
**DESARROLLO DE UN PROGRAMA SEMIPRESENCIAL
PARA DOCENCIA ONLINE: PROCESO Y RESULTADOS**

*DEVELOPMENT OF A BLENDED COURSE FOR ONLINE
TEACHING: PROCESS AND OUTCOMES*

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ABSTRACT

In this study, we outline the different steps and strategies followed to develop an online formation program aimed to higher education teachers. The aim of this program is to provide with teaching competencies to face the challenges of the next decade's classroom, with a special focus on the role of digital technology in learning environments, through a combination of a self-managed course with a guided on-site training with real cases. A multicultural, multidisciplinary team conceives this blended learning format, which applies a storytelling approach for content generation and communication. A detailed description of the different factors and stages followed to undertake the project is presented, together with a series of recommendations to face similar activities in the applied teaching and educational innovation field. Specifically, the importance of an appropriate project design, management and timing is stressed. In this way, we contribute with the

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diffusion of an innovative, hybrid program to develop digital competences in higher education practitioners and a selection of criteria to undertake other supranational projects that count on a wide reach and follow a didactical approach.

KEYWORDS

higher education, teacher education, blended learning, digital competences

INTRODUCTION

The digital revolution is here to stay. There is general awareness that this phenomenon is permeating a variety of fields and activities, including educational settings and teaching management (Kalolo, 2019). Nonetheless, there is not absolute certainty about how to cope with its derived challenges in higher education. Some of the arising questions are related to the transformation of in-class practices to the online environment. Even though it is possible and necessary to maintain some of the capabilities given by experience in traditional classrooms, it is required to adapt existing practices to the tools and formats provided by Learning Management Systems (LMS) and other alternatives that allow synchronous communication. Hence, teachers find themselves at a position in which their performance is still crucial for teaching, yet the roles adopted are to be modified with respect to what was prevailing up to now (Cochran-Smith & Villegas, 2015). One of the main challenges is related to the use of new communication software that allows real-time communications. Even though it is one of the most useful alternatives to break space and time limitations that were inseparable from classroom teaching, both teachers and students still encounter some difficulties and develop a resilience to apply this technology in the teaching process, either as part of a blended learning format or as a full-online tool. The complete range of factors that explain this challenge remains undersolved (Lakhal & Khechine, 2016).

The incorporation of digital technologies to teaching environments also requires teachers to develop new skills and roles (Bigné et al., 2018). The notion of the teacher of a module as a core source of knowledge is obsolete. Future students will be benefited by having experts in communication that employ an appropriate language and style in both oral and written expression and at the same time promote students' participation in the discussion (Pineda-Hoyos et al., 2016). Furthermore, other sources of information out of teachers control arise on the digital era, including social media, peers comments, and teachers from other institutions. Future teaching also requires digital skills, knowledge about the different functions of LMS and online virtual classrooms (VCs). Closely tied to this is the fact that teaching practices also need to be customized based on students' needs. New generations of students, especially Generation Z pupils, display a series of characteristics and preferences for the use of digital alternatives in learning that need to be contemplated by teachers, who shall incorporate them into the communication channels with students (Lee, 2018) and their assessment methods (Thomas et al., 2017), among others. The awareness of these

challenges is also present at the institutional level. Organizations such as the European Commission pay attention to the importance of building capabilities through strategic partnerships. These initiatives allow professionals in the higher education field to be better prepared for future challenges (European Commission, 2019).

This paper aims to provide a series of guidelines on how to organize an international project characterized by two aspects: 1) the reliance on a storytelling approach, which makes the learning process easier to understand and more likely to be retained in the teacher students' minds, and 2) the configuration of a multicultural and multidisciplinary of higher education academics and professionals that allows to gather insights from theoretical studies and practical experiences and adapt it to the widest possible context of higher studies lecturers from different disciplines. Two main contributions are pursued by this study. First, the configuration and dissemination of a training program for higher education professionals, focused on the achievement of digital skills and the adaptation to the challenges of the next decade. Second, the selection of criteria that will help others in the educational research field to carry out similar projects, enriching the experience of all participants and at the same time obtaining profitable results that are valuable for the target groups.

