InnovaT
Innovative Teaching Across Continents

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Innovative Teaching in Higher Education

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Innovative Teaching in Higher Education

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INTRODUCTION

University education, given the complexities of today's society, has become a complex activity to meet the expectations of students and respond to the demands of the company. The advance of Digital Technologies and their educational potential requires inserting aspects in teaching that have become evident during pandemic crisis, where the use of DT allowed to maintain teaching in virtual and hybrid modalities. This new reality requires innovation in university teaching and the transition from teacher-centered learning models to student-centered models. One of the most relevant challenges is the training of teachers in the updating of teaching-learning methods and the incorporation of Digital Technologies to teaching in face-to-face and/or virtual training environments.

The book "Innovative Teaching in Higher Education" is the product of collaborative work between three European and six Latin American universities, three Chilean and three Peruvian, in the framework of the project financed by the European Economic Community Erasmus Innovative Teaching Across Continents - Universities from Europe, Chile and Peru on an expedition (InnovaT). It aims to modernize Higher Education and improve innovation in Teaching & Learning experiences by promoting the integration of digital technologies in Higher Education Institutions in Latin America. The book seeks to provide the reader with theoretical and practical elements that can guide teachers and institutions on the road to innovation in teaching. Each of the chapters has been written by European and Latin American authors, in order to contextualize the Latin American educational realities. It has nine independent chapters, but they share common points, the main axis being teaching innovation.

The first chapter, "Keys to the University of the Future," focuses on the direct and indirect impact of digital and indirect impact of digital technologies on universities, based on 8 keys that the authors consider that universities should consider in designing their future. These direct keys are complemented by 4 indirect or structural keys: establishing Teaching and Learning Centers; micro-credentials and repackaging of educational programs; internal organization of the University; alliances and partnerships; and the development of new technologies.

The second chapter, "Innovative Teaching," presents the theoretical aspects

related to the introduction of active methodologies in university teaching and the design and implementation of an interdisciplinary experience of academia-business linkage that involved diverse actors, such as teachers, students, and businessmen; these elements added to an interdisciplinary environment promoted the development of competencies. This experience was called "Interdisciplinary Project of Academia-business Liaison." Its results and conclusions are presented to project the experience carried out.

The third chapter "Innovative Strategies for Teaching-Learning Mediated by Technologies," seeks to give guidelines to one of the most relevant challenges faced by universities, such as the development in the teaching staff of digital teaching competences for the updating of teaching-learning methods through the incorporation and integration of Digital Technologies (DT) to training environments: face-to-face and virtual. For this purpose, a practical and updated synthesis of active methodologies, digital technologies for teaching and the combination of both aspects is presented, answering the question: which technological resource is more relevant for a specific active methodology? Orientations and guidelines are given to professors and universities to make teaching in higher education more innovative, attractive, interactive, and effective.

The fifth chapter, "Innovative Teaching and Learning Offices: the Case of the ICE InnovaT Office at Universidad de Lima," presents the experience of this institution in the structuring and implementation of the InnovaT office, a space for innovation in teaching strategies and methodologies. It presents the institutional context, the implementation of the office, the activities carried out, the main results, and the conclusions of the work carried out that allow projecting it in time.

The sixth chapter "University Education and the Training of Professionals for the Company of the 21st Century," allows readers to navigate between the beginnings of the concept of university and the scenarios that have allowed a transformation, both in access to education and training of professionals up to the 21st century. It is also possible to reflect on the social elements that have influenced access to higher education and the current scenario, with generations highly connected to information and communication technologies. In this chapter, it is possible to see a reflection between the scenarios of university education and the training of business professionals, both from a European and Latin American perspective.

The seventh chapter, "Educational Innovation in Times of Crisis," presents two pilot experiences developed within the framework of the InnovaT project. These experiences were aimed at responding to the challenges that originated with the social outbreak of 2019 and with the Covid pandemic that began in 2020. Both situations raised the need to move from face-to-face to virtual teaching, both at Universidad Viña del Mar (UVM) and at other Universities in Chile and in the world.

In this chapter, two teaching innovation experiences are presented, considering background, contextualization, implementation, results, and conclusions. Undoubtedly, there are elements that need to be improved in each experience, such as, for example, the level of digital competence of teachers and students. Despite this, the experiences have the value of opening a path for teaching innovation in the institution, which can help to improve teaching practices, both in current and future teaching teams.

The eighth chapter, "Educational Innovation and Internationalization at Home," presents an applied research, whose purpose, through action research, was to evaluate the development and impact of innovations and new practices developed in the classroom with the support of internationalization, as well as to propose improvements and/or recommendations on their continued application in the classroom. Teachers and students from the Peruvian universities of Piura and Católica San Pablo participated in the research. The methodology considered surveys addressed to students and teachers of both universities, to identify the level of impact of innovative internationalization actions developed in virtuality during the year 2021. The results show that teachers and students were able to strengthen global competencies through their participation in educational innovation projects with an international dimension.

The ninth chapter, "European policies and Instruments for Teaching and Learning with an Innovative Component in Higher Education," presents some of the most recent policies and tools that the European Union is implementing with an impact on teaching and learning. It is exemplified through the cases of the Breda University of Applied Sciences (The Netherlands) and the Universidad Católica San Pablo (Peru). For this purpose, the following is presented: European policies on teaching and learning; European tools for teaching and learning in higher education; experiences of application of these tools in the two universities mentioned above. Given that the EU will continue to develop policies oriented towards teaching and learning in higher education with emphasis on innovation to promote and facilitate collaboration between countries, the lessons learned from the experiences that are in the implementation stage, such as those written here, could guide other higher education institutions interested in participating in the programs and projects of the European Union.

In summary, this is a systematization of theoretical reflections and experience of concrete practices and research, regarding innovation in university teaching. All this transmitted from European and Latin American professionals, who have worked collaboratively for three years in pursuit of introducing innovations in the way of teaching and learning. Reading the text as a whole, or some of its chapters in particular, can be motivating for teachers and/or institutions to innovate in teaching and change the work in the classroom, always with the aim of offering students

better opportunities for quality learning in a motivating environment and close to the world they live outside the classroom.

This book aims to be a help for teachers who wish to innovate in teaching by integrating innovative methodologies and digital technologies. It can also be useful for a wide range of professionals involved in teaching innovation. It is also expected that this text will be useful for the design of teaching innovation policies in Higher Education Institutions.

Juan Silva-Quiroz
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FOREWORD

The Covid crisis, economic uncertainty, social and geopolitical movements, and climate change, among many other situations, only highlight the "gaseous" context we find ourselves in as a society. Throughout history, situations as complex as the current ones have occurred, but we have not always been aware of the immediacy and diversity of information sources. Nor have the interconnections and interdependencies between what is global and what is local been evident. Ultimately, we are protagonists of a unique historical context of change and transformation, never before experienced by humanity: *uncertainty as part of everyday life and cognitive hyperstimulation as a neurobiological constant.* This may seem daunting at first glance, but it is challenging for those of us who see an opportunity for transformation, through educational innovation, to meet these challenges.

The Latin origin of "innovate" has considerations that are impossible to avoid, beyond the conceptual evolution of the term. In its etymology, "in-novare"" means "change" or "renovation" from within, bounded and in its context; in other words, it is proposed as an articulating space or bridge between "continuity" and "discontinuity." Ultimately, educational innovation *should be understood as a means rather than an end in itself. And what is the end, then? Achieving student learning and relevance in training.*

However, in previous crises, higher education institutions around the world have never been so challenged. During the first year of the health crisis, I met virtually with more than 500 institutions of higher education to discuss and try to respond together on how to deal with this "tsunami". Some institutions took a couple of weeks to respond and adjust to the emergency context. On the other hand, others took more than a year to adapt; moreover, up to the first quarter of 2022, there are still important lags for training management. Some even suggest a decade of negative effects and impacts on education. In spite of this, the interesting thing is that all the institutions found it necessary to change or initiate transformations, which have not always been as harmonious or intentional as they were in the past as we would have liked. As my good friend Carlos Delgado Kloos—whom I have quoted a million times in his statement —says, it has been more a process of "digital metamorphosis than of transformation." But in the end, it is change.

I am certain that everything we have experienced has been a catalyst, capable of mobilizing and updating our own practices, beliefs, and responsibilities in the formative processes on a massive scale: what could not be done before–for example, virtuality–, was possible today as the only path to provide continuance of the service of education. For decades, "Quixotesque" groups of innovators have been communicating, visualizing, and demonstrating the need to transform the tertiary education system: *what we had been promoting decades ago – and sometimes following a deserted path – the pandemic achieved in less than a month, triggering the need to change in order to survive institutionally.*

Innovating from a sustainable approach is perhaps one of the main concepts that emerges in this *new scenario,* since it incorporates a somewhat invisible dimension of educational innovation, which considers the co-responsibility between current requirements and those of future generations that make up the university community. In other words, the concept of "community" becomes crucial. –and as Benedetti would say- a place "where indifference is an obscene word."

Time has passed quickly and disruptively, where the "cultural pendulum" of institutions has swung from one end to another, even with an almost natural illusion of wanting to return to a previous state. However, we must remind ourselves that our students are different, with new characteristics, interests, motivations, and priorities that we have yet to decode in order to consider them in training.

But what lessons and practices will remain in post-pandemic higher education? What public policies should be promoted for this new scenario? What will the university of the future be like and what are the implications for quality? How should teaching and learning processes and professional training be re-comprehended and adjusted? How did the crisis install capacities for "other crises?" What will really return to the way it was before and what should not? The answers are "news in the making," and in a couple of decades, we will have to analyze what transformations have really been generated. Nevertheless, InnovaT has simply been visionary, opening a window to the future, promoting innovation in teaching and learning approaches, fostering modernization in higher education institutions in Chile and Peru.

In the following pages, the universities responsible for InnovaT present, in nine chapters, the lessons learned during the implementation of the project and above all, what we should be looking at in the coming years, in aparticularly turbulent context for both Chile and Peru, even before thepandemic itself, in addition to the extreme experience of confinementand geopolitical instability in recent times for European partners. Buthow did they resolve these tensions by innovating in a project that isessentially about innovation? Therefore, the great value is in the cluesthat can guide the practice of teaching and learning processes in highly complex situations and contexts.

FOREWORD

I congratulate the entire InnovaT team, because the exercise of systematizing and projecting the lessons learned in the current context is not an easy task, since it is not always possible to separate the "wheat from the chaff" or "what is circumstantial from what is important" in situations as particular as those experienced. I hope that these learnings systematized here are very useful for the reader and can be disseminated as a reference for transformation and innovation in the region.

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CHAPTER 1

KEYS TO THE UNIVERSITY OF THE FUTURE

KEYS TO THE UNIVERSITY OF THE FUTURE

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CHAPTER 1

Introduction

Digital technology is changing all aspects of life. It also affects universities. In this chapter, we will concentrate on the direct and indirect impact of digital technologies on universities, and in particular on their educational mission. The research and transfer missions are also impacted by digital technologies, but we will not cover them here. We will define 8 aspects of the impact on universities, which we will convert into 8 keys universities should take care of to design their future. There are 4 more direct keys and 4 indirect, structural ones.

Oe of the immediate keys is to understand that if there are new tools that support teaching, new teaching methods will come up. Tools have always been used to support teaching. In the past, it has been the chalk and the chalkboard, later on PowerPoint and projectors. Today, and in the future, it will be cloud-based applications and computers and mobile devices. Mastering this transition will be our first key.

A direct consequence of the availability of new tools and methods for teaching and learning is the need for the instructors to master them. For instance, how to best use one particular cloud-based tool in class and when? Identifying these new educational methods and training instructors accordingly will be key 2.

Form follows function, and therefore learning spaces should be adapted to the educational tools and methods. The learning space is called the third teacher, the first one being the teacher him/herself, and the second one being a peer (Sketchplanations 2022). It is clear that often the traditional lecture halls could be used, but spaces that optimize the new methods and tools make the transition much simpler. This will be our key 3.

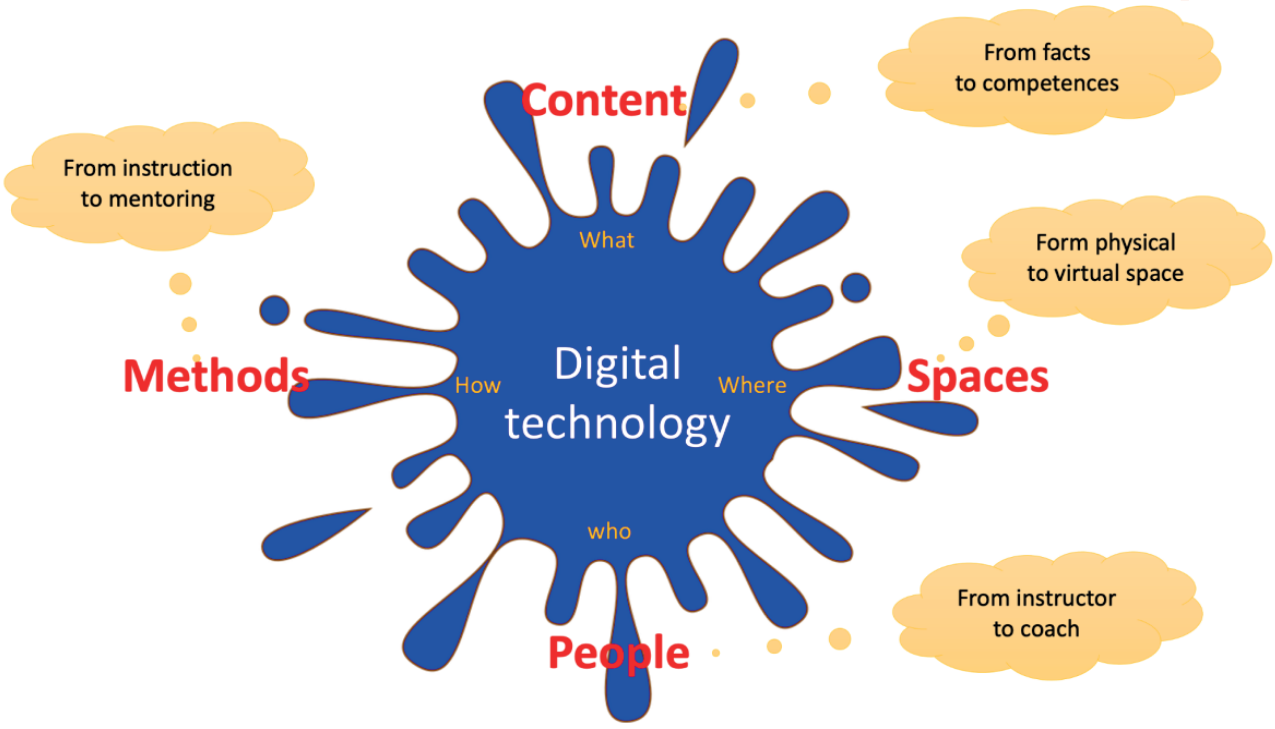
Digital technology tools do not only transform teaching methods and spaces, but they also transform the future workplace. This has implications on what to teach and what to stress. Maybe there should be less stress on content and more on skills and competences. Maybe different materials should be taught. Adapting to the future jobs that maybe don't yet exist might be challenging but are nevertheless a must. This will be key 4.

So, the first 4 keys are:

- Key 1: Harnessing digital tools in teaching and learning methods

- Key 2: Training instructors on new educational methods
- Key 3: Adapting spaces to new methods of teaching
- Key 4: Reformulating programs and syllabi to the needs of the future society

Figure 1
First four direct keys that universities should take care of to design their future: Methods (Key 1), People (Key 2), Spaces (Key 3) and Content (Key 4).



Then, there are 4 more implications that are indirect and structural.

Faculty can learn the new teaching methods by themselves, but sooner or later it will become clear that a specific support unit is necessary. Teaching and Learning Centers are not new, but there are still many universities that don't have them. Their importance will grow in the future to convert universities into learning institutions, institutions that learn themselves. This will be key 5.

The traditional university products are undergraduate and graduate programs, which typically take from one to four years to complete. This arrangement was useful in the industrial age when knowledge did not change at the fast pace it is changing today. Life-long learning and upskilling and reskilling programs of shorter duration play an increasingly important role (Goglio and Bertolini, 2021). Universities should decide whether they prefer to have other actors take over this space or whether they want to play a relevant role as well. The digitalization of the credential helps in defining short learning experiences and certify them with digital

microcredentials. This is key 6.

The two previous keys implied internal reorganization or reinforcement/ restructuring of existing units at the institution. However, the university of today is too structured like a factory, where students are pushed through a conveyor belt of subjects in the daily routine. It is time to rethink whether this approach is still adequate in the information age. We analyze this in key 7

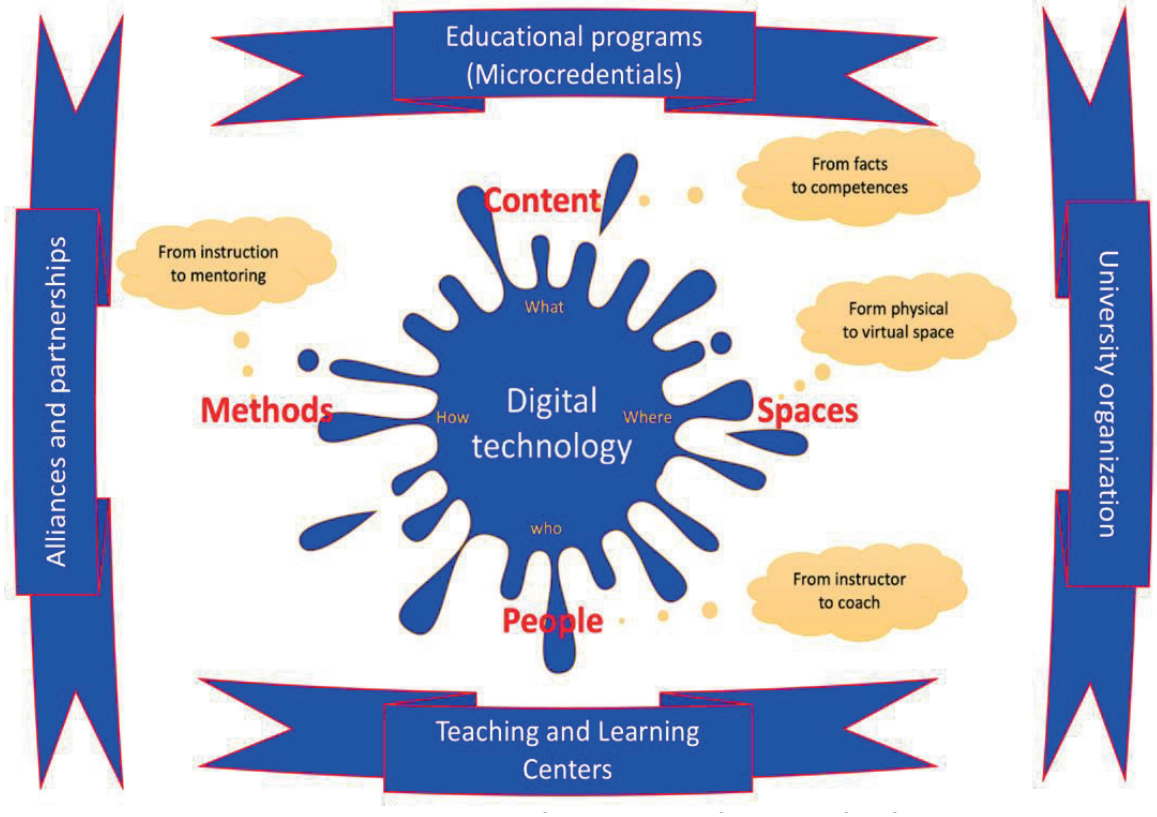
Universities should not only restructure internally, but they should also redefine the relationship with other stakeholders. Open innovation is a term that describes how innovation should work in the information age, in contrast to the silo mentality of the industrial age. In an analogous way, universities should define strategies to work closely with other universities and also with other stakeholders, like companies and institutions. This will be our last key, key 8.

Again, the 4 keys, which have just been described, are:

- Key 5: Establishing teaching and learning centers
- Key 6: Microcredentials and repackaging of educational programs
- Key 7: Internal university organization
- Key 8: Alliances and partnerships

When covering these 8 keys we will give prominent examples, including those from universities that are part of the InnovaT project (InnovaT, 2022), such as Universidad Carlos III de Madrid.

Figure 2
Eight keys that universities should take care of to design their future. The first four are in the inner part of th e figure and correspond to those already mentioned in figure 1. The last four are indirect keys: Teaching and Learning Centers (Key 5), Educational Programs (Key 6), University Organization (Key 7), Alliances and Partnerships (Key 8)



KEY 1:
Harnessing digital tools in teaching and learning methods

Today universities are using several educational models. Traditionally, classes were mainly face-to-face in most higher education institutions, with a few exceptions in the case of distance and online universities. The COVID-19 pandemic triggered a shift to emergency online teaching, which accelerated the subsequent interest for online and hybrid education (Pelletier et al., 2021). Anant Agarwal claims that the future of learning is blended (Agarwal 2021) with a final convergence between in-person and online education in the coming years.

Nevertheless, these changes in educational models and the necessary adoption of digital tools that support these educational models must also be accompanied by a profound change in teaching and learning methods. It is the necessary shift from instruction to mentoring. The transformation of the teacher into a facilitator of learning (Reeve, 2006). The key to this lies in the shift from passive, teacher-centered instruction to active, student-centered learning (Hartikainen et al., 2019). This is not new at all; for many years, research in education has shown the benefits of student-centered, active learning (Michael, 2006; Misseyanni et al., 2019). Nevertheless, the best practices developed over the years in face-to-face education must also be put into practice in online and hybrid environments. Student assessment must go hand in hand with this shift in teaching and learning methods, with a focus on continuous assessment and the collection of data-supported evidence throughout the entire course (Holmes, 2018).

In this context, it is important to consider different scenarios when applying teaching and learning methods with the support of the corresponding digital tools and the particularities of each of these scenarios. For example, there may be courses at lower levels of a program vs. courses at higher levels; courses that traditionally have a strong theoretical foundation vs. courses with a strong practical nature, undergraduate vs. graduate level courses, courses in which students must learn to use a physical tool vs. a software tool, courses that are conducted in collaboration with other institutions or companies with students in online, face-to-face or hybrid modes, to name a few examples. In each of these cases, it is necessary to reflect on the methods to be applied and their implications.

In short, educational institutions should promote the adaptation of teaching and learning methods based on active learning and student-centered learning, regardless of the delivery mode, but taking into account the particularities of each course, program, and context. Digital tools are there to help the instructor, but they are worthless without their use with appropriate methods.

Key 2:
Training instructors on new educational methods

The rapid changes in technologies to support teaching and the new teaching models, especially hybrid and online models, must be accompanied by appropriate training for teachers to be able to deliver quality classes that are student-centered and encourage active learning. This has been clearly evidenced by the lockdowns

due to the COVID-19 pandemic and the need to move to emergency remote teaching overnight (Hodges et al., 2020). In this challenging context those teachers with better digital competences were able to deal more easily with the enforced transition to emergency remote teaching (Antonopoulou et al., 2021).

Universities should review their teacher training plans to include specific training activities on methodologies and technologies to support teaching (Cabero and Barroso, 2016). These training activities should be delivered by other teachers, presenting success stories within the area of knowledge of the trained teacher. These success stories should be shared within the university community for wider dissemination. Additionally, universities should evaluate the impact of the training activities on the digital competences of educators. This can be done by using tools that support the individual self-diagnosis of the teacher and the overall diagnosis of an institution.

Popular frameworks and tools can be used to make this diagnosis and plan de teacher training activities (Schröter and Grafe, 2020). For example, UNESCO published the ICT Competency Framework for Teachers (Version 3) in 2018, revising previous versions of this framework (UNESCO, 2018). This framework consists of 18 competences classified in six aspects of teachers' professional practice, namely 1) Understanding ICT in Education Policy, 2) Curriculum and Assessment, 3) Pedagogy, 4) Application of Digital Skills, 5) Organization and Administration, and 6) Teacher Professional Learning. Three levels of attainment are defined for each of these competences: a) knowledge acquisition, b) knowledge deepening, and c) knowledge creation. Similarly, the DigCompEdu framework (Redecker, 2017) identifies 22 digital competences of educators classified in six areas, namely 1) Professional Engagement, 2) Digital Resources, 3) Teaching and Learning, 4) Assessment, 5) Empowering Learners, and 6) Facilitating Learners' Digital Competence. Six levels of attainment are defined in the DigCompEdu for each competence from A1 (Newcomer) to C2 (Pioneer).

These frameworks serve to identify gaps in an institution and weaknesses in educators, facilitating the organization of training activities to scale up in attainment levels. The personnel in charge of designing teacher training plans may take a competence, for example "creating and modifying digital resources" (2.2 in DigCompEdu framework) and prepare a training activity with a focus on the principles of creating engaging educational videos in different formats. In this way, educators can quickly scale up the levels in this competence after taking this training activity. The next step would be to consolidate the achieved level for this competence with single-themed training actions that are specific for tools that support teachers do self-production of videos, for instance, training actions for the use of Kaltura, Camtasia, or PowToon, among others (Hancock et al., 2021). This ensures that educators develop a digital competence both vertically and horizontally.

Overall, this is a critical moment in which universities need to invest in the training of their educators so that they can take advantage of technology to improve the way in which they teach their courses. This includes the development of multiple skills ranging from the creation of digital resources to the use of tools that enhance active and collaborative learning in the classroom, to the support that students receive in the form of mentoring, feedback, and assessment both inside and outside the classroom. Digital faculty for an ever more digital future is urgently needed (Grajek, 2021).

Key 3: Adapting physical and virtual learning spaces

Technological changes also entail rethinking the use and equipment of learning spaces at the university. In fact, learning spaces do not only refer to physical learning spaces, as universities nowadays have a virtual extension of the learning space consisting of platforms and tools that are used daily for teaching and learning and that can be framed within the virtual campus. The experience gained because of the changes brought about by the pandemic in the way professors teach and work shows that the purely face-to-face and purely online activities work well but that much work still needs to be done to improve the hybrid format with people in the same room and others following the activity remotely and synchronously (Grajek, 2021).

Physical spaces for teaching and learning had already been adapted by many universities in recent years, for example through the creation of spaces for the generation of digital educational resources, the creation of classrooms designed to promote active learning and teamwork, the creation of makerspaces, or the creation of spaces for collaboration between students outside class hours (Alexander et al., 2020). However, new hybrid models of teaching and learning must now also be considered when discussing the physical spaces. Hybrid models require the ability to capture what is happening in the classroom both in image (cameras required) and audio (microphones required), as well as to enable remote students to be heard when they participate (loudspeakers required) (Triyason, 2020). In addition, the images and text used as support by the teacher should be clearly visible by both onsite and online students. The traditional blackboard may be complemented (and even replaced) by interactive monitors or tablets which make it possible to better illustrate what the teacher wants to explain directly writing or drawing on them (Huang et al., 2021). In addition, it may be interesting to have special classrooms

that allow connecting groups of students in different locations, as is the case for example with the telepresence (sometimes also called multi-location) classrooms (Nenonen et al., 2019).

Virtual spaces for teaching and learning in universities have been evolving for years but have dramatically grown due to the need to move to remote emergency teaching because of lockdowns. IT services must reinforce connectivity on campus and cybersecurity, and move forward with the digitization of processes, among others. IT services are also responsible for the administration and operation of Learning Management Systems (LMSs), as the core of the virtual campus and entry points to educational content and the communication between teacher and students. Moreover, many educational tools need to be integrated in the ecosystem around the LMSs including synchronous videoconference tools for lecturing and office hours, tools for the production and management of educational videos, engagement tools for synchronous and asynchronous teaching, document sharing and collaboration tools, or assessment tools, among others (Ruiz-Martínez and Ruiz-Martínez, 2021).

The new teaching models also mean that teaching and learning activities extend beyond the classroom. Teachers and students must have adequate personal equipment, especially in the case of courses and programs that are offered online. Teachers should count on laptops, webcams and interactive monitors replacing the blackboard and acting as a second screen to be able to receive more information about what is happening with the students. In addition, teachers should use tools specifically designed to promote interaction in online teaching; tools that allow for seamless teamwork and gathering learners' feedback for the redesigning of the class on the fly based on the data collected (Pelletier et al., 2021; Zhao, 2021). Connectivity is also an issue to pay special attention to in the case of both the teacher and the students.

All in all, physical and virtual learning spaces change and universities must adapt to these changes, investing part of their budget to this adaptation. Sometimes the investment will be occasional for the purchase of hardware and sometimes will be recurrent for the maintenance of software licenses. In any case, it is important to build spaces, either physical or virtual, for collaboration and active learning and to use tools that allow students to enjoy an immersive experience regardless of their location.

CHAPTER 1

Key 4:
Reformulating programs and syllabi to the needs of future society

Technological evolution brings with it the need to adapt the programs (curricula) and syllabi (contents) taught at universities to better meet the needs of the industry and to promote the employability of graduate students. This adaptation of programs and syllabi affects both undergraduate and postgraduate programs, as well as continuing education, in the latter case due to the need for upskilling and reskilling of professionals throughout their career (Illanes et al., 2018). For example, the Future of Jobs Report 2020 (World Economic Forum, 2020) points out that the current constrained labor market shortens the window of opportunity to upskill and reskill workers and estimates that, by 2025, 85 million jobs may be displaced while 97 million new roles may be created due to the new division of labor between humans, machines, and algorithms.

Changes in the labor market impact all areas but are most noticeable in those jobs that fall within the technology and business areas. For example, the most demanded hard skills nowadays, according to employment-oriented online service LinkedIn include blockchain, cloud computing, artificial intelligence, business analysis, affiliate marketing, or video production, among others (LinkedIn, 2020). Moreover, soft skills like creativity, persuasion, collaboration, adaptability, and emotional intelligence are also in high demand by companies (LinkedIn, 2020). Universities cannot ignore these realities and should even try to anticipate future trends.

It is also important to highlight among these trends the transformation of traditional degrees to the new professional context. For example, a Bachelor of Mathematics, which for many years had graduate students working mainly on teaching and academia, becomes now essential in the design of algorithms and data processing for decision making in private companies. A Bachelor of Philosophy can be very useful to address the ethical implications on the use of artificial intelligence in business practices of a global company (Etzioni and Etzioni, 2017). Therefore, it is important for universities to consider the multidisciplinarity in the redesign of the programs offered, including training on the use of technologies and programming even in programs that historically avoided the use of technology, such as those that belong to the areas of social sciences and humanities. The redesign of degrees with this multidisciplinarity in mind should also include training on business in those technical careers in which this has not traditionally been a priority.

Nevertheless, universities sometimes struggle to redesign their programs due to the rigidity of the quality assurance systems in charge of the accreditation of

degrees. This makes major content changes difficult to implement quickly in practice. As a result, many private companies that focus on offering content that is highly customized to the demands of the labor market at a specific time, generally through short courses or bootcamps, have emerged. Some examples are 42 (the private school with a focus on programming training that is hosted in Spain by Fundación Telefónica) or Ironhack, Le Wagon and The Bridge with onsite (and in some cases also) online bootcamps on data science and web technologies, just to new a few (Hojas Hojas and García del Toro, 2021). Even a topic as fresh in the media as the metaverse is already finding its way through with Virtual Voyagers Academy although in this case through a joint venture between industry and academia (Virtual Voyagers Academy, 2022).

All in all, universities must be able to adapt the content they offer to their students. On the one hand, universities must redesign traditional programs to make them more attractive and incorporate multidisciplinarity through the development of competences related to the use of technology and business. On the other hand, universities must be able to offer new programs that are adapted to market needs, especially in their postgraduate offerings. Both traditional and new programs must consider students' development of the soft skills that are most sought after.

Key 5:
Establishing teaching and learning centers

To foster the learning and exploring of new teaching methods, tools and technologies and support the redesign of traditional programs, a dedicated unit is necessary to be in place for faculty. The importance of having established and well-equipped Teaching and Learning Centers has grown in the last years and will become a must for universities to foster the inner culture of continuous learning and respond to the challenges that higher education will face in the future.

Teaching and Learning Centers (TLCs) are not a new concept. Some universities have such centers or offices in place for years, sometimes decades, offering a variety of services and support programs, applying best practices in learning theory from multiple pedagogical perspectives aiming to improve academic success and retention of students. However, there are still many higher education institutions that have not established such spaces yet.

Some demographics related to the presence of Teaching and Learning Centers at universities worldwide indicate that the United States universities are far beyond the universities in Europe, Asia, and Latin America (PROF-XXI, 2022) in terms of their TLCs offer. This shows the immense room of improvement for universities in

different continents. More than ever, higher education institutions must consider having TLCs among their top priorities to keep them relevant and assure academic success for teachers and students.

It is relevant to point, that the mission of TLCs needs to evolve for the future scenario. There is a need to shift away from merely introducing faculty to technology and methodologies to make a more holistic approach, with the focus to help teachers improve their courses and delivery, adapting the style for new generations and including new ways of accessing and performing teaching and learning. TLCs should be seen as drivers for development and permanent innovation of the teaching-learning processes, bringing up trends to improve the quality of higher education. Empowering the role of the teachers not as a mere delivery of content and subjects, but as a key player on the development of personality, critical thinking, ethics, and capacity to learn and self-learn.

To successfully establish TLCs, it is paramount the commitment of all stakeholders, starting with the top management, continuing with academic faculty, administrative staff, and students. It should be also considered that the definition of services portfolio and types of operation of the TLCs will depend on the characteristics and needs of each higher education institution and its surrounding environment. Nonetheless, some aspects of the implementation should be always in place:

1. ***Mission and objectives.*** Every stakeholder should have clarity of the TLCs main mission and objectives, and they should properly align with institutional mission, vision, and values.

2. ***Service offer.*** The portfolio of services the TLC will provide should be designed and planned carefully, including the different stakeholders in the discussion of the needs and gaps, to put a plan forward. Services should include traditional and innovative offers, on and offline, such as workshops, webinars, talks, online sessions, courses, conferences, tutorials, certifications, training, career advice, career development, tutoring, among many others.

3. ***Target audience.*** When considering the range of offers, it should also be well tailored to the specific audience. Also, the different audiences should be clearly informed about the main benefits for them, and the support they could get.

4. ***Technology.*** The important role of technology in higher education is clear, so TLCs should decide on the technologies and how these will be used to offer advanced programs and services to faculty, to enhance individual student learning, improve the teaching delivery and management of courses, and

meet institutional and unit objectives.

5. ***Personnel.*** TLCs need to have adequate professional and administrative personnel to support its mission and carry out the activities. It includes, for example, instructional designers, educational developers, librarians, technology specialists, teachers, researchers, project managers, graphic designers.

6. ***Infrastructure.*** A TLC is meant to be a central office accessible to all faculty and students, at convenient times with adequate space, equipment and furniture that allows them to implement their programs and services and accommodate the needs of the stakeholders.

7. ***Visibility.*** As much as all the points above, the visibility of the TLC should be fostered in order to promote its services and get the best use of the unit from all faculties, departments, and institutes. It should be included as institutional support service and be present in institutional communications in general. TLCs must have a virtual presence (website, social media) and promotional materials for the dissemination of its services and achievements to the administration, faculties, and students.

In summary, TLCs are a very important unit in today's educational institutions. Therefore, TLCs should be created with the aim to support teaching staff and improve the quality of the teaching and learning processes. TLCs help to connect the previous four keys: 1) teaching and learning methods (key 1), training of instructors (key 2), adaptation of spaces (key 3), and reformulation of programs (key 4). To this end, it is important for educational institutions to dedicate the appropriate resources to install and maintain a TLC and learn from the operation of other TLCs around the world.

Key 6:
Microcredentials and repackaging of educational programs

The packaging of academic programs has traditionally been rather rigid, with 3-4-year undergraduate programs and 1-2-year postgraduate programs. The main advantages of this widespread approach include the compatibility of programs between universities located in different countries, especially in the European context, and the possibility of establishing common quality assurance criteria for both undergraduate and postgraduate programs. In some cases, universities could also offer some slightly shorter extension programs, typically for graduate learners who already hold a bachelor's degree. Precisely continuing education and the need

for rapid upskilling and reskilling for professionals who already have university degrees has opened the possibility of rethinking the way in which academic programs are packaged, especially in areas where the contents are highly dynamic (McCowan, 2017).

MOOCs were a first step towards the unbundling of academic programs (O'Connor, 2014). MOOCs received widespread attention already a decade ago with initiatives such as Coursera, edX, FutureLearn or MiríadaX, among many others (Sharma, et al., 2017). From them on, these initiatives have focused on promoting courses on popular topics and on "rebundling" them under different brands: Specializations, Micro-masters, Micro-bachelors, ExpertTrack, Nanodegrees, etc. (Shah, 2021a; Shah, 2021b). All these "rebundling" of courses, in the form of short learning experiences (also known as short learning programs), can be referred to as microcredentials (Clements et al, 2020).

Nevertheless, the concept of microcredentials is still in its early stages and there is a great deal of ambiguity about their meaning and scope (Brown et al., 2021). There have been different initiatives that try to make sense of and reach agreement on what microcredentials and the learning experiences that lead to them should consist of. This is the case of the Common Microcredentials Framework by the European MOOC Consortium, released in 2019 (Antonaci et al., 2019), or the European approach to microcredentials by the European Commission, released in late 2020 (European Commission, 2020), as well as the Erasmus+ funded projects microbol and MicroHe (Microcredentials, 2022). Some challenges related to microcredentials beyond their own definition include standardizing the data contained in microcredentials and the formats in which they are offered, measuring the quality of the short learning experiences leading to microcredentials, or raising awareness among learners and employers of their use of microcredentials to demonstrate the knowledge and skills gained through lifelong learning (European Commission, 2020).

There are a multitude of initiatives that have recently emerged in relation to digital credentials (Certidigital, 2022) and microcredentials, some of which are more local in scope, use a centralized approach to storing and validating credentials, and most of which are private initiatives. Some of the most popular initiatives include Digitary (Digitary, 2022), Parchment (Parchment, 2022), edubadges (Edubadges, 2022), and Diplomasafe (Diplomasafe, 2022), among others. The European Commission is supporting its own centralized initiative, EDC (European Digital Credentials) (Strack et al., 2021), which aims to become the de facto standard for the issuance, storage, and validation of digital credentials by European universities, these credentials being linked to the CVs and job applications of workers. In addition, the EBSI (European Blockchain Service Infrastructure) network is expected to be used for the implementation of a distributed blockchain-based approach that facilitates learners gaining control over their digital credentials, reducing verification costs, and improving trust in the authenticity of digital credentials (Grech, et al., 2021).

