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Research Article

Navigating Digital Transformation In Higher Education: Lessons From An Online University Case Study

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ABSTRACT

Background: The COVID-19 pandemic has accelerated the adoption of online learning in Higher Education (HE), prompting traditional universities to embrace hybrid learning models. This necessitates significant adjustments across university activities, highlighting the need for digital transformation.
Methods: This study, conducted as part of the "Empower Competences for Life Learning in Higher Education" (ECOLHE) European project, investigates a fully online university case. Data collection methods include in-depth interviews with academic leadership, focus groups with teacher researchers, teacher tutors, and administrative staff, and an online student survey.
Results: The case study university, developed entirely online, offers valuable insights for institutions navigating similar transitions. Findings emphasize Technology as a tool for enhancing teaching, research, and knowledge sharing. Moreover, transitioning to online or hybrid systems involves more than deploying digital technologies.
Conclusion: Lessons from this study shed light on the components and challenges of digital universities. Recommendations include viewing Technology as an enabler for educational improvement and recognizing the multifaceted nature of transitioning to digital learning environments. These insights are pertinent for higher education institutions undergoing digital transformation.

KEYWORDS: COVID-19 pandemic, Online learning, Higher Education (HE), Hybrid learning models, Digital transformation, ECOLHE project, Technology in education, Teaching enhancement, Research enhancement, Knowledge sharing, Digital universities.

INTRODUCTION:

The COVID-19 pandemic has brought a new reality, with new habits and prospects for the university system's Digital Transformation. As a result, the necessity of incorporating online or hybrid education training in person at universities or educational institutions has been apparent throughout this pandemic (Guri-Rosenblit, 2019). More traditional universities have taken on the challenge of starting or accelerating a process of adaptation to new circumstances. These universities have applied a remote training model in response to a crisis. This contrasts the strategy of defining a more sustainable and efficient global online education strategy. While this is happening, the advantages of online education, the difficulties it presents, and the solutions to those difficulties have grown. They are putting it into action with assurances that it will be successful (Gonzalez-Sanmamed et al., 2020). This puts educational institutions who wish to take a step forward in a difficult situation in the position of implementing hybrid or online models in their study programs (Suárez-Guerrero et al., 2023). Experimentation with educational models online that are distinct from each other puts these institutions in a problematic predicament (Careaga-Butter et al., 2020). Despite this, and taking into

consideration the fact that adjusting to hybrid or online contexts is rarely a simple undertaking, this research has the potential to offer a variety of viewpoints on higher education (HE), illuminating particular instances of achievement at other educational institutions that can contribute to the development of HE with assurances (Careaga-Butter et al., 2020).

Cabero Almenara and Llorente-Cejudo (2020) and García-Peñalvo (2021) assert that universities must prioritize the strategic factor and leadership to establish a digital university environment where individuals are the actual protagonists of technology development (TD) (Rotger et al., 2019). The provision of infrastructures to educational institutions, the digitization of instructional materials, and the automation of enrollment procedures are all examples of what TD brings to the table. According to Chinkes and Julien (2019), this entails implementing significant and coordinated changes in culture, personnel, and Technology to digitize the university's strategy. According to this point of view, technology development (TD) is the integrated application of digital innovation (DI) in the many sectors of the institution. TD must be handled with a critical vision while considering the specifics of each institution (Świątkowska, 2020). To meet the requirements of society, universities need to change their organizational structures, operational procedures, and professional profiles (Marta-Lazo et al., 2019; Mazzeo, 2020). TD processes are excellent for accomplishing this goal; hence, establishing investigative processes concerning the context and the university institutions that have already been digitized is essential to assisting any university struggling to undergo a digital transformation (Calvet et al., 2019).

"Empower Competences for Onlife Learning in Higher Education" (ECOLHE) is a European project whose primary purpose is to determine how digital problems promote lifelong learning through information and communication technology in higher education are reflected in various situations and where Teaching and Learning (TD) acquires particular relevance. This research is a part of the ECOLHE project (Sanchez-Puchol, 2022). A comparative research report on digital technologies in higher education was prepared as one of the outcomes of this project. Each participating country was responsible for conducting a case study under this project.