The study starts with the justification and relevance of the content and the approach followed to cope with future education challenges, together with its suitability for the higher education context. Later on, the different contents included are described, with a special focus on the opportunities provided by synchronous VC alternatives. Following this, we deepen on the the steps and requirements followed to organize and undertake the project. Finally, we outline the intellectual outcomes of the project and the value that this experience can provide to deal with the complexity of similar projects, summarized in a list of "to-do" tips as a conclusion.

FRAMEWORK

Impact of digital technology on education

The incorporation of digital technology in the educational environment is nowadays an indisputable fact. The advancements in ICT are helping to break the space and time barriers between the teacher and the students, as well as to promote self-regulation in students' learning. Furthermore, new distance learning formats such as Massive Open Online Courses (MOOCs) or Small Private Online Courses (SPOCs) are changing dramatically the classical structure of university teaching (Kaplan & Haenlein, 2016). Specialized content is also provided through webinars and social media

Specifically, new software alternatives are appearing that challenge the traditional, face-to-face interaction in the higher education classroom. Web-based or online conferencing allows to maintain synchronous audio and video communication between a number of participants and this alternative, usually applied in business settings, is becoming more and more popular in blended learning programs. As an example, Stanford University IT (2017) published the considerable increase in the use of video conferencing at the institution from September 2015 to 2017, rising the number of participants three times until reaching the more than 60,000 in 2017. The number of meetings also rocketed, from 7,500 to 13,500, approximately. Other universities have successfully

implemented online learning programs such as Wharton Business School in the University of Pennsylvania, with 50 online courses, 200 business modules and more than 3 million learners from all over the world that have accessed the school curricular programs (Wharton Online, 2019).

Departing situation of teachers

Teachers at the higher education level face this turbulent scenario with advantages arising from their previous experience and also a bunch of competences that need to be developed in order to cope with current and future, social and technological (r)evolution in teaching. First, most of the teachers can be categorized as “digital immigrants” (Prensky, 2001) since, contrary to the majority of new generations of students, they were not born with digital devices present in their daily life, but rather have the obligation to incorporate them and learn from zero. In a context in which most of their students feel comfortable with digital technology and use it with ease, teachers usually rely on learning-by-doing in order to get familiar with new tools and the full range of possibilities that they offer for teaching purposes (Paul & Adaeze, 2018).

Not for nothing, public institutions and other organizations are realizing the importance of preparing teachers for the new situations that they will face in the next decade. Along these lines, The Instituto Nacional de Tecnologías Educativas y de Formación del Profesorado (INTEF) proposed, following the Digital Competence Framework 2.0 constituted by the European Commission, a Common Digital Competence Framework for Teachers (INTEF, 2017) as a basis to foster essential digital competence in their job. This framework is a good reference to comprehend and organize the different hurdles that future teachers need to know and will eventually confront in their professional activity. Five are the highlighted areas to improve teacher knowledge: 1) information and data literacy, 2) communication and collaboration, 3) digital content creation, 4) safety, and 5) problem solving. These areas are further explained in Table 1.

It is also to be highlighted the role that teacher educators hold in this situation. Apart from providing theoretical knowledge to teaching practitioners, they have to anticipate the always-changing social and technological trends and reflect them into their lessons. Teacher education is now aimed to providing the necessary skills for teachers to feel ready at a very innovation-oriented landscape. Furthermore, introducing ICT in teacher education results crucial for two reasons. First, because it is a coherent response to the new technological trends and it can help providing solutions to real-life problems that can arise in the classroom as a consequence of its use. Second, because it ensures students' preparation for future challenges, as well as it boosts motivation, active learning and the access to a wide variety of learning resources (Avidov-Ungar & Forkosh-Baruch, 2018).

