

A Reflection about Sustainability in University Higher Education. Creativity and Proactivity at the Service of Development

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Abstract

Studies related to academia and sustainability have advanced quickly in recent years. On the one hand, numerous universities made the decision to collaborate in 2015 to find new approaches to education across Europe. On the other hand, the Sustainable Development Goals look for an awareness of the resources available on our planet. To understand the approach of the proposal and the situation of the university and sustainability in the 21st century, we will take a tour of the evolution of teaching practice, analyzing how it has gone from an analog world to a digital universe. The new paradigm of the Bologna plan, which placed more emphasis on developing skills than knowledge, will be examined from the perspectives of both teachers and students. The search for the points of connection and disconnection will come next, then the discussion, and finally the conclusions. The COVID-19 pandemic has strengthened and verified the use of new digital tools, which enable learning to be brought closer to many parts of the world in search of a broader learning scenario.

Keywords: Sustainability, University, SDG (Sustainable Development Goals), Resources, Experience, Digital Competencies.

Introduction

State of the Art

Sustainability in the XXI Century

Even though sustainability has been a concern for years, Agenda 2030 has set the groundwork for Sustainability Development Goals (SDG). “The Agenda is a plan of action for people, planet and prosperity” (United Nations. Department of Economic and Social Affairs, Sustainable Development, n.d.). There are 17 Sustainable Development Goals and 169 targets that show the ambition of this project. Additionally, they are concerned about human rights, gender equality, and empowerment of girls and women. All the plans are integrated into a balance of three dimensions: the economic, social, and environmental.

Different SDGs focus on people in the way of ending poverty and hunger, in all their forms and dimensions. Every human being should be able to fulfil their potential, and when talking about potential, academic and educational aspects are fundamental. This concept is also related to prosperity to leading successful, contented lives. To summarize, economic, social, and technological progress must occur in harmony with nature (United Nations. Department of Economic and Social Affairs, Sustainable Development, n.d.). From the university, as teachers, we are conscious that our goal is to transmit these concerns.

Superior University Education in the XXI Century

As a starting point for the evolution of teaching practice, we will focus on the Bologna Process. In 1999, education ministries of 49 countries wanted to make the exchange between students from different countries easier and to adapt content to social demands (Euroinnova n.d.; EHEA, n.d.).

The adopted framework in three cycles of the European Higher Education Area (EHEA) defines the qualifications in terms of learning outcomes using the European Credit Transfer and Accumulation System

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(ECTS). It is important to ensure the mutual recognition of qualifications and learning periods abroad done at other universities (European Education Area. n.d.; The Bologna Process and the European Higher Education Area).

Bologna Process seeks to bring more coherence in Europe and to facilitate mobility between students and teachers. There is a need to make education more inclusive and accessible considering different political, cultural, and academic traditions (European Education Area, n.d.; The Bologna Process and the European Higher Education Area; EHEA, n.d.). To support higher education reform the Commission triggered more intense and structured cooperation among European higher education institutions. The Erasmus program that started 30 years ago will be the platform for student mobility. The 49 countries involved agreed to adopt reforms based on key values. These values are freedom of expression, autonomy for institutions, independent student unions, academic freedom, and the free movement of students and staff (EHEA, n.d.). Lifelong learning has also been recognized as an essential element of the European Higher Education Area to face the challenges of competitiveness, the use of new technologies, and to improve social cohesion (EHEA, n.d.). The following steps were deemed for the implementation:

‘Widening access to higher education

Creating more flexible, student-centred modes of delivery

Improving the recognition of prior learning

Developing national qualifications frameworks,

Improving cooperation with employers.’ (EHEA, n.d.)

The evolution of virtual education is not about technological tools but about new teaching mechanisms adapted to the reality of the new times. In the conferences on higher education organized by UNESCO, between the years 1996 and 1998, the desirable influence of new digital technologies and telematic networks in the transformation of higher education was highlighted prominently. They focused on the need to maintain an adequate balance between the internationalization promoted by these technologies and the cultural identity of each country. These new digital technologies have had an impact on all institutional areas of society and higher education is no exception. (Suasnabas Pacheco et al., 2020).

It is crucial to study the commencement of the process and the current state of Bologna Process. For instance, rapid growth in the demand for student mobility makes it occasionally challenging to distinguish between study periods across national higher education systems with various academic traditions. (European Education Area, n.d.; Sánchez Caballero, 2019). In addition, there are controversial ideas about the time and method of adopting the new Bologna Process. Even though countries agreed with the approach on how to do the studies, universities had to change their teaching methods switching from masterclasses to teaching based on competencies. Expectations about reducing the number of students in short period of time were not met as well (Sánchez Caballero, 2019). Throughout this time, several innovation projects have been started to suggest novel techniques. The adoption of digital technology to enhance creativity and diversity in teaching and learning should be considered while developing principles (EHEA, n.d.).

Another difference is what is taught university and what is expected from employers in the job market. Universities often offer education outside the real needs of the labour market. In the research from the Innovation in Employment Observatory, for instance, it is also mentioned that graduates admit to having a significant lack of knowledge about the labour market, which makes them insecure when they are required to look for employment. One of the most important objectives of the Bologna Process, which is listening to society and putting students in the centre of the process, has not been fulfilled yet (Bustillo, 2015).

Superior Education and Sustainability

Referring to the SDG related to education, we will mention Goal Number 4; Quality of Education. Education must allow socioeconomic mobility to leave behind poverty. Even though the number of students who have access to education has increased, there are still many children that are without the means to education in 2018. Furthermore, more than half of all children and adolescents around the world are not meeting minimum proficiency standards in reading and mathematics (Naciones Unidas, n.d.). In 2020, as the COVID-19 pandemic spread across the globe, most countries announced temporary school closures, affecting more than 91% of students globally. This fact has resulted in many students having difficulty accessing food as school refectories were closed (Naciones Unidas, n.d.); or indeed impacting to complete their academic objectives. Amongst the important goals to accomplish, we can mention that all children should finish their studies and acquire the necessary technical and professional competencies. They should reach theoretical and practical knowledge to promote sustainable development (Naciones Unidas, n.d.).

Another important goal of SDG Goal Number 10 is to reduce inequalities and ensure that no one is left behind as an integral part of achieving sustainable development goals. As well as this, ensuring inclusive and sustained economic growth that can drive progress, create decent jobs for all and improve living standards (Naciones Unidas, n.d.). Education is the first step to achieving all these goals and in the twenty-first century, digital technologies can offer good solutions in this regard.

Evolution of Teaching Practice: From the Analog to the Digital Universe

What skills are presupposed today to face learning through established digital channels (mail, Moodle, videoconference, chat, projectors and so on)?

The educational paradigm that configures virtuality is not new. We consider that its value lies in the possibility that this medium offers us the opportunity to reinterpret, to rethink education and its mechanisms. Learning theories, methodologies, didactics, and communication must be repositioned before a virtual space is presented to us and therefore is open to all kinds of creative possibilities. This gives us a path to explore to face the educational challenges that arise in the new millennium.

According to the figures of the Spanish National Institute of Statistics (INE), 96% of Spaniards had access to the Internet in the year 2021, and in households with dependent children, the percentages is 100%. In the EU-27, 90% of households have Internet access in 2021. In households with children, the percentages are higher, and the highest is 97% in those made up of 2 adults with dependent children and in those made up of 3 or more adults with dependent children. 78% of households in Spain had a computer in 2017 and 83% in the EU-27. The highest percentages correspond to households with dependent children, both in Spain and in the EU-27 (INE, 2021a). It is also interesting to highlight that in Spain, 99.2% have a mobile phone, with access to the Internet also available through this device. (INE, 2021b). This demonstrates that, maybe, means are not a problem in the process of teaching and learning in Spain.

Furthermore, during COVID-19, we have faced a virtual scenario where educational actions in which the educator and the student knew how to be flexible in the process and adapt the methodologies and didactics to the educational needs (Harasim et al, 2000; Suasnabas Pacheco et al., 2020; Mohamed Hashim, Tlemsani & Matthews, 2022). The profile of the process components and the learning context made success possible. To reach this status, the process components and the learning context needed an explanation of the learning processes and methodologies.

Even though all countries adapted quickly to the new scenario, the beginning was difficult. While teaching staff work to improve the adaptability and flexibility of course contents and course designs for learning in various fields of education; as time has passed, they struggled to find creative and innovative solutions (Suasnabas Pacheco et al., 2020). Even though COVID-19 has shown some setbacks, students' psychological well-being was preserved by assisting them to manage cognitive load, increasing their engagement in online learning (Wang et al., 2021).

Once universities, after almost two years of confinement, were able to go forward with their academic courses, old systems came back into the system. Why are we unable to continue using some confinement stage methodologies? For instance, in the case of teachers, presentations in the cloud, shared schedules, and online meetings are considered. In the case of students, a lower need to bring together resources in presentations if they can do instantaneous searches on the Internet; deliver digital files that avoid using fungible material that is stored; accessibility to applications and materials on the Internet (applications for video and image editing from smartphones); and a new approach to learning without having to be written can be defined.