This article aimed to provide an overview of a university that was established and developed entirely online. The lessons that were learned from this university can be of great assistance to other colleges who are interested in following a similar path (Dorouka et al., 2021).

The Open University of Catalonia (UOC) was established in 1994 "in the knowledge society with the mission of facilitating the training of people throughout their lives" (Duart et al., 2006, p. 316). The university's first course was held in 1995 with 200 students; more than 85,700 students have since graduated (West & Burbano, 2020).

Table 1: Key References on Digital Transformation and Online Education

Reference	Contribution
Guri-Rosenblit (2019)	Necessity of incorporating online or hybrid education training in universities due to the COVID-19 pandemic.
Gonzalez-Sanmamed et al. (2020)	Discusses the advantages, difficulties, and solutions in implementing online education.
Suárez-Guerrero et al. (2023)	Addresses the challenges educational institutions face in implementing hybrid or online models.
Careaga-Butter et al. (2020)	Highlights the problematic predicament of experimenting with distinct online educational models.
Cabero Almenara and Llorente-Cejudo (2020)	Emphasizes the importance of strategic factors and leadership in establishing a digital university environment.
García-Peñalvo (2021)	Argues that universities must prioritize strategic leadership for digital transformation.
Rotger et al. (2019)	Discusses the role of individuals as the actual protagonists of technology development in universities.
Chinkes and Julien (2019)	Explains the need for coordinated changes in culture, personnel, and Technology for digital transformation.
Świątkowska (2020)	Advocates for a critical vision in applying digital innovation in university sectors.
Marta-Lazo et al. (2019)	Stresses the need for universities to change organizational structures to meet societal requirements.
Mazzeo (2020)	Supports the idea of TD processes for achieving organizational changes in universities.
Calvet et al. (2019)	Highlights the importance of investigative processes in supporting universities undergoing digital transformation.

Table 2: Case Studies and Projects on Digital Transformation

Reference	Project/Case Study	Contribution
Sanchez-Puchol (2022)	ECOLHE (Empower Competences for Onlife Learning in Higher Education) European project	It aims to understand how digital challenges promote lifelong learning through ICT in higher education.
Dorouka et al. (2021)	Overview of a university developed entirely online	Provides insights and lessons for other colleges interested in digital transformation.
Duart et al. (2006)	Open University of Catalonia (UOC)	It was established in 1994 with a focus on lifelong learning and an educational model centered on student action.
West & Burbano (2020)	UOC's educational model	It highlights the importance of active learning, flexibility, personalization, and interactivity, which Technology supports.
Mystakidis (2021)	Ongoing research in e-learning	Discusses the role of Technology and research in enhancing e-learning.

Table 3: Strategic and Operational Considerations for Digital Transformation

Reference	Considerations
Cabero Almenara and Llorente-Cejudo (2020)	Strategic factors and leadership are crucial for digital transformation.
García-Peñalvo (2021)	We are prioritizing strategic leadership for effective digital transformation.
Rotger et al. (2019)	Individuals are central to technology development in universities.
Chinkes and Julien (2019)	Coordinated changes in culture, personnel, and Technology are necessary for digital transformation.
Świątkowska (2020)	We are applying digital innovation with a critical vision tailored to each institution's specifics.
Marta-Lazo et al. (2019)	Organizational structures and operational procedures need to evolve to meet societal requirements.
Mazzeo (2020)	TD processes facilitate organizational changes required for digital transformation.
Calvet et al. (2019)	Investigative processes are essential for assisting universities in digital transformation efforts.

The UOC is distinguished by its educational model, which places the action of the student at the Center (Figure 1), ensuring that the student will engage in active learning, flexibility, personalization, and interactivity, as well as work together (West & Burbano, 2020). All of this is made possible with the assistance of Technology and ongoing research in e-learning. (Mystakidis, 2021).