Table 1. Common Digital Competence Framework for Teachers

| Area | General description | Associated competences |
|---------------------------------|---|--|
| Information and data literacy | Identify, locate, retrieve, store, organize and analyse digital information, assessing its relevance and purpose for teaching needs. | <ul style="list-style-type: none"> • Browsing, searching and filtering data, information and digital content • Managing and retrieval of data, information and digital content • Evaluating data, information and digital content |
| Communication and collaboration | To communicate in digital environments, share resources via online tools, connect and collaborate with others through digital tools, interact and participate in communities and networks; intercultural awareness. | <ul style="list-style-type: none"> • Interacting through digital technologies • Sharing information and digital content • Online citizen participation • Collaborating through digital technologies • Netiquette • Managing digital identity |
| Digital content creation | To create and edit new digital content, integrate and rebuild prior knowledge and content, make artistic productions, multimedia content and computer programming, and know how to apply intellectual property rights and licenses | <ul style="list-style-type: none"> • Developing digital content • Integrating and re-elaborating digital content • Programming • Copyright and licenses • Programming |
| Safety | Protection of personal information and data, digital identity protection, digital content protection, security measures and responsible and safe use of technology. | <ul style="list-style-type: none"> • Protecting devices • Protecting personal data and digital identity • Protecting the environment • Protecting health |
| Problem solving | Identify needs in the use of digital resources, make informed decisions about the most appropriate digital tool depending on the purpose or need, solve conceptual problems through digital media or digital tools, use technology creatively, solve technical problems, and upgrade my competence and of others. | <ul style="list-style-type: none"> • Solving technical problems • Identifying technological needs and responses • Identifying gaps in digital competence • Innovation and creative use of digital technologies |

Departing situation of students

On the other hand, we find new generations of students that will fill up classes belonging to the demographic segment of “Generation Z”. These individuals hold distinctive personal and psychological characteristics that need to be considered when accompanying them through the learning process. Generation Z students, comprising those born between 1995-2015, have two main defining characteristics. The first one is related to the use of digital technologies in virtually every aspect of their lives, that is why they are also known as “digital natives”.

Communication is now driven by new means and alternatives to get connected, mainly favored by the Internet. Contact between Generation Z students is ubiquitous thanks to portable devices such as mobile phones or tablets, which include different instant messaging software. The second one refers to their openness to new cultures and social trends, to which they are accustomed and feel familiar with; not in vain they also receive the name of “plurals”. A growing awareness of social and environmental matters, as well as the acceptance of multicultural teams, define this age generation (Wiedmer, 2015).

The fact of having a personal and psychological idiosyncrasy has to be considered in the teaching processes. Generation Z students value immediate and goal-oriented feedback for their activities, prefer to collaborate and work in teams, learn more by doing rather than by learning the theory behind what to do, and find it difficult to deal with complex learning materials (Lai & Hong, 2015). This implies that communication with students has to be established based on their communication patterns, adapting the task to the tool and making it more visual and easy to understand, and finally promoting team work and continuous contact with their peers.

One of the mentioned features is to be highlighted: the importance of feedback on Generation Z students' activities. As members of a generation that has grown up communicating through social media, interacting with friends' posts, commenting on relevant events and rating products online, they expect a similar exchange of impressions in educational and work environments. Moreover, they see feedback as a two-way process, giving them the chance to respond to those delegating work on them and to establish an open debate. Similarly, feedback has to be critical but constructive, established in positive terms so that it is not misunderstood as a reproof (Dolot, 2018).

BASES OF THE ONLINE TRAINING IN HIGHER EDUCATION

This project departs from several theoretical backgrounds that explain the contents and structure of the learning program and the design of the work system. We will first explain the teaching approach chosen, which is based on a blended learning format that relies on storytelling, and then explain the principles of team selection and work organization conducted in the Future-Proof your Classroom – Teaching Skills 2030 project.