In conclusion, private initiatives today have been able to exploit lifelong learning

through the creation of programs that "rebundle" educational content in an attractive way, with a strong focus on professionals who already have a diploma. This "rebundling" results in the emergence of microcredentials, which are often stackable, which should be portable and verifiable by a potential employer in a quick and easy way, and which should be subject to quality standards like those of other study programs.

Key 7:
Internal University Organization

Universities have evolved to become efficient "factories" to graduate students. As a matter of fact, national accreditation institutions evaluate universities according to their efficiency in channeling students through the "assembly line", like in a factory (Ríos, 2015). The modern university is in fact modeled like an industrial age factory: Freshmen come in on one side, and graduates are produced on the other. Knowledge is divided into subjects and assigned to academic years. The daily routine is divided into hour-long periods of different subjects. Students are organized into groups and pushed through this daily routine. This is very much like conveyor belts in manufacturing factories: from mass production to mass instruction (Ennew and Fernandez-Young, 2016). Like in an efficient factory, it is important to follow the rules to achieve maximum efficiency.

The problem is that we are in a different era. And this type of approach does not correctly capture the need for personalized learning and development of transversal skills that are so necessary in professionals today. The "factory" model for producing graduates can end up killing creativity and is far from the reality of society. The Humboldtian model of higher education promoted the combination of research and teaching within the university (Daraio et al., 2015). The idea was that research would make teaching more meaningful. However, the internal organization and quality systems emphasize the role of research far above teaching in the career of the university professor and in the classification of universities in rankings. In addition, a great vocation for teaching is needed, something that some excellent researchers may not have. Moreover, it is also important that teachers have professional experience, and that they can bring it to the university, together with the entrepreneurial spirit that is so necessary today, to reflect what is needed outside (Canhoto et al., 2016).

In this sense, some universities have evolved in their internal organization and the roles played by their staff. For example, open universities have faculty specialized in content production, which is different from instructors teaching the content. This aligns with the increasingly evident separation between content generation (in more and more audiovisual and interactive formats), and instructor mentoring

(more and more tailored and personalized to student's needs. While content can be consumed asynchronously and at the student's own pace, mentoring has a strong focus in synchronous interactions and personal relationships. In this transition, third-party content can be used as support, for example, through applications that have done a great job in this area, such as Brilliant (Brilliant, 2022) or Matific (Matific, 2022), among many others.

All in all, the university structure needs to be reviewed. This includes the organization of faculties and departments, the structuring of schedules, the arrangement of subjects, and the balance between research and teaching, with the possibility of perhaps offering differentiated careers depending on the profile of each professor. The objective must be to move from an efficient factory of graduates to a personalized learning and development environment adapted to the characteristics demanded by today's society.

Key 8:
Alliances and Partnerships

Universities are facing an increasingly complex and global world with multiple players and where rankings play an important role in students' decisions on which university to study at (Fauzi et al., 2020). This context means that universities must seek alliances with other academic institutions or with industry partners to become more competitive. In some cases, national governments even decided to merge smaller universities by decree to create larger universities, as has been the case, for example, in France in recent years (Sulkowski et al., 2019). However, it is possible to identify other increasingly widespread examples of strategic alliances involving universities, such as 1) European Universities; 2) Alliances with OPMs (Online Program Managers); and 3) Alliances with industry leaders.

The European Universities Initiative was created by the European Commission in late 2017 with the aim of strengthening strategic alliances between higher education institutions. These alliances are shaped as networks that contain multiple universities from different European Union countries, with each country contributing a maximum of one university to each network. These networks of universities are called European Universities and may also include some non-academic partners. European Universities shall allow students to obtain a degree by combining studies from different countries (Gunn, 2020). Two calls for European Universities have been already opened with a first call in 2019 leading to 17 European Universities with 114 higher education institutions from 24 Member States (e.g., YUFE – Young Universities for the Future of Europe with UC3M), and a second call in 2020 leading to 24 additional European Universities alliances with 165 higher education institutions from 26 Member States (European Commission,

2021). European universities face numerous challenges that they must overcome, such as the definition and development of joint academic programs, the identity management of students taking courses from different universities in a seamless way, the issuance of joint diplomas, the mobility of students and faculty within the European University, or the relationship of the European university with citizens and society, among others.

Online Program Managers (OPM) provide products and services to universities to help them offer online courses (Hill, 2021). Universities rely on OPMs to outsource some relevant issues, such as student recruitment and enrollment; student and graduate retention; design of programs and courses based on labor market needs; technological support with platforms and tools; and student placement for training and employment purposes. There are OPMs that work together with universities on redesigning traditional degrees (undergraduate and postgraduate), while others also focus on certificates related to continuing education and lifelong learning (e.g., microcredentials). MOOC initiatives can also be included as OPMs, as these initiatives evolved to help universities outsource some of their programs, e.g., online master's degrees for professionals (Reich and Ruipérez-Valiente, 2019). In fact, some OPMs take advantage of MOOCs to create large databases of millions of potential students globally, and then recruit some of them to upsell on a spectrum of paid offerings (e.g., some advanced MOOCs, short courses, bootcamps, sub-degree stackable courses that lead to certificates, and even full degrees). The obtained revenue is split between the OPM and the higher education institution and can be used to incentivize the creation of more content that can be offered for free (e.g., other MOOCs) with the aim to reach more learners worldwide and increase the database of potentials students to whom to sell the paid offerings; Educational Technology Consultant Phil Hill uses the metaphor of "flywheel effect" to describe the cycle that comprises the generation of content/programs, to be able to offer each learning a tailored training offer (whether free or paid), and the financial gain in the OPM-University relationship (Hill, 2021).

The relationship between industry leaders and universities must be strong and close. Traditionally, this relationship has taken various forms, for example, with students doing internships in companies in the final years of their academic degree, with industry professionals lecturing in upper undergraduate courses or in postgraduate courses, with companies endorsing postgraduate programs, or even with industrial doctorate in which the entire research project leading to a PhD is carried out in a company. Industry-university alliance is key to try to reduce the skills gap between academia and industry. In some cases, industry leaders are precisely those who are most knowledgeable about a particular technology they developed so the alliance between industry and university becomes essential. For example, to learn about Amazon Web Services (AWS) there is no better option than to refer to Amazon itself, which already provides learning paths with courses, hands-on labs, and assessments (Fain, 2019); in fact, Amazon lists the AWS Academy member institutions, which are those that have taught AWS Academy courses, including many universities across the globe (AWS, 2022). LinkedIn also offers learning paths

in topics in highly employable knowledge and skills, with the possibility of receiving academic credit at universities with which they established alliances (Cortes Mendez, et al., 2021; LinkedIn, 2021).

All in all, in a rapidly changing educational and work environment, mainly due to rapid technological evolution, universities must be able to increase their visibility and relevance in an international context, adapt their educational offering to the changes in the labor market, and offer greater flexibility to their students. This adaptation shall be achieved through strategic alliances, mainly with other educational institutions and industry leaders.

Conclusions

This article has presented 8 keys to the university of the future. Four of these keys are direct implications of digital technology and stem from the transformation of teaching and learning methods (from instruction to mentoring), teaching personnel (from instructors to coaches), teaching and learning spaces (from physical to virtual spaces), and content (from facts to competences). The remaining four keys are indirect implications of digital technology and arise from the need of dedicated units to support the transformation of methods, people, spaces, and content (teaching and learning centers), the need of repackaging educational programs (including microcredentials), the need for an internal reorganization (to evolve from the "factory" of graduates with mass instruction to personalized student coaching), and the need to build alliances and partnerships (for a stronger university connected to the professional field). All in all, digital technology is like water: it finds its way to wet everything.

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CHAPTER 2

INNOVATIVE TEACHING

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CHAPTER 2

Introduction

In teaching, various options have been presented with respect to methodologies to make the teaching-learning processes increasingly dynamic, making the student play a more leading role and the teacher become a guide who manages to guide the process towards the achievement of knowledge and its subsequent application in the labor field. At the level of higher education, it is also intended that students develop a series of competencies that, in the changing and competitive environment, make them capable of adapting and being agents of change in society, and it is here where integral education becomes important as the fundamental basis of education.

On the other hand, in a pandemic context of virtual education, with access to diverse educational resources, the initiative arose to carry out an experience that involved university teachers and students from different academic programs, thus developing a project that, with the particularities of each student's profile, generated the analysis of a business, using techniques such as the timeline, which allowed through in-depth interviews to establish an overview of the business environment. This experience, called interdisciplinary project of academia-business linkage, creates spaces for collaborative work, development of competencies and innovative teaching practices that will allow defining the application in larger groups of students and make it become a continuous practice.

University teaching, for a long time has focused on obtaining knowledge within the classroom, however, over the years, the university has involved all stakeholders, which "are groups or individuals who have an interest in the activities and results of the organization" (Phillips, et al., 2019, p. 5) mainly the entrepreneurs who run the businesses in which students will have to act. It is necessary, then, that students, be part of the link that exists between both actors, producing benefits that ensure their performance and, therefore, proposals to the problems of future employers.

The competencies that have been considered are framed within an interdisciplinary context and, from the perspective of a group of teachers who, in the subjects taught, found a point of convergence in the following areas, in which the academy-company linkage allows the establishment of action plans for the student to provide and receive knowledge. On the other hand, the company, depending on its maturity, obtains a structural development for its business, in addition to

the obvious delivery of specific knowledge of the business and the sector to the students. The project aims to motivate generic instrumental and interpersonal competencies, as well as a characteristic required by today's professionals called learnability.

The objective of this interdisciplinary project is to determine whether this experience promotes the development of competencies such as interpersonal communication, critical thinking, teamwork, conflict management, negotiation and learnability in a group of 18 students from the academic programs of Business Administration, Accounting and Auditing, and Industrial and Systems Engineering, who voluntarily agreed to be part of the project.

Antecedentes

Nowadays, the university being a space in which knowledge is imparted and received, generates challenges for teachers, due to the characteristics of the social and work environment. It is these challenges that encourage the adoption of methodologies that are more innovative and in which the student actively participates to improve the quality of teaching (Pascagaza and Bohórquez, 2019), this makes students set the limits for learning.

Likewise, the university must promote in students the ability to think, achieve that they are formed and that all the knowledge received is ordered and structured (Villa & Poblete, 2007) for subsequent application in the field in which they develop, being able to analyze, reflect and lead to propose solutions to various problems that arise.

When considering the formation of these learning scenarios, the teacher's creativity becomes important, in such a way that he implements strategies where the university student has greater protagonism. It is the student who builds knowledge and therefore develops competencies and skills with the constant accompaniment of the teacher and contrasting this knowledge with the team through collaborative work. In this sense, the creative and innovative teacher must have a good and flexible attitude to change, mastery of the topics taught in class and finally, have the didactics to reach students, within their characteristics, this framed in the three dimensions in education: being, knowing and doing (De la Torre & Violant, 2001).

In this area of the creation of teaching practices and the new role of the student, the construction of knowledge together emerges, through interdisciplinary and collaborative work, where there is the development of common tasks to achieve solutions to the problems that arise in the real world (Vargas- D'Uniam, et al., 2016), contextualized to the work environment of business, given the academic programs

and the subjects involved. Likewise, the authors Condor et al. (2021) consider that interdisciplinary experiences foster the formation of soft skills, among which they mention effective communication.

The development of competencies is part of education from the basic levels. The university promotes these competencies according to the profile of the graduate, who will have to adapt to changes in the work environment, considering that the demands in this area are increasingly solid and firm, defining the future of the professional. In relation to this, Villa & Poblete (2007) define competence as "good performance in diverse and authentic contexts based on the integration and activation of knowledge, standards, techniques, procedures, skills and abilities, attitudes and values" (p. 23).

Likewise, it can be observed over the years, that in addition to theoretical knowledge, it is necessary, in all university careers, that the student acquires skills, abilities and aptitudes that then guarantee a good performance in the professional field. Consequently, the competencies addressed by this experience coincide with those proposed by various academics, considering that they are basic for every person, adding to teamwork and communication, decision making, problem solving, work planning and information processing (García Ancira & Treviño Cubero, 2020).

Understanding competencies is fundamental to be able to relate them to the objectives of the experience, differentiating instrumental competencies "as means or tools to obtain a determined end" being this critical thinking, from interpersonal competencies that "refer to the different capacities that make people achieve a good interaction with others" (Villa & Poblete, 2007, p. 56), being part of these interpersonal communication, teamwork and conflict management and negotiation. Likewise:

Critical thinking, is the "behavior that questions things and is interested in the foundations on which ideas, actions and judgments, both one's own and others', are based" (p. 80).

Interpersonal communication, is based on "relating positively with other people through empathic listening and through the clear and assertive expression of what one thinks and/or feels, through verbal and non-verbal means" (p. 237). conflict management and negotiation, which consists of "dealing with and resolving differences that arise between individuals and/or groups in any type of organization" (p. 251).

Teamwork, understood as the ability to "integrate and collaborate actively in achieving common goals with other people, areas and organizations" (p. 244).

Learnability, which "means the desire and ability to learn quickly and effectively, gathering in one word everything that the current citizen does to keep himself in a continuous learning and thus become a competitive worker" (Jiménez Cercado,

Acosta-Veliz, & Salas-Narváez, 2017).

On the other hand, the authors Villa & Poblete (2007) established degrees of mastery and with it indicators to be able to evaluate competencies. In correspondence with the teaching experience and consequent to the students' profile, the first level of mastery was established for the development of the experience, for which the following is made known what this level implies:

Critical thinking:

> Asking questions about the reality that surrounds one and actively participating in discussions about it, analyzing the judgments that are made and reflecting on the consequences of one's own and others' decisions. Its indicators are: one's own judgment, judgment analysis, judgment criteria, practical implications, and responsibility (p. 80).

Interpersonal communication:

> Establish dialogical relationships with peers and teachers, listening and expressing oneself clearly and assertively. Its indicators are: listening, assertiveness, feed-back, climate and appropriateness (p. 237).

Concluding and negotiation treatment:

> Expressing one's own positions and considering those of others, seeking to reach acceptable agreements in those situations of interpersonal and intragroup conflict in which one is involved. Its indicators are: tolerance of frustration, understanding, assertiveness, listening skills and the search for alternatives (p. 251).

Teamwork:

> Participate and collaborate actively in team tasks and foster trust, cordiality and joint task orientation. Its indicators are: work, participation, organization, cohesion and the social valuation of the activity (p. 244).

Finally, the measurement of results is important in each of the creative experiences carried out, which is why self-evaluation and peer evaluation are considered as tools to determine the effect of the project, so that the opinion of the students can be recorded, detecting difficulties in the development of the various activities in order to propose improvements (Pozo Ríos, 2017) either immediate or in the progress and/or repetition of similar experiences.

CHAPTER 2

Description of the experience

The interdisciplinary experience of linking academia and business involved different actors, such as teachers, students and businessmen; these elements, together with an interdisciplinary environment, promoted the development of competencies. This experience was called “interdisciplinary project of academia-business linkage”.

Under this premise, the aforementioned project consisted of creating interdisciplinary working groups of six members, two for each academic program, three different academic programs, from different academic cycles. From this interdisciplinary space it was possible to link the students with the company, specifically with the owners or managers to develop an analysis of the sector of each particular company. In this context, an important change was generated in the role and focus of the teachers, who sought more to accompany the students, defining the structure of analysis, proposing suggestions and intervening in the indispensable minimum. An independence of action on the part of the students was sought at all times, so that they would be the protagonist of the project as opposed to the entrepreneur.

This was carried out as a pilot project, which is why the number of students was limited and totally voluntary. Three professors from the academic programs of Business Administration, Accounting and Auditing and Industrial and Systems Engineering, from different campuses, the first two from the Piura campus and the third from the Lima campus, respectively, participated in the project.

The innovative experience is framed in the subjects of Management and Strategy for the Accounting and Auditing academic program, belonging to the third cycle; Market Research, of the Business Administration academic program, of the sixth cycle and, finally, the subject of Management, of the Industrial and Systems Engineering academic program, of the fourth cycle.

As mentioned above, 3 teams were formed, with participants equivalent to the three academic programs. It is this interdisciplinarity that led to the generation of initiation strategies to get to know each other and establish the first contact. On the other hand, the same was done with the entrepreneurs. Three companies were selected, whose managers/CEO decided to commit themselves to the development of the experience. This commitment was based on the availability of time for meetings via Zoom or Teams, considering that the whole project was carried out in a context of pandemic and virtual classes. It is worth mentioning that the selection of the companies and the recruitment of the managers was by contact of the teachers considering criteria of size and sector with the purpose that

these are different. Once recruited, the work modality was explained to them and it was emphasized that the protagonist of the learning process was the student and that, therefore, the coordination and meetings would be promoted by the students themselves without the intervention of the teachers.

A total of 18 students were selected, 6 from each subject. This project was executed simultaneously with the development of the topics of the subjects involved, in this sense, the time of application coincides with the months of an academic period.

The time covered by the project was approximately three months, between May and July 2021, and consisted of collaborating with three companies to analyze the external environment of each one and then study their behavior over the last five years. The students searched for sources of information: they collected, analyzed, concluded and made recommendations, based on the analysis structure provided by the teachers.

ACADEMY-BUSINESS LINKAGE PROJECT

FINAL DELIVERY STRUCTURE

1. GENERAL INFORMATION

- Company name
- Company sector and category
- Number of employees
- Annual turnover 2020 (if public)
- Vision and mission of the company
- Company values

2. EXTERNAL ENVIRONMENT (SECTOR)

⇨ Micro entorno- Entorno Directo

✓ Client

- Definition of target audience / by product or service
- Customer classification
- Potential market
- Trends in direct consumer behavior

- ✓ Competition
  - Market size in units and/or investment
  - Number of competitors.
  - Main characteristics of competitors
- ✓ Suppliers
  - Identification of relevant suppliers

⇨ Macro environment- Indirect environment

- ✓ Economic
  - Current economic situation and future outlook for Peru and the sector
- ✓ Political
  - Current political situation and future impact
- ✓ Social
  - Current social climate related to the sector
  - Potential consumer trends
- ✓ Technological
  - Technological changes that have affected the sector
  - Technology trends that will affect the sector
- ✓ Ecological
  - Ecological changes that are affecting the sector
  - Ecological laws that would affect the sector
  - Legal
  - Major changes in legislation affecting the industry and the company

⇨ Porter's 5 Forces Analysis

⇨ SWOT of the Company (Optional)

⇨ Business Model: Canvas Analysis

3. CONCLUSIONS AND RECOMMENDATIONS

The analysis structure was elaborated by the teachers, considering the elements of the teaching-learning process of each of their subjects.

It was recommended to the teams to develop the project in four stages,

allowing to have an order in the execution of each one of them and especially in the achievement of the elaboration of the final structure that would become the deliverable product for the entrepreneur.

- **Stage 1 called *Understanding:*** preliminary exploratory research on the sector and the company, the objective at this stage is to understand in a general way the characteristics of the sector in which the company is involved
- **Stage 2 called *Contact:*** the teams held several initial meetings with managers in a remote environment, to frame and get an overview of the company and the industry.
- **Stage 3 called *Research, Structuring and Validation:*** consists of searching, researching, compiling, ordering, structuring and validating the information. Additionally, the behavior of the company to market changes should be understood through a timeline. It also included meetings with the managers of each company to provide feedback and validate information.
- **Stage 4 called *Preparation and presentation of the report:*** consolidation of information, presentation and presentation of the report to company representatives.

It should be noted that the planning, management and follow-up of all activities regarding the company's manager, as well as the search for information, was the decision and agreement of each working group.

Regarding the project and referring to the teaching-learning process, it is important to mention the procedure and the strategies designed to achieve the objectives.

- ***Strategy and methodology:*** basically includes the programming of the project, strategies for engaging students, and the first step was to define the structure of the analysis and to define from the beginning the modality of participation of the teachers. In this phase, meetings with initiation dynamics, team work, team building, among others, were established.
- ***Modality:*** in a pandemic context, all activities were carried out virtually, through various platforms, such as Zoom and Teams, the latter being the most important one, since it allowed sharing documents, recording meetings, giving feedback on progress and constant fluid communication, always in a collaborative environment.
- ***Follow-up:*** At this stage, the three teachers were constantly monitoring the progress of the students of the subject taught, and in turn, with all the teams, through the aforementioned platforms. On the other hand, specific dates were set for group meetings

and for the review of progress, according to the initial schedule provided. the initial schedule provided. Likewise, students could suggest additional meetings or open conversations through the chat if they had doubts or problems. Communication worked very well and was attended to promptly at all times. It is important to clarify that the teachers shared ideas or approaches, without imposing styles, forms or solutions to the problems encountered, such as: organizational capacity, group communication issues and lack of motivation of some of the participants.

- ***Evaluation:*** Although the final report, product or result of the project was not part of the evaluation of a specific subject, it was understood that it constituted the closure of the project. This involved the delivery of a product and a virtual presentation to the teachers and the employer.
- ***Feedback:*** this stage involved two sub-stages, a qualitative feedback from the employer to the students and a quantitative feedback to the students from the teachers using the indicators of the measurement instrument.

On the other hand, the project contemplated the application of an instrument to determine whether it generated a variation in the selected competencies. This instrument consisted of 26 questions, which were completed in two moments by the students: at the beginning and at the end of the project, with responses on a 5-point Likert scale using the table of levels, indicators and observable behaviors shown in Table.

The instrument measured a self-evaluation and a co-evaluation on the part of the students. Likewise, after obtaining the information and having analyzed the indicators, quantitative feedback was provided to each one. This report constituted the closure of the project, considering that all fronts had been addressed: the student himself, the teammate, the guiding teacher, and the entrepreneur (business owner or manager).

Table 1

Levels, indicators and observable behaviors for each competency

Competencia	Nivel de Dominio	Indicadores	1	2	3	4	5
Comunicación Interpersonal	Establecer relaciones dialogantes con compañeros y profesores, es cuchando y expresándose de forma clara y asertiva.	Emplea la escucha	No escucha. Quiere imponer a toda costa sus ideas.	Se distrae y no capta la totalidad de los mensajes.	Escucha atentamente a sus interlocutores.	Escucha para asegurarse la comprensión de las ideas des sus interlocutores.	Presta atención y dedicación a sus interlocutores de tal manera que éstos sanen que son escuchados.
		Dice lo que piensa y siente con respecto al tema.	Es extremadamente callado, cuesta saber lo que piensa.	No se posiciona, sus mensajes son ambiguos.	Expresa lo que piensa y siente respecto al tema del que se está hablando.	Dice con claridad y seguridad lo que piensa y siente.	Es asertivo. Sus interlocutores siempre saben cuál es su posición y sus reacciones frente a los que se está tratando.
		Con su manera de decir las cosas evita que sus interlocutores se pongan a la defensiva.	Evalúa y juzga constantemente lo que dicen los otros. Siempre está a la defensiva.	Cuando habla expresa superioridad y/o excesiva certeza.	Cuando habla evita juicios de valor o mensajes de superioridad. No se pone a la defensiva	Cuando se comunica tiene en cuenta a los demás y los apoya.	Con su comunicación genera un clima de entendimiento y diálogo.
		Pregunta para entender mejor.	No pregunta y da por supuesto que ha entendido a sus interlocutores.	Sus preguntas son escasas, poco oportunas o mal estructuradas.	Hace preguntas abiertas para comprender mejor las ideas y posiciones de los otros.	Sus preguntas son atinadas y permiten que su interlocutor amplíe su comunicación.	Sus preguntas son inteligentes y provocan un avance en el diálogo o un mejor clima comunicativo.

Continued Table

Competencia	Nivel de Dominio	Indicadores	1	2	3	4	5
		Se expresa de forma clara y precisa.	Su expresión es pobre y confusa.	Se expresa de forma entrecortada y no acaba de transmitir sus ideas	Transmite ideas de forma concisa en entornos conocidos.	Expresa sus ideas sin facilidad y soltura.	Sobresale por su facilidad de expresión y su claridad comunicativa.
		Su lenguaje no verbal es adecuado y coherente.	Su comunicación no verbal es incoherente con el mensaje verbal e adecuado a la situación comunicativa.	Su comunicación no verbal no refuerza su comunicación verbal.	Con sus gestos y con el cuerpo trasmite información coherente con el mensaje verbal y con la situación comunicativa.	Su lenguaje no verbal aporta información valiosa y enriquece su expresividad verbal.	Su comunicación no verbal es altamente expresiva, coherente y adaptada, permitiendo un mejor flujo comunicativo.
Learnability	Aprender por decisión propia nuevos conceptos y conocimientos a una velocidad suficiente para resolver problemas nuevos	Muestra una actitud positiva a aprender nuevos conceptos y conocimientos	No tiene una actitud positiva a aprender.	No rechaza el aprender cosas nuevas.	Tiene una actitud pasiva pero positiva por aprender cosas nuevas.	Tiene una actitud propositiva y positiva a aprender cosas nuevas.	Aprender cosas nuevas es parte de su actitud natural.
		Es consciente que necesita nuevos conceptos tos y conocimientos para solucionar un problema o enfrentar un desafío.	Niega la necesidad de nuevo conceptos o conocimientos para solucionar el problemas	No es consciente que necesita nuevos conceptos y conocimientos	Muestra indicios que le falta conocimiento o conceptos nuevos.	Es parcialmente consciente que desconoce lo necesario para solucionar el problema o enfrentar la dificultad	Es plenamente consciente que desconoce lo necesario para solucionar el problema o enfrentar la dificultad
		Busca e investiga fuentes de información , además clasifica y analiza la información encontrada.	Desconoce la existencia de fuentes pertinentes en donde encontrar , la información y el conocimiento faltante.	Sabe que existen fuentes pertinentes pero desconoce como llegar a ellas.	Sabe como llegar a la información pertinente utilizando los medios adecuados, pero aun le cuesta procesar el conocimiento encontrado.	Llega a la información por los medios adecuados, procesos a y clasifica la información pero demora en el procesamiento.	Sabe donde buscar la información necesaria, conoce los medios para llegar a ella, y la analiza eficientemente.

Continued Table

Competencia	Nivel de Dominio	Indicadores	1	2	3	4	5
		Utiliza los nuevos conceptos y conocimientos para enfrentar el entorno o solucionar el problema.	No encuentra utilidad de los nuevos conocimientos o conceptos	Sabe que los nuevos conceptos puede ser utilizados pero no los utiliza	Utiliza los nuevos conceptos y conocimientos de manera básica o elemental	Utiliza los nuevos conceptos y conocimientos para solucionar los problemas o enfrentar los nuevos entornos.	Propone nuevas ideas o innova en la forma de actuar a partir de los aprendido, creando nuevos conocimientos y se adelanta a los problemas o entornos posibles.
Pensamiento Crítico	Hacerse preguntas sobre la realidad que le rodea a uno y participar activamente en los debates en torno a ala misma, analizando los juicios que se formulan y reflexionando sobre las consecuencias de las decisiones propias y ajenas	Muestra una actitud critica ante la realidad	Nunca se cuestiona la situación o la realidad en la que vive.	Se cuestiona ciertas situaciones de la realidad en la que vive.	Muestra una actitud crítica ante la realidad en la que está inmerso.	Se hace preguntas e indaga en la realidad reflexionando sobre la misma.	Fórmula sus propios juicios y valoraciones a partir de su reflexión sistemática sobre la realidad
		Diferencia hechos de los opiniones , interpretaciones, valoraciones, etc. en las argumentaciones de otros	Asume como propios juicios o decisiones basadas en opiniones, valoraciones, etc., como si fuera hechos objetivos.	Acepta, no cuestiona juicios o decisiones basadas en opiniones valoraciones etc. Como si fueran hechos objetivos.	Cuestiona juicios o decisiones basadas en opiniones y valoraciones.	Diferencia hechos objetivos de opiniones y valoraciones	Incorpora en sus razonamientos y juicios ideas de otros

Continued Table

Competencia	Nivel de Dominio	Indicadores	1	2	3	4	5
		Participa activamente en los debates	Se mantiene pasivos en los debates	Les cuesta participar en situaciones de debates	Participa activamente en los debates	Participa constructivamente en los debates , contribuyendo a la construcción de una reflexión rica y compartida	En los debates es un punto de referencia constructivo para los demás
		Hace una previsión de las implicaciones practicas de las decisiones y propuestas	Desconoce los efectos de las decisiones y propuestas	Prescinde de las implicaciones prácticas de alas decisiones y propuestas	Prevé las implicaciones prácticas de las decisiones y propuestas	Analiza los pro y los contras de los efectos de las decisiones propuestas	Da importancia a la realización de una valoración adecuada de los pros y contras de pros y contras de las decisiones y propuestas.
		Reflexiona sobre las consecuencias y efectos que sus decisiones tienen sobre los demás	Ni piensa sobre las consecuencias de sus acciones	Se limita a asumir las observaciones y criticas de los demás e relación con su conducta.	Reflexiona sobre las consecuencias y efectos que sus decisiones tienen en los demás	Reconoce y asume sus propios errores	Pide, valora y toma en cuenta el feedback de los otros en relación a su conducta.
Trabajo en equipo	Participar y colaborar activamente en las tareas del equipo y fomentar la confianza, la cordialidad	Realiza las tareas que le son asignadas dentro del grupo en los plazos requeridos.	No cumple las tareas asignadas.	Cumple parcialmente las tareas asignadas o se retrasa.	Da cuenta en el plazo establecido de los resultados correspondientes a la tarea asignada.	La calidad de la tarea asignada supone una notable aportación al equipo.	Además de cumplir la tarea asignada, su trabajo orienta y facilita el del resto de los miembros del equipo.
		Participa de forma activa en los espacios de encuentro del equipo, compartiendo la información, los conocimientos y las experiencias.	En los trabajos de grupo se ausenta con facilidad y su presencia es irrelevante.	Interviene poco, más bien a requerimiento de los demás.	En general se muestra activo y participativo en los encuentros de grupo.	Con sus intervenciones fomenta la participación y mejora de calidad de los resultados.	Sus aportaciones son fundamentales tanto para el proceso grupal como para la calidad del resultado.

Continued Table

Competencia	Nivel de Dominio	Indicadores	1	2	3	4	5
		Colabora en la definición, organización y distribución de las tareas de grupo.	Manifiesta resistencias ante la organización del trabajo en equipo.	Se limita a aceptar la organización del trabajo propuesta por otros miembros del equipo.	Participa en la planificación, organización y distribución del trabajo en equipo.	Es organizado y distribuye el trabajo con eficacia.	Fomenta una organización del trabajo aprovechando los recursos de los miembros del equipo.
		Se orienta a la consecución de acuerdos y objetivos comunes y se compromete con ellos.	Persigue sus objetivos particulares.	Le cuesta integrar sus objetivos personales con los del equipo.	Asume como propios los objetivos del grupo.	Promueve la definición clara de objetivos y la integración del grupo en torno a los mismos.	Moviliza y cohesiona al grupo en aras a objetivos más exigentes. Los grupos en los que participa sobresalen por su rendimiento y calidad.
		Toma en cuenta los puntos de vista de los demás y retroalimenta de forma constructiva.	No escucha las intervenciones de sus compañeros y descalifica sistemáticamente. Quiere imponer sus opiniones.	Escucha poco, no pregunta, no se preocupa por la opinión de los otros. Sus intervenciones son redundantes y poco sugerentes.	Acepta las opiniones de los otros y sabe dar su punto de vista de forma constructiva.	Fomenta el diálogo constructivo e inspira la participación de calidad de los otros miembros del grupo.	Integra las opiniones de los otros en una perspectiva superior, manteniendo un clima de colaboración y apoyo.
Tratamiento de Conflicto y Negociación	Expresar las posiciones propias y considerar las de los demás, buscando llegar a acuerdos aceptables en aquellas situaciones de conflicto interpersonal e intragrupal en las que se ve implicado.	Tolera la frustración y acepta las contrariedades que surgen en la interacción con sus compañeros	Se muestra fuertemente contrariado cuando entra en conflicto de interés o posición con sus compañeros	Se abate ante las discrepancias, conflictos de interés con sus compañeros, huyendo o evitando estas situaciones.	Tolera la frustración y acepta las contrariedades que surgen en la interacción con sus compañeros.	Muestra una actitud de aceptación ante la expresión de diferencias y discrepancias con sus compañeros.	Valora positivamente la expresión de las diferencias entre los compañeros, como expresión de su identidad y de confianza con los otros.

Continued Table

Competencia	Nivel de Dominio	Indicadores	1	2	3	4	5
		Es capaz de analizar y comprender la situación de conflicto, tomando conciencia de su posición y responsabilidad en el mismo	Reacciona con impulsividad cuando entra en conflicto con sus compañeros	Le cuesta reflexionar ante situaciones de conflicto que le generan ansiedad	Reflexiona sobre el conflicto, tratando de comprender lo que sucede para poder afrontarlo	Analiza las causas del conflicto tratando de comprender las posiciones de sus compañeros en relación con las suyas propias.	Asume con responsabilidad sus propias emociones acciones en la situación de conflicto, y analiza las de sus compañeros.
		Expresa con tranquilidad y claridad sus posiciones cuando surgen discrepancias y conflictos	Cuando surgen discrepancias y conflictos defiende sus posiciones con agresividad	Le cuesta expresar sus opiniones y posiciones si estas entran en discrepancia con las de sus compañeros	Expresa sus opiniones e intereses con tranquilidad aunque difieran de las de sus compañeros	Expresa con claridad sus posiciones y las argumenta cuando surgen discrepancias	Expresa con honestidad sus posiciones e intereses ante sus compañeros, mostrándose abierto al dialogo y a la posibilidad de reconsiderar su postura.
		En situaciones de conflicto, escucha y considera las posiciones de los demás.	No escucha limitándose a rebatir y descalificar a sus compañeros cuando no están de acuerdo con él.	Le cuesta escuchar y comprender posiciones divergentes y discrepantes. Vive con tensión la expresión de las diferencias.	Escucha las opiniones e intereses de sus compañeros tratando de comprenderlos	Se esfuerza por comprender los intereses de sus compañeros y los toma en consideración	Promueve un clima de respeto y dialogo en el que todos puedan expresarse y ser escuchados.

CHAPTER 2

RESULTS

To establish conclusions, they are preferably analyzed from the teaching experience, which includes: 1) the interaction of the teacher with the actors involved in the accompaniment process, 2) the interaction between the members of each of the groups that were part of the project in which the competency measurement instrument was used, the results of which will be detailed as the conclusions are incorporated.

As mentioned above, the sample consisted of students from 3 academic programs, including: Business Administration, Accounting and Auditing, and Industrial and Systems Engineering, from different academic cycles and different locations (Piura and Lima).

One of the first conclusions is that there is an average increase of 5 % in peer evaluation for the competencies measured as a result of the project, while the average increase in self-evaluation is close to 6 % (see Table 2). For the participating students, there was an average increase in the following competences

Table 2

Self-assessment and peer assessment results by academic program

Programa Académico	Prom Pares Inicio	Prom Pares Fin	Var Pares	Prom Auto Inicio	Prom Auto Fin	Var Auto
Administración	3.74	4.02	8%	4.16	4.26	2%
Contabilidad y Auditoría	3.70	3.82	3%	3.84	4.29	12%
Ingeniería Industrial y de sistemas	3.74	3.94	5%	3.63	3.75	3%
Total General	3.72	3.92	5%	3.86	4.09	6%

From the point of view of peer evaluation, Business Administration students had a greater increase in their competencies (8 %), with respect to the other programs. On the other hand, Accounting and Auditing students only received a 3 % increase in their competencies from their peers. The teaching experience indicates that the reason for this may be due to the fact that the Business Administration students belonged to a higher academic level than the Accounting and Auditing students, who had the lowest academic level.

From a self-assessment point of view, Accounting and Auditing students stated that their competencies grew on average by 12%, while Business Administration students indicated only a 2% variation. Teaching experience indicates that the reason for this may be due to the fact that Accounting and Auditing students start from lower levels of competency development.

When looking specifically at the competencies, the two competencies that peers indicated the greatest positive variation were interpersonal communication and critical thinking with 7% in both cases, and the competency that presented the least variation was Learnability, with only 3% (see Table 3). By exposing students to peers with different exit profiles, they had to develop to a greater degree their levels of interpersonal communication, this was internally validated by teachers in follow-up meetings. The same happened with the critical thinking competency, as each academic program develops different criteria for decision making.

Table 3

Self-assessment and peer assessment results by competency

Competencia	Prom Pares Inicio	Prom Pares Fin	Var Pares	Prom Auto Inicio	Prom Auto Fin	Var Auto
Cominucación Interpersonal	3.74	4.02	8%	4.16	4.26	2%
Conflicto y Negociación	3.70	3.82	3%	3.84	4.29	12%
Learnability	3.74	3.94	5%	3.63	3.75	3%
Pensamiento Crítico	3.70	3.96	7%	3.92	4.23	8%
Trabajo en Equipo	3.62	3.78	4%	3.71	3.78	2%
Total General	3.72	3.92	5%	3.86	4.09	6%

From the self-assessment, interpersonal communication was the most developed competency with a 10% positive variation and teamwork the least developed with a 2% positive variation. Based on the teaching experience in this specific project in a complex context considering variables such as: schedules, availability, academic programs and geographic location, the competence that was expected with the highest development was interpersonal communication, however, the teamwork competence was limited by the non-presential nature given that this is relevant for the development of the same.

If the measurement is made with respect to the academic cycle (See Table 4), students belonging to the highest cycles (Business Administration) perceive themselves with an increase in their competencies (2 %) with respect to the perception of their peers (8 %). It can be observed again that the level of maturity of a student in a higher cycle allows him to be more acid with his self-assessment, even though his observable behaviors in relation to his peers indicate an important growth. The same logic is presented inversely in the students of the lower cycles.