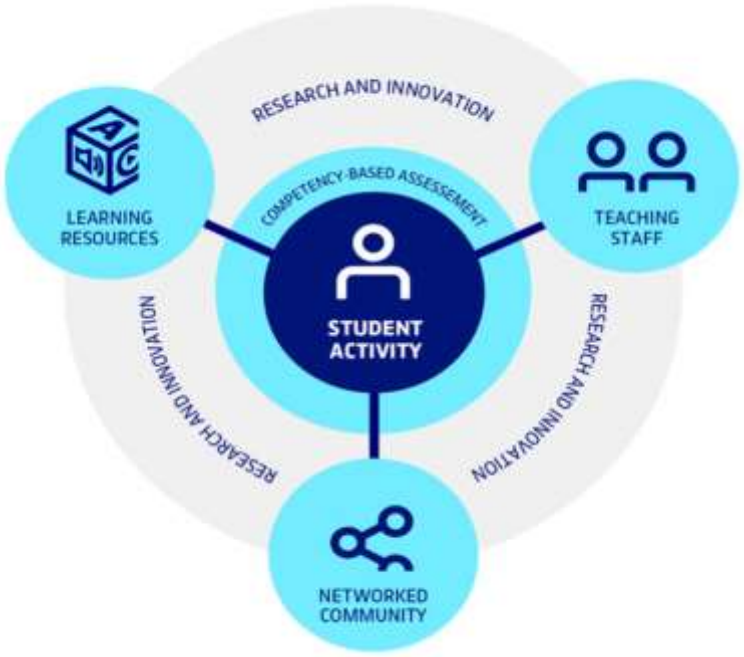

Figure 1. Model of instruction for the UOC (Figure taken from https://www.uoc.edu/estudiant/portal/guia/en/com_estudia/model_educatiu/index.html)

The examination of this institution, which is a one-of-a-kind instance from a qualitative point of view, offers some keys to universities to encourage the transition from a traditional face-to-face system to an online or hybrid system. This is based on the assumption that the most significant advancement in the incorporation of Technology is due to the Internet (Wang et al., 2024).
Events have occurred in organizations born and raised in the digital age (Astudillo et al., 2022).

METHOD:

The research uses a hybrid methodology to understand a complicated phenomenon such as TD at a digital institution. Taking this approach enables us to comprehend a tangible reality by focusing more on the how and why of the phenomenon rather than on the definition of the phenomenon itself (Shannon-Baker, 2015), which provides sources of information from various prisms based on the dimensions, actors, and implementations in a training and development process, with an application in studies on higher education institutions that already have a defined path.

The procedure for analysis, the research instruments, and the sample:

The study participants were selected based on the similarities in profiles between the universities of the many nations that are members of the consortium of the ECOLHE project. These universities include academic leaders (RA), research professors (P), and tutor professors (PT). This selection process aimed to gain a comprehensive perspective regarding the research.
Students, as well as administrative and service personnel (PAS) members. According to Artino et al. (2014), the research goal was considered when designing several different instruments. These instruments included semi-structured interviews, discussion groups, and questionnaires. Considering the current circumstances, the geographical diversity of the individuals who participated, and the potential of digital media for research, the instruments were administered through the Internet (Balansag et al., 2018). The following is a list of the research instruments based on the profiles described earlier: Four of the most influential academics at the university were interviewed to acquire a strategic perspective on TD. The Vice-rector for Competitiveness and Employment, the Vice-rector for Strategic Planning and Research, the Vice-Rector for Teaching and Learning, and the Deputy Director of Emerging Programs are all positions that are currently available. The Digital Maturity Framework for Higher Education (DMFHE) dimensions were adapted to design the interviews. This framework synthesizes the leading frameworks and models regarding integrating digital technologies in the SE. It consists of 43 elements divided into seven areas (Figure 2).