Blended learning approach

Blended learning, also defined as hybrid or mixed, combines online with face-to-face teaching activities, giving room for student self-regulated learning with selected teaching materials combined with in-person discussion and activities. It is full well proven that this approach provides better results in developing student critical skills as compared to other traditional approaches (McCutcheon et al., 2015). Moreover, higher student satisfaction is achieved given the active use of online tools (McCutcheon et al., 2015). Students also prefer a blended format to a purely online environment teaching because it combines the best of both modalities: on the one hand, the flexibility guaranteed by the online format, and on the other hand the easier interaction with the teacher and other students and the facilitated collaboration among peers that face-to-face activities are perceived

to provide (Wanner et al., 2015). Due to all these reasons, a mixed classroom actively contributes to student engagement (Henrie et al., 2015).

Storytelling approach

One of the most innovative aspects of this program compared to other courses that deal with teachers' learning of digital skills is its didactical approach. Apart from the blended learning format that combines online self-learning with face-to-face guided activities, the contents are based on storytelling: two fictional characters will play the role of virtual teachers and lead the way of the teacher-student through all the modules. These characters will resort to a story in which teaching experiences are shared.

Storytelling in the educational field is an approach to teaching that allows creating interesting contents transmitted through a story, which can be original or reflective of a third party's experience. Thanks to the inclusion of digital technologies in the learning environment, the content quality of the stories can be improved through the inclusion of new visual elements and more interactive formats: this is the basis of the next stage in telling stories, also known as digital storytelling (Phan et al., 2016). This combination of storytelling with multimedia aims to better satisfy individual needs related to communication and improve student competences derived from teaching. Previous research supports the positive effects of this practice on students' problem solving, motivation, cooperative learning, critical thinking and digital literacy. Additionally, digital storytelling is helpful to understand difficult, complex concepts and facilitates the discussion in the classroom, plus it has a very significant impact on visual memory and writing skills (Sanca & Usluel, 2016). These reasons made of storytelling an ideal choice for training teachers, as they might find concepts related to computer and communicative skills too complicated, especially if their command of such technologies is low.

Storytelling is essential for developing the so-called 21st century skills: curiosity and knowledge-updating skills to keep learning continuously, analytical and critical thinking, work collaboratively in technology-mediated environments. All of them are undoubtedly a study object for future-proofing today's classrooms. In order to obtain relevant and interdisciplinary knowledge, becoming familiar with technology-rich environments and collaborating on a P2P basis, it is strongly advisable to use this approach to learning, in which the achievement of digital competencies and literacies is prioritized (Niemi & Multisilta, 2016). Specific to our case, several complements have been included to strengthen the storytelling focus. Recorded audios and short videos with actors were included as an appropriate tool to introduce the different topics and guide the student teachers through the process. The purpose of these supportive materials was to motivate the student, remind interesting previous content and establish links between complementary topics, and provide definitions, explanations and additional sources to amplify knowledge.

Teams' choice

When configuring the teams participating in a training tool for higher education, three important variables were considered. First of all, it was important to make teams with members of different levels of teaching expertise. Therefore, a combination of novice and expert teachers were asked to take part in the project, leading to a final team with teachers of different experience, from newcomers to

seniors. We followed the contributions of articles such as Wolff et al. (2015) that state that different backgrounds yield different perspectives. In this particular case, the themes and focus that are relevant for an online classroom management are different: novice teachers would focus more on how to handle the classroom and establish clear rules to carry out the classes, whereas experts would place greater importance on how to optimize students' achievement of learning outcomes through this new environment.

Second, the project coordination prioritized a multigroup scheme build up on teams from different universities in different European countries. This decision is supported by previous research, which confirms that the heterogeneity in national origins of team members can lead to higher effectiveness and productivity as well as an improved creativity due to the sharing of more different perspectives, which leads to more abundant and interesting ideas (Shachaf, 2008). Furthermore, the possibility of interacting through online environments and the use of specific tools, such as the electronic recording of meetings, can diminish misunderstandings and distortion in communication and minimize conflicts (Shachaf, 2008). Cultural diversity is positive for both, team and individual creativity, as long as there is sufficient information elaboration and sharing between peers. A climate for multicultural inclusion also favours creative ideas: considering individual needs, integrating differences and considering everyone's opinion into final decision-making fosters each member's creative thinking (Li et al., 2017).