Table 4

Competencies results by academic cycles

Nivel	Competencia	Prom Pares Inicio	Prom Pares Fin	Var Pares	Prom Auto Inicio	Prom Auto Fin	Var Auto
Nivel 3	Comunicación Interpersonal	3.71	3.89	5%	3.65	4.07	11%
Nivel 3	Conflicto y Negociación	3.74	3.88	4%	3.78	4.08	8%
Nivel 3	Learnability	3.85	4.00	4%	3.88	4.13	6%
Nivel 3	Pensamiento Crítico	3.71	3.88	5%	3.82	4.18	10%
Nivel 3	Trabajo en Equipo	3.62	3.77	4%	3.58	3.67	2%
Total Nivel 3		3.72	3.88	4%	3.73	4.02	8%
Nivel 6	Comunicación Interpersonal	3.69	4.14	12%	4.10	4.33	6%
Nivel 6	Conflicto y Negociación	3.79	3.98	5%	4.24	4.24	0%
Nivel 6	Learnability	3.97	4.02	1%	4.35	4.30	-1%
Nivel 6	Pensamiento Crítico	3.66	4.15	13%	4.16	4.36	5%
Nivel 6	Trabajo en Equipo	3.62	3.78	4%	4.00	4.04	1%
Total Nivel 6		3.74	4.02	8%	4.16	4.26	2%
Total general		3.72	3.92	5%	3.86	4.09	6%

Finally, the experience of the present interdisciplinary project of academia-enterprise linkage carried out with students of the University of Piura promotes the development of competencies, since a positive variation is observed in all competencies and in all academic programs (see chart 5)

Table 5

Percentage variation of competencies by Academic Program

Competencia	Programa	Prom Pares Inicio	Prom Pares Fin	Var Pares	Prom Auto Inicio	Prom Auto Fin	Var Auto
Comunicación Interpersonal	Administración de Empresas	3.69	4.14	12%	4.10	4.33	6%
Comunicación Interpersonal	Contabilidad y Auditoría	3.66	3.88	6%	3.67	4.19	14%
Comunicación Interpersonal	Ingeniería Industrial y de Sistemas	3.76	3.91	4%	3.64	3.94	8%
Total Comunicación Interpersonal		3.70	3.96	7%	3.78	4.15	10%
Conflicto y Negociación	Administración de Empresas	3.79	3.98	5%	4.24	4.24	0%
Conflicto y Negociación	Contabilidad y Auditoría	3.75	3.82	2%	3.97	4.50	13%
Conflicto y Negociación	Ingeniería Industrial y de Sistemas	3.73	3.93	5%	3.60	3.67	2%
Total Conflicto y Negociación		3.76	3.91	4%	3.92	4.13	5%
Learnability	Administración de Empresas	3.97	4.02	1%	4.35	4.30	-1%
Learnability	Contabilidad y Auditoría	3.73	3.90	5%	4.00	4.46	11%
Learnability	Ingeniería Industrial y de Sistemas	3.98	4.09	3%	3.75	3.79	1%
Total Learnability		3.89	4.00	3%	4.01	4.18	4%
Pensamiento Crítico	Administración de Empresas	3.66	4.15	13%	4.16	4.36	5%
Pensamiento Crítico	Contabilidad y Auditoría	3.71	3.79	2%	3.87	4.53	17%
Pensamiento Crítico	Ingeniería Industrial y de Sistemas	3.71	3.97	7%	3.77	3.83	2%
Total Pensamiento Crítico		3.70	3.96	7%	3.92	4.24	8%
Trabajo en Equipo	Administración de Empresas	3.62	3.78	4%	4.00	4.04	1%
Trabajo en Equipo	Contabilidad y Auditoría	3.66	3.73	2%	3.77	3.83	2%
Trabajo en Equipo	Ingeniería Industrial y de Sistemas	3.59	3.82	7%	3.40	3.50	3%
Total Trabajo en Equipo		3.62	3.78	4%	3.71	3.78	2%
Total general		3.72	3.92	5%	3.86	4.09	6%

It is important to mention that this type of projects where different academic programs, subjects and even different geolocations are linked must have a common motivator, since it is essential that the teachers who take on the challenge want to carry out the project. Since this is a new experience, there was no certainty about the inconveniences that could arise, but the will to solve them and the desire to go ahead with the project are essential for the project to carry it out. In this sense, we want to make learning known to each of the actors involved, which is the raison d'être of the teaching work.

Actor 1 – Teacher: three professors were involved: two of them with more than 15 years of teaching experience, as well as involvement in several projects and consultancies, and participants in various university activities; one of them as a teaching collaborator with more than 17 years of business experience and almost 10 years of teaching experience. This combination of profiles allowed us to get to know the student closely and to have a broad knowledge of the competencies in which they excel and those that need to be promoted throughout the subjects and the career in general, as well as sensitivity to the current business environment.

There are conclusions regarding three fundamental points:

- *Teacher academic learning:* based on a new experience, not previously applied in other similar contexts, implied assuming responsibilities and roles, fostering creativity and innovation with respect to the forms of planning and coordination. Each teacher contributed knowledge and solutions to the different problems that arose from his or her specialty.
- *Networking: based on the continuous contact with students and entrepreneurs who, by voluntarily taking part in the experience, generated links for future collaborative work, with a view to repeating the experience in larger action groups. This type of project reinforces the need for teachers to be in continuous contact with the business world*.
- *Competency learning:* While it is true that teachers have mastery of the classroom and manage groups of students, in a virtual context, in which communication is through platforms such as Zoom or Teams, management is different and requires strategies that achieve continuity of the parties involved. The teachers learned how to enhance the use of these tools, especially the communication space, taking into account that the project was carried out in the middle of the pandemic with mobility restrictions and face-to-face meetings..

Actor 2 – Student: a total of 18 students voluntarily agreed to take part in the innovative experience. At the launching of the call for applications, there was strong interest in belonging to the team, being necessary the selection through randomization. Since the students were from different programs and academic cycles, they did not know each other and saw in these characteristics an important learning framework. According to the feedback, students state:

- *Academic learning:* The students had a different mastery of the topics addressed in the classroom, there was an exchange of knowledge among them, taking up topics from subjects they had already studied, allowing the application in a real business situation. On the other hand, it was necessary to search for sources of information on various topics related to the environment, in order to understand the sector of the company under study.
- *Competency learning:* The students stated that organization is key in

this type of work, since the non-coincidence of schedules did not allow for constant communication; however, they highlighted the benefits of virtuality for the creation of collaborative spaces.

In addition, interdisciplinarity, different academic levels and geolocation were determining factors for the development of the aforementioned competencies. In addition, in a business context composed of diverse professionals, specialties, generations with diverse knowledge and experiences; it allowed the student to live a future reality in view of their job opportunities.

Actor 3 – Entrepreneur - CEO: three companies voluntarily decided to include among their multiple activities the academy - company linkage project. Time is a critical factor for the 3 actors, however, in spite of a relatively negative pandemic and conjunctural environment, the entrepreneurs found spaces to interact in the project in each of the meetings and interviews with teachers and students, being possible to obtain the following:

- *Research-Experience Contrast:* Although it is true that the entrepreneurs had knowledge of the market, the search for information obtained from different sources by the students was able to expand this information and have concrete and updated data on the environment, the competition and the factors that influence the business.
- *Identification of student competencies:* Given the experience in the business environment, they were able to identify certain competencies in the students, including interpersonal communication, critical thinking and leadership. They also highlighted the degree of research that some students had carried out in order to learn about the sector in which the business was located and thus issue hypotheses and theories about the behavior of the business.

After having analyzed the competencies and learning conclusions for each of the actors, the limitations that have arisen during the execution of this project should be mentioned. The most prominent:

- *Sample size:* Given the number of participants, it cannot be inferred with respect to the entire university population of the academic programs in question, since it is not representative; however, since this was the first time this type of collaborative work was done, it is taken as an experience to be replicated in larger groups.
- *The technology-dominated juncture:* During the pandemic era, technology has undoubtedly made it possible to establish relationships to work together, however, it has certain limitations. While noting its benefits, the sessions could have been more productive if they had been held in person, avoiding the interruptions inherent to connectivity. On the other hand, teaching experience tells us that virtuality has limitations

in teamwork compared to unrestricted face-to-face teaching.

- *The pandemic juncture:* This experience was carried out in the year 2021, in which there were still many cases of Covid-19, this happened with a student who deserted from being part of the project, which destabilized the working group at the beginning, however, it was possible to continue with the programmed activities.

Conclusions

Finally, and although it has already been mentioned in the conclusions, this experience promotes the development of competencies, highlighting the importance of linking the academy with the company, so that students have opportunities to apply knowledge during the academic cycles and realize the relationship and the importance of learning in each one of them. Likewise, the teachers and authors of this experience invite their colleagues to continue with this type of projects and that the results obtained in this one are the premises for future research with representative samples of students that allow validating the hypotheses left by the teaching experience.

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CHAPTER

3

INNOVATIVE STRATEGIES FOR TECHNOLOGY-MEDIATED TEACHING-LEARNING

ESTRATEGIAS INNOVADORAS PARA LA ENSEÑANZA-APRENDIZAJE MEDIADAS POR LAS TECNOLOGÍAS

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CHAPTER 3

INTRODUCTION

The educational models of teaching in Higher Education Institutions (HEIs) are evolving, currently facing very intense debates, which consist of how to make teaching-learning methods innovative, attractive, and of high quality. Another problem is how to adapt them to the changes in 21st century education in accordance with the demands of a changing and productive society (Rajaram, 2021). Some of the most important challenges facing HEIs include developing teachers' skills in content creation, updating teaching-learning methods by incorporating and integrating Digital Technologies (DT) into face-to-face and virtual learning environments, and applying digital tools (Fuentes et al., 2019; Parra-González et al., 2020). However, the diversity of existing methods and resources does not make it easy for teachers to choose those to suit their teaching work demands. In addition, this condition has been favored by the absence of common terminology, the accelerated adoption of technologies and tools in changing contexts, and the lack of integration between methods and tools.

The productive world of the new century demands competencies, capacities, and skills of a higher order that are fundamental for professional activities at the local and global level (Rajaram, 2021; Antonova et al., 2020). This has implied changes in HEIs in the roles of the teacher and student, where the teacher plays the role of a facilitator of learning. The student, on the other hand, is an active subject of learning, responsible for his or her learning (Rajaram, 2021). Likewise, it has been necessary to provide teachers with the relevant competencies and skills needed to incorporate new methodological approaches and technologies that meet the required quality standards (Miranda et al., 2021). In this regard, strategies for the development of digital competencies have been fundamental, allowing teachers to acquire a set of skills, improve collaborative work, and continue learning, in an increasingly effective and autonomous manner (Zhao et al., 2021; Alenezi, 2021).

In relation to the student in HEIs, teaching methodologies have focused on favoring the student's protagonism and participation, giving importance to critical thinking and the development of problem-solving skills, addressing the needs of the changing and productive world, seeking to favor students' leading role and participation, emphasizing critical thinking and problem-solving skills development,

addressing the needs of the changing and productive world. Some of the innovative strategies that have enabled achieving student skills and competencies include Project Based Learning (PBL), Flipped Classroom, Design Thinking, Gamification, and Active Learning, among others.

Particularly, two methods that have acquired a great projection, improving the motivation processes and, above all, the autonomy process are the Flipped Classroom and Gamification (Parra-Gonzalez et al., 2020).

Teaching in HEIs for a modern, changing, and productive society is a complex activity that requires the teacher to identify, select, and apply the best possible combination of strategies to promote meaningful learning. Therefore, the objective of this chapter is to provide a practical and updated synthesis of innovative strategies and technologies to direct and guide the teacher and the HEI, and to make education in HEIs more innovative, attractive, interactive, and effective.

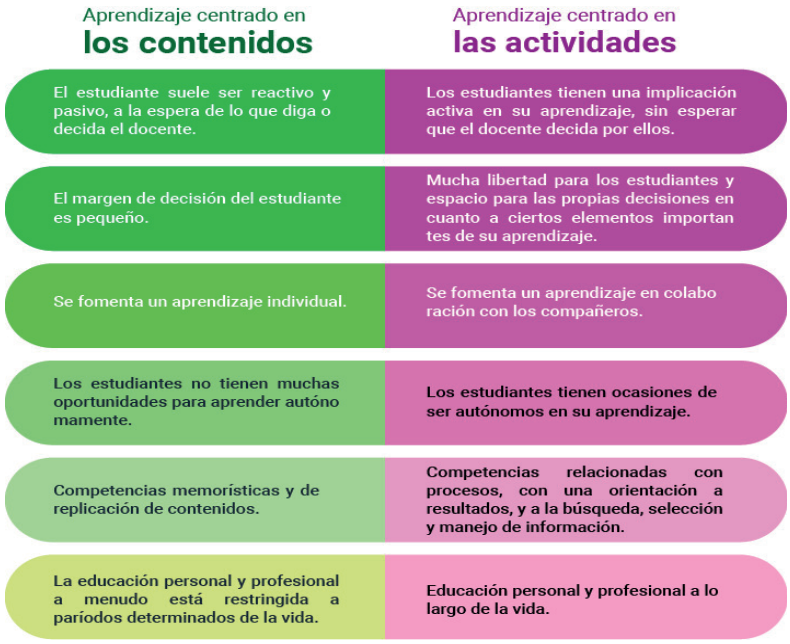
ACTIVE METHODOLOGIES

By active methodologies, we mean methods, techniques, and strategies used by the teacher to turn the teaching process into activities that encourage active student participation and lead to learning. They are methodologies that focus on activities rather than content, which implies profound changes in the actions of teachers and students, along with changes in the planning of subjects, classes, and evaluation. An Active Methodology is an interactive process based on teacher-student, student-student, student-teaching material, and student-medium communication, which enhances the responsible involvement of the latter and leads to the satisfaction and enrichment of teachers and students (López, 2005).

Activity-centered learning is a higher level of student engagement and work, favoring autonomous learning and generating competencies for learning to learn in collaboration with peers (Gros, 2011).

Figure 1

Content-based learning vs. activity-centered learning (Gros, 2011, p. 39)



Activity-centered learning places the student at the center of the learning process, gives him or her a leading role, and favors collaborative and autonomous learning. In addition, it allows students to develop higher order skills[1] demanded by the knowledge society and useful not only for academic but also for professional life.

To design an educational process focused on activity over content, a wide variety of active methodologies has been designed and implemented to promote the construction of learning and meaning, based on an active role of the students and in collaboration with them.

Below, we present a set of active methodologies, some of which have a long history in teaching, and others that have emerged because of advances in education and digital technologies.

Case studies

The case study is a methodology characterized by being a detailed analysis of a situation, real or created, but feasible to address in teaching, which recreates the conditions of the working environment of the future professional.

[1] Analysis, synthesis, conceptualization. Information management, critical thinking, research, metacognition.

Case studies can be presented in written, audiovisual, or non-participant observation forms. In its implementation, students are required to analyze the case using principles, concepts and theories reviewed in the course. The teacher should pose questions that help the analysis. Finally, students prepare a strengths, weaknesses, opportunities, and threats (SWOT) analysis of the case studied. In this methodology, the evaluation should consider the progress the students have made and the conditions under which it has been carried out. The final product is relevant, together with the process through which students manage to reach that product, which makes it necessary to think of evaluation in an integrated manner in the teaching-learning process (Labrador & Andrew, 2008).

Problem-Based Learning (PBL)

Problem-based learning is a methodology that assumes problems as a starting point for the acquisition and integration of learning. It confronts students with problematic situations associated with their profession, mobilizing a set of resources, and learning to solve them from this point (Díaz Barriga, 2005). Students are required to reflect on the problem, discuss, and propose hypotheses to solve them, considering their previous learning on the subject, exploring possible strategies to face the problem with the support of relevant information, and finally verifying the hypothesis through the background information gathered and the basis of their answers. It responds to "an inductive approach in which students learn the content while trying to solve a real-life problem" (Atienza, 2008). The evaluation in this methodology should be a process where the use of information, integration of the theoretical aspects of the course, and the transfer of what has been learned to new problems are valued.

Design Thinking

Design Thinking is a methodological approach focused on creative and cooperative problem solving through the establishment of needs, design, and iteration of the solution. This methodology seeks to develop critical and logical thinking in students, openness to new ideas and proposals, creative thinking, and another set of metacognitive competencies (Latorre-Cosculluela et al., 2020). Students also develop self-learning skills, improvement in teamwork competencies, such as assertive expression of opinions, empathy, and knowledge sharing. According to Jiménez and Castillo (2018), this methodology encourages students not only to do things differently but to do things in a better way, it also fosters autonomous learning based on imagination, integrative thinking, optimism, experimentation, and group collaboration. Design Thinking is carried out through a series of stages which are problem planning, definition, design, prototyping, and evaluation. These

activities allow the student to formulate assertive answers and solutions to an identified problem.

Service Learning (SL)

Service Learning (SL) is a methodology that integrates learning based on experience and service that contributes to provide real solutions to community problems (Martinez, et al., 2013), generating a space for training in values for students (Jouannet et al., 2013). In this way, "developing a service action transforms and gives meaning to learning and, on the other hand, developing active and meaningful learning improves the action of solidarity" (Puig et al., 2011). To implement this methodology, learning activities that position reflection as an articulating axis of the learning process need to be designed. Before, during, and after the process, students should be allowed to understand all the aspects involved in their intervention in a given community, while at the same time favoring the re-signification of the intervention developed. The methodology encourages students to relate the course content to the service experience, ask questions, propose theories and action plans, and express their ideas (Jouannet et al., 2013).

Flipped Classroom

The Flipped Classroom or inverted classroom is a methodology that considers performing simple learning activities outside the classroom, such as observing or memorizing. More complex activities, such as reasoning, take place in the classroom. This method has stood out for its practical and dynamic components (Parra-González et al., 2020; Hew & Lo, 2018). It is a methodology that reverses the order of a traditional class, presenting the content before the face-to-face class by means of short videos, audios, or readings (among other inputs) that students review in the autonomous work prior to the class. The face-to-face class is focused on activities, where the content previously addressed by the students is used. Acknowledging the importance of content mastery, expanded understanding is achieved through teacher mediation in solving the task. (Schneider et al., 2013).

Gamification

Gamification is a methodology that combines the mechanics of games with the educational environment, allowing to improve the results and predispositions of students to learn (Parra-González et al., 2020).

It is also increasingly frequent for assessments to use innovative strategies, replacing traditional assessments, for example, assessment combined with

Gamification, such as interactive quizzes or Trivia game-like contests (Sera & Wheeler, 2017; Fotaris et al., 2016).

DIGITAL TECHNOLOGIES FOR TEACHING

There are a multitude of digital technologies and tools that can be used in the teaching and learning process at different levels, from elementary education (Pierce & Cleary, 2016) to higher education (Castañeda & Selwyn, 2018). Some of these tools have a general purpose (e.g., Padlet fosters discussion on a certain topic by organizing the contributions of each student in notes that are presented on a board and ordered according to their relevance) (Beltrán-Martin, 2019). Other tools have a more specific purpose (e.g., Photomath allows solving mathematical equations by taking a photograph of the equation, providing a step-by-step explanation of the process of solving the equation) (Igcasama et al., 2020). In any case, the use of digital technologies and tools for teaching has accelerated strongly in recent years, mainly due to the digital transformation of educational institutions (Delgado Kloos et al., 2021) and the availability of multiple devices in the classroom that allow the use of technologies and tools, including teachers' and students' own devices (Parsons & Adhikar, 2016). It is also important to note that many technologies and tools, particularly many of those offered through the cloud, are licensed for educational use, which allows their free or low-cost use by teachers and students.

This acceleration in the adoption of technologies and tools, along with their changing nature and the multiple purposes for which they can be used complicate the definition of a single classification for such technologies and tools. In this regard, there have been several attempts to classify technologies and tools that can be used for teaching (Goodwin & Highfield, 2012; Cherner et al., 2014; Stevenson & Hedberg 2017). For example, de la Serna-Tuya et al., (2020) propose a classification of technologies and tools aligned with the levels of Bloom's revised taxonomy (remember, understand, apply, analyze, evaluate, and create). An interesting classification, which is dynamically revised as new tools appear, is proposed by Andrea Oviedo through a representation of teaching technologies and tools as a periodic table (Oviedo, 2020). In this classification, eight categories are established for technologies and tools: 1) content creation; 2) communication and community; 3) content creation; 4) content creation; and 5) content creation; 2) communication and community; 3) assessment and gamification; 4) programming; 5) organization of ideas and blackboards; 6) educational content; 7) content management; and 8) tools and resources. However, it is important to note that not all categories are independent and that the same tool can have different uses depending on the purpose established by the teacher. For example, Google Suite (now Google Workspace) tools such as Forms, Docs, Sheets, and Slides can be used by teachers

and students for content creation, but they can also be used to foster collaborative work and organize ideas by editing documents synchronously or asynchronously (Tan & Kim, 2011). Another example of technology that can be classified into several categories is H5P, which is a framework to create and organize HTML5 content and can also be used to assess students (Reyna et al., 2020).

Regarding the creation of educational content, we can use technologies and tools that make it easier for teachers to create rich texts, infographics, slides, or videos, among others. For example, three major software vendors provide tools for content creation in the cloud: Google (Workspace), Microsoft (Office 365) and Apple (iWork). Other tools that allow, for example, the creation of interactive presentations or infographics include Prezi, Canva, Genially, or Nearpod. It is also important to highlight some tools that can be used to produce educational videos such as PowToon, Kaltura, Camtasia, Screencast-O-Matic, or Panopto, among others (Laaser & Toloza, 2017).

Communication among teacher and students or among students themselves and the creation of communities within a subject or course is typically supported by tools that allow synchronous or asynchronous communication. In this regard, videoconferencing tools can be used for synchronous communication such as Zoom, Google Meet, Blackboard Collaborate, or MicrosoG Teams (Lenkaitis, 2020). Alternatively, discussion forums of institutional platforms, known as LMS (Learning Management Systems) such as Moodle, Canvas, or Open edX (Tirado et al., 2015), can be used, as well as other popular general-purpose tools for asynchronous communication such as WhatsApp, Telegram, Discord, or Slack (Menzies & Zarb, 2020).

Assessment is a very relevant aspect that can be gamified thanks to tools that allow implementing interactive quizzes with point systems, medals, and rankings. Many tools of this type have emerged in recent years and are successfully used for both formative and summative assessment (Göksün & Gürsoy, 2019) and include Kahoot!, Wooclap, Quizziziz, Quizlet, Socrative, or Mentimeter, among others (Vallely & Gibson, 2018).

All these tools require students to use a mobile device to be able to answer the questions, although there are other tools intended for elementary education that do not impose this requirement. These tools work with codes that students must show the teacher, who reads with their mobile device, as is the case of Plickers (Wood et al., 2017). Finally, it is worth noting the case of tools that allow to integrate assessment with educational content in a simple way, as is the case of the creation of videos with integrated assessment questions thanks to tools such as Edpuzzle (Mischel, 2019).

Another interesting category that is becoming increasingly relevant is the one

that refers to teaching and learning programming, generally in non-university educational contexts or non-engineering-focused university education. In this sense, a first approach to programming can be carried out with block-based languages, such as Scratch, Blockly, or Snap! (Ortiz-Colon & Romo, 2016; Ball et al., 2019). Alternatively, there are other tools that allow mobile application development also by connecting blocks and that allow students to easily introduce them to the world of programming, as is the case of MIT App Inventor (Wolber et al., 2015).

Numerous tools support students in idea organization and knowledge construction such as, for example, shared whiteboards, such as Google Jamboard, MicrosoG Whiteboard, Padlet, Miro, Sketchboard, Stormboard, Whiteboard Fox, Limnu, and OpenBoard, among many others (Pardo-Cueva et al., 2020; Alanya-Beltrán et al., 2021). There are also tools to specifically create concept maps such as Mindmeister or Coggle (Debbag et al., 2021). Finally, other tools can be used to organize the tasks to be performed, such as Trello (Kalizhanova et al., 2018).

In relation to educational content, there are many sources available to teachers and students, for general purposes (e.g., presentations on Slideshare, videos on YouTube, academic articles on Google Scholar) and specific purpose (e.g., content for STEM learning on Khan Academy, content for language learning on Duolingo, MOOCs - Massive Open Online Courses - on edX or Coursera, etc.) (Thompson, 2011; Huynh et al., 2016). For educational content management and organization, LMS such as Moodle, Canvas, Blackboard, Google Classroom, or Open edX are usually used, although there are other lighter technologies and platforms to organize content, such as Wordpress or Google Sites, and even Symbaloo or Edmodo, more oriented to pre-university education, among others (Holland & Muilenburg, 2011). Finally, it is important to consider the extensive number additional tools and resources, some of which are browser extensions, such as image banks and other open-license educational resources (e.g., Pixabay for images and OpenCourseWare for all types of content).

ACTIVE METHODOLOGIES AND DIGITAL TECHNOLOGIES DIGITAL

Active methodologies innovate in the teaching-learning processes, for which digital technologies are a great ally. They are successfully inserted in education when they accompany processes of methodological changes that promote the active participation of students. During the first years of DT use, projects focused on technical innovation to create technology-based learning environments; now the focus is the student and the methodology (Salinas, 2004). DTs are conceived as

tools to support and improve how to provide students with educational assistance and to promote their autonomous and self-regulated learning capabilities (Coll et al., 2006).

In the current university context, teachers face the challenge of changing their role from teacher-centered teaching to a student-centered learning process. This implies for Amador et al. (2017) developing competencies to guide, advise, and create spaces and opportunities for students to develop professional competencies, being immersed in a process of reflection and analysis of their own teaching practices. The keys to the university of the 21st century are new DTs, interdisciplinarity and innovation. Teachers become mediators, articulators of learning environments and facilitators of autonomous learning of students, thus they are required to adequately manage pedagogical and technological content (Gros, 2011).

Active methodologies are enhanced by the possibilities offered by DTs, such as search and access to information, interaction and collaboration, virtual platforms, general and specific digital resources, and tools to generate mental and conceptual maps, among others. This allows for innovation in teaching, incorporating active methodologies and favoring collaborative and autonomous student work. There is a set of active methodologies such as the flipped classroom and gamification that arise under the protection of digital technologies. Without DTs it is impossible to implement them. There is a series of techniques that facilitate the implementation of active methodologies using ICT (Salinas et al., 2008).

Introducing digital technologies in teaching is a process that must be approached carefully. First, the desired learning outcomes must be selected. Second, there is the methodology, in this case the active methodology to be used. Third, the digital technology that is most relevant for the implementation of the learning activity must be sought. The following table shows for different active methodologies, activities, or techniques that can be employed and the digital technologies that could be used

Table 1

Active Methodologies and Digital Technology Use

Active Methodologies	Activities and Techniques	Digital Technologies
Gamification	Points Levels Classes Challenges Badges Prizes	Elever Preguntados Cerebriti Kahoot Brainscape Educaplay Quizlet
Cooperative Learning	Screencast Forum Blogs Wikis	Google Drive Blogger Slideshare
Project-based Learning	Blog creation Product elaboration Research projects Community projects	Zoom Google Drive YouTube Prezi Slideshare
Flipped Classroom	Reading Guides Slide presentation Pre-recorded Videoconferences Online libraries Screencast Infography	Prezi YouTube Moodle Google Académico Kahoot Pinterest

Table 1 (Continued)

Active Methodologies	Activities and Techniques	Digital Technologies
Design Thinking	Forums	Canva
	Concept maps	Power Point
	Infography	Drive
	Interviews	Moodle
	Cause/effect diagrams	Telegram O WhatsApp
	Moodboard	Pinterest
	Brain- storming	
	Sketching	
	SWOT or PESTEL	
	Canva Matrix	

Source: Buenaño-Barreno *et al*. (2021)

Digital technologies contribute to the acquisition of skills in information search and management, communication, collaboration and creation of digital resources, and their well-planned use could have positive effects on the teaching and learning process. From this perspective it is important to identify types of digital technologies that can be used within the different strategies and learning activities that promote active methodologies. It is the teacher who, based on a methodology, decides the role to be played by the DTs. This involves diagnosing teaching situations, deciding the DT to be used, designing, implementing, and evaluating the experience (Prendes et al., 2018).

CONCLUSIONS

Teaching in higher education requires changes to respond to the current needs demanded by the knowledge society. There is a profile of students entering higher education with a high degree of digital technology management, which they use for social and leisure aspects rather than to support their learning processes (Sánchez-Caballé et al., 2020).). On the other hand, the demands of the labor market demands and job dynamization require competencies associated with teamwork, collaboration, problem solving, and commitment to society.

In this scenario, active methodologies are called to show a path of innovation, an opportunity to align university teaching to the demands of new students and the labor

field. Designing teaching from the use of active methodologies incorporating DT, is a strategy that enhances student learning, brings them closer to the technological world that they experience outside the classroom, and allows teachers to renew their teaching. Therefore, it is advisable to use the mixture: active methodologies and digital technologies, in different contexts and educational levels.

Active learning methodologies present important challenges to teachers because their success is the correct design of activities framed in a pedagogical plan, which are especially suited to the needs of students and involving the use of digital technologies. It is essential for teachers to constantly research DTs that can be applied in developing activities based on active student learning (Reyes-Maldonado & Chaparro-García, 2013).

Training is required for teachers in active methodologies and in teachers' digital competence understood as the skills, attitudes and knowledge required to promote true learning in a DT-enriched context. A digitally competent teacher must be able to use technology to enhance and transform classroom practices and to enrich his or her own professional development and identity (Fraser et al., 2013). In this sense, the DigCompEdu framework (Redecker & Punie, 2017) is widely used to diagnose and train in Digital Teaching Competence in Higher Education (Cabero et al., 2021). These trainings should be carried out using active methodologies and inserting DT as a support resource, they should model how to implement teaching under this approach. They can be practiced in face-to-face modality, online courses, MOOC, or other instances. The MOOC "INNOVAT" developed under the InnovaT project "Innovative Teaching Across Continents - Universities From Europe, Chile and Peru on an Expedition," is an example of how to approach through a MOOC the teacher training in active methodologies and DT, in order to innovate in university teaching (Silva et al., 2020).

It is desirable to collect and make visible good practices that act as models for other teachers.

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CHAPTER

4

¿WHAT DO WE UNDERSTAND BY QUALITY IN EDUCATION AND HOW DO WE ENSURE IT? CONCEPTUAL APPROACHES, USES AND FACTORS OF ITS CONFIGURATION

¿WHAT DO WE UNDERSTAND BY QUALITY IN EDUCATION AND HOW DO WE ENSURE IT? CONCEPTUAL APPROACHES, USES AND FACTORS OF ITS CONFIGURATION

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CHAPTER 4

INTRODUCCIÓN

¿What do we talk about when we talk about educational quality? What does this concept depend on and what scope does it have? Although we often hear and read the word, it is probably one of the most complex concepts to define and delimit in the educational field; partly because of its multidimensionality, its diverse scope in micro and macro educational spaces, and because its various definitions reflect different perspectives on the individual and society (Vaillant y Rodríguez, 2018). With regard to this chapter, it is intended to address the concept initially with a historical review, to then delve into those conceptualizations made by international organizations that have been fundamental for the construction of public policies that arise and develop in an intertwined way with the reflections on the scope of quality in higher education. Subsequently, various phenomena of a different nature that impact the installation of the concept of quality in Latin America are reviewed, which then translates into quality assurance. Finally, the factors that affect the evaluation of quality and the mechanisms used for its assurance are analyzed.

Quality is a multidimensional, dynamic term that varies according to the context and that can be perceived in different ways by different actors. Different authors propose different notions of what educational quality implies and to delve into the concept it may be illuminating to refer to the installation of the concept in different regions.

Installation of the quality concept in Europe and Latin America

The incorporation of the concepts of educational quality from the western perspective have aimed to improve the quality and competitiveness of the teaching-learning processes, as well as the necessary attractiveness for the satisfaction of the interested parties -in this case the students- incorporating processes of continuous improvement in all areas that converge in higher education institutions (Prakash, 2018). In the case of Europe, the concepts linked to educational quality and quality assurance are relatively young, being incorporated during the 1980s, due to the diverse number of offers for higher education and the growing rise in internationalization in Europe. These institutions forced the European context to ensure quality in higher education, in a context of constant international changes (Wächter, Kelo, Lam, Effertz, Jost & Kottowski, 2015). In this way, According to Rhoades & Sporn (2002), the concept of quality assurance was incorporated in mid-1987, emerging from countries such as Germany and Austria, being later followed by countries such as Belgium, Denmark, Finland and Norway, and settling definitively at meetings of the European Association for Institutional Research. This is how these spaces led to the beginning of the conversation for the dissemination of self-assessment and self-regulation mechanisms developed independently by higher education institutions in Europe. Likewise, the different meetings promoted by the Consortium of Higher Education Researchers, allowed the installation of various concepts related to quality assurance in higher education institutions such as curriculum and institutional control, management institutional, finance and quality among others (Rhoades & Sporn, 2002). This is how, in view of the massification and internationalization of higher education, Europe raises the importance of quality assurance through the development of the establishment of independent quality assurance agencies (QAAs) (Wächter et. al., 2015).

After the installation of the importance of quality assurance in European higher education institutions, the Soborne declaration in 1998 and the Bologna declaration in 1999, gave way to the creation of the European Higher Education Area, whose influence significantly marked the beginning of quality assurance in Europe through the installation of the European Network for Quality Assurance.

On the other hand, the concept of quality bursts into force in Latin America in the 90's, in the context of various educational reforms focused on the basic level. Since then, the countries of the region began to create educational policies to improve educational quality, within the framework of the definition of public policies in

which international organizations have played a relevant role. For several years, the reflection on the concept of quality was focused on the levels of basic and secondary education; while higher education was seen as a level of study achieved predominantly by the elites, so it was not the subject of public policies.

Although there is no delimited definition of what quality is by international organizations, this concept has been placed at the center of educational policies and at the same time has become a mobilizing concept that has frequently been the axis of the various instances of reflection and, also, in the establishment of goals. It is possible to investigate its conceptualization through its various publications, since there is a constant use of the concept since it emerged in the region focused on primary education. UNESCO already in 1996, in the Delors Report: Education contains a treasure, reflected on the link between quality and equity, the importance of having good teachers and proposed strategies focused on the social situation, training and working conditions of the teaching staff. The report is built from an integrating perspective of learning and quality education, proposing that education throughout life is based on four fundamental pillars: learning to know, learning to do; learning to live together and learning to be (Delors et al., 1996). In 2003, the importance of quality education was consolidated as a UNESCO priority at the round table of ministers held in Paris, since "good quality" education is considered a human right.

Subsequently, in the 2030 Agenda for Sustainable Development, UNESCO proposes as one of the proposed objectives "to guarantee an inclusive, equitable and quality education and to promote lifelong learning opportunities for all" (UNESCO, 2016ª, p. 4). In addition to this, according to the Educational Policy Recommendations report based on TERCE (UNESCO, 2016b), technology plays an important role in improving the quality of learning, since, according to multiple evidences, the Ddgital devices have potential as resources that improve teaching processes, which would have a direct impact on educational quality. The latter is an intricate field in reality, due in part to the complexities of the region, since despite the increase in ICT policies, learning outcomes have not changed substantially. Another aspect that UNESCO has considered as a factor in the issue of quality is investment and its relationship with academic results, since it is not enough to invest more, but it is essential that there are plans to measure the effects of these investments in educational quality and equity. More investment should be accompanied by valid statistical information for decision-making.

For its part, the OEI (Organization of Ibero-American States for Education, Science and Culture) began to incorporate the concept of educational quality into its discussion in the second half of the 1990s. . At the meeting of Ibero-American Ministers of Education, which took place in 2008, it was decided to promote the project "Educational Goals 2021: the education we want for the Bicentennial

generation", which had as one of its central objectives to improve the quality and equity in education, as a way to contribute to social inclusion and confront poverty and inequality. The OEI's vision of the quality of an educational system is embodied in the following excerpt: "equity, a fundamental dimension of the quality of education that emphasizes the achievement of good results for all students, and the impact of the results achieved in the medium and long term" (OEI, 2010, p.106). In short, from this organization the idea is reinforced in various milestones that one of the main challenges of the educational agenda of the continent is to contribute to the reduction of inequality and poverty (Vaillant & Rodríguez, 2018).). This idea is also taken up in the Final Declaration of the Regional Meeting of Ministers of Education of Latin America and the Caribbean in 2017. In this sense, it is declared: "the quality of education in all its dimensions and at all levels continues to be the large pending educational debt in the region (...) we commit to developing inclusive policies with a view to improving the quality and relevance of education that affect all actors in the education system" (OEI, 2017, agreement 11). According to this, educational quality is a multidimensional concept, which should consider the various actors in the educational system and must be ensured, as it can contribute to equity and social inclusion.

With regard to the World Bank, it is important to emphasize the influence that this international organization has historically had in various fields since its creation in 1944. In declarative terms, what this institution does is connect international resources with the needs of developing countries. As of 2015, the World Bank's strategy in education has been aligned with the proposal of the United Nations Organization (UN, 2015) to achieve the Sustainable Development Goals (SDG) by 2030; specifically with the fourth, which calls for guaranteeing quality education and promoting lifelong learning opportunities for all by 2030 (UN, 2015). Despite this, there is no explicit definition of quality prepared by the World Bank, even though this has been one of the organizations that has made quality a mobilizing axis of public policies (Monarca, 2018).

Education is not independent of the social context in which it develops. Specifically, the concept of educational quality has historically been related to social demands and the needs of different contexts, according to the new perspectives that are emerging. In this sense, it is essential to address certain transformations that mark educational development in Latin America, since they have repercussions on education at its different levels.

For some years in Latin America, there has been the conception that the State understands education as a social right, being from the first decades of the 20th century the central achievement of the educational process. However, since the end of the second millennium, a transformational process has taken hold that places education as a consumer good, changing the paradigms of public education

through a social market logic (Vázquez, 2015). This scenario brought with it different scenarios in which an attempt has been made to break this social paradigm, installing a more social perspective with respect to what governments should have in these matters. An example of this is the case of Chile; social movements have had a fundamental relevance in the development of public policies, with students being the protagonists with the so-called "Penguin Revolution" of 2006. Among the demands raised, it is recognized that the educational administration was focused on the "privatization" of secondary and higher education establishments, generating substantial gaps both in access and in the training provided. In this context, the state is held responsible for not having an effective presence in ensuring the quality of education, positioning it as a negotiable good over a universal basic right (Durán, 2018). Other phenomena that are marking the configuration of the educational system in Latin America can be analyzed, on one side, as an external dimension, which corresponds to global changes. An example of these are the new information technologies, economic globalization and the requirements of the labor market. While, internally, the increase in student enrollment in Higher Education, the diversity and segmentation of the educational offer and the new profile of students are recognized (Romero, 2018). If we look at internal changes, this exponential increase in enrollment is understood because there is a desire for the possibility of overcoming the poverty gap through access to higher education. Moreover, the labor market is shaping towards a scenario that defines as a base, that professionals have at least 12 years of schooling, surpassing the trend of the 90s that established the limit in secondary education. This combination pushes the middle and lower social sectors to make efforts to continue their formal education, with demographic changes reflecting this phenomenon with an increase in the adult population to access university studies (UNESCO, 2018).

In this sense, it is possible to establish a relationship between the increase in enrollment and the segmentation of supply, phenomena that have increased progressively in recent decades. Therefore, governments have had to make decisions regarding how to meet these needs. Some countries choose to free private supply, such as Colombia, Chile, the Dominican Republic and El Salvador, in which private supply is considerably greater than public supply, while there are countries that assume a reduction in public spending, which limits the access, for example, this is the reality of Uruguay (Brunner, 2003). This type of scenario, in the case of the Chilean context, was promoted by the Pinochet dictatorship in the 1980s, causing the supply of private higher education institutions to generate a greater supply of various study programs.

However, these changing scenarios with public policies that are not necessarily the most pertinent, and that generates a direct impact on educational quality, with a direct relationship with the socioeconomic level of people. Espinoza (2017) states

that "the evidence shows that the most selective and expensive studies are only accessible to the wealthiest sectors" (pp. 30). In this sense, it can be seen that since there is such a wide offer, it is difficult to establish the criteria under which the quality of these programs is defined.

Governments have understood the need to permanently recover quality in their educational processes, for which countries have generated registration strategies and the creation of minimum standards for evaluation and accreditation of universities (Medina et al., 2022), being Chile the first country to create a regulatory mechanism called the Higher Education Council, known today as the National Accreditation Commission (CNA). From then on, in the rest of the countries of Latin America, the need arose to have organizations dedicated to generating strategies that would allow them to take charge of quality assurance.

These efforts have made substantial progress with the creation of the International Network for Quality Assurance in Higher Education (INQAAHE) started in 1991. Also, in the Latin American context there are three instances of networks: the first of them is the Council Central American Accreditation, the work carried out under the MERCOSUR network and the Ibero-American Network for Higher Education Quality Accreditation, RIACES (UNESCO, 2018).

Ensuring quality: factors, mechanisms and challenges

Educational quality is part of the conversation in various contexts, whether at a political or economic level, or in instances of pedagogical reflection. Armanet (2018) states that there is also a requirement to guarantee quality in education for young people who are the first generation of professionals in their family and for emerging entrepreneurs who require the hiring of professionals that allow them the talent to compete in the market. In this sense, Puente et al. , (2020) state that continuous improvement is a global demand of today's society.

Although until now, there is no consensus regarding the definition of quality and its implication in higher education institutions (HEIs), there are coincidences at the moment to discuss the importance of establishing strategies and mechanisms that allow quality assurance (Pedrajas, Rodriguez, Munoz, 2021).

Cadena et al (2018) state that in order to respond to this social demand, it is the duty of university institutions to review their processes in order to raise quality, evaluating their programs and processes of the institution itself that allow it to verify and establish the level of achievement of their social commitments. Consequently,

a transit between the quality statement and actions to be implemented must be promoted so that continuous improvement is achieved. For that, Noui (2020) points out that ensuring quality implies understanding its characteristic of continuous process that seeks to evaluate, control, guarantee, maintain and improve the quality of the education provided. Therefore, quality assurance aims to provide information on those significant aspects of higher education (Perfumo and Ares, 2020).

The proposed approach has a logic and sense to respond to the needs of society. However, variables such as globalization, work organization, the reduction of public resources, student mobility, the growth in the supply of institutions private, had already been causing transformations and generating an impact on the higher education system and on the discussion about quality (Campos de Sánchez, 2020).

Another of the variables that has exerted pressure on the quality of higher education is the diversification and increase in enrollment. Because of the democratization of access to universities, involving aspects such as infrastructure capacity, personnel to support learning, resource of ICT, relevance of curricula, quality in the teaching-learning process, efficiency of administrative processes, institutional governance and equity (UNESCO, 2020).

There are various quality evaluation processes in HEIs to grant education guarantees to society and the selection of the mechanism to use will depend on how basic elements are understood for these subjects (quality, periodicity, evaluator). As a result, one of the mechanisms being the licensing (regulation exercised by the State on the minimum compliance for its operation), improvement (involves the continuous improvement of quality, establishing action plans within the framework of institutional purposes), management control systems (involves the definition of indicators that derive from the institutional strategy, within the framework of its strategic objectives and its mission). In the same way, internal audit (assesses the processes to contribute to the improvement and reduction of impact risks, being of a confidential nature), ISO certifications (process that allows accrediting the quality of its processes through international certification), analysis of the quality of the service of the students and ranking and finally, accreditation (Perfumo and Ares, 2020).

Accreditation is one of the most visible evaluation processes when it comes to quality assurance, this instance includes the participation of external agents, being defined mainly by favoring the constant review of quality (Martínez, Tobón, Romero, 2017). It is important to highlight that even though the accreditation process is recognized and has a facility in most countries, there are still differences in terms of conditions to carry out a supra-evaluation between the institutions of Latin America and Europe (Campos de Sánchez, 2020). However, there is an

evolution and growth of quality, evaluation and accreditation for the continuous improvement of processes in Latin America (Páez et al, 2021).

This process would correspond to a voluntary instance of public commitment to improve the quality of education, research and contribution to society, allowing to regulate the mediation between autonomy and public regulation, procedurally it involves a stage of self-assessment, analysis and external opinion to then issue a results report (Martínez, Tobón, Romero, 2017). This is how, in various countries in Latin America and the world, accreditation is carried out by external agencies that analyze the records provided by the Higher Education Institutions (HEIs) themselves. According to Casanova and García (2020), external accreditation agencies have grown in number in the last twenty years, which shows an interest on the part of higher education institutions to evaluate and compare the quality, recognition of degrees and the internship exchange.

Nevertheless, the accreditation process in Latin America also poses some difficulties in its implementation, for instance, the tendency to focus on administrative processes. That is why, only on certain occasions, it can be seen an improvement in student training and performance in social and scientific projects (Martínez, Tobón and Romero, 2017). In the same way, another of the problems detected is the lack of indicators that encourage the participation of all the actors in the educational community. Thus, for an accreditation process to correspond to an instance of continuous improvement, it must have the commitment of all the actors of the institution (Martínez, Tobón and Romero 2017). As Campos de Sánchez (2020) points out, quality implies "committing all the actors of Higher Education, both inside and outside the university, with the contribution expected from each one of them in that continuous search for continuous improvement" (p.205).

In terms of the relationship between accreditation and learning processes, some criticisms are also outlined. Martínez, Tobón and Romero (2017) explain that, in recent decades, the competency-based model has been installed in the training of professionals; Mexico, Colombia and Chile are some of the countries that have best valued this paradigm. However, these authors state that it is observed that the universities have reduced it only to aspects related to the adjustment of the study plan and there is no transformation of learning or profound changes towards the administration that lead to the improvement of the impact on society. In this sense, establishing quality assurance processes, among other factors, should make it possible to train professionals capable of responding to the context and for institutions to generate an impact on society (Cadena et al., 2018).

On the other hand, in the last two years, the Covid-19 pandemic adds another external agent that comes to stress the educational processes in HEIs and, therefore,

their quality. Without a doubt, this scenario has generated transformations in higher education, directly influencing aspects such as institutional management, decision-making, and the dynamics of the teaching and learning process. La Casanova and García (2021) state that the installation capacity of Information and Communication Technologies (ICTs) in teaching-learning processes can have an impact on the quality of HEIs, further complicating the discussion about monitoring and evaluation of these processes (Carbonell et al., 2021).

Therefore, it must be understood that this transformation is a scenario that involves each of the actors that make up the educational community. As a result, it is relevant to consider that this will imply adaptations, changes and dynamism to the face-to-face context that most HEIs were used to (Ortiz et al., 2021). In addition, a study carried out by Soto et al. (2021) conclude that the evaluation processes of educational quality is a challenge for accreditation bodies, due to the changing scenario of technological innovation. However, this is still a variable of low prominence and with few indicators for its evaluation from the perspective of its impact on learning.

Final considerations

Although the contextual historical review of the concept is essential, since it frames the discussion and provides background information, there is still a great task to be done, which is to reflect on what we understand by quality in education. Moreover, considering the sociocultural, material and historical particularities of the region and conversing between the different actors of the teaching-learning processes from their territories and realities. The constant use of the concept (quality assurance) in official instances by international organizations, which have been central in the construction of public policies, has generated the idea that this is a neutral concept and an end in itself (Monarca, 2018). However, the term quality, more than a meaning, leads a reflection and conversation that must continue to take place from the different educational spaces.

Thus, if the central purpose is that quality assurance be a continuous process and that it allows measuring how higher education institutions manage to advance in their internal processes, the essential point should be to respond to the needs present in each reality. In this sense, it is extremely important to understand that the countries of Latin America must generate their governmental guidelines with a sense of reality, since only in this way will progress be made in generating educational quality, allowing it to be visible by all the actors (institution, teachers-students, society) and improving their own context.

On the other hand, it is necessary to mention that international policies provide

the standards in which the structural bases are developed to maintain a continuous improvement of the comprehensive training processes of higher education students. However, these must be aligned and contextualized based on the national public policies of each country, as long as there is a constant development of the concept of quality assurance internationally. This is why in countries especially from underdeveloped or developing areas, problems persist that hinder the continuous advance of a contextualized and articulated strategy about educational quality. In this sense, there is no doubt that the Latin American context, in contrast to the European one, differs in various aspects that range from organizational cultures to the minimum standards that students need to be able to develop a university career. In this sense, the question arises about how we can balance both elements (highlighting the importance of international elements) without distorting the needs that even national organizations do not take as a central responsibility. In short, regardless of the current quality assurance mechanisms, the question remains whether they really manage to cover all the necessary elements to reach this real educational quality. Finally, it is necessary for developing countries to maintain quality assurance mechanisms that promote a practical downgrading to reality. Eventually, reaching the great gap achieved by European countries and the guidelines established by the United States over the last 35 years.

Educational quality is a process that requires a constant and permanent review over time, defining the best mechanisms that allow its assurance. In this sense, it is the duty of educational institutions to be alert to the changes that society. Particularly, the implications that these may have on the development of its objectives. One of the most latent challenges today is to generate information on the effects caused by the pandemic and the impact it has had on the training of professionals. Consequently, it is relevant to propose strategies to evaluate the achievement of learning and the level of achievement of curricular objectives determined by each institution in this experienced context (Carbonell, 2021).

On the other hand, the commitment of higher education institutions is to affect the environment through the training of professionals, research and other associated areas. In this scenario, it is necessary that quality assessment processes and mechanisms understand their purpose, and delve into essential aspects to carry out continuous improvement. In other words, in order to move towards a culture of quality, it is necessary to rethink the indicators and methodologies, installing spaces that allow the reflection of the training process and the contribution to society, marginalizing the administrative and isolated perspective that today involves these quality evaluation processes. In addition, to make this process meaningful in university spaces, it is necessary to install better strategies that allow involving and motivating all the actors of the educational community, students, teachers, officials and all the people to be part of continuous improvement (Martínez , Tobón and Romero, 2017).

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InnovaT
Innovative Teaching Across Continents

Cofinanciado por el programa Erasmus+ de la Unión Europea

CHAPTER

5

INNOVATIVE OFFICES IN TEACHING AND LEARNING: INNOVAT OFFICE UNIVERSIDAD DE LIMA

OFICINAS INNOVADORAS DE ENSEÑANZA Y APRENDIZAJE: CASO OFICINA ICE-INNOVAT UNIVERSIDAD DE LIMA

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CHAPTER 5

INTRODUCTION

The experience of non-face-to-face classes to which educational institutions migrated as a result of the SARS-CoV-2 pandemic, evidenced the need for implementing innovative practices that promote educational flexibility. These changing realities also imply developing new effective mechanisms in comprehensive academic management, which enable developing competitive advantages within the framework of a quality educational training process.

In this context, Universidad de Lima, in accordance with its mission, bases its professional training achievements on the high-quality standards it applies in developing its processes and in the practice of innovation. Likewise, in accordance with its educational model, it prioritizes the permanent search for academic excellence and develops mechanisms, raising the standards in the selection of teachers and students. To this end, the university formulates policies to ensure that the infrastructure, technology, teaching methodologies, and educational materials and services required are at the forefront of the higher education system.

In this sense, the need to implement and innovate teaching strategies and methodologies that can be adapted to the present context and prepare the university community to face new situations that may arise in the future was identified. Thus, the creation of a technical office, under the rector's office, was suggested to develop proposals to improve curricular plans, teaching-learning strategies and methodologies, teachers' competencies, teaching means and materials, and the learning evaluation system. At the same time, the office would channel the corresponding directives in coordination with the academic units and the corresponding university directorates. Thus, this office was created as a vehicle for communication between the authorities and the main actors of the academic training process, in order to promote spaces for reflection, exchange of ideas and generation of proposals for improvement in favor of quality higher education.

Background

Educational innovation and teaching quality

Since the mid-twentieth century, Latin American society has gone from a stable and slowly changing stage to a rapid dynamism in the scientific-technological and sociocultural orders, under a context that promotes the strategic use of information and knowledge framed in a process of globalization (Ríos-Cabrera & Ruíz-Bolivar, 2020). In tune with this social dynamism, education must respond to the demands that arise in its different dimensions.

The urgency of adapting education to the changes that society is experiencing in knowledge, technology, information, new languages, communication, and research, led to the incorporation of innovation as a central aspect of the new social scenario. This has influenced innovation to become a concern of education in the second half of the twentieth century (UNESCO, 2016, p. 11).

The urgency of innovation in education was not always called this way. The term moved from the business and administrative sphere in productive organizations to a plane linked to the modernization of the school in the new times. In the discourse linked to higher education, it appears so frequently that it is integrated as a general assumption (Sánchez et al., 2018). However, the use and study of this polysemic concept applied to educational institutions does not generate a consensus among specialists and evokes a misleading perception of acceptance (Magda & Buban, 2018; Ríos-Cabrera & Ruíz-Bolivar, 2020; Sánchez et al., 2018).

At the same time, educational innovation points to different approaches beyond the creation of new knowledge, products, and processes. It also constitutes the substantial modification of beliefs, mental models, habits, values, paradigms, attitudes, and solutions to achieve higher quality of learning (Ríos-Cabrera & Ruíz Bolivar, 2020). According to UNESCO (2016), educational innovation bears an imprint of transformation and change. However, this process may be blurry, depending on each institution. An American study by Magda and Buban (2018), which interviewed and surveyed more than 1600 academic administrators, found the following about educational innovation in higher education: a) institutions do not have a standard definition of innovation; b) in general, higher education relates innovation to problem solving; c) the balance between administrative leadership and operational initiative is key; and d) interdepartmental collaboration, structural issues, and cultural factors are the most common barriers to success.

Thus, the last two findings by Magda and Buban (2018) are in line with the need to implement a planned and organized innovation process to achieve the desired impact within spaces, such as specialized offices in educational institutions, given that “the willingness of a center to connect with the needs and interests of families,

teachers, and students is one of the central aspects of its innovative capacity" (UNESCO, 2016, p. 31). Consequently, collaboration and teamwork generate links between teachers and managers that provide horizontality for perspective and analysis. Hence the importance of teachers and their quality in innovation processes.

In sum, educational quality is closely related to innovation and is a concept approached in different senses according to the ideal of society and institution (UNESCO, 2016). Consequently, educational quality is largely effected by the quality of the teacher. However, the correct conception of educational policies and innovations does not ensure or replace the competence of the people responsible for carrying them out (Elacqua et al., 2018). Therefore, it is crucial to generate spaces and channels within institutions to have the opportunity to raise, communicate, and criticize ideas, where dedicated groups are interdisciplinary and cross-functional for the consideration and sharing of views and resources (Magda & Buban, 2018).

Innovation and education quality offices in higher education institution

LOrganization and planning in higher education are important predictors of the success of a transformation process aimed at educational innovation. This order could constitute, for example, the implementation of an administrative unit (office, unit, coordination, etc.). For this reason, we will now review some cases in which universities in the Latin American region have shown concern for addressing the need to promote and exercise educational innovation (and quality) through the implementation of specialized administrative units. Understanding that the approaches to educational innovation vary and depend on each institution in which it is applied, in Mexico, the Autonomous University of Mexico (UNAM) focused its activities on broadening a perspective that was limited to "the liaison between the university community and the productive and social sectors to promote the transfer of developments, knowledge, services, and products of the university, and to promote university entrepreneurship" (González et al., 2018, p. 90).

The Coordination Office of Educational Development and Curricular Innovation was thus created, which addressed the concept from the stimulation and activation of educational innovation to search for new ways of teaching and learning. This office was made up of two areas: the Directorate of Educational Evaluation (DEE) and the Directorate of Educational Development and Curricular Innovation (DDEIC), which propose to pay attention to the development and innovation in models, practices, programs, methods, processes, and resources, among other ideas in the pedagogical field. Likewise, evaluation goes from being from learning to for learning (González et al., 2018).

Institutions need to see innovation within the educational management scenario, that is, as part of a comprehensive process and not as an isolated one. An example is the Institutional Program for Educational Innovation (PIInE) of the National Polytechnic Institute of Mexico (IPN), which, with the purpose of promoting educational innovation through the identification, incubation, transfer, and evaluation of innovation in educational management, seeks to improve the processes of teaching, learning, and educational management. The objective is for Academic Units to be able to develop their own innovation programs, according to their contexts (Zavala et al., 2018). Once this innovation is integrated into the educational management process, one can also look at innovation outside the institution. In fact, the IPN itself has an interesting innovation program with social projects, in which innovation not only meets internal transformation objectives, but is also used as a tool for external impact through social development. In this program, innovation projects with social impact are created by master's degree students, encouraging constant innovation and adaptation to environmental changes, and seeking to train leaders and teachers to transform society (Barroso et al., 2006).

One important way in which these areas make themselves known is by promoting events that gather the university academic community. Such events constitute a trend in the first steps of the implementation of offices of this type. An example of this is the Universidad Nacional Autónoma de México (UNAM) with the Encuentro de Innovación Educativa: Vocación por lo Nuevo (González et al., 2018). Additionally, these events are complemented using communication, training, and educational tools, such as the use of videos and applications (apps), participation in MOOCs, among others. The above, given that, as Knight (2005) points out, the growing demands of the knowledge society increasingly and increasingly require electronic resources and technological tools for training in competencies.

These technological tools must always be linked to an objective, to a purpose within education, which is understood by the Conecta-TE innovation area of the Universidad de los Andes in Colombia, which has an educational innovation area called Conecta-TE.

The Conecta-TE innovation area of the Universidad de los Andes in Colombia, which has an educational innovation area called Conecta-TE, where innovation is understood as the introduction of changes that generate improvements in educational processes, supported by the possibilities offered by ICT. Thus, to measure these objectives, the implementation of these tools is developed as innovation pilots, which must be evaluated in order to be expanded. Trends such as flipped classrooms, blended learning environments, massive open online courses, mobile technologies, and remote laboratories are part of the experimentation scenarios (Osorio & Galvis, 2015).

CHAPTER 5

CONTEXT

LUniversidad de Lima is a Peruvian non-profit educational institution, founded in 1962, and has 12 undergraduate professional career programs, housing more than 24,000 students and a graduate school. The university is oriented to the search for scientific truth and the preparation of highly qualified professionals, with a humanistic culture, and criteria of permanent updating and improvement. Likewise, from its mission, it bases its professional training achievements on the high-quality standards with which it develops its processes and the practice of educational innovation. Based on its educational model, it prioritizes the permanent search for academic excellence and develops mechanisms that are at the forefront of the higher education system.

In the context of the transformations that were accelerated by the pandemic, Universidad de Lima recognizes that the teaching-learning methodologies and strategies in use so far no longer have the same impact in the current scenario, because for an adequate teaching-learning process, work must be done considering cognitive flexibility (Moore & Malinowski, 2009; Anacker & Hen, 2017). That is, the ability to adapt and modify thoughts according to the circumstances in an empathetic manner is required. Thus, the university seeks to promote a type of autonomous and self-regulated learning by the student (Zimmerman & Schunk, 2011; Panadero & Alonso-Tapia, 2013; Panadero, Andrade & Brookhart, 2018); and in the case of teaching work, which to some extent has a private and particular character within the virtual learning environment (OECD, 2017), it also requires the development and consolidation of its digital competencies (Unesco, 2019).

Consequently, the ICE-InnovaT office is implemented to continue with the practices of demand, excellence, and continuous improvement that Universidad de Lima enshrines in its educational model, with a more innovative and integrative vision, based on the philosophy oriented to the preparation of highly trained professionals for the development of society. Thus, this model includes the design of materials, evaluations, methodologies, development of teaching skills, constant updating of content, and the use of technological tools and innovative teaching platforms.

Description of the experience

The ICE-InnovaT Office was born within the framework of the project "Innovative Teaching Across Continents - universities from Europe, Chile and Peru on an expedition" (acronym: InnovaT), co-funded by the Erasmus+ Program of the European Union (2021), which aimed to improve teaching and learning capacities with an innovative approach in higher education institutions in Chile and Peru. The InnovaT project involved a consortium of three European universities: FH Joanneum University of Applied Sciences, Universidad Carlos III de Madrid, and Breda University of Applied Sciences; three Chilean universities: Universidad Austral de Chile, Universidad Viña del Mar, and Universidad de Santiago de Chile; and three Peruvian universities: Universidad de Piura, Universidad de Lima, and Universidad Católica San Pablo.

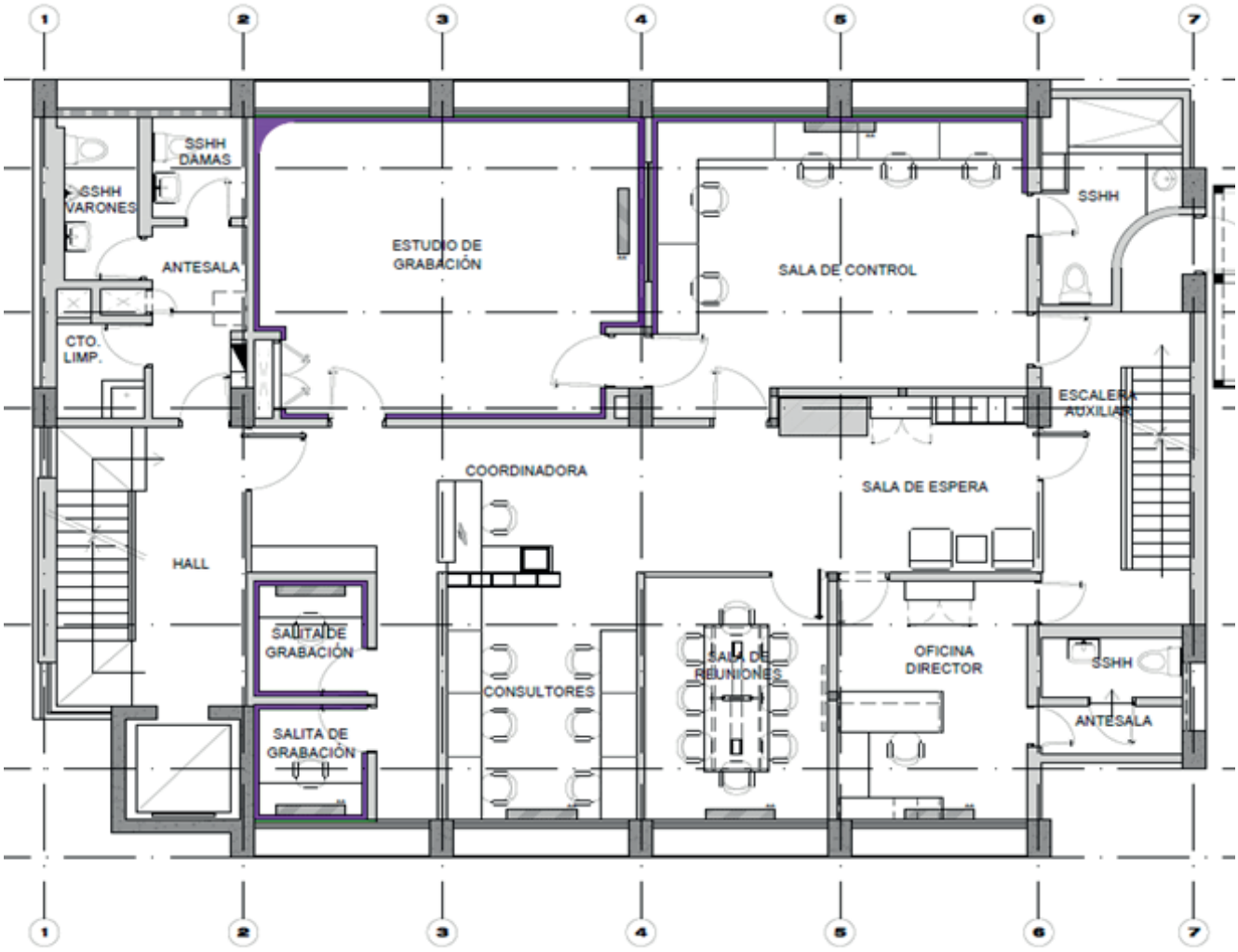
It is important to note that the funds obtained thanks to financing from the Erasmus+ Program of the European Union and Universidad de Lima, through its Administration and Finance Directorate and its Personnel Directorate, made possible the basic implementation of this organizational unit in terms of infrastructure, equipment, and staff. Thus, the objectives of the ICE-InnovaT Office are to:

- Manage and promote educational innovation
- Ensure the quality of curricular programs, complying with institutional policies in coordination with the academic units
- Foster teaching quality in the processes of academic formation

To accomplish the above, the creation of the ICE-InnovaT Office involved the design and remodeling of a physical space located in building B on the 6th floor of the university campus of Universidad de Lima. The University Administration and Finance Department was responsible for this task, providing an area of 178 m2 for the office. In addition, meetings were held with the team of architects of the university to determine the best distribution of the spaces in the environment for the construction of the new office. Finally, the university decided to allocate half of the space for the recording studio and the control room, to have the capacity to produce various formats of audiovisual material. The other half was allocated for the construction of a collaborative workspace, a meeting room, two individual booths where teachers can create and edit their own videos and audiovisual content, an office for the person in charge, and a reception area. Thus, the main rooms of the office are as follows: two small recording rooms (for self-generated audiovisual material by the teachers), an open area for coordination, a shared work area, a

meeting room, the management office, a waiting room, the control room, and the main recording studio. Figure 1 shows the floor plan of the office.

Figure 1
ICE-InnovaT Floor Plan



However, as a starting point, the process of implementing the office equipment conducted analysis and identification of needs by the universities involved in the InnovaT project. Universidad de Lima thus prepared a base list of audiovisual equipment as a reference for other Latin American universities to develop their respective lists. A valuable contribution was made by Universidad Carlos III de Madrid, which provided a list of the equipment it currently has in its recording studio.

In the case of Universidad de Lima, a multidisciplinary group of specialists was

convened to draw up the final list of equipment to be acquired. This group was made up of communicators, audiovisual experts, engineers, and technicians, most of whom worked at the university, in addition to the support of external consulting staff. In this way, list of equipment, both audiovisual and computer, was obtained, determining what would be necessary for optimal development of functions in the new office (see Table 1).

Regarding the purchase of equipment, the university's internal procedures had to be aligned with the requirements of the Erasmus+ projects. Due to the pandemic caused by COVID-19, there were delays in the delivery of devices, difficulties in receiving them at the university, since a rigorous confinement was in force, among other complications. However, all this was successfully overcome. Thus, once all the equipment was in the university facilities, the audiovisual technical group of the institution oversaw its installation, as planned (see Figure 1 and Figure 2 below).

Table 1
ICE-InnovaT office base equipment

ÍTEM NRO.	DESCRIPTION
1	Sony Edge Analytic REA-C1000 MFR # REA-C1000. PAC.
2	PSU for Sony Edge Analytic 12V 5A MFR #AC Power Adapter for REA-C1000.
3	Switcher Mixer SDI-HDMI Sony MCX-500 MFR # MCX-500.
4	PTZ Sony IP FHD PTZ Cam w/ NDI/HX Capability (Black)-Can be Upgraded to 4K with License Available April 2020 MFR #SRG-X120 (03 UND).
5	Sony RM-IP10 IP Remote Controller MFR #RM-IP10.
6	USB FHD Elgato Game Capture HD60 S MFR #1GC109901004.
7	PTZ Prompter People RoboPrompter Junior Teleprompter with 19” Reversing Monitor MFR #ROBO JR.
8	Light tripod with adapter Manfroto MVH502A Fluid Drag Video Head with MVT502AM Tripod and Carry Bag MFR # MVK500AM (02 UND).
9	Sony Lavalier Wireless Bodypack. Sony UWP-D21 Integrated Digital Wireless Bodypack Lavalier Micro- phone FAB # UWPD21/14 UWPD11/14.
10	Interactive board. Samsung Flip 2 WM55R 55 Inch Digital Flipchart for Business 4K UHD 3840x2160 with Touch Screen, Wi-Fi, HDMI, USB- + INCLUDING STN -WM55R Flip Stand for Flip 2 #WM55R.
11	Light and sound set ikan Lyra Bi-Color 3-Point LED SoG Panel Light Kit with 2 x LB10 and 1 x LB5 MFR #LB-2F1H.
12	Lights for ceiling rail ikan Lyra LB5 Bi-Color SoG Panel Half x 1 Studio and Field LED Light MFR #LB5.
13	Laptop Notebook ThinkPad P73. P/N: 20QRCTO1WW. Intel Core i7-9750H, 16GB, RAM, 512GB SSD, NVIDIA Quadro T2000 4GB GDDR5 128bits, 17.3 FHD, (1920x1080), Win 10 Pro 64. 3 years guarantee onsite. (02 UNITS).
14	Samsung 32” P/N: LU32J590UQLXPE Monitor with: MON SAM 32’’ LED UHD 4K 32”” Led, 3840x2160, HDMI/DP/Audio. 12-month guarantee.
15	Workstation TS P520c, Intel Xeon W-2133 Processor, 32GB RAM, 512GB SSD, 2TB HDD, P4000 8GB 4DP, HP S_EXT, Win 10 Pro 64. 3-year onsite guarantee. P/N: 20QRCTO1WW.
16	Creative Cloud license for enterprise All Apps ALL Multiple Platforms. Multiple Platforms Enterprise Licensing Subscription New. HED Shared Device Education License Lab and Classroom Device Level 1 1 - 9. (03 UND).
17	AVerMedia ExtremeCap UVC HDMI to USB 3.1 Gen 1. P/N: BU110 Converter (02 UNITS).
18	LG 27MP59G, 27” IPS Monitor, 1920x1080, HDMI / DP /VGA 250 cd/m2, color depth 6 bit + A-FRC (8 bit), contrast 1000:1, dynamic contrast: Mega, auto volt. P/N: 27MP59G.

Figure 1
Recording Studio

Figure 2
Control room view

It should be noted that for the new offices to remain operational until at least 2024, the commitment of the authorities of each participating university was required. This agreement, put in writing, provided the guarantees for the development of the InnovaT project in general, and the implementation of the new office in particular. However, it should be added that the sustainability of this office, in the case of Universidad de Lima, is ensured not only by the needs it covers, but also by the alignment with its vision and strategic objectives.

The internal structure of the ICE-InnovaT Office was proposed under three coordination areas:

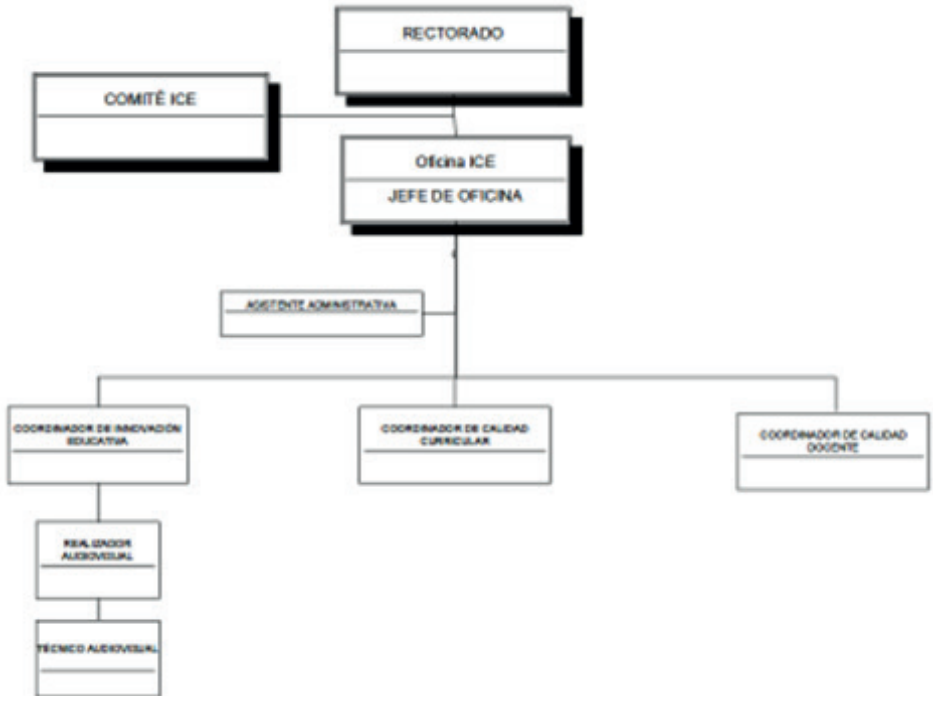
a) Area of Educational Innovation: carries out projects and generates content to help in the tasks of teaching, such as elaborating audiovisual material and MOOC-type instructions, and ongoing advice and training for teachers to become autonomous in developing audiovisual educational material.

b) Area of Curriculum Quality: contributes to ensuring quality education through permanent revision of curriculum plans of the academic units, incorporating topics, methodology strategies, and assessment measurement in line with national and international market trends.

c) Area of Teaching Quality Area: establishes and ensures compliance with the teaching quality guidelines at Universidad de Lima, taking into account four areas of work: a) teaching profile and category, b) comprehensive teacher development (DID), c) continuous learning evaluation, and d) teacher training.

Figure 3 shows the initial organizational chart of the ICE-InnovaT office

Figure 3
ICE-InnovaT Office organization chart



RESULTS

The link between the projects and the objectives and results of the ICE-InnovaT Office, framed within the objectives of the institutional strategic plan of Universidad de Lima, is detailed below:

- Requests from 5 career programs of Universidad de Lima were attended in the development of audiovisual projects: Industrial Engineering, Communication, Architecture, Systems Engineering, and International Business. These projects are aligned with the axis of the students' academic training.
- Forty videos were produced on remedial courses in the subjects of Language and Mathematics for the Pre-University Center of Universidad de Lima.
- The first International Forum of Innovative Educational Experiences of Universidad de Lima was organized and in 2 days, 10 presentations were given by experts from 7 international universities, with a virtual meeting of more than 400 teachers and the general public.

- Bridges of collaboration and internationalization of the University were generated not only with the Forum but also with the Gamit! project being worked on with TEC de Monterrey (Mexico).
- Finally, members of the Office participated in the TECNOTIC event, organized by the Peruvian Ministry of Education. This participation is aligned with the strategic axis of the projection towards the community.

Conclusions

The implementation of this office has meant the realization of a large international, interdisciplinary project, and a challenge in itself, which was generated despite the mandatory confinement produced by the pandemic, and which produced delays in relation to the acquisition of equipment.

However, since the office has been up and running, some additional needs have been identified, mainly on the technical side, such as the requirement for a communication system that allows communication between the control booth and the recording room. Also, a monitoring system is requested inside the recording room to allow the actors to visualize themselves while the productions are being carried out. In addition, the development of the initial projects also revealed the need for a permanent audio system inside the recording room, as well as the acquisition of portable equipment that allows recording on location.

Regarding institutional lessons learned, the creation of the ICE-InnovaT office was not only well received by the academic units and university departments, but also arose at a time when its existence was extremely necessary, as it was aligned with the institutional strategy. In this sense, clear communication about the objectives, scope, as well as the entire operation of this office to the community it serves was and is key.

Finally, the ICE-InnovaT Office is projected to take an active role and continue exploring trends based on the needs and plans of Universidad de Lima. So far, among the methodological trends that have been prioritized are active and hybrid teaching methodologies. As for technological trends, the plan is to explore augmented reality, virtual reality and metaverse[1].

Thus, with the support of the authorities, the fruitful collaboration with all the areas involved and the strategic alliances with external entities, these purposes will be achieved, whose ultimate goal is associated with contributing to the formation of leading, creative, autonomous professionals committed to the welfare of society.

1 Metaverse is an environment where humans interact socially and economically as avatars in a cyberspace, which acts as a metaphor for the real world, but without its physical or economic limitations

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InnovaT
Innovative Teaching Across Continents

Cofinanciado por el programa Erasmus+ de la Unión Europea

CHAPTER

6

UNIVERSITY EDUCATION AND THE TRAINING OF PROFESSIONALS FOR THE 21ST CENTURY COMPANY

UNIVERSITY EDUCATION AND THE TRAINING OF PROFESSIONALS FOR THE 21ST CENTURY COMPANY

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CHAPTER 6

INTRODUCTION

Growing connectivity, creativity and convergence in society come with a developing amount of socially complex issues for managers and politicians. There is a growing number of issues in which many actors are involved that interact with one another in a non-predictable manner. Issues such as organisational innovation, public governance, social cohesion, or whole system innovation. Coping with these socially intricate issues asks for a generative operating logic of inspiration and orchestration within higher education. This should complement the conventional mechanistic operating logic that is perfectly effective in coping with technically complex issues however now requires education and vocational training to step up as leaders towards diverse paradigms and realities.

As a consequence of this major shift in the type of complex issues we face in society there is a growing need for high level professionals. They need to be able to frame and reframe value creation from diverse and cross-disciplinary perspectives and guide whole system developments and innovation as emerging, co-creative processes. Thus, higher educational institutions are now more and more growing into the responsibility of educating students in a very applied way how to use a variety of theories, approaches, practices, and methodologies to intervene in social and business systems, and thus enable them to become effective system innovators, critical thinkers, professionals, and creators.

The objective of this chapter is to provide the reader with structure, perspectives, examples, and experiences into how universities have evolved along the pathway of becoming the creative catalysts of training professionals for the 21st century.

First there shall be sketched an evolutionary perspective of the specifics of university education and professional training from the past to the present. The above continues with a presentation of the characteristics of 21st century specifics and frameworks for the 21st century education, followed by a trend analysis of the 21st century skills within the domain of university and professional education, incorporating a vision of the future through the necessary axes for the comprehensive development of competent professionals necessary for a rapidly growing society. Then there will be discussed illustrations from both the Latin-American, as well as from the European perspective on how a series of contemporary approaches are currently embedded within the university realms. Finally, the lessons learned, and

insights generated will be concluded accumulating into an outlook on how to design education that is well equipped for the future.

ESSENCE OF UNIVERSITY EDUCATION AND TRAINING OF PROFESSIONALS – AN EVOLUTIONARY PERSPECTIVE

Higher education as we know it, is mainly a product from the societal developments in the 18th and the 20th century. It is there and then when learning and enlightenment have gone hand in hand in sustaining knowledge on a completely new and higher level thus creating the continuous synergy between industry, universities, and education.

But let us first go even further back in history.

In Europe, the history of education began in ancient Greece and gradually, through Greek influence, it expanded further into Western Europe. Prior to the 12th century, in the early Middle Ages, the intellectual life of Europe was linked to the monasteries, which were mostly engaged in the study of liturgy and prayer. Some monasteries were islands of knowledge because many monks had to copy books by hand. They worked with the so-called cathedral schools.

With the increasing professionalization of society during the 12th and 13th centuries, in addition to the demand for a better educated clergy, the demand for better educated people, especially in the field of arithmetic and accounting, grew. The cathedral schools could no longer meet the demand and in the late Middle Ages the first Universities in Europe were established, the first being in Bologna in 1088. These universities were mainly open to the elite; the aristocracy and wealthy merchants also financed this. In addition to a scientific education, they trained lawyers, doctors and theologians.

About the same training was offered throughout Europe and this brought a certain degree of unity to the continent. Students were free to attend lectures at other universities and that happened a lot. Whether someone was “graduated” was at the discretion of the magister (lecturer) in question.

There was, however, a remarkable difference between the universities in Southern Europe on the one hand and those in Northern Europe on the other. In the south, especially in Italy, the universitas were primarily aimed at students, while in the north the lecturers played a bigger role.

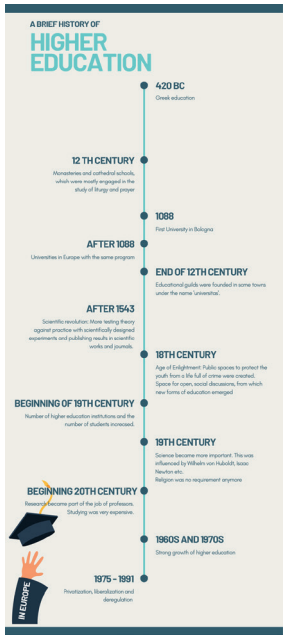
At the end of the 12th century, educational guilds were founded in some towns under the name 'universitas'. These were all kinds of groups of people who worked together to promote the interests of the members in education. Then it was also decided to determine exam requirements and to hand out degrees.

The emphasis in terms of content was on the theoretical part. Universities had no practical perspective, nor did they conduct research. If research did take place, it was literature research where historical natural philosophers such as Aristotle and other Greek philosophers were compared.

It was not until the scientific revolution that it became customary to test theory against practice by means of scientifically designed experiments and to publish the results in scientific works and journals. The beginning of this revolution is often put in 1543, the year Copernicus published his work on the movements of the celestial spheres. Its end is usually laid with discoveries in chemistry and biology in the 18th and 19th centuries.

European politics, philosophy, science, and communications were radically reformed in the period 1685 to 1815. The changes that came about were part of a movement called the Age of Reason, or simply the Enlightenment. Enlightenment thinkers in Britain, France and the rest of Europe questioned traditional authority. They also put forward the idea that humanity could be changed and improved using reason (Anchor, 1967). The Enlightenment produced numerous books, essays, inventions, scientific discoveries, laws and even wars. The age of Enlightenment strongly influenced thinking in Western Europe in the 18th and part of the 19th century. This intellectual movement focuses on scientific thinking based on rationalism and empiricism. A new worldview emerged, based on a strong trust on reason, enabling social and political reforms to take place. Citizens were given more freedom and a say in all kinds of matters. Liberalism arose. All kinds of emancipatory movements started to grow. In the intellectual and social field, an important consequence was that public spaces were created that offered space for open, social discussions, from which new forms of education emerged.

Figure 1
Evolution of higher education in the centuries



Some important pedagogues around that time were John Locke, Jean Jacques Rousseau, Christiaan Gotthilf Salzman, Friedrich Frobel and Johan Friedrich Herbart.

At the end of the seventeenth century, for example, the English philosopher John Locke argued for children to learn through play and not to hit them. “The child” was rediscovered. They were convinced that an enlightened citizen had to be made, by means of a solid upbringing and good education. Throughout the 18th century, people have been looking for the right educational method to protect the youth from a life full of crime. The so-called “philanthropists” in Germany first experimented with new forms of education around 1775.

By the late Enlightenment there was a rising demand for a more universal approach to education, particularly after the American and French Revolutions. During the industrial revolution, the importance of technical studies and the exact sciences grew, and the number of higher education institutions and the number of students increased.

Many of the universities were located in Northern Europe, with the most renowned being the universities of Leiden, Göttingen, Halle, Montpellier, Uppsala and Edinburgh. In most of Europe the universities were bastions of traditionalism and were not hospitable to the Enlightenment. In France, the major exception was the medical university at Montpellier.

Moving into the 19th century, the objective of universities evolved from teaching

the “regurgitation of knowledge” to “encourag[ing] productive thinking” (Saarinen, 1960) We have already seen this kind of thinking at Oxford in the 17th century with Robert Hooke and Robert Boyle and at Cambridge with Isaac Newton as the Lucasian Professor of Mathematics & Physics. Wilhelm von Humboldt completely reformed the educational system of Germany by demonstrating the process of discovery and making sure students would take account of fundamental laws of science in their ways of thinking. He inspired many countries with this approach, whereby overall his science became the focus of universities in the 19th and 20th centuries. Students could conduct research in the so-called seminars or laboratories. Educational and political movements also changed the role of religion. During the 18th century, most universities were strongly connected to either a Catholic or a Protestant church, whereas in the 19th century, religion was deleted from the requirements.

In the 20th century the professors’ professional role expanded from lecturing to investigating, which meant that research became part of the job. Studying at a university was very expensive, thus it was not accessible for everyone.

The economic development after the Second World War with its strong growth of industrial production, again led to a strong growth of higher education. In the 1960s and 1970s in particular, the number of students in higher education increased enormously. Higher education became available to all layers of the population. Studying was increasingly seen as a right for everyone who had the capacity to do so. A system of scholarships also enabled students from less well-off backgrounds to study. However, those attempts were only partially successful. The young people performed well in terms of knowledge and skills, but the gap between the different social categories widened mainly due to the accessibility to higher educational institutions and the growing list of requirements (Liu, et al., 2016).

With the general recession of 1974-1975, economic growth came to an end, and it became clear that governments had to play a smaller role in society. Capital was sought in various areas and neoliberalism was introduced. Higher education also had to be made suitable as a source of profit for private companies. This approach of privatization, liberalization and deregulation should lead to the recovery of the economy, but instead the profit ended up in the pockets of large multinationals. The Council of the European Union (2012), which can be seen as the great driver of European education reform, wrote in its annual report how higher education allows, even encourages, its young people to take the liberty “to follow ‘interesting’, not directly work-related studies that in many cases offer little prospect of a practical application”. In the neoliberal view, it is all about one thing: the economy, or more precisely: the profits of the companies.

In the late 1980s, but also after the collapse of the Soviet Union in 1991 when European integration gained momentum and new member states joined the

European Union, changes in higher education were urged. At the time, the European Commission established that there was a need on the part of employers to create one single European labor market for highly educated people.

In 1991 the Memorandum on Higher Education in the European Community was published, in which some proposals were made to create such a market. In addition to providing education, universities and colleges also have the task of conducting scientific research. Much attention is paid to this in the texts of the European Union. Scientific research is considered essential and seen as the engine of the EU's economic growth.

Higher education is increasingly privately funded. Part of the private funding of higher education, in the form of special professors and research costs, comes from the business community. In addition, parents and students themselves pay a considerable part.

21ST CENTURY SPECIFICS

The transition from the 20th to the 21st century can be described as reflecting a major shift in society and in the way, individuals shape their lives and give meaning to it. The essence of this shift was well characterised by Karakas (2009) in his concept of the World 2.0. He defines this World 2.0 as an:

> *"interactive, hyper-connected, immersive, virtual, digital online ecosystem or mega-platform where users create and share knowledge (e.g. Wikipedia, Delicious), innovate and collaborate together (e.g. InnoCentive), have fun and entertainment (e.g. Zango, Second Life), interact, network or connect with each other (e.g. LinkedIn, Facebook, Skype, or Twitter), design new products or buy and sell merchandise (e.g. Ebay, Craigslist, or Amazon), connect and communicate globally with mobile devices (e.g. iPhone, Blackberry), write reflection blogs (e.g. blogger), share their photos (e.g. flickr), podcast their presentations or make creative films (e.g. YouTube), develop projects (e.g. wikis or Google docs), and express themselves to the world' (p. 23)."*

EWorld 2.0 is fundamentally different from the world as it was before influential trends as technology, globalization and hyperconnectivity got a hold of it and changed it irreversibly. This emerging new world is an open and flexible digital ecosystem for people to "ollaborate, interact and participate in the process of

innovation and value-creation" with people from all over the world (Karakas, 2009). This new way of relating can be characterised by what Karakas calls the five C's, namely creativity, connectivity, collaboration, convergence and community. The first shift refers to the rising importance of creativity to come up with innovative solutions for existing problems. Information and imagination are needed to navigate into unknown directions. The second shift of connectivity addresses the ability to connect to the internet and by doing so having access to a global information network. Millennials, born between the early 1980s and early 2000s, and generation Z following this cohort, are considered to be digital natives as well as global citizens. They are familiar with using the Internet, mobile devices and social media and with thinking and acting across borders and perceiving the world as their playground. This digital connectivity makes cooperation across the globe possible. And this is reflected in the third shift of collaboration and elucidated by the example of Wikinomics with as central principles: "openness, peering, sharing and acting globally" (Tapscott & Williams in Karakas 2009). The bigger issues society, industries and organisations are facing, challenge co-creation of more and more people related in fluid (digital) networks. The next shift is about convergence of "new technologies of information and communications and the global connectivity these technologies enable" (Karakas, 2009). All sorts of innovative media are connected in multi-media platforms to form one big information channel. Technological revolution has facilitated working together and exchanging information from a local level to global scale. On the one hand this results in a rich environment where all information is easily accessible but on the other hand it culminates in an overload of data where it is difficult to value the trustworthiness of every single piece of information. Finally, the last shift mentioned, is the community one and refers to the "use of internet and media platforms for social change and community benefits" (Karakas, 2009). People are more and more connected to each other, not only physically but especially digitally and within these (new) collectives they strive to move into common desired directions.

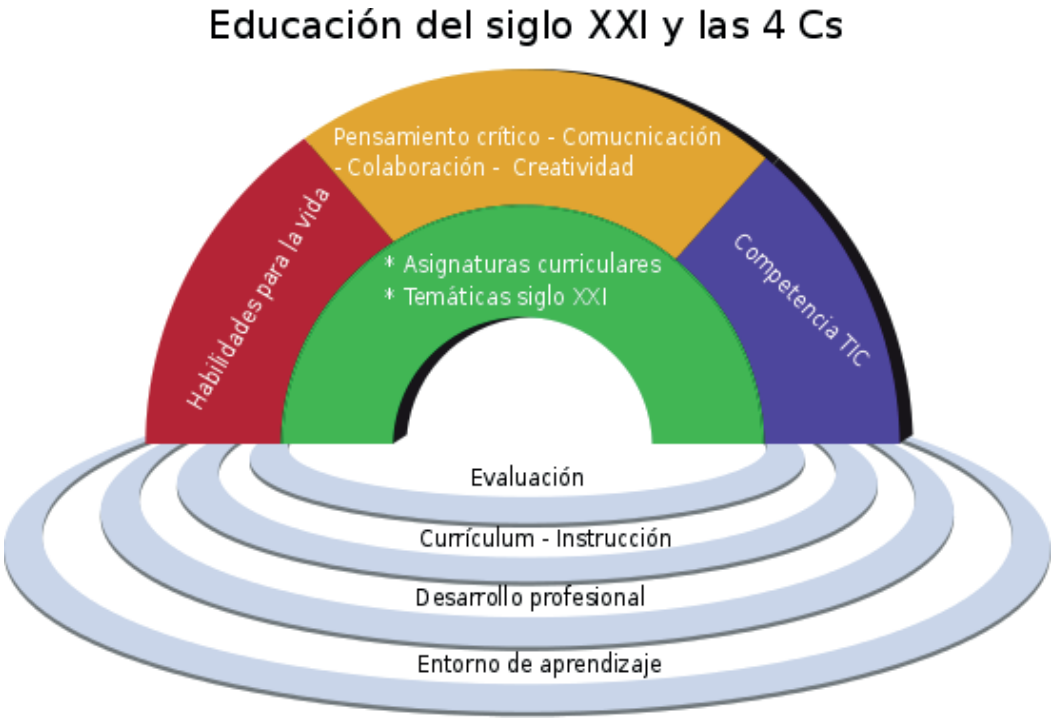
This World 2.0 conceptualization immediately raises the question whether education programmes currently are tailored towards developing the specific skills and requirements needed to be ready for the 21st era?.

Frameworks for 21st century education

In his world-famous TED Talk "Do schools kill creativity?" Sir Ken Robinson (2006) assumes all people have a huge interest in education, because nobody has a clue what the world will look like in 5 years' time, and it is education that should bridge this gap to the future people are yet unable to understand. In the same presentation he underlines children have an innate capacity for innovation, but it is the current school system that undermines these creative talents.

This is a provoking statement because creativity is widely acknowledged as one of the key characteristics of the 21st century skill set. Following the Framework for 21st Century Learning as developed by the Partnership for 21st Century Learning (P21) (see Figure 1), a coalition of international leading experts from education, government as well as from businesses, the other elements being communication, collaboration and critical thinking (Partnership for 21st Century Learning (2019)).

Figure 2
Framework for 21st Century Learning



Next to this so-called 4 C's skill-set related to learning and innovation, the framework distinguishes a digital skill set consisting of information literacy, media literacy and ICT literacy as well as a career and life skill set referring to (1)flexibility & adaptability, (2)initiative & self-direction, (3)social & cross-cultural interaction, (4) productivity & accountability and (5)leadership & responsibility (see table 1).

Table 1
P21 skills

Learning and Innovation "The 4 C's"	Digital Literacy	Career and Life
Critical thinking & problem solving	Information literacy	Flexibility & Adaptability
Creativity & innovation	Media Literacy	Initiative & Self-direction
Communication	ICT Literacy	Social & Cross-cultural interaction
Collaboration		Productivity & Accountability
		Leadership & Responsibility

Whereas 20th century education was still focussed on the 3 R's of reading, writing and aritmetics, in the new era these competencies need to be connected to the 21st century competencies as specified.

Based on a systematic literature review Van Laar et.al. (2017) identified seven 21st century core skills: "technical, information management, communication, collaboration, creativity, critical thinking and problem solving"and five "contextual skills: ethical awareness, cultural awareness, flexibility, self-direction and lifelong learning". Whereas Mishra & Kereluik (2011) make a distinction between the 3 core categories of foundational knowledge, meta-knowledge and humanistic knowledge, with each category consisting of several subcategories. However, they argue that most of the skills mentioned in their framework as well as in that of others are not uniquely related to success in the 21st century but were just as relevant to navigate around in the 20th century social world and in preceding eras. This except for two 21st century skills, namely information literacy and cultural competence and awareness that are specifically relevant for professional and academic success in the current context.

Although there are many competing models and frameworks describing the 21st century characteristics, overall, the similarities between the different

conceptualizations are more striking than the many differences in nuances and details. This subsequently leaves the question whether currently educational institutions around the world are trend setters that live up to the ambition to educate the next generation of independent and creative thinkers that succeed in making a difference in the direction society is evolving? Or that educational institutions can more accurately be depicted as trend followers educating academics and professionals that are able to respond and adjust to changes that are happening in the surrounding context.

Karakas (2009) formulates several implications of the World 2.0 concept for managers and professionals that can be translated to the educational domain resulting in strategies to make education more future proof. Above the notion of education as frontrunner instead of follower was already put forward. To make this work, education should break down the walls that separate their institution from the outside world and connect closer to industry and society. This by investing time and effort to build up an ecosystem consisting of many different societal institutions and profit, non-profit and not-for-profit organizations instead of having a focus on the internal institution or on separate academies or programmes. This open set-up directly relates to having a multi-disciplinary approach in which students, lecturers, and industry partners, from diverse backgrounds and cultures co-create education and learn from and with each other. In this type of cross-over educational environments collective creativity is ignited and fostered and innovative solutions to complex challenges can be envisioned. Furthermore, future oriented education is no longer viewed as limited to a dedicated amount of time in especially the child and young adult phases of the life cycle but as a self-directed life-long-learning experience driven by intrinsic motivation and passion of individual learners to make the most out of their talents and competencies and to search for synergy with the knowledge and skills of others.

21st century trends in university education and training of professionals

Starting the conversation regarding the trends of the 21st century and the training of professionals takes us back from the conception of Web 2.0 defined by Tim O'Reilly (2005), where the web was conceived as a platform and the user had the power to manage its own data. However, the conception of the web as a repository has changed in the same way as the prevailing needs today. Nevertheless, remembering the past is a necessary time travel, since in that minute as a society we did not question issues such as instantaneous adaptation under contexts that exceeded human control or how future virtual meeting spaces would substitute

physical human space interaction. Despite this, and amid the synergy of ideas and questions around the needs of society, technology has always been present as a tool to empower humanity through extra-genetic evolution (Waddington, 1975), better known as education.

The trends of the 21st century in terms of professional training and university education have developed from the needs anticipated by current societies, which to a certain extent has been predictable and yet has been always a necessary element to consider. In this way, there is a strong incidence of the Sustainable Development Goals of UNESCO, positioning higher education institutions as key actors for the fulfilment of these objectives in 2030 (UNESCO, 2021). In the same way, from the last two decades of the 20th century to the present day, there has been a strong push from UNESCO towards the development of informational competences hand in hand with its incidence in the industry (Castillo et al., 2016). In addition, continuous learning throughout life, media and information literacy have been considered as key elements when it comes to avoiding the excess of information that circulates in the different media today (UNESCO, 2020). Moreover, the permanent link to the needs present in society and trends in university education leads higher education institutions with the permanent challenge of innovating from professional profiles to university teaching itself.

This is how, and since the beginning of the new millennium, authors such as Ortega (2002) viewed globalization as a key element for the development of society, foreseeing that higher education institutions should expand their educational systems to satisfy the needs of society. As an example, the incidence of communication technologies in university classrooms, which through active teaching methodologies have located technological elements essential for the lives of young people and adults, such as cell phones, in pedagogical tools of learning construction rather than a prevailing distractor. Therefore, higher education institutions maintain a constant and complex challenge when analysing the training of future professionals, even more so considering that economic, social, cultural, environmental, and political factors play an essential role in the developing of a comprehensive professional profile. On the other hand, the use of communication technologies connected to globalization, leads to the need of including the interdisciplinarity throughout university professional training. In this sense, the tendency to go beyond traditional disciplinary lines rooted in higher education has been visualized to solve problems of modern life (CEPAL-ONU, 2003). Likewise, it is observed that the implementation of interdisciplinarity in university education provides the necessary skills to work as a team from different points of view in pursuit of continuous improvement and learning throughout the professional life (Carvajal, 2010), providing students with a realistic and timely setting in professional terms. This is how interdisciplinarity is viewed as a tool that connects the university and social reality through the solution

of problems, hand in hand with viable alternatives that go beyond the traditional academic research that is developed in higher education institutions. In this sense, interdisciplinarity proposes an integration of various visions that delve into the problems covered by the academy, articulating coherent solutions to social realities (Hernández, et al., 2017).

Currently, due to the direct incidence of needs of today's society and the global pandemic caused by COVID-19, we have experienced the need to have professionals capable of quickly adapting to situations that are beyond what they were taught in their institutions. An example of this is "the teaching itself university", which has responded immediately to the challenges and added immediate value to the training of professionals during the pandemic. In this sense, self-learning, and rapid adaptation to an unexpected environment, produces a new trend in terms of training professionals. Likewise, the competencies for the 21st century are an essential component when considering the skills necessary for the training of professionals and the integration of efficient individuals in professional and social contexts. In this sense, the development of professionals for the 21st century poses the actual need of contextualized trainings in the future, which to provide for sustainability, critical sense, effective communication, among other skills, as starting points for the contemporary training of professionals for this century (Carvajal, Y., 2010).

Application of the 21st century specifics at examples from Chile and the Netherlands

The section of this chapter shall provide an in-depth overview and illustrations of two examples of educational practices and case studies in Latin America and in Europe. Below one will become acquainted with the lessons learned and insights generated out of the Innovative classes conducted as part of the InnovaT project which have been translated and framed into the curricula of Universidad Austral de Chile (UACh), Chile. Moreover, there shall be also presented the case of the Master Imagineering programme of the Breda University of Applied Sciences, the Netherlands as one of those educational models where the 21st century specifics and high contemporary demands have been deeply rooted, embedded, and engrained within the educational philosophy and practices.

CHAPTER 6

Examples of Innovative classes at Universidad Austral de Chile (UACh)

Innovative Class nº1: Computing at the service of the community throug the acquisition of English as a foreign language

Within the framework of the InnovaT project, a series of activities were developed that culminated in a semester of innovative classes belonging to professors from different faculties of the university: egineering sciences in the mention of computer science, medical sciences through obstetrics and childcare and, finally, information engineering and management control, through the management of people through human resources. Likewise, these three moments took place on the Isla Teja campus and Puerto Montt campus.

To be able to carry out this innovation in the classroom, the teachers participated in six exploratory workshops, which allowed a new look regarding the activities that they would carry out throughout this semester. In this sense, from the beginning of the planning of these activities, the choice of students who would be immersed in these innovative programs was arranged. However, it was not possible because all the classes were in a remote format, so all the students belonging to the innovated courses were part of this experience.

¿What is new?

In the case of the first innovative class, a teacher specializing in the acquisition of English as a foreign language, developed a relationship little used at that time: a talk with experts and SMEs who were in our country. In the first case, the students were linked to an expert who innovated in the way of paying in our country: the MATCH company. Likewise, the students were able to analyse a new way of working and broaden a vision that is still taking its first steps in the country, which is developed under the gaze of innovation and entrepreneurship. After this expert talk, the students had an arduous mission which focused on finding a SME that needed help in digital and/or computer aspects during the health contingency, because not all small entrepreneurs had mechanisms that could allow you to continue your business despite the sanitary distance. For the detection of problems, the students developed semi-structured survey instruments, which allowed them to collect data and information to direct this help in a better way. Finally, this innovative class ended with the construction of an audio-visual resource using the English language that compiles their experience during the three stages that this innovation consisted of.

The teacher's view

In general terms, it is important to mention that during the development of this activity, the lecturer was in permanent support of the InnovaT project, through the UACh coordination. Likewise, his innovative classes were extended from March to July 2021. On the other hand, the teacher showed a complete openness to innovation, because he maintains a pedagogical spirit that drives him to innovate day by day in his classroom. In the words of the teacher, he considered that it was an excellent instance that can be replicated every semester. Likewise, the lecturer pointed out the appreciation that the students had regarding the participation in the innovative class since it linked them in a real and concrete way with experts, SMEs, and real needs in times of pandemic. Finally, the lecturer of this subject considers this innovation as a tool that allows students to carry out a new type of mentoring, which can be innovated from the construction of a software to another type of tool, in the search to solve a problem: real problems that can contribute to make a better society.

¿What about the students?

At the end of the innovative course, a survey was conducted to determine the perception of the students. Furthermore, the reception of the students was positive; since total of students considered that the teaching-learning methodologies were adequate for the training they needed.

Regarding the data collected with the survey, it was possible to understand students' perceptions towards the future professional lives. In this sense, the students considered that the topics and abilities developed in these innovative classes allowed them to relate theory to practice. This aspect validates the importance of real connection of students' and society in general.

Innovative Class nº2: Bioethics and counselling in sexual and reproductive health. Raise awareness in our communities

During the year 2021, within the framework of the innovative classes, five sessions were held in which the following professors were invited: a sociologist, Coordinator of Education and Studies of the Fundación Chile Positivo and president of the Chilean Society of Sexualities. and a peer counsellor. This workshop was led by two professors, both obstetricians from the Institute of Sexual and Reproductive Health, and Miguel Flores, advisor to the Institute of Public Health.

¿What is new?

The students had the opportunity to work collaboratively in different instances of activities that were developed within the obstacles and challenges of the pandemic context. In this sense, virtual classes were a recurring tool throughout this course. Therefore, students were able to work with different tools and software such as conceptual maps through Coggle, Bubll.us and Canvas. On the other hand, the contents and topics of the course were delivered through Zoom and an exchange of opinions was carried out via Jamboard. Additionally, experts in the field participated in a permanent dialogue within the unit related to HIV issues. In the same, the peer counselor who shares the experience of being a person living with HIV could exchange ideas with the students and counseling towards their peers. Likewise, the students analyzed videos regarding the importance of delivering post-HIV test results, as well as other resources for understanding the concept of Undetectable=Untransmittable (U=U).

The teacher's view

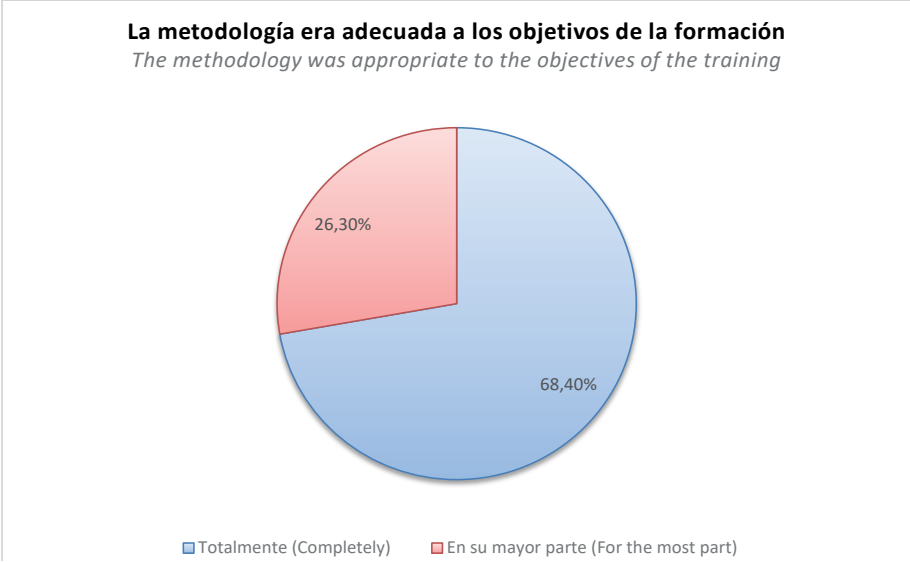
It is necessary to mention that the lecturer carried out this innovation for several semesters. The main difference was the introduction of interactive workshops that were significant useful for the development of the class. Furthermore, these workshops allowed her to incorporate tools and new elements that could complement to her previous innovation. Likewise, the lecturer maintained a great approach and communication throughout the whole course of her innovative classes to the coordination of InnovaT, especially for her interest in new tools that were provided by partners' universities from the consortium. According to the lecturer's point of view, this innovation was very useful since it not only made it possible to go deeper into previously developed concepts, but also to give utility and an information tool to the community.

¿What about the students?

A survey was conducted to determine students' perception towards the innovative class. In this sense, 68.4% of the students were satisfied with the methodologies used during the development of this innovative class, which not only allowed them to deepen their knowledge, but also allowed them to understand key areas of their future professional training (see Figure 2 below).

Figure 3

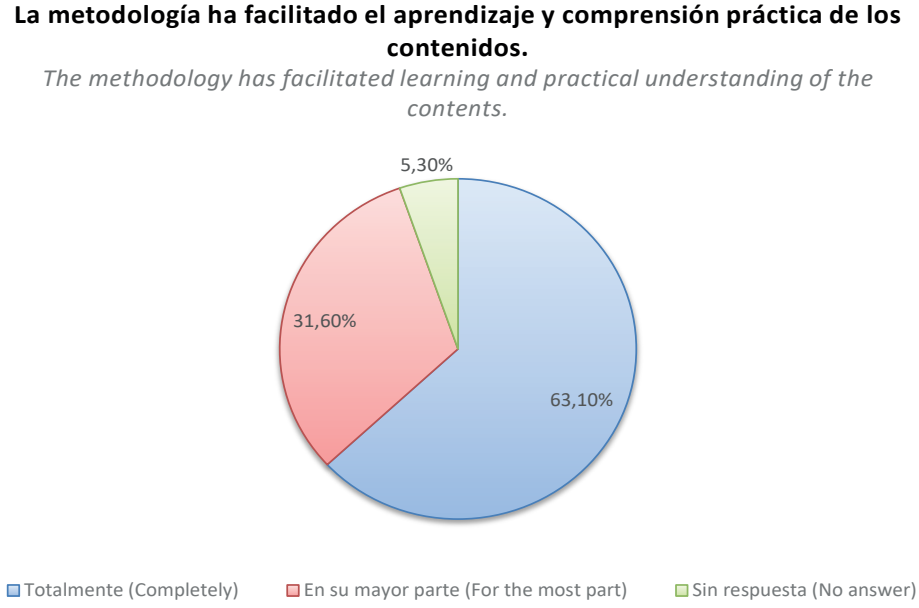
Students' survey UACh: Question n°1



Regarding the metodology and the students' learning process, 63.3% of the students considered that the teaching approach completely allowed them to facilitate their understanding towards the contents of the classes. In the same way, 31.6% of the students considered that for the most part, the metodology helped them to understand the learning and practical areas of the contents. Finally, 5.3% of the students did not answer this question (see Figure 3 below).

Figure 4

Students' survey UACh: Question n°2



Innovative Class nº3: People Management, training virtually in possible future working places

The third innovative class was developed in the course called "People Management" which was part of the seventh semester of the Information and Management Control Engineering career and led by a lecturer. In this sense, the lecturer developed an innovative syllabus that was composed by different teaching methodologies and activities that led to an innovation in the middle of pandemic times. Thus, a virtual World Café was held where the topics of Recruitment and Selection were topics such as to onboarding, job design, performance management, talent management, people development and compensation management were discussed with the students.

¿What is new?

The lecturer introduced issues and obstacles presented in the innovative course. Most of them were related to the lack of resources to create a significant connection to people management during the emergency context. In this sense, the new tools provided by InnovaT contributed with experiences and ideas about teaching methodologies that engaged students during a fortuitous scenario. In the same way, these teaching approaches allowed them to connect with a future simulated and work environment.

The teacher's view

SAccording to the lecturer the greatest difficulty was explaining the activity to the students, where in addition to teaching material, several sessions were devoted to explaining the activity and the role that each one had to play in it. Due to this, the idea of inviting outsiders to the course was abandoned, especially because the students' opinions that were verbally delivered throughout the course. In this sense, the lecturer considered that bringing outsiders to the course could be more an obstacle than a profit for the course. In the same way, according to the lecturer, the main fortitute of this innovative class was the willingness of the students to carry out new activities instead of recurring to traditional lectures. Regarding evaluation, some interesting facts were that students provided their opinions associated with the strategy of evaluation. Therefore, the evaluation material which was largely built together with the students, to identify the aspects to be evaluated in these innovative activities.

On the other hand, the greatest weakness consired by the lecturer was the characteristics and obstacles that the virtual world café had through Zoom. Additionally, the lecturer considered that was the fact of replicating the relaxed atmosphere that implies talking about a topic, was a significant challenge for her course, however, this atmosphere was achieved at some minutes of the World Café.

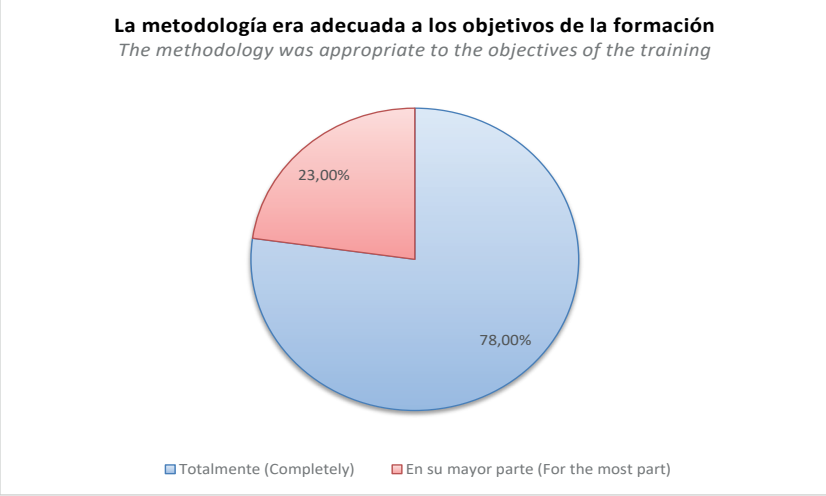
¿WHAT ABOUT THE STUDENTS?

A survey was conducted to determine students' perceptions towards innovative classes thoughout the semester.

In this sense, 78% of the students considered that teaching methodologies were appropiate to the learning results of the course. In the same way, 23% of the students considered that for the most part this approach was suitable to the objectives of the training (see Figure 4 below).

Figure 5

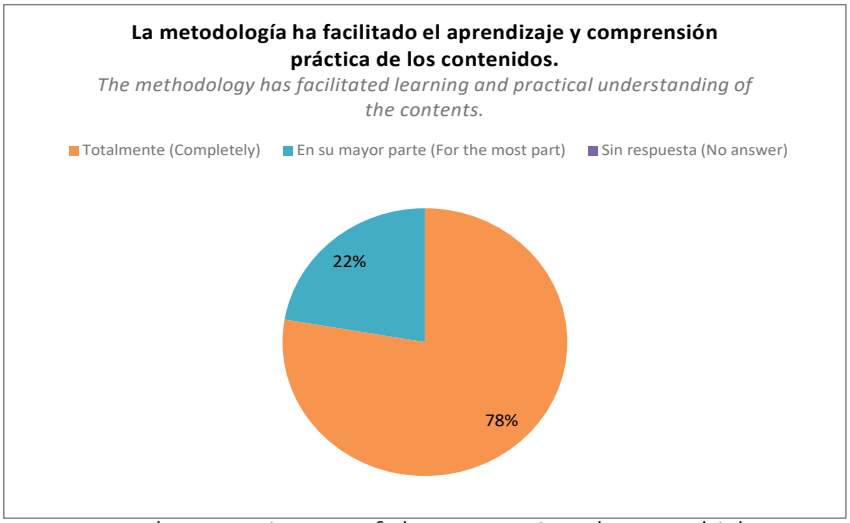
Students' survey UACh: Question n°1



Finally, regarding teaching and learning proccess, 78% of the of the students consider that the methodologies used allowed them to understand and facilitate learning. Likewise, 22% of the students considered that for the most part, theory could be related to practice. Additionally, it can be considered that the methodology of World Café and the others activities that were changed due to students' anxiety about including outsiders from the course, were welcomed by the students (see Figure 5 below).

Figure 6

Students' survey UACh: Question n°2



Next to the experiences of the Innovative classes which were conducted within the framework of the InnovaT project this chapter also provides the example of a Master's programme that has been created and has been evolving with the 21st century specifics and beyond both within its content as well as in its process of implementation and actual interaction with students.

Example of Innovative education Breda University of Applied Sciences (BUas) in the Netherlands: The Master Imagineering programme[1]

The field of study

The Master Imagineering programme from BUas focuses on the specifics of designing in the narrative mode. Engaging people in a subjective, future-orientated, and creative manner, it is built upon the concept of designing for organisational/ business or society emergence and employing the imagination to involve other stakeholders as co-designers of the future.

Imagineering strategically ignites and frames the facilitation of interpretation, variation, collective creativity, and sense making. Direct links are made to Transformative leadership, Strategic design, Business Innovation and Creative Entrepreneurship.

The Master's programme offers the international students from various

1 The first author of the chapter is the coordinator of the Master and the first, second and fourth authors are lecturers of the master programme

educational and professional backgrounds a deeper theoretical insight in issues of organisational/business/societal design within the context of enterprise logic transformation. It enables the students to develop analytical, pro-active, problem-solving attitudes and design-skills towards these issues.

The imagineer

The Imagineer is educated as a professional able to reframe existing situations into more desirable future directions and to use the cohesive and engaging power of the narrative mode in orchestrating these processes of emergence of the learning organisation. An Imagineer is educated to co-create a context in which people, whether consumers or employees or other stakeholders, become engaged and can be creative.

Educational (teaching) methodology in Co-creation (collaborative methodology)

The Master in Imagineering is structured to educate the professional of the 21st century, which means a professional prepared to deal with the fast-changing society. People are trained to become capable of translating those changes into new forms of organization, of devising innovative approaches to problems and opportunities, and of carrying out plans in dynamic ways. For that, the curriculum adopts collaborative methodology. Collaborative methodology refers to learning environments in which students engage in a common task where each individual depends on and is accountable to each other by sharing their experiences and taking on different roles. It aims to create a working space that invites the students to get involved with the learning topic in different ways, and to have different roles throughout the Master's. It is also about engaging with others, collaboratively participating, generating new ways of tackling issues and sharing their learning. The collaborative methodology is inspired by the social constructionist approach, a theory concerned with the relational processes in the construction of meanings and possibilities for new action

By creating and working together, students become more active and responsible for what is created, since they become part of it (McNamee & Gergen, 1999). The collaborative approach invites working and planning together, requiring interaction, engagement, and commitment among all involved.

Programme structure and content

The Master Imagineering programme follows a structure and content, from an expedition concept viewpoint, that embodies the main principles of the collaborative and complexity-driven essence of Imagineering as a design approach.

Figure 7

Master Imagineering programme structure

To dive deeper into this, Figure 7 represents the entire structure of the programme. The total of the study units makes 60 ECs.

The main objective of Block 1: Inspiration is to sketch the broad theoretical framework of the master. Studying processes of value creation and change/innovation/emergence from the complexity/experience perspective.

Complex adaptive systems and complexity thinking play a central role in block 1, to open another scientific perspective on reality. Through the perspective of complexity, there is another dynamic view on change and innovation in human systems which we have developed in the design methodology of Imagineering.

The first part of the block problematizes traditional approaches to organisational development, while offering the complexity perspective as an alternative on the macro-, meso- and micro-perspective. Throughout the block topics such as co-creation, collective creativity, design thinking, systems thinking, complex thinking, strategic and entrepreneurial thinking, within an organisational context, are explored.