Figure 2. The Digital Maturity Framework for Higher Education

Textual analysis was performed on the content of the interviews, which consisted of a total of twenty-four questions that were dispersed over these seven categories. Regarding TD's contributions to the university, the perspectives and experiences of the teaching staff and PAS are discussed. They were compiled through three separate virtual discussion groups, which developed textually from the questions posed to three professional groups. These groups included eight professors (P) who had a research career, seven tutor teachers who did not have a research role (PT), and seven administrative and service professionals (PAS).
The four blocks that were the subject of the discussion groups were as follows: the concept of ID in ES, the organizational viewpoint of the university's technological development, teaching and creative techniques, and the professional skills of your profile. In every single one, we incorporated similar questions for the three professional groups and adapted some for the profile function. Open coding was utilized to facilitate the analysis of the qualitative data.
The transcripts of the interviews and focus groups were classified to construct categories. These categories combine the various interventions and determine the outcomes based on the similarities and variations in the participants' tales (Natividad et al., 2024). This coding was carried out with the Atlas. Ti software in version 8 was also utilized to emphasize some of the most significant interventions gathered as testimonies in the section devoted to the outcomes. According to the findings of the analysis, the following categories were developed:
• TD as a result of the effect of ID
• The strategic perspective of TD
• The concept of digital innovation. Innovative pedagogical practices The level of professional expertise required for TD A questionnaire is used to collect the students' perceptions of their online study experience. The most pertinent to the study are extracted from the questionnaire, and the results are presented in the part corresponding to it (Papadakis & Kalogiannakis, 2019).
The findings are presented in the section titled "Results." This section aims to highlight and examine the most significant issues (Osuna-Acedo, 2021).

RESULT:

By the dichotomy between qualitative and quantitative aspects of the study, the information that was gathered is examined in two ways: on the one hand, the quantitative data of the questionnaire that was given to students is studied, and on the other hand, the information that was acquired from the interviews and discussion groups of the academic staff is analyzed (Tlili et al., 2022). Because TD necessitates the integrated implementation of innovation across the many departments of the institution, participants were questioned regarding their perspectives on ID in higher education. The Academic Leaders (RA) provide a strategic perspective by defining ID as the "creation of" intellectual property. As commented by RA1, "They contribute value to the higher education sector and, consequently, to society. New products, services, processes, or digital organizational models that are either unique or significantly superior to the previously available ones" When it comes to ensuring that any higher education institution is transformed into an organization that contributes to the change of society via the transfer of their expertise, they agree that identification is a crucial step (Hawamdeh & Abdelhafid, 2024). It incorporates both "the learning processes and the analysis and detection of trends and needs in the demands of society," according to the teaching staff (P), who describes it as the process of analyzing and adapting existing technologies to meet the requirements of higher education institutions (P1, P5). They think the identification card is significant in education and "within the scope of the organization and the strategy of the institutions themselves" (P1).
Several educators define the term as more general, stating that it is "the application of knowledge and use of information and communication technology to transform education and achieve different results that provide added value" (P6) which is in consonance with the study of Fondo and Jacobetty (2020). ID is defined as "the application of information and communication technology to offer multiple possibilities to improve teaching and learning processes by creating the most appropriate spaces to ensure that these processes are most productive" (PT2), according to teachers and tutors (PT), who offer a more applied vision that is linked to teaching that is mediated by technologies. For the university to keep up with technological changes (PT2, PT4, PT6), it is vital to articulate the relationship between ID and technological evolution. ID enables your teaching to evolve by pushing relevant methodological changes (PT1, PT4, PT7). The profile of this teaching staff that is entirely dedicated to teaching may be the reason for this particular institutionalization of the ID notion that is less visionary. The administrative staff (PAS), in addition to taking into account the extensive use of information and communication technology (ICT) in the processes of teaching and learning, links identification to management processes related to teaching and research (PAS3, PAS4, PAS7). However, unlike teachers, the PAS does not influence teachers' role in promoting adaptation from the university to society. This is likely due to the PAS1's less strategic profile (PAS3, PAS6, PAS7). The examination of the many definitions reveals a widespread consensus, which enabled us to construct a definition of identification that encompasses almost all contributions which is to have the ability to use new digital technologies, tools, knowledge, or processes in an integrated manner, either by incorporating them, adapting them, or creating them. This will allow them to significantly improve various aspects of higher education, such as teaching, research, management, knowledge transfer, or governance, thereby providing additional value to the actors directly involved in the SE and the entire society.

The qualitative findings are presented by the categories that surfaced during the analysis.