Third, experts on different subjects beyond educational research were sought. Expertise diversity is favorable for team learning and performance as long as there is a high degree of identification with the team (Van der Vegt & Bunderson, 2005). Not for nothing, there are different examples of successful projects in the educational research field undertaken by multidisciplinary experts, such as the one provided by Planas-Lladó et al. (2018).

Work dynamics

The way in which the work was structured for each of the project teams combined an element of individual, theory-based content generation together with online and in-person encounters that were useful for 1) sharing ideas and experiences and 2) receiving the appropriate technical support to manage the software used for the creation of the online teaching materials. The following elements can be highlighted from the project functioning:

Firstly, the personal work and specialization of the different teams. Each team was made responsible for one of the specific topics of the teaching program. All of them were related to challenges in teaching in the next decade, but each topic covered a different aspect, from the use of synchronous VC to the application of social media in the learning methodologies. All contents were extracted from both, academic journals and specialized professional sources, and were based on the already described storytelling approach. Furthermore, we opted for actively collaborating with higher education teachers and other professionals at an international level. Given the fact that they would be the main beneficiaries of the project's outcomes, their considerations were included into content development through a pretest and subsequent questionnaire about their impressions on the teaching materials and course organization.

This individual work was combined with periodical online meetings with all team members. The software used for this purpose was WebEx, a web-based conferencing program that is also used for future online training of teachers in

higher education. This alternative has allowed all participants to share documents with their own advancements and to present them to the rest of the group, achieving synergies and avoiding overlapping in the proposed contents. In terms of project management, this alternative was useful to monitor all particular works, to obtain continuous assessment on the results and to establish new guidelines on how to proceed next. Apart from online appointments, in-person meetings were held every year in one of each team members' home university. The purpose of such encounter was twofold. On the one hand it allowed to review contents more thoroughly and establish future goals. On the other hand, it favored informal contact and bonds between different teams, which facilitated the discussion and the exchange of experiences.

The use of software to develop online study materials for teachers was crucial in the present project, as it allowed a self-regulated, initial contact with the topic. Hence, technical support from software developers as one of the research teams was one of the cornerstones. Apart from their presence in the online and face-to-face meetings, personal online meetings from each team with the software technical support staff for doubts were proposed once a week during the final stages of the project. These were useful to solve possible doubts arising out of the software use and content implementation.

Another fundamental issue was the monitoring and control of the different teams' performance. Apart from the regular meetings, different templates were created for to controlling hours invested in the project and tasks undertook along these hours. As an example, the use of a spreadsheet template for this purpose has proven to be extremely useful to know the advancements of the different teams and report this information in a clear and verified way to the contracting party.

Lastly, with respect to the reporting and dissemination of contents and results of the project, two types of sources were selected. First, academic conferences and teaching and education seminars were targeted to make other professionals in the educational research area aware of our project and obtain insightful remarks to orientate the contents. Additionally, informational sources were used to inform the general public about the project. In this sense, notions about the project were published in newspapers, blogs and university websites, among others.

TRAINING OUTCOMES

The project "Future-Proof your Classroom – Teaching Skills 2030" (abbreviated as #Teaching2030) is funded by the European Commission and included in the Key Action To (KA2) projects of the Erasmus + Program. It is aimed to the cooperation for innovation and the exchange of good practices and focused on the action type "strategic partnerships for higher education". The main intellectual output of the cited project is a blended learning course that includes two phases of training. First, an online training through an interactive book (cBook) with eight different modules and an in-person training (iLab) that includes extra theoretical content, practical activities and reflection tasks to be performed in small groups. The totality of this training program is equivalent to 20 ECTS.