Within the framework of the second block – Block 2: Ideation the programme aims to explore creative processes within organisations and possibilities for transformation. The block is divided into theoretical material, practical examples and activities that provide discussion and invite reflection on creativity, innovation and meaning; the basic components for organisational, business and social transformation. The students immerse themselves into the world of co-creation, imagination and dialogue; having a strong impact on transformative processes. Furthermore, the students will get the

opportunity to learn how Imagineering design methodology is applied and how to design for social systems. Applying theoretical frameworks from several disciplines and formulating a critical opinion about the complexity of organisational, business and social development.

The third block of the programme – Block 3: Implementation aims to offer an understanding of the management issues that arise when 'continuous creative business development' has to be a core competency of the organisation. Recognising the difficulties in the simultaneous orchestration of the existing (transaction) and the innovative (transformation) activities in the field of product, and/or market, and/or primary process.

After the Inspiration and Ideation phases there follows the Implementation phase, in which the focus lies on the design of the organisation (business, society) in such a way that the realisation of the experience concept can be optimally executed. By means of real business cases, the students in this block, are exposed to actually applying Imagineering as a methodology and process to transform an organisation/ business/society from a fixation in the industrial logic towards functioning in the networked co-creative logic.

A special emphasis within the Programme is placed on the Imagineering Design and the Imagineering Research courses, which run in parallel to the three Blocks described above.

The Design course has the purpose to enable the students to become strategic designers, designers for social innovation, social change, and business innovation. Following the course, the students become able to:

- Apply systems thinking and design thinking in coping with complex management issues in practice
- Create an environment in which collective creativity can take place and in which creative initiatives will result in innovation processes
- Analyse and creating interactive communication (a two-way process between sender and receiver, where in this process the different roles (sender/receiver) change constantly) between the organization and its stakeholders
- Generate new insights for the specific context in a rigorous way
- Promote collective creativity
- Create an on-going dialogue
- Develop interventions aimed at transformation
- Evaluate the impact of a designed high concept/adaptive tension engine

The Imagineering Research Course focuses on a variety of issues related to understanding, planning, conducting and writing up an Imagineering research. Learning about research, and how to conduct it, is crucial in the Imagineering Masters. It supports the application of the Imagineering design methodology by understanding and responding to the challenges organisations face. It also helps in decision making and to produce useful knowledge.

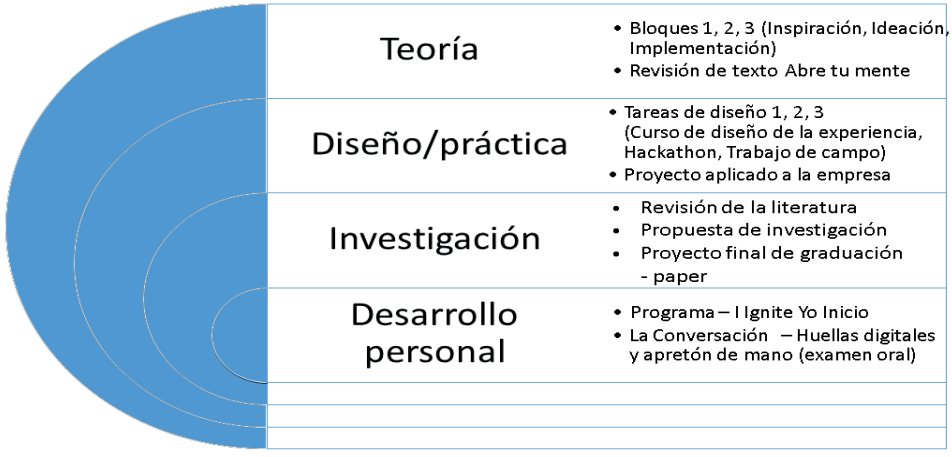
The ultimate objective of the Imagineering Research Course is to help students in acquiring the necessary skills to carry out and complete their research-based Imagineering project at the end of the Master's.

The I ignite programme is a very special part of the Master's, adding and building upon the learning goals and the desired learning outcomes and profile of the Imagineer. It runs throughout the entire academic year. As an Imagineer seeks to ignite for desired transformation in social processes, he or she needs to investigate not only the rational, instrumental or technological approach, but also needs to understand the various interpretations of this context, based on the values, norms, ambitions and dreams of the involved stakeholders.

Below Figure 8 shows all the elements described above and the integrated content elaborated upon:

Figure 8

The Master Imagineering in content versus EC and competency development



Insights and lessons learned (based on the cases, the frameworks, the practices)

Having depicted the development of higher educational and professional training organizations in the evolution of time; having made a deep dive into the specifics of the 21st century and existing frameworks for 21st century education, and arriving to the core of the contemporary trends that currently the whole humankind is being challenged by; as well as illustrating by examples how organizations in Latin America and Europe cope with the above, it is here the moment to present and synthesize some of the lesson learned and insights that can be taken and explored further.

• Technology

It is more than clear, especially after being within the hurricane of a pandemic, that major steps have already been taken and still need to be addressed in terms of ICT, blended, hybrid, and e-learning facilities. It is no longer just optional or an issue to be addressed in a strategy for the future but each and every educational institution has the objective and the responsibility to provide information to students by means of a personal portal, as digital access to information about education / the educational process, whether this would be a specific Learning Management System and/or registration and administration Software tools and applications for study results and examinations, these become the "default" expectations of all learners at hand. Communication, promotion, visibility, interaction do no longer happen via only traditional channels, on the contrary – they have moved towards the "screen" and "smart gadgets" of the learners as well as towards the social media variety of applications such as Facebook, Instagram, Twitter, TikTok, Snapchat, Yammer, LinkedIn and many more.

Students require 24/7 access to a personal online portal (also accessible via an app) where all diverse systems can be accessed (Single Sign On -SSO). Facilities are being created for lecturers at various workstations such as: live-streaming; collaborative software such as Teams, Mural, Miro, Zoom, etc. for maintaining national and international contacts and study coaching as well as COIL environments and webinar/self-recording booths.

• Transversal competencies

Higher and professional education are not there just to shape the professionals into experts with specific expertise, it is obvious now that the transversal competencies gain more relevance – like problem-solving, critical, and creative thinking, teamwork, communication, data savviness, entrepreneurship, and leadership – that will serve these professionals for life. These skills - together with an attitude of openness, curiosity, civic duty, optimism, initiative, an inquisitive mindset, and drive- are already recognised by alumni and industry partners.

- **Internationalization**

In addition, the diversity and international environment, together with a transdisciplinary approach and connection with academic research, professorships and many industries are there to enable the students to understand, analyse, and intervene in the complexities of organisations. In that sense, educational institutions have already achieved first steps or have strengthened their role in managing to grow and enlarge their international networks, stakeholders, and counterparties. Each university would need an internationalization plan referring to the opportunity that students benefit from the international experience in their daily study environment. This can be through mobility and work experiences lecturers already have, through the international colleagues, but also through the international experiences students have been gaining (either through mobility or by international students living, studying and working within a new context). A great way to increase the use of actual examples in educational settings, is to continuously make these experiences explicit by creating (short) clips/ podcasts or other formats that can be used in the diverse curricula.

- **Link to Industry**

The universities and professional training institutions need to be as well the providers of education that has real and direct impact on the industries and wider society they serve. Its focus is not 'just' on developing knowledge (through academic research) nor 'just' applying knowledge (as traditional applied sciences) but primary on its use in real life to solve real problems and shape the industries in which they occur. Use is the difference between innovation and invention. The education has to be guided by societal challenges and aligned with national and international research agendas. Thus a specific difference can be made where it matters and that means constantly evaluating and adopting the research and development activities through external, outside-in reviews.

Designing the educational programmes needs to be seen as a learning expedition, where highly motivated and study-driven students are collaborating and interacting with professional and experienced lecturers and industry practitioners. Only in this way do the educational institutions become capable to continuously empower the development of the multidisciplinary and cross-sectorial skills and competencies of the students.

- **Teacher's role**

Being in this dynamically evolving 21st century context, the teacher has moved away from the one who has "all the knowledge", who "knows the answers to all

questions", who is hierarchically "untouchable", who is "there to provide knowledge in one direction". Now we talk apart from the above "with a twist" about a facilitator, a mentor, a collaborator, a designer, someone who empowers, a trainer, a coach, a supervisor and many more.

It will not be too much to say that the continuously changing roles and the ones continuously added to the profile of a teacher, transform the university as well as the professional training institution into a HUB – a blended (both physical as well as online) space of interaction amongst students, lecturers, industry and public authorities– where knowledge is sustained, practices tested, and experiments embraced.

- **Collaboration (creating learning and communities of practice)**

Educational programmes call for a new structure –one that is able to educate the professional of the 21st century, which means a professional prepared to deal with the fast-changing society. People will be trained to become capable of translating those changes into new forms of organisation, in devising innovative approaches to problems and opportunities and in carrying out plans in dynamic ways. To encompass this, the curricula need to look into the so-called "learning community" and/or "community of practice" methodologies. Methodologies which refer to learning environments where students engage in a common task and each individual depends on and is accountable to each other by sharing their experiences and taking on different roles. It aims to create a working space that invites the students to get involved with the learning topic in different ways. Furthermore, to have different roles throughout the learning together with lecturers, industry representatives, alumni and researchers. It also engages with others, collaboratively participating, generating new ways of tackling issues and sharing their learning. Learning communities and communities of practice convene regularly and frequently during the workday to engage in collaborative professional learning to strengthen their practice and increase student results. The community members are accountable to one another, to achieve the shared goals of the school and school system and to work in transparent, authentic settings that support their improvement.

The community methodology, described above, is seen to be adapted and adopted more and more in the context of university and professional teaching and learning. It strives to achieve the objective of integrating theory and practice, as well as content and methods, in order to provide a coherent learning experience to the students and to prepare them to become professionals of the future. It also allows the involvement and engagement of diverse stakeholders and the formation of a collaborative networking ecosystem, which we have also emphasized upon above.

- **Personalization and flexibilization of education**

Personalization and flexibilization are not just about making courses accessible to students across an educational institution being compatible in size and planning, so they can be combined. They are at the heart of everything an educational institution needs to create, namely a knowledge-rich, active, and sharing community that supports students throughout their learning journey. Students need to be provided ways to both actively learn from and contribute to the cross-disciplinary learning communities, courses, projects and minors they participate in – enriching the learning experience for all: students from different programmes, lecturers, researchers, alumni, and industry professionals.

Higher education now and beyond

The purpose of any higher educational and/or professional training institution has always been, but now even more than before, to educate students and prepare them for their role in society and their chosen professions and for engaging in research and development in their professional domains. Ultimately, their success is the measure of the institutional success. Therefore, it is incumbent upon the educational world to define what students' success means. The ease with which they find employment is certainly one indicator. So is the degree to which they are sought after by the industries the educational institutions serve (and want to serve). Another indicator is impact: having a marked positive effect or influence on the development of an industry or of society. However, what is more?

Without any doubt the core can be continuously traced within the ambition to have impact – to shape a better, more meaningful, sustainable, open, connected, and appreciative world. This is representative of the generation coming to these institutions for an education today and tomorrow. It reflects a sense of civic duty, responsibility, optimism, initiative, and the desire to do more than just a job.

All the above can happen when the mission of educational institutions will become more and more oriented towards a model of combining multi- and cross-disciplinary learning and research; where in learning and communities of practice students, industry partners and stakeholders, educators and researchers go hand in hand and work on practical challenges for industry and society – thus blending education, academic and applied research, and generating continuous impact.

The professionals that would need to be delivered to the different industries would have to be capable of operating in a world that is fast and constantly changing. As our global population is growing, living longer, becoming more prosperous and increasingly urbanised, we must find new ways to remain healthy, consume less energy and fewer resources, protect the environment, and deal with the threat of

pandemics and increasing geopolitical instability. Technology promises solutions to many challenges as well as poses new practical, ethical, and legal challenges of its own. Robotization, digitalisation and artificial intelligence will transform entire industries, the nature of work itself and the individual's relation to society.

Conclusiones

Unsurprisingly, both industries and society in general expect higher education and professional training institutions to deliver professionals who can help and lead them through these transitions.

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InnovaT
Innovative Teaching Across Continents

Cofinanciado por el programa Erasmus+ de la Unión Europea

CHAPTER 7

INNOVATIVE EDUCATION IN TIMES OF CRISIS

INNOVATIVE EDUCATION IN TIMES OF CRISIS

Mario Catalán Universidad Viña del Mar, Chile

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CHAPTER 7

Introduction

In Chile, since October 2019, social mobilizations emerged to demand social rights violated by the structural violence to which Chilean society has been systematically exposed since the military dictatorship (1973-1990) until today. In this context, educational institutions, including the university, had to interrupt classes and incorporate adaptations in their modality for the development of the contents. Subsequently, since March 2020, the Pandemic associated with COVID-19, which generated a worldwide social and health impact, universities also had to develop adjustments and adaptations: from face-to-face teaching to the virtual modality to give continuity to the training processes.

Thus, within the above context, we highlight two experiences developed at the Universidad Viña del Mar (UVM): (1) the subjects of Group and Community Practice I and II of the Social Work career program of the School of Legal and Social Sciences; and (2) the subject Basic Tools and Methods for Scientific Work, belonging to the Initial Training Unit of the School of Education. Both experiences are developed as pilot experiences within the framework of the InnovaT, project of which the institution is part.

Regarding the subjects of Practice with Group and Community I and II of the Social Work, it is important to note that since 2018 these subjects have been developed in connection with functional and territorial community organizations, where teams of students (2 to 6), generate social intervention processes: design, implementation, and evaluation of Service Projects, under the Project-Based Learning Teaching Methodology (Toledo and Sanchez 2018). Likewise, since 2021, these subjects are also articulated with the Learning and Services methodology (Ochoa, Pérez, and Salinas, 2018). These subjects are declared by the Social Work career program as bidirectional mechanisms of outreach and engagement (VcM), i.e., they fulfill a double intention: on the one hand, students develop theoretical and practical learning in Although the Real Academia Española de la Lengua considers

the term “los” as neutral, in the text the expression “los” and “las” will be used to account for the diversity of gender relations in the configuration of students and social relations, since it is considered that only the expression “los” is not neutral, but a hegemonic linguistic expression of patriarchal machismo.

In addition, they contribute to the work of Civil Society organizations, contributing to the strengthening of Collective Action, participation, and community organization.

In the development versions of the practice modality implemented between 2018 and 2020, the following situations were appreciated: (a) slowness in the generation of actions or activities to respond to community interest; (b) extensive phase in the generation of diagnoses to identify needs, problems or community interests; (c) difficulties to give continuity to the community work processes; and, (d) scarce evaluation of the impact of the actions carried out in the students’ training. As a result, the teaching team of the subjects emerged as a challenge to incorporate innovations to strengthen the teaching-learning processes of the students, and to contribute directly and concretely to the organizations and institutions in which they work. For the above, qualitative evaluations of the implementation of the modality and the participation of teachers in trainings carried out in the framework of the InnovaT project were generated, from where it was incorporated as a pilot experience in the implementation of the subject in the afternoon session in the first quarter of 2021.

Another pilot learning experience, related to the InnovaT project, was developed in the subject Basic Tools and Methods for Scientific Work (hereinafter HMBTC), belonging to the Initial Training Unit of the School of Education of the Universidad Viña del Mar. In this, the design of an innovative syllabus was applied, created in a MOOC in which several teachers were invited to participate. It should be noted that, although this subject has a 100% online modality, it was defined as such long before the context described above, because it is part of the Initial Training Unit of the Universidad Viña del Mar, which leads the development of online subjects in the afternoon, starting by implementing in 2016 hybrid subjects (better known in its anglicism as blended) to later become 100% online, with 30% to 50% of synchrony, i.e., connection by videoconference.

However, there are some students in evening courses who have shown low interest in the subject, not taking the formative and summative activities and/or not

connecting. Therefore, it was decided to apply the innovative syllabus developed under the aforementioned project, in the career of Risk Prevention Engineering (continuing studies program, to opt for the professional degree), with the aim of promoting the learning of research methodology tools through the development of projects with a focus on the locality, as well as to increase motivation for the course. Thus, using active learning methodologies (Caro-García, 2020), namely, Project Based Learning and Collaborative Learning, by means of synchronous classes, via the Zoom platform

Theoretical-practical sessions were developed through synchronous classes, via Zoom platform, which provided conceptual knowledge and tools for the development of projects, applying scientific research methods. These included the use of various applications such as: MENTI, Kahoot! and Padlet, before, during and after class, with the purpose of achieving the learning results proposed.

Regarding the experience, the main strength is the constant support provided by UVM's International Cooperation Department throughout the process, which through a MOOC provided the necessary tools for the design of the syllabus. In addition, in terms of implementation, the promotion of healthy competition among students, the generation of metacognition spaces, as well as the increase and improvement of their digital competence should be highlighted. As weaknesses, it is necessary to recognize that not all applications are suitable for all audiences, i.e., interest will vary according to age and context of study. In addition, it is necessary to know the level of digital competence (Grande-de-Prado et al., 2021) of the participants, as well as their access to the Internet, so that the use of applications is a good experience for all. Therefore, the present implementation serves as an example, but also represents an opportunity for the teaching team behind the course, to seek much more innovative alternatives to present the contents and guide the teaching-learning process, taking advantage of everything provided by Web 2.0 as well as the platform of the institution itself.

Background

a) Practicum

The subjects of Group and Community Practice I and II contribute to the graduate profile of the Social Work Career of Universidad Viña del Mar, associated to the Founded Social Intervention. These subjects contain learning outcomes related to the link with groups, communities, territories, generation of diagnosis, design, implementation, and evaluation of intervention plans, as well as the reflective field of professional work from its ethical components. Therefore, these subjects develop processes of social intervention under the teaching methodology of Learning and Services (Ochoa, et al., 2018)

complemented with Project Based Learning (Toledo & Sanchez, 2018). Service-Learning seeks to link service and learning in a single articulated and coherent educational activity, where students develop skills through service to communities or organizations, based on experience through a cycle of action and reflection, conceiving service as a response to real needs of communities, from conscious, planned, and systematic teaching and learning processes (Puig et al., 2007).

According to Tapia (2008, in Paredes, et.al., 2017), the development of the Learning and Service methodology presents 3 particular characteristics that are developed in the indicated subjects: (a) the student as protagonist in the planning, development and evaluation of the Service Project they generate in the process of practice with organizations, communities or institutions; (b) the development of service activities, aimed at collaborating in addressing specific social situations, and (c) the intentional linking of practices, empirical experience of the students, with the learning contents of the programs of each subject. The incorporation of the SL methodology in the development of the Group and Community Internship I and II subjects of the Social Work at UVM, seeks to strengthen students' learning by addressing real situations in order to solve problems and strengthen community resources available in the territories. In this sense, various experiences and good practices have been identified in Higher Education institutions in Chile of the use of the methodology in subjects with practical components that account for the contribution of this in professional training (López-Fernández & Benítez-Porres, 2018; Caire, 2019; López & Vera, 2019).

The Project Based Learning (PBL) methodology is a learning strategy that seeks to integrate theory with practice. In this sense, students can apply information, linking their knowledge acquired in subjects already taken and thus represent their knowledge in different ways. In the literature, there are analyses of experiences of incorporation of PBL in the University (Maldonado, 2019; Orellana, 2020) with

interesting analyses regarding significant contributions for collaborative work, self-management, and development of students' creativity, which are considered necessary for the professional training of Social Workers at Universidad Viña del Mar.

The articulation of both teaching-learning methodologies in configuring complex universities is evidenced as a possibility to create harmonious models that relate the functions of teaching and liaison with the environment, where learning converges with the development of citizen commitment, simultaneously with academic excellence and the university social responsibility, in which students and faculty participate through social initiatives (Tapia, 2008 in Paredes, et. al., 2017).

b) Initial Training

The HMBTC course is part of the university's Initial Training Unit, belonging to the School of Education. This, unlike the three compulsory courses of the group (Oral and Written Expression, Logical Mathematical Thinking and Personal Management), is part of a group of disciplines among which the schools of the institution, according to their profile, choose one to implement in the first year of their career programs. Thus, Risk Prevention Engineering decides to integrate this discipline in its curriculum, with the objective that its students achieve the following Learning Outcomes: 1) Distinguish between scientific knowledge and common sense, analyzing reality and problematizing it; 2) Identify objects of study in relation to their disciplinary training that are relevant to be investigated; distinguishing the stages of the scientific method; and 3) Select a relevant problem to investigate in their discipline, developing a limited research project.

The course establishes in its teaching, learning and evaluation methodology the use of active learning methodologies, to make the above possible, understanding these as:

> "techniques and strategies that the teacher uses to convert the teaching process into activities that focus on the active participation of the student as a way to achieve learning. They are methodologies that focus on activities rather than content and some of them are case analysis, flipped classroom, collaborative and cooperative learning, gamification, Service-Learning (SL), project-based learning, challenges, or problems (PBL) (Caro-Garcia, 2020, p. 12)."

In this sense, Project Based Learning is adopted from the program and syllabus, and, as part of the updating of the course, Collaborative Learning. Regarding Project Based Learning, it should be added that it originated in the book The Project Method published in Teachers College Record by William Heard Kilpatrick in 1918 (Salido, 2020). Through this book, the foundations were established for what we

know today as PBL, questioning rote and content-centered learning, thus promoting active learning in which the student becomes the center of everything, being able to solve a problem through the development of a real and collaborative project among peers (Salido, 2020). Thus, thanks to this methodology, students can learn how to use the scientific method, applying it in a real way in the design of a research project focused on their community or locality.

In addition to the above, and in relation to Collaborative Learning, also known as Cooperative Learning, it is defined as "an active methodology based on the construction of knowledge through teamwork with mixed and heterogeneous groups" (López et. al., 2020, p. 6). This is ideally complemented with the PBL given that, to develop the project design, students need to form work teams. Thanks to this action, they learn to work in teams, the work is distributed equitably; and networks are generated among people who have an important wealth of personal and, in many cases, academic experience, as they have a technical or professional degree in the area.

Finally, a not minor element to analyze is related to the name of the course and refers to the basic tools and methods for scientific work. These arise from the need to respond to the challenges faced by every professional researcher in the 21st century, being able to search for and obtain information from academic sources, as well as to use technology in favor of their learning. For this, a series of digital tools were applied, namely, applications available in Web 2.0, understood as that which incorporates a "...multitude of simple and free platforms to the Internet world..." (Cerda et. al., 2020, p. 64). It should be noted that the applications used were known and learned to use in the MOOC from which the innovative syllabus emerged, so their choice and use were fully studied.

Context

In relation to the Educational Model of Universidad Viña del Mar, we have that the undergraduate formative programs are organized from: disciplinary, professional, and transversal training, where skills for academic success and the development of the specialty are integrated, along with their practices, and graduation and degree processes.

The subjects of Group and Community Practice I and II, associated with the disciplinary and professional dimension of the training, is an inter-curricular practice of two academic periods of duration that are located in the third year of the Social Work Career and that seek mutual benefit between the university and its significant environment that contributes to improve, impact and feedback the quality of the social work

professional training (UVM, 2021). This is consistent with the Institutional Project and the Educational Model of Universidad Viña del Mar, since it generates instances with different learning environments, as well as seeks a link with the environment through bidirectional initiatives of meaningful collaboration. It also develops the theoretical-practical articulation of the learning developed by students in the development of Service Projects.

Transversal training, as part of the School of Education of Universidad Viña del Mar, has an area that encompasses three smaller units: Transversal English, General Training, and Initial Training. The Transversal English Program is focused on the teaching of a second language, implemented from the first year in all career programs. The General Training is divided into 5 different lines of application, from which the schools choose the subjects they will enroll, depending on the interests of the career programs. Finally, Initial Training is taken in the first academic year and began to be implemented in 2012 only in some career programs, increasing its coverage to the entire university to date. The objective is to level the entry skills of all students, thus providing a space for leveling, but also for adapting to the university and academic world. Currently, there are three compulsory subjects (Oral and Written Expression, Logical Mathematical Thinking, and Personal Management), and a fourth one is added, which is chosen between two options, which are Basic Tools and Methods for Scientific Work and Use of ICT (Information and Communication Technologies). The choice of this fourth subject is a decision of the schools and responds to the need to implement one of them in the first year, since they do not have a similar one in their respective curricula. Thus, in the case of the School of Engineering and Business, there is the HMBTC course, which is the starting point for the learning to be developed in the other courses, according to the school's focus on scientific development, research, projects, and innovation.

Description of the experience

a) Practicum

Table 1 characterizes the experiences developed in teaching innovation:

Table 1

Experience characterization

Subject	Program	Academic Period	No. of Teachers	No. of Students	No. of Organizations
Group and Community Practicum I	Social Work	Trimester 1 2021	2	10	4
Group and Community Practicum II	Social Work	Trimester 2 2021	2	10	4

In the implementation of the subjects of Group and Community Practicum I and II of Social Work, during the afternoons of the first quarter 2021, a pilot experience was developed with the objective of strengthening the learning of the students of the subjects through innovative Service Projects that mutually benefit the participating territorial organizations. This version of the subject had two sections; a group of students accompanied by a teacher who in parallel develop the academic planning of the subject. This was based on the development of the teaching-learning methodologies SL and PBL, where the following activities developed with the students were incorporated in the planning of the subject (Syllabus): (1) extended workshop (where both parallels met) to address the Service Projects, (2) extended workshop to address the teaching-learning methodology; (3) workshop to review inquiry strategies linked to PBL, (4) extended and group workshops to monitor the processes of design, implementation and evaluation of the Service Projects; (5) workshop to close the course with the participation of representatives of the organizations.

Due to the Pandemic context that originated periods of quarantine of the population, the subjects were developed in virtual teaching modality, with presence in practice sites, and teaching support in the field. The organizations linked to this experience are: (1) Asamblea Territorial Huanhualí, Villa Alemana, (2) Agrupación Emprende Villarrica, Villa Alemana, (3) Escuela Popular de Artes de Achupalla, Viña

del Mar, and (4) Junta de Vecinos Las Canchas, Talcahuano.

- In this experience, the following inquiry strategies linked to Project Based Learning were addressed to favor the analysis of the current situation of the organization and the design, execution and evaluation of the Service Project:
- **Mobile interview:** interactive interview that the students applied in the territorial context where they developed their internship with key actors (e.g., social leaders) as part of the diagnostic exercise.
- **Mapping of localities:** visual representation of information in a geographical context, in this case the territory where the students develop their practice. This activity is linked to the strategy of Social Cartography (Diez, 2018) or territorial mapping (construction of maps from stories, photographs, etc.) reviewed in previous subjects. Virtual tours were conducted through Google Maps (Street View) and face-to-face tours of each territory.
- **Appreciative inquiry:** instances of co-construction between the team of students and key actors of the territory for the formulation of the service project.
- **Formative peer evaluation:** conducted through the identification of strengths and skills identified among the participating students, which was carried out at the end of the Group and Community Practicum I and II.

The following platforms and applications were also used for virtual teaching: Zoom for videoconferences and group work, Mentimeter for interactive activities, and Google applications (Jamboard, Google Map, Word, Forms, etc.) for the development of products and reports by student teams.

b) Initial Training

The pilot classes were implemented in the Basic Tools and Methods for Scientific Work course. This is part of the Initial Formation curricular line and seeks to provide knowledge, abilities, skills, and attitudes that incoming students should achieve by the end of their first academic year.

This is a subject that aims to contribute to the development of the students' initial profile and performance, together with a basic and introductory notion of what Scientific Work implies. To this end, students are encouraged to formulate a limited project, from the identification of a research problem to the methodological proposal, using the scientific method and synthesizing information on disciplinary problems at an incipient level.

As a result of the above, a summary table of general information on the process is presented below:

Table 2
General information of the process

Institución: Universidad Viña del Mar				
Faculty	**Teacher**	**Course**	**Program**	**Endeavors**
Initial Training, School of Education	Priscilla Moena	Basic tools and methods for scientific work	Risk Prevention Engineering (continuing ed.)	Alternating energy generation system using photovoltaic means.
				Automated control system for the correct use of masks (SCAMAPP).
				Hydrologic modeling of the La Ligua River basin in the province of Petorca.

It should be noted that, although three innovative projects or ventures are recognized, belonging to a total of 12 students, the entire course was part of the pilot classes within the framework of the innovative syllabus, therefore, the participants were 20.

1. Teaching-learning methodology

The learning-teaching methodology of the subject contemplated the theoretical-practical modality, in a 100% online implementation. In this, active learning strategies were implemented, complemented with contents delivered in the classroom, making use of this, in an interactive way; thus, developing the autonomous learning of students. The current one was oriented to the Project Based Learning Model (PBL) and Collaborative Learning, which allowed students to acquire knowledge and basic skills of analysis and synthesis of information, writing a report and interpretation of data, which enabled them to solve problems of their discipline.

In addition to the above, the course integrated a Peer Evaluation, which allowed students to learn from the successes and mistakes of their classmates, as well as from the different topics and problems existing in their discipline. In addition, Case Analysis and Problem-Based Learning (PBL) were integrated to a lesser extent, with the purpose of diversifying the strategies proposed and giving more opportunities

to students to enhance work in real contexts.

Finally, it is worth mentioning that autonomous learning and collaborative learning were developed in the classroom; the latter, given that the student is assumed as a constructor of his own learning and evaluates his own process, supported by a teacher facilitator.

2. *Evaluation methodology*

The evaluation methodology had a diagnostic, formative, and summative intention. These were critical learning activities, which required the necessary participation of those involved, as they sought to generate metacognition and learning processes, evaluating individually and in groups the strategies developed by each student to achieve the objectives set.

Regarding the evaluations and their detail, the following were carried out:

Diagnostic evaluation: students completed a questionnaire in the subject that allowed them to reveal their previous knowledge of the subject.

- Formative Assessment: consisted of workshops that allowed the practical application of all the knowledge acquired in the theoretical part of the course.
- Summative Evaluation: development of an individual test on the theoretical content of the first part of the course. In addition, the course included an analysis of a scientific article (in groups), delivery of a written project and its presentation (the latter two also in groups).
- Peer evaluation: part of the review process of the final project, which contributed 10% of the total 35% that this delivery implied to the overall course average of each student.

Finally, within the framework of the above formative and summative evaluations, the innovative tools used during the implementation of the classes were as follows:

Table 3

Innovative tools used

Instances	Results Associated learning	Typ
Diagnostic Assessment: Initial questionnaire (week 1): **Online**, individual, synchronous; in **Respondus format** (with closed questions and one open question related to your perception of the subject to be taken).	RA1. Distinguish between scientific knowledge and common sense, analyzing and problematizing reality.	Formative assessment
Practicum workshops (weeks 2,3, and 4): Online, group, synchronous: in homework format, after having their class via **Zoom** with their teacher, they proceeded to apply what they had seen in the first part of the class. To do so, the teacher divided the students into groups and assigned them tasks such as the following: develop a case **(case study)** or solve a problem **(PBL)** using **Mentimeter**; or create a diagram (using **Diagrams.net**). Add to this that, at the end of each class, students actively participated by answering motivational questions that the teacher asked them using **Kahoot!**	RA1. Distinguish between scientific knowledge and common sense, analyzing and problematizing reality.	Formative assessment
Event I: Quiz on basic notions in science (week 5): **Online**, individual, synchronous; in **Respondus format** (with closed questions and about 3 open questions).	RA1. Distinguish between scientific knowledge and common sense, analyzing and problematizing	Summative evaluation (10 %)
Workshops on Research Project Design (weeks 6 and 7): **Online, group,** asynchronous; in document format. The students had to meet weekly to advance in the design of their project, using **GoogleDocs,** where they could edit the document in real time. Afterwards, each group met with the teacher to show their progress, giving each other feedback.	RA2. Identify objects of study in relation to their disciplinary training that are relevant to be investigated; distinguishing the stages of the scientific method. RA3. Select a relevant problem to investigate in their discipline, developing a research project	Formative assessment
Certamen II: Análisis de artículo científico (semana 8): **Online,** grupal, asincrónico; en **formato Respondus** (con preguntas abiertas; que deben responder en torno a un artículo asignado a cada grupo de trabajo).	RA2. Identificar objetos de estudio en relación con su formación disciplinar que sean relevantes de ser investigados; distinguiendo las etapas del método científico. RA3. Seleccionar un problema relevante a investigar en su disciplina, elaborando un proyecto de investigación acotado.	Evaluación sumativa (20 %)

Table 3 Cont.

Instances	Results Associated learning	Typ
Workshops on Research Project Design (weeks 6 and 7): **Online, group**, asynchronous; in document format The students had to meet weekly to advance in the design of their project, using **GoogleDocs**, where they could edit the document in real time. Afterwards, each group met with the teacher to show their progress, giving each other feedback	RA2. Identify objects of study in relation to their disciplinary training that are relevant to be investigated; distinguishing the stages of the scientific method. RA3. Select a relevant problem to investigate in their discipline, developing a research project.	Formative assessment
Event III: Scientific research project (week 10): **Online**, group, asynchronous; in Task format, a report was due, following the previously agreed structure, which fully detailed the working group's project proposal. This was reached after several previous revisions where the teacher gave feedback to the students. However, it should be noted that this evaluation included a percentage given by a peer evaluation that each group had to give to two papers (related to two different groups), once they had delivered their final paper. This peer feedback awarded each group 10% of the total 35% grade.	RA3. Select a relevant problem to investigate in their discipline, developing a research project. RA3. Select a relevant problem to investigate in their discipline, developing a research project.	Summative evaluation (35 %)
Workshop on Research Project Design progress (week 11): Online, group, asynchronous; in document format The students had to meet to correct the design of their project as per teacher's indication, using **GoogleDocs,** where they could edit the document in real time. Afterwards, each group met with the teacher to show their corrections, giving each other feedback	RA3. Select a relevant problem to investigate in their discipline, developing a research project. RA3. Select a relevant problem to investigate in their discipline, developing a research project.	Formative assessment
Event IV: Research Project Exhibition (week 12): **Online**, group, synchronous; via zoom. After agreeing on a date and time, the professor met via **videoconference** with the different groups to observe, together with an evaluation committee, the students' presentations related to their projects.	RA3. Select a relevant problem to investigate in their discipline, developing a research project. RA3. Select a relevant problem to investigate in their discipline, developing a research project.	Summative evaluation (35 %)
Total	100 %	

RESULTS

a) Practicum

After the implementation of the pilot experiences described above, a perception survey was applied to the participating students to evaluate the teaching innovations incorporated. This survey consisted of a series of statements associated with the methodological strategies developed in the subject, the teaching performance, and the perception of compliance with the program.

In relation to the subjects of Group and Community Practicum I and II, 10 students participated, of which 80% participated in the evaluation of the experience. The following results were obtained. Regarding the methodology, 87.5 % expressed total agreement that it was adequate to the training objectives, that it facilitated learning and that it was able to relate theory with practice, while 12.5 % agreed for the most part with these statements.

Regarding the teaching staff, 62.5 % totally agree that they organized the training adequately and that they mastered and had up-to-date knowledge of the subject, while 37.5 % agree for the most part with these statements. Likewise, 50 % totally agree that the teachers were able to solve the doubts that arose, while the remaining 50 % agree for the most part with these statements. Regarding the fact that the teachers had a good command of the digital tools or platforms used, 87.5 % of them totally agreed, while 12.5 % agreed for the most part with these affirmations.

About the course, 100% of the students state that the program of the course has been fulfilled and that the theory is applied in practice. 75 % totally agree that the documentation and materials available were adequate, 12.5 % agree for the most part and 12.5 % agree partially. Seventy-five percent strongly agreed that the available documents and materials contained practical guidance, while 25 percent agreed for the most part. Among the strengths identified by the students, the following stand out: teacher accompaniment, flexibility, communication, and support, and among the weaknesses: connectivity (Internet connection), time and distance. 100% of the students say that digital tools or platforms were useful, which facilitated the learning process and strengthened the work done with community organizations in the context of the Covid-19 pandemic.

The following experiences were generated in relation to the Service Projects developed[1]:

1 2 Audiovisual recordings of Service Projects Group and Community Practice UVM Social Work: https://web. facebook. com/watch/101479442256376/5020079041341547com/watch/101479442256376/5020079041341547

- Asamblea Territorial Huanhualí, Villa Alemana: support for the implementation of a Popular School in the territory and self-management of the organization.
- Agrupación Emprende Villarrica, Villa Alemana: strengthening support networks and the participation of the organization's members.
- Escuela Popular de Artes de Achupalla, Viña del Mar: strengthening the link between the school and the community and territory from the Good Treatment and Care of the Environment.
- Junta de Vecinos Las Canchas, Talcahuano: strengthening of the organization and human relations by emphasizing the importance of participation in the decision-making process of the neighborhood council.

b) Initial Training

After the application of the innovative syllabus in the course of Basic Tools and Methods for Scientific Work, the main quantitative and qualitative results, in terms of strengths, are as follows:

1.- Student motivation was high, developing interesting project designs, with a focus on the locality; highlighting the work with Empresa Sanitaria de Valparaíso, Aconcagua y Litoral (ESVAL), Hospital Juan Noé Crevani in Arica, Ministry of Health, Supermercado Jumbo Concón, Constructora Waldo Sánchez, Ferretería Higuerillas Concón and Ferretería Su Casa de Concón

2.- The increase in participation in videoconference classes, from 50 % to 80 % connected, as well as greater motivation to learn and autonomy in the students, should be highlighted.

3.- Regarding implementation, it is important to highlight the promotion of healthy competition among students, the generation of metacognition spaces, as well as the increase and improvement of their digital competence.

4.- The applications were diverse, motivating, contextualized; they promoted individual and group recognition, were playful, challenging and interesting; they simplified the teaching of complex content; and they were very well received by the students in general.

Regarding the planning of the good practice, the constant support provided by the International Cooperation Directorate throughout the process is highlighted, which through a MOOC provided the necessary tools to design the syllabus.

Conclusions

a) Practicum

In relation to the subjects of Practice with Group and Community I and II, during the 1st and 2nd quarter 2021 respectively, they were developed in virtual mode because the city of Viña del Mar is in quarantine phase, however, as the phases progress, the students carry out face-to-face practical activities associated with the development of the Service Projects in conjunction with community organizations. The connectivity conditions of the students are identified as difficulties, where some of them had problems to stay connected (internet) for the development of some of the classes. Due to the above, all classes were recorded and uploaded to the Virtual Classroom of the subject for later review by the students who presented connection difficulties or for consultation. Likewise, the connectivity conditions of the community organizations with which the students were linked, who mainly performed their work in person, were identified as a difficulty.

In the subjects of Group and Community Practice of the Social Work Career, the use of the Service Learning Methodology (SLM) and Project Based Learning (PBL) is declared, however, for the development of the subject, prior to the pilot experience, the review with the students of the characteristics of the teaching-learning methodologies and particular methodological tools for the student teams to develop community intervention processes with organizations was not incorporated, Therefore, the incorporation of pilot classes to review tools (mobile interview, mapping of localities, appreciative inquiry), made possible the timely and relevant development of various actions grouped in Service Projects developed by students in collaboration with community organizations.

The incorporation of the methodological tools allowed the students, together with the organizations, to define lines of action in relation to the current situation of the community organizations, considering their needs and problems as well as their resources and interests. Therefore, the activities developed are incorporated in the Practice Modality to replicate it in subsequent versions, as well as the incorporation of student self-evaluation in the evaluation of the management of the individual process.

In relation to the service projects developed by the students, they were able to contribute to each of the organizations with which they were linked, where the theoretical-practical integration of the contents to be developed by the course was made possible in parallel. Although the course of Group and Community Practice I and II has as a prerequisite the course of Approaches and Methods of Intervention with Groups and Communities, where methodological tools of community work are reviewed, the incorporation of methodological tools linked to ABS allowed the

explicit linking of the students' previous learning, having as an articulating axis the service to the community, without losing sight of the problems, needs, interests and resources of each of the territorial-community contexts where each of the practice processes were developed. These same results coincide with those obtained by Paredes, et. al, 2017, who point out that the learning and service experiences promote the consolidation of integral competencies from the social reality of the training processes and that they are presented as an opportunity for the formation of students as social beings, in relation to themselves and the world, where the interrelations of the social, human, intellectual and professional dimension form the basis for the development of integral competencies (Paredes, et. al., 2017).

b) Initial Training

After the completion of the course and the implementation of the innovative syllabus, the following difficulties were identified:

- Not all applications are suitable for all audiences, i.e., interest will vary according to age and context of study. Based on this, for example, not all students were interested in developing ventures or working with companies.
- Not all students were able to access or participate in the online games and the like (due to problems with their internet), which discouraged a small group of students who felt left out because they did not have a good connection. Therefore, it is necessary to know in all participants their access to the Internet as well as the level of digital competence (Grande-de-Prado et. al., 2021), so that the use of applications is a good experience for all.
- Considerable increase in the number of hours dedicated to the preparation of activities for the teacher.

In order to solve these problems, the following opportunities have been created:

- Maintain the current version of the syllabus across all courses and parallel programs that must take the course (integrating it into the curriculum), gradually introducing the use of applications and recreational activities, in order not to wear out the interest in the resources (by making them customary) or the teachers who teach the subject with a greater number of hours dedicated to creating activities.
- Digitally diagnose students, being able to recognize their access as well as digital competence. Thanks to this, for anyone who requires it, the institution could provide material assistance, as well as training and competence leveling.

It is concluded that the use of diverse platforms and applications increases motivation for learning, being excellent tools for teaching the scientific method, as well as for the development of local projects. Therefore, being the duty of every teacher to learn and update every day, it is imperative to promote a culture of gamification (Macías Silva, 2021) as the main learning strategy, which allows to awaken the interest in learning in all students.

Thus, developing the pilot classes, within the framework of the InnovaT project, was an excellent opportunity to put into practice all the learning acquired in the MOOC. These served as a basis to establish a more active and dynamic subject, which helped considerably in the teaching of more complex contents. This, also considering the difficult current context, provided the space to generate more motivation in the students, who were grateful for all the instances of entertaining learning. In addition, and thanks to this action, the space was provided to further motivate students in the choice of project design topics oriented to the development of entrepreneurship or generation of working relationships with companies in the area (including, where several of them currently work); managing to show the connection between the subject, entrepreneurship, and business, thus generating significant learning.

However, it is important to recognize that, although the subject has been taught 100% online for several years, it has never had so much participation, especially in the videoconferences. And the fact is that the profile of the evening student (working adult) is a complex public to approach. However, the high attendance of students, always eager for an activity that would surprise them, was pleasantly recognized.

In addition, it is also important to mention the need raised by a small group of students for whom it was complex and sometimes impossible to participate in the games and the like, due to their connectivity problems. Although they represent a smaller group, they exist, therefore, they imply an aspect to consider when planning various interventions. Although it is a problem that we teachers cannot solve, it is imperative to be aware of it and who it affects, in order to provide various channels to integrate all students in the development of classes.

Finally, it is important to recognize that carrying out the classes was not an easy task, especially considering the long hours that had to be dedicated to preparing each activity. However, it was all worth it, since it was possible to develop projects related to related enterprises and for the full benefit of the community, as well as to build networks with local companies, which highlights the regional character of the institution, thus representing a learning experience not only for the students but also for the entire community.

Thus, as projections of the present experience, it is expected to be able to generate a project with a control group and an experimental group, in the same semester; and to compare results using applications. In addition, it is intended to create spaces to teach other colleagues to take advantage of Web 2.0. In addition, we would ideally like to be able to design exclusive applications in the subjects; and in this same framework, to promote a culture of gamification in the classroom as a learning strategy.

Finally, and by way of future work or suggestions, it is recommended to focus the attention of educational research on the measurement of students' digital competence, as well as on access to ICTs. This, in order to demonstrate the real scope and impact of the use of technology in the classroom.

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CHAPTER

8

INNOVATIVE EDUCATION IN TIMES OF CRISIS

INNOVATIVE EDUCATION IN TIMES OF CRISIS

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CHAPTER 8

Introduction

EThis chapter is a study carried out by Universidad de Piura and Universidad Católica San Pablo, both located in Peru, regional, private, non-profit universities, and participants in the InnovaT project, through which they have learned and supported each other to face various challenges of virtual teaching-learning.

Classes and content virtualization in Higher Education was already a reality in other countries and institutions, and a subject of study by several authors in recent years; however, it was the situation caused by Covid-19 that accelerated this process in Peruvian institutions. The objective of this study is to show the importance of the use of innovative methodologies in the classroom already implemented internationally and their application in these universities as a result of the pandemic. To this end, surveys were conducted with teachers and students from both universities, which show us, first, that virtuality was an opportunity to carry out internationalization actions without generating extra expenses, but with a positive impact. Second, that virtuality made it possible to innovate from the classroom in terms of methodologies, content, or curricular design, and that the result of this process has been equally satisfactory for teachers and students.

This study is a call for reflection on the importance of not wasting what has been learned, of promoting the strengthening of good practices, even though many of them have been applied virtually. Innovations that lead to the improvement of educational quality must be recognized and implemented as part of the dynamics of our institutions. The internationalization of higher education can no longer be understood and related only to the international mobility of students – although it is its most visible and traditional action – in an exclusively face-to-face manner. Although it was the pandemic that, to a large extent, forced us to implement internationalization actions at home and curricular innovation in the last two years, the return to face-to-face learning must contemplate this and reinvent itself in an educational system open to the culture of innovation and internationalization in the classroom.

Finally, it is up to our educational institutions to strengthen themselves with innovative and internationalization practices at home that are of greater impact and lower cost, which, as this study will show, offer great benefits to the academic community and to the institutions themselves. Integrating educational innovations

in virtuality and international impact, with the benefits they bring, should be seen as an objective of the institutions, a purpose linked to achieving a seal of quality and differentiation at the local and global level.

Keywords: educational innovation, internationalization, curriculum, universities, higher education institutions (HEIs), collaborative online international learning (COIL), mirror classes, virtual mobility, international projects, international virtual collaborations, information, and communication technologies (ICT).

ABOUT THE UNIVERSITIES OF THIS STUDY

Universidad de Piura (UDEP) is a private, non-profit university, founded in 1969, with two undergraduate campuses, the main campus in the north of the country, in the Piura region, and its second campus, in addition to the School of Higher Education in Lima, the capital. UDEP is consistently ranked among the top 10 universities in the country in the ranking of America Economía and the QS 2023 World University Rankings, due to its high quality, leadership in education, research, and social and cultural impact.

Between its two campuses, it has seven faculties and twenty-five programs in different fields of knowledge, ranging from education and administration to medicine at the Lima campus. It has close to 9,000 undergraduate students between both campuses and 2,600 graduate students (master's and doctoral degrees, and extension programs). It has an educational innovation department, which has been strengthened with the actions developed within the framework of the InnovaT project, and an international relations department, which leads the university's internationalization strategies and actions, through agreements, participation in different networks, international projects, mobility programs, among others, that support the institutional strengthening of the university.

Universidad Católica San Pablo (UCSP) is a private, non-profit Peruvian institution of higher education, focused on humanistic and professional training that, in the light of faith and with the effort of reason, seeks the truth and promotes the comprehensive development of the person through activities such as research, teaching and outreach, to contribute to the shaping of culture according to the identity and deployment of the human being.

UCSP has 25 years of experience in the education sector and is accredited by the Peruvian government, in addition to being considered the best private university in southern Peru, according to the ranking of the magazine América Economía 2020. Located in Arequipa, Peru's second largest city, it has an enrollment of more than 8,000 students in its twelve undergraduate programs divided into nine departments.

CHAPTER 8

For more than 10 years, UCSP, through the Directorate of International Relations and Cooperation (DRIC), together with other academic and transversal departments, has been generating an increasing international activity with various programs and projects that seek to achieve greater visibility and international participation. Within the framework of the InnovaT project, a virtual academic production studio, EDUCA-InnovaT, was created in 2021, which, as Mónica Sánchez explains, "has the mission of accompanying teachers who aim to improve their pedagogical practices by providing them with digital tools for the production of quality materials and resources" (Universidad Católica San Pablo, 2021, 11m11s).

Background

Since the 1980s, globalization - and its effects - have been studied, which, over the last few decades, have brought countries closer together and interconnected at the social, economic and political levels. Education was no exception and higher education institutions around the world were forced to improve themselves and offer quality, competitive, certified, qualified and international education, i.e., they sought to respond to this globalization and one of the strategies was through internationalization. According to Gacel-Ávila (1999), as cited in Peña et al. (2006) "the internationalization of higher education should be understood as one of the most important and coherent responses of university students to the phenomenon of globalization" (p.22). Internationalization introduced a new aspect in teaching and research: they needed to be more innovative and technological, and the academic offerings provided should be recognized as competitive and international.

Thus, internationalization brought about changes in processes and disrupted the common development of higher education institutions, which, in recent decades, from different perspectives, has led to the development of a series of concepts and visions of various authors on what internationalization is and what it comprises. For Knight (2005) "internationalization of higher education is the process of integrating the international/intercultural dimension into the teaching, research, and service of the institution" (cited by Knight, 2005, p. 14). While for de Wit et al (2015), internationalization is:

> The intentional process of integrating an international, intercultural, and global dimension into the purposes, functions, and provision of tertiary education, seeking to enhance the quality of education and research for all students and staff of institutions, with the aim of making a meaningful contribution to society (p.29).

> On the other hand, Gacel-Ávila (2009) points to internationalization as:
>
> A process of institutional renewal that seeks to incorporate an international and intercultural dimension in the culture, mission, vision and transversally in all institutional strategies for institutional strengthening, improving the quality and relevance of the profile of graduates, teaching programs and research products. (p. 8).

In this sense, internationalization as a concept is an active process, constantly being studied and updated, and undoubtedly with greater progress in some countries or regions than in others. Under this premise, as indicated by H. de Wit and L. Deca (2020), in the last thirty years, the internationalization agenda has undergone a paradigm shift: we moved from cooperation to competition, with mobility programs for students, academics, and reputation programs, based on world and regional rankings, where internationalization has become one of the most important indicators for higher education institutions. In addition, as H. de Wit and L. Deca (2020) point out, with the entry into the new century, new trends in cooperation have emerged, such as internationalization at home, internationalization of the curriculum, and within them, methodologies such as international collaboration for online learning, better known as COIL for its acronym in English. These appear as a response to an elitist internationalization, often based on face-to-face international mobility, which, although necessary, it was important to revert to more inclusive internationalization processes, such as internationalization processes at home and curriculum internationalization.

Both concepts are explained by different authors and scopes regarding their meaning, but with something clear, and that is that internationalization at home and curricular internationalization are a vital axis in the internationalization of an institution, since they are focused on impacting 100% of the academic community, without requiring the classic international mobility. For Joss Beelen & Jones (2015) “internationalization at home corresponds to the deliberate integration of international and intercultural dimensions to the formal and informal curriculum of all students within domestic learning environments” (p.12). While an internationalized curriculum refers to “the integration of the international dimension in the educational teaching process: contents and forms of course programs, didactic methods, evaluative systems, research and extension, quality criteria, concept of relevance, coverage, and equity” (Madera, 2005) (para.24).

COIL, a methodology that promotes collaborative work, originated in the United States of America, in the State of New York, where it was incorporated into the New York University System (SUNY). In addition, due to its importance and impact, the SUNY COIL Center was established in 2004 as an institution that promotes its use and training worldwide. COILs are characterized by the cooperation between

institutions and their partner universities abroad that allow developing courses jointly with a collaborative, online and international character that, as indicated by Meza Morón (2018), are a model that considers "collaborative intercultural learning (...) and a magnificent response to the challenges of internationalization of Higher Education Institutions (HEIs)" (p.9).

In the global framework of the pandemic and e-learning, several challenges provided opportunities for higher education institutions to assume, grow and improve their academic and management processes for continuous improvement through academic innovation and internationalization resources. Within this framework, processes such as educational innovation, whose purpose is to achieve a positive impact on the teaching-learning process, had already come a long way internationally, but its application in the classroom was still incipient in the case of Peruvian institutions, and it was the global health emergency situation that prompted its implementation. As Carbonell (2005) points out, educational innovation implies a "set of ideas, processes and strategies, more or less systematized, through which an attempt is made to introduce and provoke changes in current educational practices" (p. 11). Despite some progress in recent years, most Peruvian universities still have a traditional teaching system, where the student is considered a passive entity and receiver of information, and the teacher is the one who gives the master class and directs the classroom session. However, it is known that the current profile of students requires the use and implementation of innovations in the classroom and these methodologies represent an effective response to this change. This is evidenced by several authors such as Llamozas, Fernández and Llorent-Bedmar (2014), the student goes from being a passive entity to an active character, now not only listens and receives knowledge from the teacher, but also plays a diligent role in their learning: "from a student who was not taken into account for scientific work, to one who participates in the research team that carries it out"(p.276). Currently, the student is more daring and participatory in the classroom, having a clearer presence, going out in search of knowledge, and working closely with the teacher, who is "a guide and not necessarily an instructor" (p. 276).

Therefore, the application of these new innovative teaching-learning methodologies supported, in addition, by internationalization allow the student to participate as an active character within the classes, to know, understand and contribute to his own learning process, As referred by Zabalza and Zabalza (2012) an important aspect in educational innovation, is that it must comply with three conditions: openness, updating and quality improvement. Openness to innovate in the classroom, updating to learn in the use of new platforms and application of current methodologies; and quality improvement in the collaborative teaching-learning process that occurs for both teachers and students, in this sharing of knowledge not only locally, but also internationally, and with the support of

information and communication technologies (ICT). Educational innovations that were developed in a new scenario of virtuality, unknown to the vast majority of institutions that started online teaching for the first time and that motivated UNESCO (2020) to list several recommendations, such as the use of different, but restricted number of tools and resources that benefit students and teachers, the incorporation of competent and effective distance learning programs and dynamics, and the creation of collaborative communities that facilitate the exchange of experiences and knowledge. And within the referred innovations deployed are the methodological strategies, teaching contents, curricular materials, international collaborations, among others, which correspond in this study to the new actions and/or educational practices of teaching-learning implemented in the classroom and in virtuality, which also have an international impact.

In conclusion, the processes of educational innovation and internationalization are processes in constant evolution and improvement, as are the programs and strategies of a university, whether on-site or virtual, but clear in the objective of training global professionals, through the development of international and intercultural competencies that promote the formation of responsible citizens for the world. For Zabala (2008) quoted by Trujillo Segoviano (2014), after analyzing several definitions of competences in the educational field, he concludes that "competence has to identify what any person needs to respond to the problems he/she will face throughout life" (p.7). Competencies understood as knowledge, skills, attitudes, and values that are currently highly valued by employers, but which are also the basis for the development of a culture of peace and understanding of other cultures.

International and intercultural competencies are necessary for teachers and students and are generated by the exchange of knowledge, experiences, academic practices and values, fostered by the interaction and understanding that is achieved, among others, with the development of international online academic activities, such as the aforementioned COILS, or actions such as the development of virtual mobility, which solves the financial problem faced by the vast majority of students to carry it out in a physical form. In this context, virtual mobility offers access to courses or programs in other universities and countries that would not be possible in person. As Ruiz Corbella and García Aretio (2010) point out, "for the student it is, without a doubt, an educational experience, since he/she acquires intercultural and technological competencies, apart from the specific content of his/her study, given the interaction it facilitates" (p.9).

Finally, each of the innovation and internationalization activities developed in the classroom allow us to glimpse that both innovation and internationalization have in common the fact that they are new processes, disruptors of common practices, both require high-level planning and support processes, both are also a challenge

for teachers and students, but, in addition and essentially, both are focused on improving the academic profile of the institutions and their members, in order to train professionals capable of building a global and responsible citizenship for the world.

Contextualization of the Covid-19 pandemic at the UDEP and UCSP

With the onset of the pandemic in 2020, universities worldwide were forced to turn to virtuality, even if they had no previous experience. The importance of internationalization at home and curricular internationalization became more visible and necessary than ever, with the impossibility of traveling, new strategies assisted by technology represented a satisfactory solution for the internationalization of Higher Education.

In Peru, where access to new technologies and the Internet is still a challenge, the challenge was greater, since this change of teaching platform opened up enormous challenges; it was not only about teaching through a computer, but about being able to achieve learning by changing methodologies, applying innovations, and making both students and teachers initiate new teaching-learning processes, adding to this internationalization resources. In a context where internationalization is still a process of little impact and development in higher education institutions - and whose process is focused, in most Peruvian universities, on international mobility programs -, given the emergency circumstances, they saw the need to change strategies, to learn, and themselves to innovate in their programs and actions, making use of virtual platforms to transform the arrival of international teachers, in online visiting teachers, in betting on the launching of virtual mobility programs, among others.

In the case of the University of Piura, there had been some experiences in the development of virtual programs at the graduate level in the Faculty of Education and some isolated actions, without strengthening or great expertise in the development of classes in virtual platforms and/or with the development of new methodologies. For its part, the Universidad Católica San Pablo had no experience with virtual teaching; all its academic programs at the undergraduate and graduate level were taught, until March 2020, entirely face-to-face. The experience with international classroom activities through the use of technological tools, such as mirror classes, online international visiting professors, COILs, among others, was very limited.

Both the Universidad Católica San Pablo and the Universidad de Piura were

already part of the InnovaT project when the pandemic began in 2020 and this was a great boost and support for the training of teachers in the application of new methodologies. Likewise, through the areas of international relations, collaborations between partner and non-partner universities were activated in a very agile way. The pandemic united higher education institutions and made them realize that virtuality opened up a series of possibilities for carrying out joint programs and projects with almost no financial outlay, but with a determined willingness to cooperate and manage time to successfully carry out actions that made a difference in quality and impact for those who were able to access it. A further step was taken towards the democratization of international experiences because now both teachers and students were just a click away from being part of these environments, getting to know their peers in other regions, working with new innovative platforms and carrying out cultural exchanges, so valuable in the training of global professionals.

Both universities, active in their internationalization processes, developed strategies such as virtual mobility, whether in two-way or one-way, international projects or programs, COILs, or mirror classes, among others. And it is these international online academic activities that we are trying to analyze and measure, in how much they have made a difference from the traditional teaching model to the active learning model. The same, which has occurred through the different internationalization strategies carried out in courses or programs. As Brandenburg and de Wit (2011) point out "internationalization has become a synonym for "doing good", and people question less its effectiveness and essential nature: an instrument to improve the quality of education or research" (p3.). The situation brought about by covid-19 prompted closer joint work between international relations offices and academic departments considering that these activities had to be led by them and by professors who, by developing their digital competencies and assisted by technology, were able to be part of the internationalization process of their institutions.

Research Design

The type of research is applied, whose purpose through action research is to evaluate the development and impact of innovations and new practices developed in the classroom with the support of internationalization, as well as to propose improvements and/or recommendations on their continued application in the classroom. Surveys addressed to students and teachers of both universities were designed to identify the level of impact of the innovative internationalization actions developed in virtuality during the year 2021.

The study included different variables, including the types of actions developed

or participated in, the role of each one (teacher or student), the challenges faced, as well as the benefits and competencies they consider having achieved or strengthened after participating in an international collaboration activity. We sought to explore how educational innovation impacted the internationalization of the curriculum of both institutions through the activities carried out and analyzed here.

In the case of teachers, there were 18 professors from both universities (10 from UDEP and 8 from UCSP) and in the case of students, there were 36 responses, 16 from UDEP and 20 students from UCSP.

Results

The respondents, both teachers and students, have been classified according to the academic areas of the Organization for Economic Cooperation and Development (OECD), as can be seen in Table 1, where teachers are mostly from Engineering and Technology and Social Sciences, while the largest number of students belong to Social Sciences.

Table 1

Respondents according to academic area:

	Cs. Natural Sciences	Engineering and Technology	Medical and Health Sciences	Agricultural Sciences	Social Sciences	Humanities
Teachers		7			7	4
Students		10			16	10

Likewise, the innovation and internationalization activities carried out in the classroom are varied (Table 2), with a high representation of international collaborations for online learning (COIL), with an equal number of participants among students (9) and teachers (9). In the case of students, moreover, 15 of the respondents attended virtual exchange programs, while 7 participated in short-term international programs and/or projects, which were possible to develop remotely and internationally.

Table 2

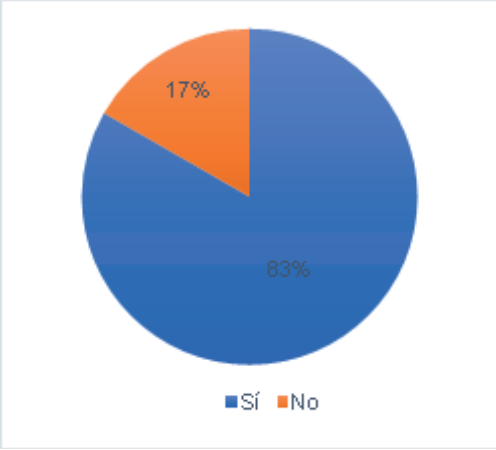
Type of collaboration participated in:

	Mirror Classes	Collaborative Online International Learning (COIL)	Program International Project	Semester Virtual Exchange Program	Online classes with international visiting lecturers	Development of joint online research	Others
Teachers	2	9	1		4	2	
Students	2	9	7	15	1		2

Regarding previous experiences in the use of platforms and the teaching-learning process, the data show that, for the vast majority (students and teachers), it was the first time they had carried out international online academic activities. As shown in Figures 1 and 2 below, when asked if it was the first time they had participated in an international online activity, teachers answered affirmatively with 83%, while students answered with 78%. The very similar figures between students and teachers show the lack of previous experience in the development or participation of virtual educational activities. It should also be added that, in the case of Peru, and as a consequence of the pandemic, the university law No. 30220 (Ministry of Education, 2014) had to be changed to adapt to the global health emergency. Article 47 of the Law was amended and three modalities of education were introduced: face-to-face, blended and distance education; prior to this, the law only contemplated the first two options.

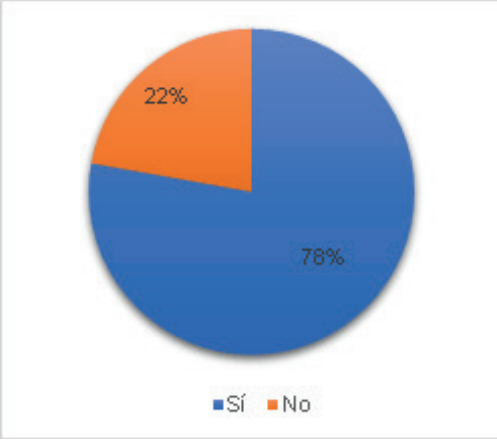
Graph 1

First participation of teachers in international online academic activities due to pandemic.



Graph 2

First participation of teachers in international online academic activities due to pandemic.



CHAPTER 8

IInnovation and internationalization are two concepts that are closely linked and complement each other in their application to education. When we speak of internationalization, as we have indicated, we refer to that process that influences and is incorporated into the functions of an institution such as the teaching-learning process, research, and services in universities (Knight, 2005). Innovation, on the other hand, is all justified improvement proposals that generate changes and lead us to improve quality. As indicated by Zabalza M.A (2012) “innovating is not just doing things differently but achieving new and better results” (p.19).

The importance of educational innovation is to achieve better learning outcomes, and thereby improve the quality of the institution. Part of these better results is the achievement or strengthening of competencies, which are currently necessary to be able to face both personally and professionally the world around us, and for this, through internationalization, we talk about generating global competencies, which according to the OECD (2018) is understood as:

> **Global competence:** is the ability to examine problems locally, globally and cross-culturally, to understand and appreciate the perspectives and world views of other human beings, to interact appropriately and effectively with people from different cultures, and to act for collective well-being and sustainable development (p.6).

In this sense, as educational institutions we seek to educate citizens with global competencies, which according to the study have been strengthened at both the teacher and student levels. According to the survey, 94.4% of the students surveyed claim to have strengthened their global competencies by participating in international online academic activities, while an absolute 100% of teachers also claim to have consolidated their global competencies.

When asked about the reasons for the students' answers, we shared some of them:

- *Because it allowed me to compare my reality with a different one and find points in common, thus improving my reflection, study, and comparison skills.*
- *Yes, because by exchanging information, work, and coordination I was able to enhance my leadership skills and enrich myself with different work methodologies.*
- *Since it helped me to strengthen and develop my skills as a student and as a person, covering different aspects of my career and others.*
- *Undoubtedly, because it forms us, makes us aware of the knowledge and application of our career in different places, the perspective and understanding that we can go beyond our country, with the bases that are given to us in our universities of origin.*

- *I learned to relate to people who do not share a common culture with me, it was also the first time I had to adapt to an external student environment and different from what I am already used to, something that will happen often when I start my working life or my postgraduate studies.*

At the teaching level, as indicated above, all of them confirmed having strengthened their global competencies. Some of their reflections are the following:

- *Undoubtedly, virtuality has had a positive impact on the promotion of academic activities with an international emphasis. We have realized that it is possible to internationalize our work as teachers with little or no budget. In addition, it has allowed us to interact with students from other countries, which requires us to prepare our classes with a broader and more inclusive spectrum.*
- *It enriches the theoretical knowledge that might be in traditional classes with practical international professional experiences from other contexts, shared resources for classes, such as bibliography, can be enriched as well.*
- *These collaborations help us to consider aspects of intercultural training on the part of the participating students, thus broadening their personal and professional horizons*
- *There is enrichment on both sides, both for teachers and students. You get to know new countries, careers, personalities, which improves both your knowledge and the social relationships you establish. The look abroad is very positive and in fact several of my students have obtained scholarships to Canada and the United States.*
- *The experience of having students from other countries is invaluable and forces us to update ourselves and prepare world-class classes.*

The profile of today's educator is to train global professionals, capable of facing life in any city or country. The survey, therefore, asked teachers to indicate in order of importance the learning competencies that they consider have been strengthened in their students through participation in international online academic activities. This same question was asked of students, i.e., they were asked to evaluate from their own perception (Figure 3).

The result of this evaluation from the point of view of both academics and students is almost perfect. That is, both students and teachers rate very similarly the competencies and capacities developed, highlighting among them, the attainment of a global vision (22%), which allows them to understand and accept other ways of seeing the world, the development of intercultural sensitivity that involves understanding and respecting diversity (22%). And the ability to integrate

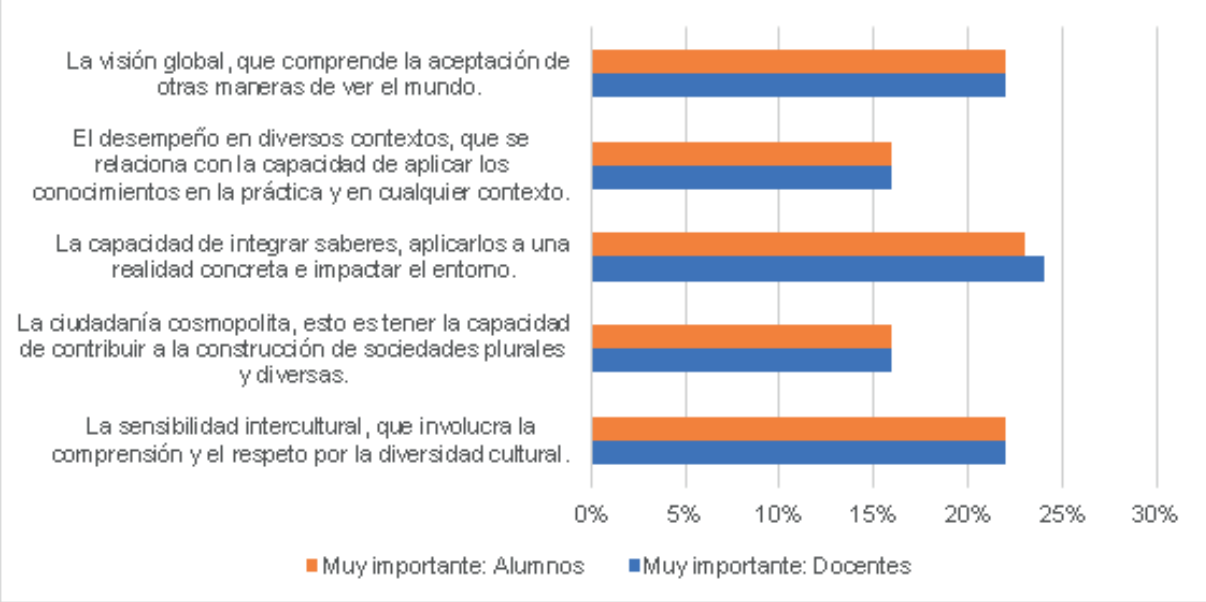
knowledge by applying it to a concrete reality and impacting their environment (24% teachers and 23% students).

The teaching performance in the classroom, through the internationalization of the curriculum and the practices developed, generate capabilities fully recognized by the students, highlighting the importance of the teaching role as a generator of changes, which have a real impact on their students. As Trigos (2016) points out, "internationalization as a teaching and learning strategy is not an isolated activity but a set of strategies to foster international and local understanding, as well as the development of intercultural competencies" (p. 15). Competencies that help the understanding and actions of students and teachers themselves to be able to develop in this globalized world.

The responsibility of the university teacher is therefore vital for the generation of these new dynamics and teaching processes, making use of methodological innovations and the resources that internationalization allows. Indeed, the results again show a great harmony between what the teacher seeks and appreciates and what the student perceives as a result of his participation in international online academic activities. With lower scores, but still considered very important, are the options: performance in diverse contexts (16%), related to the ability to apply knowledge in practice and in any context, and the generation of cosmopolitan citizenship (16%), which involves the ability to contribute to the construction of plural and diverse societies.

Graph 3

Impact on competency development from the point of view of teachers vs. student perception.



An important question that universities should ask themselves when they talk about internationalization and the development of innovations in the classroom is the reason that motivates them to do so, the why, what for, what motivates us to implement changes in the classroom, and what benefits does it bring us to develop them? Having a clear vision of what they aspire to as institutions will help to outline a development plan and clearer goals for its implementation.

When asked about the benefits that both teachers and students identified from carrying out international online academic activities, we found that 20% of teachers and 18% of students focus on the development of intercultural competencies (see Figure 4). As Trigos (2016) points out, internationalization is part of a set of strategies, which aim to foster international and local understanding, and the development of intercultural competencies. Understanding by intercultural competencies, the knowledge, skills, abilities, attitudes, and aptitudes that allow us to be and act in diverse cultures with respect and tolerance towards the other. "For internationalization policies to be effective, HEIs should accompany them with intercultural education that is promoted in the classroom," Quiroz (2013, p.6) points out.

In 2018, Castro *et al.* explains that,

> "The higher education system must rethink the need for the application of ICT as a learning tool that will open the gap to improve the interaction between teacher-student and student-teacher, achieving an optimal exchange to produce between peers and non-peers"(p.591).

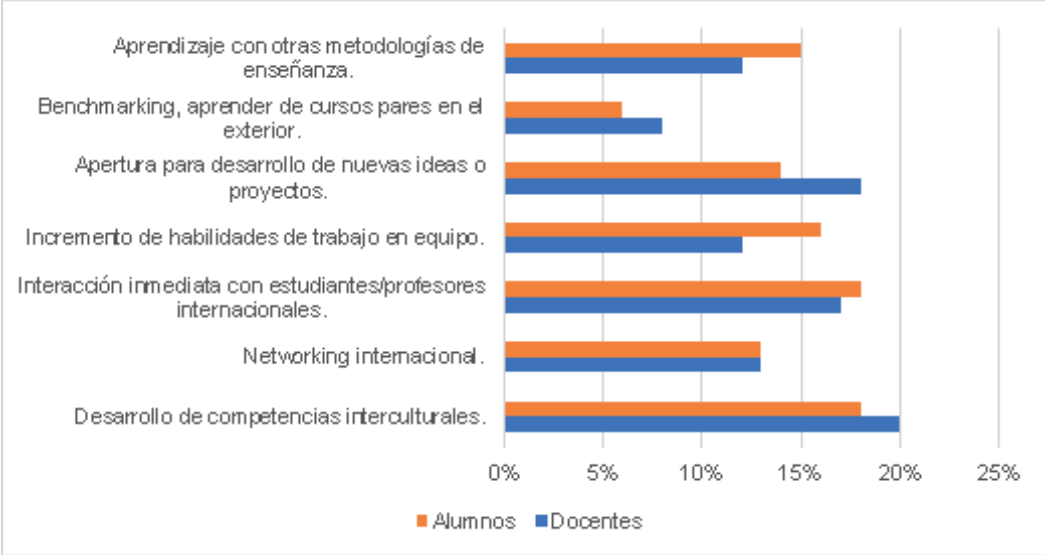
This is in line with what was verified in the surveys analyzed: virtualization, through the activities carried out at both universities, allowed immediate interaction with international peers, creating links between participants, according to teachers (17%) and students (18%).

Another of the advantages, and with a greater number of teachers, has been the openness to the development of new projects (18%). The first interaction developing a joint class, or being part of the same international project, or other, has been an opportunity to generate academic exchange, which has led to the development of new projects, publications, or shared research, which is undoubtedly highly valued by academics. Now there is no longer a physical barrier; professors, researchers and students are more receptive to collaborate virtually, thus verifying a positive use of ICTs for the benefit of internationalization.

Learning about other teaching methodologies; increasing teamwork skills; taking advantage of international networking; or benchmarking the course or programs abroad are other options valued as positive and beneficial when implementing internationalization strategies with the support of technology.

Graph 4

Benefits of participating in international online academic activities - teachers vs. students.

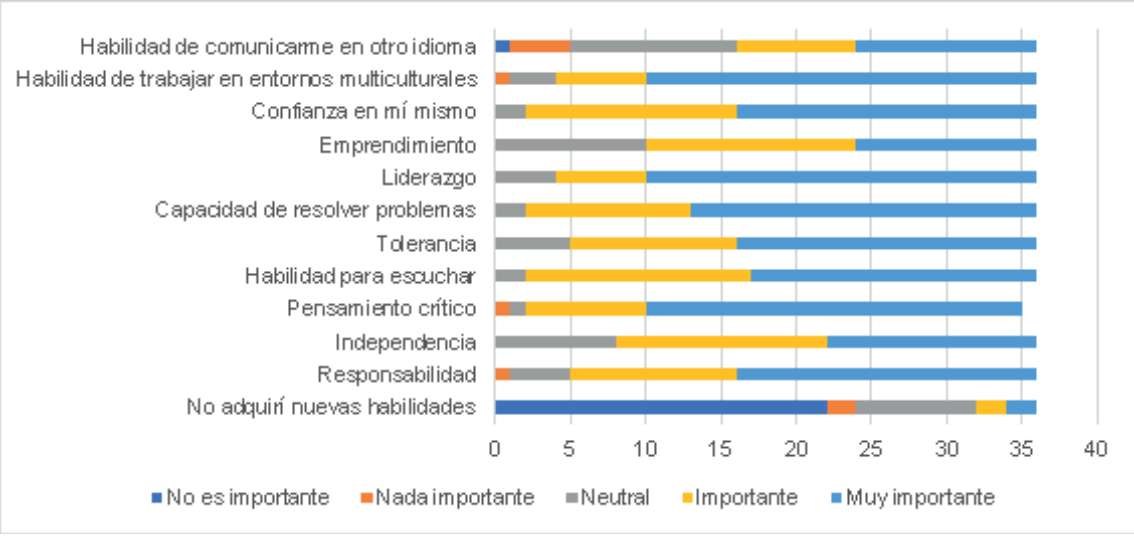


Training the professionals of today and tomorrow requires, more and more, to be clear that in addition to the knowledge that universities can impart, the development of skills, aptitudes, abilities and/or competencies that will help them perform in our global society is required. Universities more than ever are obliged not only to educate citizens, but to educate citizens for the world, and the development and participation of students in international activities supports this.

The study asked students to rate from very important to not at all important a number of competencies, skills and/or abilities they believe they have acquired as a result of their participation in remote international academic activities. Figure 5 shows the most or least impact students assigned to each. Leadership, problem-solving skills, critical thinking, responsibility, and tolerance are some of the skills that stand out as very important. Networking demonstrates once again that it has benefits, and although it is clear that nothing replaces face-to-face attendance, it is important to consider the series of advantages perceived by both students and teachers.

Graph 5

Skills, abilities, and competencies acquired by students through participation in international collaboration

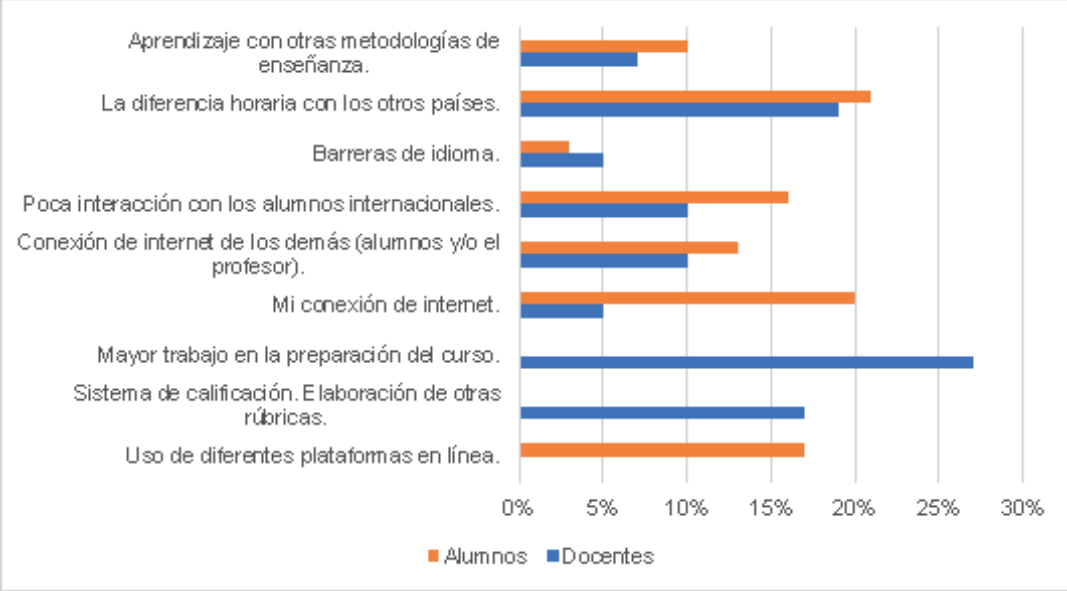


The survey also sought to inquire about the challenges faced during the development of these activities and most students highlighted technical characteristics, such as the time difference (21%), the low internet connection (20%) and the use of different platforms (17%) (see graph 6). It is important to note their observation of the little interaction verified with international partners (16%), which they considered to be one of the challenges of virtual teaching-learning. Remembering that in the previous question they had indicated leadership as one of the most significant skills acquired, it justifies the importance of this type of activities that contribute so much to the development of soft skills in students and that, through them, will give them more confidence to interact and participate in class. On the other hand, teachers point out that remote international academic activities encourage greater availability of time to prepare the course (27%) and the grading system and/or elaboration of other rubrics (17%).

However, and as Figures 7 and 8 demonstrate, despite the challenges, both groups indicate that they would participate in an international online collaboration again: of the 54 respondents, only two (one student and one teacher) indicated that they would not engage in technology-assisted collaborative activities again.

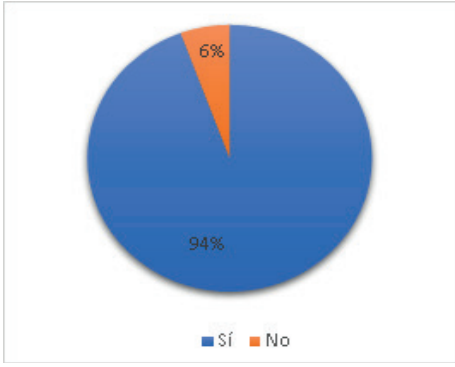
Graph 6

Challenges faced during the development of remote international academic activities.



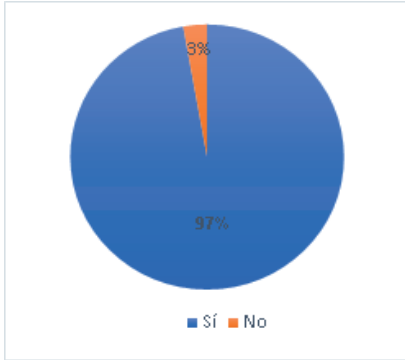
Graph 7

Possibility for teachers to participate in an international online academic activity.



Graph 8

Possibility for students to participate in an international online academic activity.



At the end of the survey, all participants were asked to provide their comments on this experience in a more complete way through an open response. In general, all responses were quite positive and recognized the advantages of being part of remote innovative academic activities with an international dimension: the possibility of being able to develop soft skills, meet new people, methodologies and cultures were highlighted by teachers and students.

From the answers given by the professors, we highlight the importance of looking towards the future, the consideration of continuing to develop international projects with the same or other partners and also the benefits of low-cost learning for the students:

- *The experience has been very positive, and we plan to develop a joint project.*
- *I believe that the educational objectives are met regardless of whether it is virtual or face-to-face. The savings in airfare to the host university have allowed us to invest in more projects that benefit the students. It is my wish that there is a healthy balance between on-site and virtual, so that we can achieve our internationalization objectives and continue to strengthen our ties with our partner universities.*
- *It was a great experience for me and my students, it was like going on a study trip.*
- *An international online collaboration is almost immediate.*
- *We must take advantage of the international contacts generated and continue working with international peers to enrich our work.*
- *If we have technological means in the classroom, we should take advantage of the connection with other universities.*

On the other hand, students continue to value the importance of face-to-face contact, but they also recognize the possibilities that virtuality brings, such as developing skills and learning about new realities and the positive dynamics established in this form of learning:

- *I would love to participate in a COIL course again, because I had an enriching experience and, although it was my first time, I learned a lot from the suggestions of the professors and the participation of my classmates. If I participate again, I believe that I will be able to exchange knowledge with other cultures and enrich my experience as a student.*
- *I believe that, despite a possible return to the classroom, it would still be important to continue with these collaborations, since they encourage new experiences and the development of student skills.*
- *I would like to participate again in a COIL because I found the methodology of working with different groups attractive, dynamic, enriching and, above all, effective.*
- *I hope virtual exchanges do not end with a return to face-to-face learning. I believe that this alternative is still viable and has proven to give great results.*
- *I believe that virtual learning makes it possible to overcome many barriers: in this way I could continue to study my degree in my country, but at the same time continue to acquire intercultural knowledge online.*

CHAPTER 8

Conclusions and recommendations

The study demonstrates the efficiency and effectiveness obtained by teachers and students through their participation in educational innovation projects with an international dimension.

Their participation in educational innovation projects with an international dimension. The internationalization at home and of the curriculum, with the use of new technologies, and the development of strategies that promote their realization are, without a doubt, an opportunity for the academic community to achieve the desired internationalization at a higher level of impact and without economic barriers that prevent it. Presence and direct human and cultural contact is unparalleled; however, virtuality offers a series of benefits through the development of a series of international academic activities that institutions should evaluate and promote, especially considering aspects of accessibility and sustainability.

The infrastructure and investment of HEIs cannot be wasted, just as there cannot be a regression in the new methodologies and use of platforms that were part of the teaching-learning process of the last two years.

The benefits that we have been able to analyze, from the comments of teachers and students, lead us to outline some recommendations for higher education institutions, since it is important not to lose the positive things gained and/or learned. Educational innovations, in the midst of a pandemic situation, gave way to the opening of new opportunities and benefits for our educational communities, through the joint work between teachers, students, areas of educational innovation, international relations and, of course, the area of technological support, fundamental in the transformation to virtual teaching and the possibility of collaboration between geographically distant universities.

From the academic point of view, educational innovations, with the support of internationalization, have brought teachers and students closer to their peers abroad, learning about the same subject, but with a different perspective, based on the expertise of the teacher or the curriculum of the foreign university. It has complemented the knowledge and development of competencies, forging relationships in which new actions are proposed, virtually and/or face-to-face, thus strengthening the internationalization objectives of any institution. “What we need are people who understand and define their role within a global community transcending national borders, embracing the concepts of sustainability: equal rights and access, advancement of education and research” (Brandenburg, U. and de Wit. H., 2011, p.5). It is now necessary to continue to count on determined support from educational institutions to establish a culture of innovation, quality and internationalization of the teaching-learning process for the benefit of its members and, therefore, of the institution.

In terms of educational innovation and the use of information technologies, both teachers and students highlight, as we have been able to recognize in this study, the importance of learning under new teaching methodologies, networking, but also the opportunity of using other academic platforms, learning from them. They emphasize the immediacy of an online collaboration, and the value of it, after having been immersed in it. The development of innovation programs or projects in the classroom, with the use of virtuality, should not disappear, but should be integrated into the academic work of the institutions. These actions can become the added value, the differential of higher education institutions that demonstrate that the pandemic and virtuality have taught us to do things differently for the better, despite the challenges that this entails.

The internationalization of courses, programs or projects that have been developed within the framework of virtuality and whose impact is clearly positive for both students and teachers, demonstrates the important role of the areas of innovation and international relations, which serve as a link and support for the interconnection of the academy at a global level. This function as an ally with academics leads to strengthening the actions developed with them. For the first time, virtuality has made the teachers the main actors, and not the students with the classic student mobility.

> The internationalization of higher education is entering a new phase. A transition from an internationalization abroad with a strong focus on a small elite of students, faculty, administrators, and mobile programs, to internationalization at home for all students, faculty, and administrators [which] is more urgent than ever (de Wit, H. and Deca, L.,2020, p.7).

Valuing and encouraging the internationalization strategies developed is vital to give them continuity and strengthen their impact. They require, therefore, the support of the institutions, and that the actions become policies that promote internationalization at all levels of the institution.

If in 2006 it was foreseen that internationalization "would continue to be a central force in higher education [considering] information technology, the knowledge economy, the increasing mobility of students, faculty, programs and providers, and the growing integration of the global economy" (Altbach, P. G. and Knight, J., 2006), today, the current paradigm post pandemic of covid-19 accelerated the use of new technologies in the teaching-learning process and awakened for a better awareness of the fundamental role that internationalization represents in the progress of HEIs. In the case of UDEP and UCSP, and according to what was exposed in this article, information technologies and virtuality allowed both universities - and their students and teachers as main actors and beneficiaries - to develop virtual

academic opportunities with an international approach, whose contact with their peers has provoked curiosity and willingness for more and better experiences that bring better understanding, wisdom, and strengths to higher education.

Finally, both innovation and internationalization have in common the development of new strategies aimed at improving educational quality. Both nurture and work towards the same objective, although they are not always recognized as such within educational institutions. The areas of innovation work hand in hand and as support for academics in their actions or development in the classroom, and those of internationalization function as the link that can ensure that these innovations transcend borders and are nourished by international experience. Their joint action is strengthened by fostering collaboration between institutions or individuals, by connecting students, teachers, or collaborators, by favoring inclusion through the use of new methodologies or platforms. An example of this is the development of COILs or mirror classes, where the support of the innovation areas is valuable to implement these new methodologies, with the support of the international relations offices that promote and strengthen these cross-border connections that add value and raise the quality of teaching-learning in the classroom. It is therefore up to higher education institutions to ponder their value and scope in order to achieve the objective of improving the quality of education and, by having these two cross-cutting areas as allies, to achieve the greater objective of training citizens at the service of global society..

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CHAPTER

9

EUROPEAN POLICIES AND TOOLS FOR TEACHING AND LEARNING WITH AN INNOVATIVE COMPONENT IN HIGHER EDUCATION

EUROPEAN POLICIES AND TOOLS FOR TEACHING AND LEARNING WITH AN INNOVATIVE COMPONENT IN HIGHER EDUCATION

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**"If I had to start over, I would start with Education"
(Jean Monnet)**

CHAPTER 9

Introduction

Europe has a well-established tradition of scientific excellence of globally competitive large-scale infrastructures and networked entities. This system, promoted and supported by the European Union (EU), has contributed to transforming the way science, research and education is done in Europe and beyond with an emphasis on co-creation, inclusivity, collective creativity, and open, merit-based access to world-class infrastructures across the research landscape in education.

To maintain and strengthen such a leading position, the constant development of research, scientific and innovation skills, state-of-the-art facilities, and related activities is crucial. The EU policies, specific programs and projects play an essential role in enabling the broadest community of researchers to perform disruptive research, discovery, technology development and invention thus advancing competences, innovation, and competitiveness within the higher educational context.

The EU supports research, development, and innovation through diverse interlinked programs. These are estimated to provide billions of Euros to directly support research, development and innovation activities over program periods of a duration of 6 to maximum 7 years.

Excellent research and innovation help people enjoy lives of prosperity, meaning and social impact. Europe is home to world-class research, and researchers come from all over the world to collaborate and to use European scientific infrastructures and programs. Within this community, countries from both Europe as well as Latin America have created a world-leading research base that interacts with the best and most ambitious in the rest of the world, keeping them at the cutting edge.

The European research landscape is complex. Both the EU and individual European countries fund research. Researchers collaborate with each other within Europe and internationally.

In addition, the EU provides indirect support for research, development and innovation through specific programs.

This chapter has the objective to provide a detailed overview to better understand some of the most recent EU policies and tools with an impact on teaching and

learning, with concrete examples from Breda University of Applied Science (the Netherlands) and Universidad Católica San Pablo (Peru). The above is followed by insights generated and specific lessons learned that could serve as a basis for other higher educational institutions on the pathway to experiment and participate (actively) on the EU program and project arena.

European policy towards teaching and learning

EU policies and tools have historically been designed to benefit EU citizens, the industry and other stakeholders. As it will be discussed in this chapter, this is particularly true when it comes to policies to promote collaboration in higher education.

It is worth mentioning that each of the 27 EU Member States has its own educational system, a reflection of its historical, political, and cultural contexts. Notwithstanding the above, as established under articles 165 and 166 of the Treaty on the Functioning of the EU (Europe Union, 2012), the Union is expected to support and supplement the actions of the Member States to contribute to the development of quality education (article 165). Within the complex European institutional framework, this function has been delegated to the European Commission (EC) as the executive of the EU responsible for managing the EU's policies. Indeed, the EC's mission is to support the designing, drafting, development and financing of educational policies common to the EU Member States to meet their needs for the benefit of its citizens.

As expected, progress towards the definition of the common European Education Policy has not been fast, but there have certainly been important developments and institutions that are worth mentioning.

Although the EU is probably the most elaborated case in the world on educational integration, it is not the purpose of this chapter to be exhaustive on its historic development. We will highlight, however, the most important policy developments in education to better understand the main current policy and tools for teaching and learning in higher education.

To do so, we will follow the three main periods identified by Egido Gálvez (2015), based on the EU Treaties adopted by the Member States: the Rome Treaty, the Single European Act and the Treaty of the European Union (Maastricht Treaty)

From 1957 until 1986

The year 1957 constitutes the beginning of the European Economic Community (ECC) with the signing of the Treaty of Rome of March 25. According to article 2 of the aforementioned Treaty, its main task essentially one of economic integration, seeking a common market and the progressive convergence of the economic policies of the Member State.

As expected, the efforts of the intervening European States, at that time, were not intended to establish common standards in the field of education. However, in article 128 of the Rome's Treaty we did find the seed of the policy development that occurred over the years in education. It sta tes that "the Council shall, acting on a proposal from the Commission and after consulting the Economic and Social Committee, lay down general principles for implementing a common vocational training policy capable of contributing to the harmonious development both of the national economies and of the common market" (Treaty Establishing the European Community, 1957).

As well indicated by Egido Gálvez (2015), one of the most important aspects to highlight during this time is that there were no community competencies in the field of education, thus any initiative on the matter was considered as cooperation and, therefore, dependent on the sovereign will of each State.

From 1986 until 1992

After 29 years of execution of the Rome's Treaty, in 1986 the Member States of the ECC adopted the Single European Act, which many authors agree to recognize as the first major reform of the founding treaties of the EEC. Although the Single European Act does not provide explicit references to the development of a convergent Education Policy, several of its established "new policy areas" relates to Education and Training aspects, for example, the ones referring to research and development (Single European Act, 1987).

During this time, very interesting programs related to Education and Professional Training begin to appear, such as the Community Action Program for the Professional Training of Young People and Their Preparation for Adult Working Life (PETRA) and the volunteering programs such as YOUTH for Europe (Egido Gálvez, 2015: 23).

Without a doubt, the iconic program of this era was the Erasmus Program (European Region Action Scheme for the Mobility of University Students), which began in 1987 originally mainly focused on exchange, that offered university students the possibility of learning and enriching themselves by studying abroad (European Council, 2017). Later in this chapter, we will expand on this program that has evolved over the years and continues to positively influence the formation of citizens open to the world.

From 1992 until up-to-date

On February 7, 1992, twelve Ministers of Foreign Affairs and of Finance of the Member States signed the treaty by which the EEC became the European Community (EC), also known as Treaty of Maastricht.

After a long path of integration, the Treaty of Maastricht introduced clear signals in terms of harmonization of EU Member states Policies in Education. For example, the introduction of Chapter 3 pertaining to "Education, Vocational Training and Youth". Article 126.2 states that:

> The Community action shall be aimed at: developing the European dimension in education, particularly through the teaching and dissemination of the languages of the Member States; encouraging mobility of students and teachers, inter alia by encouraging the academic recognition of diplomas and periods of study; promoting cooperation between educational establishments; developing exchanges of information and experience on issues common to the education systems of the Member States (...) (European Communities, 1992).

Furthermore, article 126.3. of the aforementioned Treaty states that the Community and the Member States shall foster cooperation with third countries and the competent international organizations in the field of education, in particular the Council of Europe.

A milestone of this era, specifically related to community policy on higher education occurred on June 1999 with the launching of the Bologna Declaration defining the European Higher Education Area (EHEA) to be achieved by the implementation of the Bologna Plan.

Much progress has been made ever since in harmonizing higher education quality standards, adapting teaching contents to social needs and demands and the recognition of credits (among others), which has certainly facilitated academic mobility and collaboration in various areas of knowledge between higher education institutions. However, the goal is ambitious and complex; hence, there are still adjustments to be made.

For this reason, a supporting structure and monitoring system of the Bologna Process has been created. It is made up of the Bologna Follow-Up Group (BFUG), BFUG Board, the BFUG Secretariat, the Working Groups and Bologna Seminars and the Ministerial Conferences. The latter meets every two or three years to ensure the implementation of the Bologna Plan. So far, eleven Ministerial Conferences have taken place and the next one is expected to occur in Albania in 2024 (European Higher Education Area, 2022).

CHAPTER 9

Existing European tools for teaching and learning in higher education

General scope

The European Union attaches great importance to developing the quality of higher education. Cooperation between the various members is encouraged and wonderful programs have already arisen from the initially formulated 'lifelong learning theme'. The objective has been and still lies within creating new opportunities for people in higher education to learn from one another across national borders and to work together on joint projects to develop good learning and teaching, undertake excellent research and promote innovation. The European Union had set a target that in 2020 40% of young Europeans would have a higher education qualification, 90% of which has been reached.

Development in evolution

In 2010, flagship initiatives were launched in response to the economic crisis. An example is the Grundtvig program (GP) which ran until 2017, that aimed to strengthen the European dimension in adult education and lifelong learning across Europe. The program specifically aimed to address the educational challenge of an ageing population and to provide adults with alternative pathways to updating their skills and competences. The GP encompassed all types of learning, whether these took place in the 'formal' or 'non-formal' system of education for adults, or in more 'informal' ways, such as autonomous learning, community learning or experiential learning.

As mentioned above, long-term initiative has been Erasmus, which was established in 1987 to promote higher education in the European Union. The aim is to stimulate exchange between students and lecturers.

More than 3100 colleges and universities from 31 countries are currently enrolled in the ERASMUS program. It has an estimated budget of 26.2 billion, which is nearly double the amount that was allocated for the program of 2014 – 2020. The program of 2021 – 2027 had a strong focus on social inclusion, the green and digital transitions, and promoting young people's participation in democratic life. It will also support the resilience of education and training systems impacted by the corona crisis. The new ERASMUS+ program offers opportunities for exchange, as well as for internships in the area of education, youth and sport.

Students who join the program study in another European country for a period

of three months to a year. The ERASMUS program ensures that the period abroad is also officially recognized. The student remains registered at their own university or institution. If lecturers would like to participate in the program, they get the opportunity to teach at another university.

ERASMUS contributes strongly to the development of a European mentality, which is an important goal of the EU. In addition, it can help in understanding other cultures better or you can improve your language skills. Moreover, participants are challenged to develop competences and soft skills that are important for taking an active part in society by living, studying and/or working abroad.

The program also helps to improve the quality of education through international cooperation projects and in that way it contributes to economic growth, employment, equal opportunities and inclusion in Europe.

The previously mentioned programs show the focus on internationalization in Europe of many universities as a key strategic priority (EUA, 2013; Jones et al., 2016). The Europe 2020 Growth Strategy and its flagship initiatives, highlight the importance of smart, sustainable and inclusive European higher education as a policy driver. However, there are also some critical notes. The interpretation of the word 'internationalization' has been done from a neoliberal perspective in which it's considered as a means for growth and income generation in the Higher Education sector. Because of that higher education often focus primarily on transnational mobility (both outward and inward, staff and student mobility), with ambitious targets for international staff and student recruitment, and for strategic international partnerships for research and publications. A prestige culture has emerged in which these rather instrumental factors play into the metrics that are regarded as indicators of the success of higher education institutions (West and Rich, 2012).

It would be valuable, according to some scientists, if we would look at internationalization as a values-based movement that improves the quality of teaching and that addresses societal issues to improve cross-cultural understanding, inclusion and social justice. That way higher education can make a responsible contribution for society at large.

Open education

Open education (OE) is a form of education that uses digital resources. This has attracted attention from international policy organizations such as United Nations Educational, Scientific and Cultural Organization (UNESCO), the Organisation for Economic Co-operation and Development (OECD), and the European Commission.

One particular aspect of OE in the form of Massive Open Online Courses (MOOCs)

has drawn attention. The term "'MOOC" was coined by Stephen Downes and George Siemens back in 2008, during the development of a course. MOOC platforms can be considered as socio-technical devices, that act and make their users act.

The open learner is in control of his or her own learning process because he or she is involved in choosing (and, if necessary, adapting) the proper software applications needed for his/her learning, and is able to co-determine which content he or she is making use of precisely (Farrow, 2016). A lot of MOOCs attempt to install and cultivate learning through the mutual construction and exchange of knowledge. In doing so, participants (teachers and students) are considered as equal learners.

The open learners are embedded within a community of other group members, who are assisting him or her in learning something. Operating as contextless places, platforms nevertheless regularly seek to actively create a sense of community

Regenerative education

This is a critical time to be alive on Earth where our actions and inactions have far-reaching consequences for decades to come.

We are all part of Mother Earth's ongoing creation process. Nature is a living ecosystem that does not consist of independent building blocks. No, it is a lively nest, in which there is a fundamental interdependence. This perspective is at odds with our traditional thinking that focused mainly on numbers and control over processes. More and more scholars are realizing that this is no longer sufficient and that something has to change. A lot of people feel small and vulnerable in the cosmos and go in search of existential life questions that create energy. They want to dream about different futures and new possibilities.

The corona crisis is far from over and also reveals deeper learning issues that go to the root of our sustainability crisis. We have to address the root causes of the multiple crises we are in.

Regeneration is the act of healing, improving, and enhancing a place, system, or relationship with the healthy flows and triable conditions for life. This movement thinks education should focus on creating learning spaces and living labs that invite reflection and research through which new levels and ways of understanding and action can emerge.

We can and should achieve change by addressing core concepts of the dominant world view: appreciating individualism, competition, ego-centeredness, putting humans first, having a growth orientation, and so forth. Since all education affects how we live on this earth, all education is sustainability education (Wals, 2015). Therefore, all education impacts the individual, the other and the world. If you support values like fairness, equitability and sustainability (Wahl, 2016), it is the duty of educators:

- To co-create supportive conditions with all stakeholders.
- To address the causes creating these life-threatening conditions (Wals, A.E.J., 2015).

This movement believes that learning is way more than mainly making intellectual efforts: it requires a holistic approach to learning, including emotional learning, embodied learning, spiritual learnings, values/beliefs/mental models; these latter learnings are difficult to achieve in classroom, let alone online education. It's also about developing capabilities, socio-ecological literacy, sensing the impact of the 'web of life' interdependencies, exploring the more-than-human, exploring the multiple ways for learning and expressing.

Practices and living labs offer real live opportunities for learning, enabling the exploration of actionable inputs from the life world; the life world is the richest space for learning; contextual complexity is the source for our learning and needs to be explored in ongoing interactions. The issues at stake require collective commitments towards our co-ownership and responsibilities to the Earth. Long term commitment and a co-creative focus are required. Those labs embrace uncertainty and make space for the emergence of new possibilities by experimenting and reflecting. This way of learning and educating can lead to transformation and innovation.

We are also seeing a rise in competence thinking in higher education. Originally, the attention for this was intended to make education more socially relevant, but it has now also become part of the economic discourse on education. Masschelein & Simons (2015) believe that competences should primarily contribute to students seeing themselves as entrepreneurial selves, so that they learn to adapt in different environments.

All in all: Higher education is under permanent pressure in our society. It is also constantly encouraged to adapt to the ever-changing circumstances. The motivations to change often seem to be motivated by market considerations. This tension also puts students under pressure, increasing rather than decreasing inequality. In addition, young people are encouraged to excel individually instead of taking care and responsibility for the well-being of the community.

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Experiences with the application of European policies and tools (a case from Peru/UCSP and a case from the Netherlands/BUAs)

Why does the EU programs include collaboration between HEI of the EU Member States with HEI from Latin America and the Caribbean?

The EU and Latin America and the Caribbean have enjoyed closed relations since 1999, when it was held the first bi-regional Summit establishing this strategic partnership (Joint Communication to the European Parliament and the Council European Union, Latin America and the Caribbean: joining forces for a common future, 2019). The EU is the leading investor in the LAC region and its third external trade partner (Relaciones UE - Perú, 2021). We see this close relation in the field of Research and Education, and in this chapter we will focus on the relation EU-Peru.

Peru actively participates in the EU-CELAC Joint Initiative for Research and InnovaTion and in the Program Horizon 2020, Peruvian researchers participated in 33 projects, mostly in the field of the mobility of researchers (Marie Sklodowska-Curie actions), health, climate change, environment, efficiency of resources and raw materials (Relaciones UE - Perú, 2021).

In terms of Education and Mobility, under the Erasmus+ Program, from 2015 until 2019, 530 mobilities were awarded between Peru and the EU, involving almost 70 different Peruvian institutions (Relaciones UE - Perú, 2021). Precisely, one of the Eramus+ key action that we consider relevant to mention in this chapter is the one referring to Capacity Building in Higher Education (Key Action 2), which from 2015 up to 2021 has allowed 380 Latin American Institutions (23 from Peru) to strengthen their institutional capacities for the benefit of the members of their university communities.

Many universities want access to these projects, but where to start from? In the experience of Universidad Católica San Pablo (UCSP), to take advantage of the calls available annually, the key is the combination of offering a high quality educational service, institucional agility in the processes and robustness in the management of internationalization.

In 2014, UCSP was a fairly young university located in Arequipa, Peru, with 17 years of institucional life. However, at the national level, progressively its academic programs were acquiring prestige for their high quality. At that time, its international relations office mainly worked to promote student and teacher mobility. The combination of the institutional profile and the rigorous work dynamics of the members of the international office team, allowed UCSP to be part of a proposal

for an Eramus+ Key Action 2 project, to strengthen capacities in the management of the internationalization of universities in Chile and Peru, called INCHIPE (Eramus+ CBHE Project N°561816-EPP-1-2015-1-ES-EPPKA2-CBHE-JP). It involved eight partners: two from Spain, one from Austria, two from Chile and two from Peru with the purpose of streghtening capacities of the HEI from Chile and Peru in terms of international cooperation and managing internationalization to better fullfil their universities missions.

Fortunately, the INCHIPE Project was awarded by the EC, and from 2015 to 2018 an important number of activities were carried out with two main results for the UCSP community: the obvious one, the improvement in the management and promotion of the internationalization of UCSP (by outlining an internationalization plan and equipping the international office for the contact with HEIs around the world). But most importantly, the greater result that is common to all the Erasmus+ CBHE projects, was to effectively develop the institutional capacities to design and execute other international cooperation projects.

Taking part in Erasmus+ CBHE projects is an enriching and very educational experience. It requires dedication, responsibility in the compliance report, internal and external dissemination of the results, but the main lesson is that in these projects there are no superior partners in the consortium, this is not a one-way transfer of knowledge and experience, instead, the learning process goes both ways and there is always something to contribute and learn from each consortium partner.

Based on the experience with the INCHIPE project, important collaborative relationships were established between the partners of the consortium, which motivated us to look for alternatives to deepen our institutional collaboration. For this reason, in 2018, at the initiative of the FH Joanneum (Austria) some of the INCHIPE partners began working on the proposal under the Erasmus+ CBHE Program, for a challeging project, called InnovaT, to promote innovative teaching methodologies and integrating new technologies to enrich the conventional concept of teaching and learning.

Since January 2019, the 9 partners of the InnovaT consortium (3 European and 6 Latin American higher education institutions) have carried out a learning journey (and expedition across continents, if you will) with challenges and opportunities, especially during the Covid-19 Pandemic and the global lockdown. However, the innovative spirit of the original proposal was especially evident in this challenging time, producing truly positive results. As it has been mentioned several times in this book, little the partners of the InnovaT project knew of the real value this project would bring to them, especially during times when the pandemic forced online teaching exclusively. (Eramus+ CBHE Project N° 598758_EPP-I-2018-I-AT-EPPKA2-CBHE-JP).

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The INCHIPE project and the InnovaT project are only two of the many examples where the impact of the EU's international collaboration policy is evident, not only for European HEIs but also for HEIs across continents.

Next to the practices and the experience gained by Latin-American universities using the diverse European tools as well as programs, there can be provided also a relevant example from the context of how the above serve the European higher educational market as such showing the application of a concrete project – SOCCES.

The European project SOCCES ("SOCial Competences, Entrepreneurship and Sense of Initiative – Development and Assessment Framework), where Breda University of Applied Sciences was a partner within the project consortium, was a two-year project running from the 1st of February 2015 to the 31st of January 2017 and funded by European Commission Erasmus+ Program. It involved seven partners from six European countries (Bulgaria, Finland, Italy, the Netherlands, France and UK). The aim of the project was to develop and pilot a framework for the methodical assessment for two competences with utmost importance for the working life - namely the Sense of Initiative and Entrepreneurship, and Social competences. Thus the overarching aim to design and test an assessment framework for transversal competences was achieved and directly tested within both the higher educational realm as well as with enterprises interested. The project recognized the variety of approaches to the development of transversal competences (skills and competences relevant to work), with an associated range of assessment methods. Focusing on the two competences, *"Sense of Initiative and Entrepreneurship", and "Social Competences", the SOCCES project successfully designed and piloted* a consistent framework.

Why the abovementioned two competencies had been selected to be the core? It turned out that their development was lagging behind those of mathematics, science and technology and yet they have a crucial role to play in the future working lives of students and for their personal fulfillment and active citizenship.

What the project achieved in terms of impact, was that it provided *teachers* with the means to:

- Define and describe these entrepreneurial and social competences for their students.
- Support students with the development of these competences in an inclusive, virtually enabled setting.
- Assess and provide feedback to their students on how they are progressing in the development of entrepreneurial and social competences

And moreover, it provided *learners* with:

- The means to describe, self-assess and benchmark their entrepreneurial and social competences.
- The language to articulate these competences to others such as teachers and employers.
- A means to develop with them in an accessible, virtually enabled environment.

It is also of relevance to mention here the long-term effect and sustainability of the SOCCES project as such. It served only as a starting engine towards collaboration that was ignited and currently running among the 7 partner institutions which is being made tangible by diverse publications, joint research initiatives, teacher and student exchange and the most significant – further application of the tools designed, and the means developed. This only proves the viability of such initiatives to be nurturing close interaction among key players and stakeholders and thus bringing more added value to the university education and the employability towards a thriving market.

INSIGHTS AND LESSONS LEARNED

As stated by the Report on Lessons learned from Triangular Cooperation between the European Union and Latin America and the Caribbean (Adelante, 2020), "global development policy is the result of numerous efforts to create a range of modalities and practices, which aim to ensure that people come together in agreement on standards of quality, dignity, and fairness. Moreover, since the launch of the 2030 Agenda with its Sustainable Development Goals, the main goal of development policy is to leave no one behind."

One can certainly state that the progress that has been made through the various EU policies and instruments of development cooperation continues to face challenges that require new strategies and new initiatives, as well as leveraging the lessons learned through strategies of social development, combating climate change, and promoting economic growth: all within the complex framework of multilateral policy.

When referring to insights and lessons learned from development, implementation, partnership, management, and collaboration within EU-funded projects based upon defined EU policies and program schemes, using the examples both UCSP as well as BUas have already had, three specific, rather generic categories have been outlined below: 1) organization of the collaboration 2) good practices and 3) observations from thematic project collaborative activities (constructive feedback).

When it comes to the *organization of the collaboration* – there are several factors of specific relevance for the success, the value, and the impact an EU-funded project can achieve

- *The number of countries involved.* This distinguishes bilateral cooperation (between 2 countries), plurilateral cooperation (involving more than 2 countries but limited to a relatively small number) and multilateral cooperation (involving a large number or all countries).
- *The form of the cooperation.* Collaboration can be organized as a consortium (i.e., consisting of a number of organizations participating in a joint program scheme effort through a contractual arrangement, e.g. a specific project), a network (i.e., involving organizations that can cooperate on activities in different compositions at different points in time) or as a platform facilitating cooperation between interested parties. In other words, from consortium through network to platform the extent of organization and formalization decreases.
- *The scale of the activities*. This specifies whether activities comprise a single project or are organised in a program of multiple projects.

In relation to the good practices stemming out of the EU-funded project schemes, the following can certainly stand out:

- Ensuring an inclusive and transparent process to sensitize/inform stakeholders about the possible opportunity, engaging with them during the call design, and then selecting on the basis of pre-announced criteria both ensures broad and fruitful participation by stakeholders and trust in the process.
- Providing sufficient funding and reasonable time horizon for the projects to make participation both attractive and feasible.
- Employing a multi-institutional consortium model for the virtual entities, which allows for broad participation by a range of stakeholders and therefore allows horizontal learning even among the members of the group.
- Having clear intellectual property right rules together with industry participation facilitates the development of deployable technologies.
- Establishing secondary objectives such as strengthening human resources through PhD and post-doctoral training and student exchange opportunities (along with the main objective of developing deployable technologies) helps in long-term and ecosystem level benefits of the program.

- Ensuring smooth and streamlined management of the program by anchoring it an existing institution with well-developed administrative infrastructure.
- Allowing and opening space for synergies and effects coming out of activities which do not have to necessary been described in detail in the submitted project proposals.
- Enabling options for additional collaborative efforts in multiplying effects and factors of what has been generated within the projects/programs themselves.
- Opening and sustaining platforms of cross-project interactions, not only thematic but also cross-country and cross-disciplinary

The constructive feedback towards the general observations can be summarized as follows:

- While there are a large number of international collaborations on teaching and learning and innovation within higher education, only a limited number is engaged in actual funding or implementation of research, development or demonstration of 'competencies. Instead, many focusses on technology, hardware, one-way direction of knowledge transfer and capacity building, or on the commercialization and deployment of technology.
- Among the joint (funding of) higher educational project initiatives, there are relatively few that cover nurturing networks beyond the project scope or only provide certain directions onto how this can actually be embedded into the diverse higher educational institutions.
- While some initiatives are set up specifically to address identified teaching and learning needs of universities, with dedicated institutions set up for this purpose, in other cases, the initiative is a result of a primary objective to strengthen international personal relations rather than go beyond within the whole institutional scope of domains.
- The project schemes when coming to higher education are mostly public sector-led. Although various initiatives have made a special effort to engage with the private higher educational sector, its involvement in the early stages of the EU policy cycle is limited. Private sector mostly gets involved in the demonstration, incubation, commercialization, and diffusion phases

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Conclusion

In the previous strategic periods, more than fifteen different EU-wide research themes were identified resulting in diverse policies, program and project schemes, and were each provided with a seed investment meant for the sustainable development of research and education around that theme. Although this strategy saw quite some successes bringing higher educational institutions form all over the world closer and improving both their capacity as well as knowledge-transfer, overall, it did not contribute very strongly to institutionalizing cross-country research and education, nor (with a few exceptions) to strong sustainable and impact-driven teaching and learning initiatives around these themes.

A number of factors have contributed to the challenges the different project programs have been facing. First, the project program themes were somewhat loosely defined, using umbrella terms that meant to unite different research and educational interests. However, these themes lacked a clear direction for impact and value with principles of dissemination and re-integration, and hence did not delineate specific research agendas. Second, these project program themes attempted to instigate new collaborations, rather than building upon existing collaborations between academies or professorships. And third, no concrete measures were put into place (financial, HR, support) to facilitate the existence and proper functioning of these themes after the specific projects were coming to an end.

Taking the learnings from this previous EU program initiatives and policies, a new, forward-looking EU-wide R&D agenda in higher education is currently being introduced that caters to define a sufficiently clear program agenda, one that gives direction while allowing specialists to add to it from their own vantage point and have the impact wanted. It has been designed to build upon existing collaborations and structures, and on the expertise, enthusiasm, ambition and motivation of individual educators, professors and researchers. And finally, it has the aim to provide the necessary organizational support and structure according to the principle that form follows content. Additionally, a EU-wide R&D agenda in higher education has to also acknowledge that for some (probably most) cross-country projects, collaborations that cut across domains and specializations have clear added benefit, but that for some specialization and concentration of expertise in the own project theme is key.

Current developments, such as the COVID pandemic, climate change and the rapidly increasing digitalization of society are putting pressure on the sustainability of our industries. This directly impacts several EU program policies and the long-term changes that they will need to undergo. Furthermore, facility concepts are changing fast, and whole sectors, including education and in specific higher education are undergoing tremendous changes. However, by serving as a Nurturing

the Future Design partner for the sector of higher education, and supporting through projects such as the InnovaT one, the EU makes a significant contribution to creating a better society. We see such projects as enablers, digital realities as a means, places as platforms and sustainability as a goal of essential societal innovation and transformation on the program/project domains. The EU-wide R&D program agenda, currently under development and already certain implementation, will certainly centre around these topics, and formulate a concrete scenario that combines focus and critical mass, and thus helps further develop both the EU as well as the concrete higher educational institutions' ambitions.

An important rationale for developing a EU policy towards teaching and learning in higher education with the emphasis on innovation is to promote, stimulate and facilitate collaboration across countries, domains and systems. It is often at the junction between different fields of existing expertise that innovation is conceived, and stimulating interdisciplinary, cross-country, and institutional collaboration therefore likely stimulates innovation for the work field of the different initiatives beyond borders. In addition, a Europe-wide research and education program with a limited number of well-delineated focus areas/project schemes should ensure that there is sufficient critical mass within each of these focus areas, a consideration that is especially relevant given the size, scope, and expectations from higher education, and the research capacity that follows from this.

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