Creativity has extreme importance because it produces a sentiment of satisfaction giving us a fundamentally positive attitude about ourselves and our work life. Creativity must be part of our contemporary culture, as a social value and not only as a personal capacity but as a social requirement just like education. Creative stimulation is the north of any educational system open to the future. The opportunity to change the ideas, mechanisms, and dynamics of creative education offered by the inclusion of new communication technologies, especially the web, is always a positive factor for creatively rethinking educational values. Conventional and distance education converge in the same paradigm, in the same space for reflection, which stimulates the processes of optimization of educational action.

Education is an important part of our mechanisms of identification, transmission, and human survival. Even though the eruption of technology was seen as a threat to the education process, communication has been the key to defining the relationship between teachers and students. Consequently, an appropriate and effective level of communication must be protected, and the Internet is the medium. The relationship established between education and virtuality is creative (Duart, 2000).

New technologies have made it possible for more people to be able to access information, concepts, contents, and education is key for the maintenance and development of the system. For example, we encounter Learning Management Systems (LMS) that have functionalities that support the management of courses, users, groups, and grades; and they also allow content management such as the Modular Object Oriented Dynamic Learning Environment (MOODLE) and, Adaptive Hypermedia Systems (AHS) for education, which are systems capable of recording student actions, interpreting them according to the associated user model and, in consequence, to adapt the learning process to the individual. Gamification, through online applications such as Kahoot, represents a powerful strategy to motivate and promote student learning, since through it the players (students) can increase their dedication time to the proposal designed by the teacher, as well as their psychological predisposition towards it (Suasnas Pacheco et al., 2020).

Digital Competencies of University Communities

The most significant distinction between face-to-face and virtual education is the change of medium, as well as the educational potential that results from optimising the use of each environment (Duart, 2000). The intended objectives are accomplished if there is technological competence in the university community.

Competence is ‘the ability to face complex demands, relying on and mobilizing psychosocial resources (including skills and attitudes) in a particular context’ (OCDE, 2005: 3). The digital competencies can be separated into basic and advanced. The basic ones are related to the use and management of computer tools, and the search and treatment of information, while advanced or specific digital skills would entail mastery of specific programs and software specific to a certain field professional. (Fernández, E., Leiva, J. J. & López, E. J., 2017). In recent years technical digital skills play an important role and are becoming smarter and more user-friendly. They shift from the focus on technical skills of operating technologies to higher skills such as collaboration, creativity, and knowledge building (Janssen, J., Stoyanov, S., Ferrari, A., Punie, Y, Pannekeet, K. & Sloep, P., 2013).

‘Digital competence in teaching is key to achieving the digital transformation of society, as well as inclusive and accessible quality education, as set out in the European agenda through the Digital Education Action Plan 2021-2027 and the European Strategy for Universities’ (Mora-Cantallos et al., 2022).

The authors of the 'Digital Competence of Academics in Spain. A study based on the European frameworks DigCompEdu and OpenEdu' saw the need to define the level of digital competence, also through the DigComp framework that started in 2016. The key findings are that B1 is the most common grade, with B2 being the perceived median level of teaching digital skills. Additionally, among the various factors analysed, age is the one that demonstrates the biggest variations in self-perception levels, with no discernible variations according to professional category, dedication, or gender (2022). The importance of promoting digital competence is key to developing university teaching staff.

As Janssen et al. (2013) mention digital competence is described by the European Parliament and the Council, as one key for Lifelong Learning concept, and is defined as the confident and critical use of Information Society Technology (IST) for work, leisure, and communication. Our society is not exempt from handling digital tools. As already mentioned, one of the biggest problems that students encounter at the end of their university studies is the little connection that they have had with the professional world over the 3 or 4 years of their degree. Since students must enter the workforce after receiving their degree, the digital environment must become a crucial tool for their future professional success.

Digital competence is the term more often employed as a broader and educational-oriented concept and refers to the categorization of a discipline in intertwined knowledge, skills, and attitudes envisaged by Bloom (1990). These are creation, evaluation, analysis, application, comprehension and remembering. Competence acquisition in a digital era enables the user to adapt to new requirements set by evolving technologies. Experts in different aspects of digital competence were asked to contribute to a study focused on gaining a deeper understanding of the digital competence concept (Janssen et al., 2013). Twelve digital competence areas have been identified and shown in the following figure according to Janssen (2013) (fig. 1).

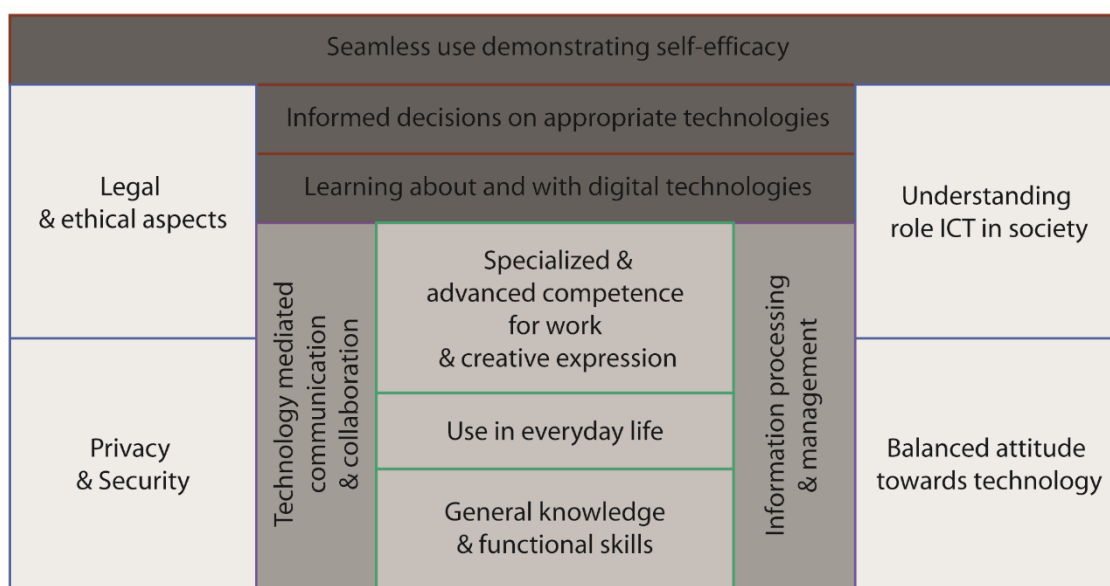


Figure 1. Areas of Digital Competence (Summary of Janssen's Research, 2013)

Research supported by the Spanish State Agency is analysing if sustainable development goals are included in the learning guides of every subject in addition to being related to the skills students must acquire in their specific grades. It all starts with the approaches of the study plans, many of them established before the approaches of the SDGs. However, it is important to make a difference between digital competence and personal preference, or choice to use particular digital technologies (Janssen, 2013). Basic digital technology usage does not necessarily entail high levels of competence. Due to their age, students may be more accustomed to using digital tools than teachers, but this does not imply that they are agile and skilful in the use of digital tools.

Covid-19 brought new ways of learning and teaching. Maybe it was not the best way to learn digital technologies, but after two years, the special situation made fast learning an obligation. This scenario made it possible that face-to-face universities adopted the use of different tools never seen before and, in doing so, progressed teaching and learning methods. This setback has made it possible for university life to continue. In terms of sustainability, on one hand, we can consider stopping contamination due to displacement and, on the other, being sustainable by bringing digital tools closer to all agents in the academic world. Access must indeed be improved on occasions, not by the digital tools themselves, but by means available outside of the person, such as a proper Wi-Fi network.

Students' Competencies

According to the study of Koyuncuoglu (2022) and related to the competencies marked by Janssen (2013), the digital competence of university students was high in some dimensions and moderate in others, and there is a great relationship between the digitalization of education and the change of individuals. Digital technologies have integrated information systems, social media, communication, and education. Being competent in digital technologies includes knowledge and attitudes towards technology in a global and personal way.

Through the required competencies, students should be able to solve problems, recognise when they need to utilize digital resources, use digital technology creatively, make informed decision, and manage technical issues (Koyuncuoglu, 2022). They must be aware of the fact that they must be proficient in these skills in order to choose reliable information sources and effectively transmit organised material (Galimullina et al., 2022). In addition, every competence must also constantly be connected to other skills.

When students graduate from university, they will work in a different setting throughout their careers, therefore it is critical to emphasise the importance of collaboration. Unearthing this cooperative learning technique in teaching activities is recommended as it will encourage proactivity or proactive behavior. The paradigm nowadays is focusing on the student instead of the teacher-centred perspective. The relationship between both must change to facilitate students' motivation. (García-Almeida, D. J. & Cabrera-Nuez, M.T., 2020). Traditional learning theories emphasize the importance of the active construction of knowledge developed over time and with personal experiences. Thus, regardless of where they learn and what tools they employ, students must take an active role.

Teachers' Competencies

The study of Galimullina et al. (2022) identified behaviours that will become the basis for the formulation of descriptors for the digital competence that teachers will require in their positions. It is about contact, cooperation, solving, creating, and providing. UNESCO (2018) has established a competency framework for teachers with 6 different aspects (fig.2); understanding the role of ICT in the education policy, curriculum and assessment, teaching practices, digital skills, educational process organisation and management and finally professional development of teachers.

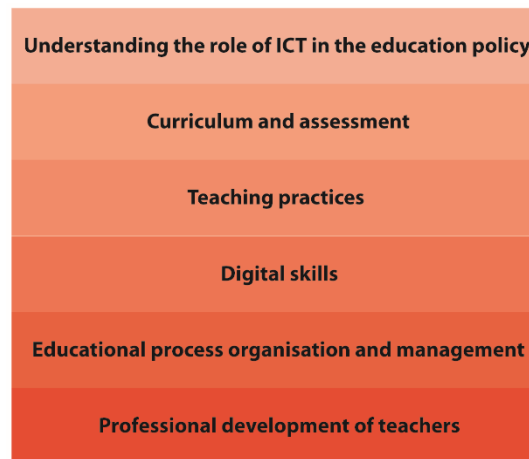


Figure 2. Competency Framework for Teachers (UNESCO, 2018)

Teachers must likewise change with the times and view digital tools as crucial teaching aids in their classrooms. It is essential to approach this task professionally since it offers the finest means of educating the young people who will be in charge of running our nations in the future.

Connection and Disconnection Points

As mentioned previously, sometimes malfunction or disconnection is not due to the digital tools that teachers or students have. The system may or may not be prepared and has many shortcomings to provide the necessary resources to teachers. Sometimes the implementation takes a long time which means that many times, the slowness of the administration keeps us lagging behind. Problems can also occur when institutions underinvest in technology, resources for online learning, and the efficacy of the teaching approach (Koyuncuoglu, 2022).

Universities use technologies to trigger paradigm shifts and technology connects mechanisms to design, deliver and establish digital learning. Therefore, digital transformation has become a necessity. They need to improve their capabilities, efficiencies, and accountabilities to satisfy the demand (Mohamed Hashim, Tlemsani& Matthews, 2022). Even though studies seek the inclusion of sustainable development goals in the learning guides, it is also necessary to monitor whether they are applied.

Nowadays, another important disconnection may be related to the lack of adaptation of teachers to the new teaching methods where the student must be the protagonist.

Discussion

According to Fernández, Leiva, and López (2017), it is advisable to acquire degrees in higher education, to reduce the risk of social exclusion related to the performance of jobs, which in turn is a means that facilitates access to becoming independent. This is directly related to the SDB Goal Number 4; Quality Education and SDB Goal Number 10; Reduction of Inequalities, and indirectly to SDB Goal Number 8; Decent Work and Economic Growth (Objetivos de Desarrollo Sostenible, n.d.).

The students' familiarity with various technologies—known as "digital natives"—enables a better open attitude toward them and proficiency in using them. We found a digital gap in teachers who, for the most part, had to adapt to new technologies in a mandatory way, as well as the new adaptation of their role and methods considering social needs. Another factor is that the majority of the time, students and teachers have acquired digital competencies by practice, trial and error (Leiva and López, 2017). Universities ought to give their management of the instruments more thought. Therefore, students and teachers with the acquisition of digital competencies can advance faster in their teaching/learning path. In summary, it is

crucial to make sure all students have access to digital devices, encourage student engagement, and support student differentiation and personalization.

Conclusions

Sustainability in higher education is related not only to matters of the environment but also to the optimization of the students' learning process. The Bologna Process established a common scenario for the universities in different European countries in the way of searching for points in common in undergraduate and master studies. Another significant adjustment was the adoption of a new approach based on skills that replaced masterclasses.

The competencies are related to the way of learning, not only content, but with ways of relating to our environment, our peers, and considering values such as freedom of expression, freedom of movement, and maintaining the cultural and social identity of each country.

According to the Sustainable Development Goals, and particularly to the Goal Numbers 4, 8, and 10, making education accessible is closely related to new technologies. In addition, COVID-19 showed that online teaching using digital devices made it possible to continue teaching and learning during almost two years of confinement. To sum up, we encourage effective teaching using digital tools that foster students' initiative and creativity, which are crucial for knowledge to be retained over time.

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