The target group of this program includes teachers at universities and other higher education institutions, although it can be extended to other beneficiaries such as teachers at other different educational levels, trainers, consultants or

coaches. The range of contents makes it useful for professionals with different teaching experience, from newcomers and beginning teachers to senior, more experienced practitioners. The entire course is structured along eight modules, detailed in Table 2, which cover the essential competences to be developed by higher education teachers in order to successfully carry out their job in the near future. These modules are interconnected and share common ideas in order to answer to the most important challenges of these educators.

MILESTONES AND ROADMAP

The outcome of the project is based on two intellectual outputs: an interactive book, which includes the essential theoretical concepts together with some graphic materials, activities and self-reflection tasks (cBook), and a complementary in-person training session, in which the theoretical concepts will be developed and extra tasks related to them will be proposed (iLab). In order to achieve such outcomes, the project development has been structured in five different stages.

Table 2. #Teaching2030 project: module organization and contents

| Area | General description |
|---|--|
| Module 1: Professional teaching role 2030 | The first module focuses on how the roles of teachers will change in a decade, mainly as a consequence of technology and modified learning spaces. Teachers should be prepared to 1) understand and handle digital technology, 2) guide each student according to their specific learning needs, 3) create adequate study environments in which the atmosphere is adequate for learning and 4) be familiar with social media and their networking possibilities |
| Module 2: Communication in on-campus classes | The two-way communication between the participants in the learning process, including teachers and students, is still fundamental. In this module, insights are given on 1) how to initiate and develop quality communication in the classroom, 2) how to introduce storytelling to attract student attention, 3) the relevance of two-sided communication and creative discussion to develop critical thinking and 4) the importance of tolerance to multiculturalism and preparing the students for intercultural communication. |
| Module 3: Designing an on-campus training | Departing from previous experiences of students, this module stresses in-person practical activities that focus on developing competences, introducing different approaches and considering the importance of all elements in learning spaces (light, sound, distribution), together with the role of technology, to propose on-campus activities. |
| Module 4: Creation and use of e-learning tools | The main objective of this module is to present technology from a user-friendly perspective. Ideas on how to work with e-learning tools, especially MOOCs and LMS, and examples of these software alternatives are presented. A special consideration is given to the production of videos and podcasts for educational purposes. |
| Module 5: Working with social networks | In order to take advantage of connectivity of students through social media, this module presents the optimal way to use them as teaching instruments, focusing on the collaborative work and the possibilities of User-Generated Content (UGC) as learning materials. It also presents the risks and challenges of adopting social networks in the classroom. |
| Module 6: Writing skills on the web | The core topic of this module is the adaptation of the writing style to online environments. It introduces monoactive and proactive texts and their applicability, |

notions of writing styles in web media, innovative communication principles for writing on the web and including the proper visuals in order to promote research. Finally, important considerations on web netiquette and ethical behavior in online texts are given.

| | |
|---|---|
| Module 7: Teaching in Virtual Classrooms | The importance of new digital technologies for synchronous online communication in the classroom is highlighted. The whole module deals with the presentation of web-based conferencing as a teaching instrument, the roles that the teachers need to adopt in order to master the tool and achieve the best results in terms of student engagement and a series of guidelines on how to plan, implement and evaluate the course through this synchronous VC. |
| Module 8: Structuring the blended learning process | Considering the initially proposed roles and the characteristics of new student generations, the combination of face-to-face and online activities is presented. This module retakes all the core concepts mentioned in previous topics and adapts them to a hybrid classroom system. |

Phase 1: designing and structuring the contents. In this initial stage, the aim was to create the contents and structure of the course, following the storytelling principles. This implied a series of decisions. First, to agree on which were the relevant contents to be included in the whole project, and how to appropriately divide and arrange them into 7 specific modules, which in turn were divided into 5 chapters each for a clearer sequencing of the contents. Second, to decide on the activities and templates that would be provided in the interactive book, based on the possibilities provided by the software developer company. This set of activities include written content, tables, images, videos and different activities for further understanding such as quizzes, multiple-choice tests, drag-and-drop exercises and wordclouds.