A revolution of digital technology brought about by the influence of digital innovation:

Through well-established structures, such as the eLearning Innovation Center 3 (eLinC), the Residential Assistants (RAs) disclosed how the institution implements TD based on a variety of innovative methods. As suggested by RA, he defines it as "a specific circuit through which a teacher proposes the new product or process and the center studies whether it is feasible to integrate it." It is a circuit that encourages the evolution of the educational model through the implementation of innovations in learning. The Hubbik 4 hub, also known as Research Area 2 (RA2), is a hub that "allows research groups to transfer knowledge and that if an experience concrete is relevant enough, it can be generalized and benefit the entire university" (RA1). When seen from a more practical perspective, academics believe that institutional transformation is activated due to ID, which improves the efficiency and efficacy of daily management and communication acts. P7 argued that it must improve your daily life by enhancing the processes that, as a result, "facilitate the collaboration and the generation of shared knowledge". This is the requirement for the first, fourth, and fifth points. The institution can successfully manage many students because of the educational model, staff, and technical infrastructure that they deem innovative in and of themselves (P3).

Nevertheless, the majority of them express some critical aspects, such as the fact that the ID is too closely linked to a strictly technological criterion to keep up with trends in the industry or that TD has caused the bureaucratization of almost all processes due to the requirements of the tools, which is an aspect that some of the administrative staff (PAS1, PAS6) coincide with.

The majority of the teaching staff at the university warns that we must avoid increasing the multiplicity of processes, bureaucracy, and the number of associated work, which can be detrimental to academic and relational standards: "There has been an acceleration of time and the feeling that we have more and more to do and that time is increasingly It is shorter" (P5). This is about transforming the university as a system due to the pressure of the ID. The majority also confirm that there is a lack of time to incorporate innovation, which is sometimes nothing more than an individual initiative within a particular course. This is why they demand a redistribution of your time and the establishment of more apparent spaces and processes that enhance innovative initiatives' design, application, and generalization. One of the participants who has experience teaching at a traditional university suggests that online universities, which were born in a digital environment, have the potential to be more innovative in every way (P5, P8). One of the participants even comments that "communication between the different levels or levels of the organization, the capacity for action, innovation, and change is greater than in "face-to-face" (P2), which is a positive aspect of online universities. Some participants identified that there were no structures or a work culture before the advent of digitalization as a cause of these advantages (P3, P8). TD can modify specific processes, such as administering examinations or conducting meetings (PT1, PT6), as demonstrated by the tutor teachers. As a result of the fact that "communication and workflows, as well as the growth of the university, has made everything more complex" (PT7), they think that there is a requirement for continuous improvement and learning from the perspective of the organization (PT2, PT5, PT6, PT7, and PT8). They observe that the institution's structure can be excessively inflexible, stating that "changes have to take so many steps that sometimes they get lost along the way" (PT3). This is a more general perspective. As a result of focusing the inquiry on your particular function, they have confirmed that the rapid pace of technological advancement compels them to be vigilant, to adapt (PT3, PT5, and PT7) continually, and to "carry out constant recycling at a technical level" (PT2).

Regarding their work, all participating administrative staff members consider Technology a significant advantage. Management has become more effective, and the most crucial change is the virtualization of collaborative networking and communication, which reduces face-to-face presence. However, working in a wholly digital environment makes it difficult for some to manage their time or solve various problems effectively. Simultaneously (PAS2, PAS3), in addition to the requirement to enhance abilities to function as a team, occasionally experiencing feelings of isolation (PAS4, PAS7).

Perspective on digital transformation from a strategic standpoint:

Within the findings that pertain to this category, a few of the aspects of the interviews are assessed by the model. To provide a strategic perspective, the academic leaders present the vision of TD. When discussing leadership, planning, and management, RAs highlight how transformation is incorporated into the institution's entirety. They emphasize the importance of planning and having communication channels that are both clear and well-structured to extend new practices that advocate for transformational leadership. A request for "financing of potentially innovative projects from any of the three administrations (Catalan, Spanish, and European) and financing is obtained" (RA2) has been made by the university to facilitate its development and promotion.

Regarding the quality assurance of the procedures, they state that they are carried out by the System Internal Quality Assurance (SGIQ), which offers direction on instruction and its planning and execution. It is the responsibility of the Planning and Quality Area to provide a comprehensive response to the demands made by the Agency regarding the Quality of the University System of Catalonia (AQU) as explained by RA2. On the other hand, RA1 argued that "we do not believe in the requirements of the AQU as a bureaucratic procedure, but we take advantage of them to integrate it into the monitoring process and improvement of programs." This

is a statement that is made concerning the university's utilization of these requirements as a resource to enhance the programs. The monitoring of the academic success of the programs and the satisfaction questionnaires that students fill out at the end of each semester are also included in this process. About scientific research, two participants asserted that "Research is at the beginning of the chain because it generates knowledge, and innovation is at the end because it creates value (economic and social) based on this knowledge". This constructivist idea of generating knowledge enhances the critical thinking perspectives (Natividad, 2022). The participants emphasized that research, along with transformation (whether digital or not), is an integral part of the knowledge chain itself. Through the Vice-Rectorate of Strategic Planning and Research, which is responsible for coordinating the Research and Innovation Area and providing support to teaching and research staff in the management parts of the inquiry, the university encourages transformation in the field of research. The management of the university's Third Mission is concerned with transferring Technology and providing professional services to the community. RA3 observes: "The teaching and research staff have the three missions as part of their job." In addition to the dean's office, three vice deans are in each of the seven faculties. Each of these vice-deans is assigned to one of the missions, and one of them is responsible for "taking advantage of the knowledge generated to provide a training offer that responds to the third mission for citizens" (RA4). Over the entirety of the institution, there is a coordinating body that is dedicated to each single objective. The Competitiveness Commission is responsible for extending TD's reach outside the university by implementing measures directed toward various organizations and institutions (Third Mission). Therefore, The university's transfer is envisaged in the definition of the strategic plan, which identifies the most important for the institution in the coming years (PAS1, PAS3, PAS4, PAS6, PAS7). This was a spontaneous thought expressed by the administrative staff in their discussion group.

As an additional point of interest, the Research and Innovation Committee is responsible for addressing the transformation that results from the research. It is stated that "research focuses on the interaction of technology with human activity, with the networked society, online learning, and digital health being the three main axes" (RA2). Finally, the Vice-Rectorate for Globalization and Cooperation, in addition to the homonymous Area, is active in the process of the Third Mission in connection to TD. Particular attention is paid to transmitting and transferring information to Latin American countries and the interchange of information with non-governmental organizations (NGOs).

Innovations in pedagogical practices:

The resident assistants discussed the changes made to the curriculum and how student support is incorporated. Professional development. RA1 states that curricular modifications are carried out constantly and are "where teachers have a very relevant role and have the support of eLearning Innovation." This is the Center (eLinC)" (RA1). On the other hand, it is essential to point out that because the curriculum transformation is a controlled study plan, it is difficult to incorporate because clearance from the AQU is required. The teachers focus on the teaching innovation processes that they have carried out: “Throughout my career I have applied innovative experiences such as automatic evaluation and the development of educational resources” (P8), and a more critical view of the university's innovation processes: “there are some innovative methodologies that have been applied in the design of subjects but, in my case, they have not served me well a lot” (P5), mentioning some negative experience: “I tried to carry out a process of evaluating the common competencies in the subjects but it did not go well” (P3). On the other hand, most of them agree regarding the significance of pedagogical aspects in encouraging innovative practices.

As an example, the instructor or tutor demonstrates more specific aspects that are associated with the utilization of mobile devices (PT4), the development of collaborative projects on GoogleSites (PT1, PT2, PT4, PT5, PT6, and PT8), "the feedback in audiovisual support" (PT1), as well as online evaluation, virtual group work, co-assessment, and self-assessment with a practical and reflective improvement application (PT1, PT2, PT4, PT5, PT6, and PT8). The most significant changes that information and communication technology has brought about in their work are the resources that are "much more versatile and interactive teaching-learning systems" (concept maps, infographics, materials hypermedia...) (PT8) and the ability to communicate and work as a team that "has been systematized and enhanced its development, monitoring, and evaluation" (PT3). This aspect is related to the transfer of practices among colleagues, which is essential to improving transfer and involving the teaching team in innovation processes (PT1, PT2, PT3, PT5, PT7, and PT8).

Competencies professional in nature that are required for digital transformation:

Instead of elaborating on the abilities teachers should possess to be eligible for TD, the RAs note that the growth of teachers as professionals is encouraged through the event, which provides professionals with training tailored to the stage of their professional careers. The instructors, on the other hand, hold a more pragmatic perspective. Their professional abilities emphasize the adaptability and flexibility to change (P4, P7), the capacity for planning, teamwork, and leadership (P6), and the ability to design subjects and continually challenge their teaching practice (P8). The tutor faculty agrees to a large extent with the teachers' assessments, adding the ability to work collaboratively online, knowledge of the digital tools available (PT4), as well as pedagogical competencies for teaching in digital environments (PT3) and for evaluation (PT6), information management (PT8), and those more related to attitudinal aspects such as its role as a motivator and energizer, optimism and flexibility in the face of changes (PT1).

The administrative staff, in conclusion, supports some of these principles and complements them by providing autonomy (PAS1, PAS6), critical analysis, learning, flexibility, and transparency (PAS1), empathy, credibility, and creativity to solve challenges (PAS5).

DISCUSSION AND CONCLUSIONS:

The higher education sector, mainly traditional colleges, is currently debating whether or not it is necessary to adopt blended or online forms of instruction. The process has only been sped up by COVID, which demonstrates the necessity of equipping educators with digital skills and addressing challenges associated with reluctance to change. This reality is taken as a whole.

Because universities are required to implement a TD strategy, there is a necessary push for them to become more accessible, global, and interactive with society. Several valuable lessons have been acquired during the pandemic, which should be utilized and channeled to reflect the university system deeply. Within this part, we examined the primary contributions made by the various players involved in the university of study about TD to assist face-to-face institutions transitioning to hybrid or online higher education. The analyzed university has over 25 years of experience and has worked in the digital environment (management, teaching, research, and innovation). This means that it can assist other universities in digitizing their operations and avoiding the problems or difficulties typical of TD.

According to Choudhury and Pattnaik (2020), the most critical factor in determining the success of any company that aspires to become hybrid or online is adopting a holistic approach to teaching within the online environment. Every single one of the characters has the potential to offer a valuable perspective when it comes to addressing the TD of a university.

In general, teachers and researchers are the ones who focus the most on how TD affects the institution and their duties. This is because TD enables them to produce original and innovative suggestions. For their part, the administrative staff has a more pragmatic perspective on applying digital technologies. They believe it is essential to make the most of the opportunities these technologies present to facilitate and improve the processes of teaching and learning, communication, and management (Cadiz et al., 2024). Furthermore, accumulating the students' opinions regarding particular areas of their experience is paramount. This is because it enables the students to concentrate on those aspects in which there is a higher potential for growth while simultaneously continuing to promote those qualities that are more highly regarded in which equity in the classroom as the most inclusive education can be achieved (Jardinez & Natividad, 2024). These are some of the lessons that can be gleaned from the results that were shown earlier, and they are ones that any traditional university that is interested in transitioning to online or hybrid instruction might take into consideration: For the institution to succeed, it must clearly understand what TD means and how it is connected to innovation. As can be observed in the introduction, the viewpoint of Hinings et al. (2018) and Gong and Ribiere (2021) view TD to be the application of many innovations for the development and enhancement of the institution. In agreement with this viewpoint, the individuals who participated in the research have identified digital innovation as the primary factor driving technological development. Furthermore, in the same vein as Espinosa et al. (2018), they believe that TD encourages the university to adapt to the requirements of society. TD may also promote The integration of AI in higher education institutions which has the potential to revolutionize various aspects of education and administration (Bibi et al., 2024; Murtaza et al., 2024).

Moreover, they believe that institutions need to be explicit about the significance of TD for their future. To promote innovations that promote TD at the university, it is recommended that structures be created for this purpose. Therefore, as stated by Rikkerink et al. (2015), redefining organizational structures that generate innovative practices that require efficient channels in their management of transformation should be taken. To accomplish this, it is essential to transform the organizational dynamics in the direction of a learning organization model. For this reason, the establishment of a unit or Center, such as the one that was examined in the case of the university, appears to be pertinent.

Furthermore, for it to be feasible, TD needs to be incorporated into the institution's overall strategy. This is done to assist the institution in developing TD as a process that allows it to respond to environmental changes by utilizing digital technologies to enhance the processes by which it creates value. The digital transformation causes some processes (such as communication and network collaboration) to be much more efficient (Arango et al., 2018), providing them with more flexibility by not being carried out in a face-to-face environment. Still, the transformation of these processes must be accompanied by a transformation of work methods, roles, and activities that must be part of the institutional commitment, coinciding with Gebayew et al. (2018).

It is essential to point out that this change. As seen in the described scenario, it can indicate bureaucratization. In light of this, it is suggested that a review and redefining of processes be carried out to simplify them and differentiate between necessary processes and those that are not, in addition to the growth of more flexible structures. On the other hand, as observed in the results, the transformation may imply an increase in the number of processes, which may cause professionals to struggle with managing their time. This facet necessitates rationalizing processes and providing tools and strategies for time management through training. Schophuizen and Kalz (2020) state that a university institution interested in undergoing a digital transformation must provide the teaching staff with the necessary space and time to design, implement, and generalize innovation. This should be done in such a way that innovation through Technology is promoted not

only from the strategic instances of the university (top-down) but also, and most importantly, everything is carried out based on the initiatives of the teaching staff, and these initiatives are generalized throughout the institution (bottom-up). This component is related to the transfer of practices among colleagues since an essential factor in increasing transfer is including the team teacher in innovative activities. Therefore, mentoring tactics could be effective.

The results demonstrate that technology-driven teaching (TD) necessitates possessing professional skills beyond the instrumental domain of Technology. These skills include adaptability, flexibility, the ability to plan, work in a team, and leadership. These are also some of the professional competencies that Prendes et al. (2018) highlighted as among the most important for teachers. Furthermore, a significant portion of them are associated with digital competence. This is because it is essential for the employees of higher education institutions to experience a sense of ease and to carry out the procedures associated with their work in the most effective manner possible through Technology. Therefore, every university interested in undergoing a digital transformation must invest in the ongoing training of their teams in these abilities. This is because, in a digital world that is constantly evolving, higher education institutions must be regularly updated, promoting the training of both their personnel and their students. Any educational institution contemplating extending a portion of its training program to include hybrid settings or online instruction must not overlook the students' viewpoint and must inquire about the factors that encourage them to pursue online education. According to the case described and other research, they are driven by flexibility, which includes geography and the fact that it allows them to mix their university education with their career and family life. Therefore, you must present a pedagogical and structural model that provides this flexibility per the requirements of the students who might be enrolled in the program. In addition, it is necessary to encourage their participation in the organization by developing avenues to become an active part of the institution's existence, such as serving on the university council. Not only does the flexibility to which reference has been made translate to learning activities, but it also enables them to broaden the avenues for engagement in the institution, thereby becoming an active member of the organization. In other words, the flexibility is a double-edged sword. For this to be feasible and by the requirements that have been identified, the structures of the institution must be made explicitly accessible. This will allow students to be aware of the various involvement channels available. However, the fact that this research was only conducted at a single school is one of the most significant drawbacks of the study. It is also possible that the results were affected by the fact that the information collection was carried out during the pandemic. The possibility of conducting a comparative study with the other universities that are part of the ECOLHE project consortium and presenting varying degrees of implementation of digital technologies is one of the potential future lines of research that could be pursued. This would involve delving deeper into the most pertinent aspects that have emerged during this work in other instances where the presence of the pandemic is not an aspect that should be considered. In conclusion, and according to the findings of the research conducted by the university, the higher education institutions that have been transformed digitally are those that are adaptable and able to adjust to changes in society, the ones that innovate continuously, the ones that generate networks of expert knowledge based on research, and the ones that test technological trends in an agile manner. These are the aspects that should be the foundation of your pedagogical model.

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