

Digital Campus – a future former investment in education for a sustainable society

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Abstract. Intelligent learning and research are happening everywhere, nevertheless, conventional teaching and learning in universities, based on face-to-face or in person approach is still the basic environment. Actual movements in socio-economic life around the world impose e-learning and e-presence. However, moving digital is more than online teaching, is changing the environment. The present research paper aims to demonstrate how a digital campus, with all aspects, can perform a crucial role in enriching the university campus's structure and culture to ensure the quality assurance of teaching, research and administrative management using actual innovative technologies. Moreover, digital campus changes the perspective of social and physical environment, and the present paper found out that Digital campus provide *anytime* and *anywhere* access to university facilities (maintaining the environment clean in the same time), learning, research, and meeting the industry as well.

1 Introduction

Every country wants to be wealthy, to have a sustainable economy and a healthy environment [1], and education plays an especially important role in all socio-economic life stages of developments. An educated and knowledge equipped student means an educated family, and an educated family means an educated society. An educated society understand the importance of investment in developing the education sector, as it can help the whole society to develop and grow in a sustainable way (fig. 1). Digitalization helps the society to evaluate, change the education institutions' structure and offer a different view about social and physical environment.

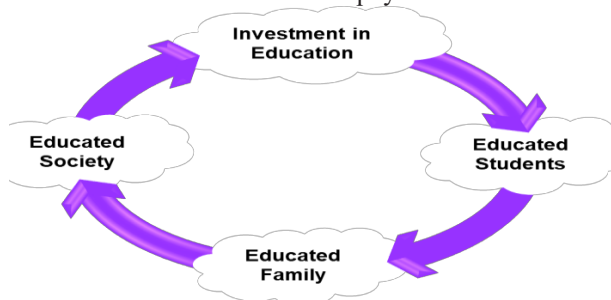


Fig. 1. Return of the Investment in Education

As a general definition for a university, academicians agreed that it is an institution of higher education and research, which, based on the students' performance, it awards academic degrees/diplomas in various academic disciplines or specializations. The first university was recorded in Morocco, in year 859. Since then and till present time, according to the Webometrics database [2], on January 2020, around the world, there are noted

29,429 universities. All of them are offering face-to-face teaching and learning programs. The emergence of new requirements on the labor market, industrial reforms and the development and implementation of new technologies have been, and still are, challenges for professors in all specializations. Teaching methods have gradually improved, to meet the needs of labor market requirements, as well as the perceptions and needs of students and for those eager for professional development [3, 4, 5]. However, online teaching started in years 1900, and now are more than 28,000 online degrees from accredited online universities and colleges [6]. Online teaching and professional development appear to be more approachable in a social distancing restriction, for example in a pandemic crisis caused by Covid-19, in year 2020 [7]. Nevertheless, even before 2020 pandemic crisis, there was already high growth in adoption in education technology, artificial intelligence, digital systems and cybersecurity specializations concurs also to global *EdTech* investments, which reached US\$18.66 billion in 2019, and the overall market for online is predictable to reach US\$350 billion by 2025. We may say that Covid-19 stimulate and urge all education industry to make a step further and adopt *EdTech*, whatever is the language or communications tools used [8, 9, 10]. Therefore, *digital campus*, in its whole concept, can help to have a continuity for the education process in the era of uncertainty. And when comes about uncertainty and safe environment, Digital campus comes to support if by helping reduction of water, electricity and paper waste, as many activities will be conducted online, and the water and paper supply necessity will be much lower, compared with the necessary one used for a face-to-face campus.

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From this point further, the present research tries to demonstrate the necessity and the benefits of investment in campus digitalization, both from students and universities perspective.

2 Literature review and Findings

As a general understanding, investment is an activity used by the people to increase wealth, develop a business, and improve the economy. This activity is about putting the money in a form of assets in a place where it can be used for improving an existing business or open a new business. Such activity will make the investors run the money in a way that there will be gain or loss [11-13]. Investment in education is considered an advance of the gross domestic product. The product and profit of these investments are recorded / observed in the long run and consist in the high degree of professional qualification and education of the entire society [14]. Universities are institutions of higher education in which human capital improvement takes place, typically through the process of teaching, learning, research and innovation. Therefore, an investment in developing the university campus based on modern technologies consequently benefits the entire economy. Moreover, the investment in a human capital development is an intelligent and sustainable instrument to be used for increasing the economic growth [15-17].

A university, and a university campus, could influence the economy through its sectoral links [15]. All economic sectors and all social categories benefit directly and/or indirectly from the expenses incurred by a university campus, whether private or public. An informed and educated society will understand better the effect of their decisions, regardless those decision is related to the private or public actions.

New technologies and digital systems have dramatically changed the organizations' structure and culture, labor market skills' requirements, and marketing environments. Whether it presents an opportunity, a test, or a need for survival, addressing this challenge depends on how organizations approach it strategically [18].

Digital technologies have transformed the way organizations and consumers interact and transform value [19]. For example, web 2.0 has transformed the way people access information, communicate with each other, and experience products and services [20]; 3D printing has changed the way goods are produced and consumed [21]; the Internet of Things has revolutionized the way individuals interact with physical environments; application-based mobile banking helps with digital financial transactions [7, 22]; and, universities offer training, learning and accomplishments of new skills, through digital communication [23-26]. Therefore, digitalization is not a new phenomenon, and in conditions of social distancing, such as the Covid-19 pandemic of 2020, it continues to evolve and produce new effects on the organization's environment, with more emphasis on the educational system. And this because, despite disrupted routine, the whole economy needs skilled people in the years to come.

Digitalization of university campus and the need of reshaping and funding the higher education systems, it was discussed in many academic research [27, 28], with emphasis of the importance of the human factors: social interaction, well-designed learning experiences, participatory pedagogy, supportive teaching presence, and effective techniques for using technology to support learning [29, 30], and not only socializing.

3 Research methodology

This is a qualitative exploratory research, aimed at determining for the complete framework on the frontiers of Digital Campus, EdTech, represented by the advanced technologies used for online communication, learning and research. The understanding of this context, deriving from a systematic analysis of potential or already started online teaching approach, is particularly relevant not only for the purposes of pure scientific research, development and improvement in higher education approach, but above all to understand current challenges faced as a result of social distancing restrictions, Covid-19, as well as to offer a solution in plus to preserve the environment, through significant reduction in wasting the water, paper and electricity.

4 Discussions and findings

4.1 Digital Campus from Students' perspective

Despite the fact that digitalization become a common word and part of our daily life, most recent in the last years, we have to underline that digital campus means more than e-learning, it includes e-presence and e-university administration also [31], and involve all activities conducted by the university as a business organization, not only from teaching, learning and research perspective [22, 32].

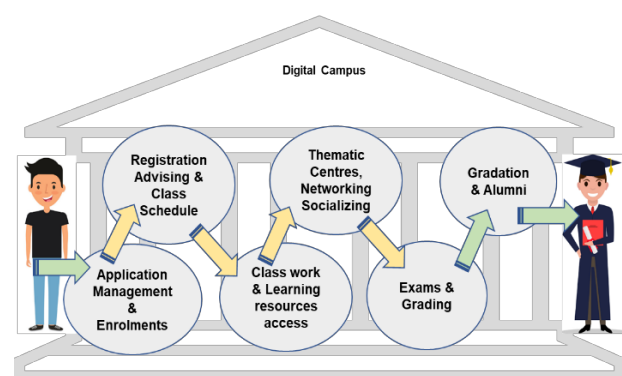


Fig. 2. Student's journey within Digital Campus

The present study on the digital campus services revealed that the student's journey within Digital campus imply more aspects than what we know as *e-teaching and learning* or *EdTech*, it is imply e-presence, e-administrative services, e-finance, and others (fig. 2). Using e-communication tools, student' academic journey goes through many stages: Application Management &

Enrollment; Advising, Registration & Class Schedule; Class work & Learning resources access; Thematic Centers, Networking & Socializing; Exams & Grades; and, Graduation & Alumni. All these activities can be easily conducted online.

Application Management & Enrollment area it is particularly important. On virtual mode, the student has its first contact with the university. The university portal is better to be specific, attractive, and friendly to use, to let the student to know which can be his learning plan, from the enrollment to graduation. Enrollment area is better to offer online services as: documents verification, students dossier acceptance; link for fee payments (all payments are better to be conducted online, to avoid any inconvenience); presentations of universities facilities (hostel, parking, sponsored educational participations, or other similar); and, advising or counseling (which has to be consistent from the first day till graduation). Once the student is enrolled, he/she will have assigned an email (university email address) and free access to all campus facilities.

Registration, Advising & Class Schedule is a process which is part of the student' journey till graduation. Advising is important and better be consistent, being online, the same adviser should assist the student throughout the whole university years. Student should have the possibility to register online for his/her classes and monitor his/her accomplishments.

Class work & Learning resource access, as it is named *online learning* or *e-learning* imply various communications tools. Here *e-presence* is particularly important. The university campus, though its e-communication tools, is better to give free access to all facilities. To effectively manage a campus-wide digital signage application, the system is better to have a set of tools and widgets to connect to the established university applications to collaborate and exchange data in an automated and real-time fashion [33]. The existence of e-Library for resources and free access to a database for research is compulsory to achieve a quality of teaching and learning, as research is part of learning. Students should be able to have access to library and database, in online mode, wherever they are, not only from physical campus.

Thematic Centers, Networking & Socializing. Being part of one or more *Thematic Centers* or *Clubs* is particularly important for networking or socializing (for example: Student Research Club, Business and Finance Club, Chess Club, Football Club, Sailing Club, so on so far). In a Digital campus, all networking and socializing activities/facilities should, as much as it can, be also offered online. Encouraging students to work together on different projects, will equip them with team management skills, decision-making ready, and will develop their innovation and creativity.

Exams & Gradings. During the last 6 months, in 2020, since social distancing restrictions were imposed because Covid-19 pandemic, all students, professors and academic administrators realized that course learning outcomes can be verified through several types of assessment, conducted online. Therefore, all academic participants are better to be trained to use designated e-

communication tools, such as: MS Teams, Zoom, Skype for Business, Office 365, EOL and others. Exam schedule should be visible online, on professors and students' university page, and grading system should be online too. Students are encouraged to have the possibility to consult their grades online, after each assignment. An orientation related to all communication channels is better to be conducted at the beginning of each semester, or anytime is appropriate, regardless of whether the educational activity takes place in conditions of social crisis or in normal conditions, without any restrictions.

Graduation & Alumni. One of the most beautiful moments of a student's university journey, of which he/she is proud is *Graduation*. In this last stage as a student, all degree process, final transcript and certificate can be conducted online, even it is more lovely to have an in-campus ceremony. And the university implication in student's life is not stopping here. A dedicated area for *Alumni* is recommended to be in place, for placement possibilities, continuous learning developments, and research projects in partnership with private or public industry.

4.2 Digital Campus from Administrators' view

Digital Campus project is an important part of university development and should meet the need of information technology development in higher education [34]. Currently, there is no standard framework for the digital campus, and as technology advances, the framework will evolve organically. However, to begin the journey to provide students with an experience on the digital campus, educational institutions need to change their organizational structure and culture, and incorporate: visual experience and exposure, a high-performance IT system and the implementation of digital systems in all institutional levels (admission, finance, administration, research, courses and much more).

The system architecture of Digital Campus can be divided into 6 parts – Academics, Accreditation, Industry and Community Connections, Digital Student Journey, Administration, and IT & Security (fig. 3). Every part is better to be intercorrelated with each other to achieve the integrity and the unity of the whole university system.

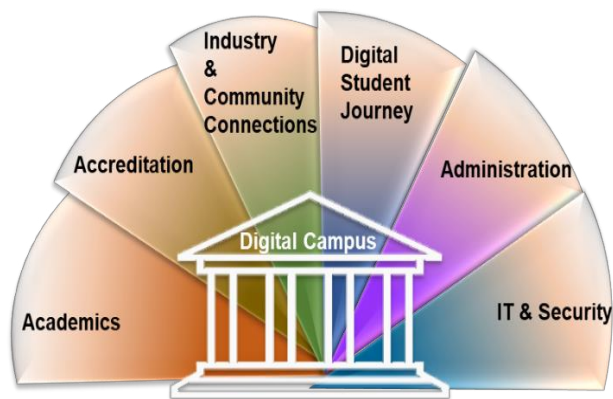


Fig. 3. Digital Campus' architecture

As the labor market and socio-economic needs are changing continuously, and world moves towards smart cities focusing on digital solutions for a more liveable and sustainable future, higher education institutions are expected not to be left behind [35].

According with Campus Management Corporation all these 6 parts have their importance and they cannot work separately [35]:

Academics include learning management systems; virtual/blended and personalized learning methods; learning analytics; assessment models; 3rd party content and apps; learning aids including library and CMS.

Accreditation, the recognition of quality assurance of teaching and learning is better to include academics and institutional performance (teaching and research); real time reports; infrastructure; raking; quality management systems; governance and regulation mandates; real time reports; and, compliance data.

Industry and Community Connections is vital to be part of teaching and research process. They help the university to be updated to the labor market and the whole economy needs in terms of skills and knowledge, also they help the young graduated students to integrate themselves into society, through internships, work places and research projects developments. In this regard, the university supposed to have on its portal dedicated area to link with industry and community research projects; employment hubs; grants; and alumni.

Digital student journey connects the student with all services and facilities offered by the university, provides access to identity management, ensure connection with the campus remotely.

Administration and It and Security are the services management area which include human resource (both academics and administrators); finance; accounting; procurement; welfare; support functions; secure hardware; mobility/apps; 3rd party content; and secure data warehouse.

5 Conclusions

We live in a digital era and in a time of changings. Economic and social needs are moving. Education is called to produce educated students able to fit the market needs. More than this, now all life become digital.

Therefore, investment in education appears more than necessary to move from *traditional learning* to *e-learning* and to quip the students with those qualifications and skills needed to be employable. Digital Campus is more than technology and *going online*, is more complex, is about willingness to change safety, investments, innovation, creativity, and teamwork. An investment in Digital campus approach, as a technological developed perspective of higher education is more than welcome, to help the entire economy to grow in a healthy and sustainable way.

Digital campus is an academic education approach which provides *anytime* and *anywhere* access to both learning, research, meeting the industry, as well as administrative content.

Access to a developed higher education system, such digital campus, it transforms the lives of people and society. The ability of universities to provide access to education in line with modifying behavior, changing needs and circumstances are priorities in the actual environment. The Digital Campus is a high-tech experience, and nevertheless represents a pathway for universities to respond to 21st century society's changing needs and remain relevant, ensuring quality of teaching and learning, in the same time. Investment in education is investment in our future safeties.

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