Third, special attention was given to design the two characters that acted as guides during the learning process. It was decided that both were teachers, in order to facilitate the identification process of those taking the course, and even were given real names (Marko and Lucia). The two characters were chosen to reflect different genders, nationalities and backgrounds – they are also not total experts in technology, but realize that it is helpful and not so difficult to use if the appropriate skills and tools are developed. Marko and Lucia, incarnated by two real actors, are always present at the beginning and at the end of each chapter, introducing the concepts and retaking the key ideas from previous topics. They also appear along the different chapters, through either written explanations or videos. Furthermore, one can easily see that they use a familiar and relaxed tone in their interventions: this is crucial, since they are acting as facilitators and presenting the new challenges of digital technologies as an opportunity rather than as a threat.

Phase 2: developing the contents and writing the storyboards for the cBook. The main sources for developing the theoretical load of the interactive book are academic literature, case studies and contributions from experts in education. Together with that, additional self-reflection and critical thinking tasks are prepared for the in-person part of the training always as a means to apply the theoretical concepts to the practical situation of each particular teacher. This content was refined and adapted to a storyboard format, with the two fictional characters as guides through the whole course. Visual materials such as audios or videos are included, to make explanations clearer. Furthermore, task design is undertaken, considering both the related content to be evaluated and the functions allowed by the cBook.

Phase 3: feedback on each module and consolidation of the entire content. Once the first stage of the cBook development is finished, a discussion with all project partners follows in which feedback and suggestions for improvement is provided. The guidelines provided by the project coordination helped to create a unified version of the different teams' contributions, and followed four different lines of improvement: 1) making the journey through the interactive book more fluid, so that the motivation of the student is maximized (Medrano, Mosquera & Melón, 2018) 2) betting more for visuals and interactive tasks rather than too heavy theoretical parts, 3) connecting all different modules and eliminating duplicities and 4) creating a comprehensive structure of the contents that served as a reference for other teams not overlapping and developing the same ideas. On top of this, a style guide was agreed to make the entire cBook coherent and cohesive from a formal perspective.

Phase 4: final production of the eight modules (cBook + iLab manual). With the additional improvements from this discussion, the final contents for the cBook and the manual belonging to the iLab sessions is produced. Self-study and reflection tasks are included, so that the teacher-students can apply the content to their particular context. Moreover, further readings are recommended for those who wish to know more about a specific topic. In this stage, coordination between all partners is essential to avoid overlapping and provide a final comprehensive product.

Phase 5: testing and evaluation of the eight modules with actual university teachers. The last stage consists in the pretest of the Teaching2030 course materials with actual higher education teachers to verify the participants' understanding and validity of the program. It comprises surveys about impressions on the cBook, written open feedback from teacher-students taking the course and a final teacher training with the entire program (cBook + iLab) to evaluate the whole content and incorporate changes according to their perceptions.

TEACHING IN VIRTUAL CLASSROOMS

The specific segment of the project for which the authors are responsible is devoted to preparing the teacher to understand the functioning of synchronous VCs. This software allows applying different learning models, promotes students self-responsibility and individualized learning assessments, and present a practical and attractive interface that can be integrated within multiple tools (Christopher & Hyder, 2014). The software includes a series of functionalities (video communication, chat, schedules, sharing documents, whiteboard and questionnaires) in which the different activities have to be implemented, making the transformation of the proposed tasks a critical issue.

The teacher is immersed in a completely new environment in which digital technology is the main means to establish two-way communication between the teacher, the student and the materials. This situation requires the teachers to develop an extra curriculum of competences related to their performance in these new environments. The new roles that teachers should perform in the future classroom are four. First, the teacher should become an expert in communication (Alshahrani, Ahmed & Ward, 2017) that is clear, useful and at the same respects personal discretion and uses a polite language. Second, the teacher becomes no longer a mere provider of knowledge, but a moderator of the process that guides

students using the software and facilitates the debate in a friendly and equitable way (Schwartz & Asterhan, 2011). Third, it also the responsibility of the teacher to design tasks that are compatible with the software tools and at the same reflect the learning objectives of the course (Gil-Jaurena & