is perceived as constant in accompanying, supporting and mobilising cognitive, metacognitive, intellectual and methodological knowledge.

Conclusions and Implications

The transformation of higher education in the digital age requires attention to the choice of optimal learning tools. The analysis reveals that game-based and blended learning are relevant, but their success is highly dependent on adherence to key principles during the training. In addition, it is important that the facilitator has a deep understanding of their audience and their needs in order to choose the right digital tools and pedagogical approaches. For example, an individualised approach to each course and audience can provide the best learning environment.

The transformation of higher education in the digital age brings a number of differences compared to the traditional face-to-face system. Students are more often faced with independent learning, which is associated with distance methods, but at the same time have supervision. They are given the opportunity to access knowledge at any time and monitor their progress, which helps to develop organisational skills, critical thinking and problem-solving through problem-based learning.

Social media is increasingly becoming part of the learning process, but the market for applications and platforms is becoming increasingly diverse, making it difficult to choose the best solution. While the Internet allows users to exchange ideas, collaborate, be creative and develop skills in various fields, it also creates the illusion of easy accessibility and efficiency of knowledge.

Communication between participants in the learning process often goes beyond formal classes. This leads to the emergence of social computing, which is adapted to the needs of young people but goes beyond organised learning. However, remote, sometimes virtual, supervision makes it difficult to control the learning process.

However, it is important to remember that the rapid development of digital technologies responds to the demand for greater access to resources and meets expectations of legitimacy, recognition and prestige through institutional isomorphism.

The chosen typology methodology to describe the variety of digital learning tools and modalities, including their advantages and limitations, provides insights into how to build a digital learning process that is relevant and adaptable to the needs and design context of the organisation. Important criteria are interactivity, efficiency, skill development and effectiveness, which should be taken into account when designing courses at the appropriate pedagogical level that is useful for learners. At the same time, it is important that they meet the needs of their audience and adhere to the fundamental principles of design and animation mentioned above.

Suggestions for Future Research

Future research may consider the problem of choosing the best digital tools for transforming higher education in the digital age. It was found that game-based and blended learning are relevant, but their success depends on adherence to key learning principles. It is also important that the facilitator has a deep understanding of their audience and their needs to choose the most appropriate digital tools and pedagogical approaches. An individual approach to each course and audience can provide the best possible learning environment.

The transformation of higher education in the digital era brings differences compared to the traditional face-to-face system. Students are more likely to undertake independent learning, involving distance methods, but with supervision. This allows them to access knowledge at any time and monitor their progress, which contributes to the development of organisational skills, critical thinking and problem solving.

The use of social media in the learning process is becoming increasingly common, but the market for applications and platforms is becoming increasingly diverse, making it difficult to choose the best solution. While the Internet enables users to share and collaborate, it can also create the illusion of easy access to knowledge.

Communication between participants in the learning process often goes beyond formal classes, leading to the emergence of social computing adapted to the needs of young people. However, remote, sometimes virtual, supervision makes it difficult to control the learning process.

It is important to bear in mind that the rapid development of digital technologies responds to the demand for greater access to resources and meets expectations of legitimacy, recognition and prestige through institutional isomorphism.

The chosen typology methodology to describe the variety of digital learning tools and modalities, including their advantages and limitations, allows us to imagine how to build a digital learning process that meets and adapts to the needs and design context of the organisation. Interactivity, efficiency, skill development and effectiveness are important criteria to consider when designing courses at the right pedagogical level that is useful for students. At the same time, it is important that they meet the needs of their audience and adhere to the fundamental principles of design and animation mentioned above.

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Conflict of Interest

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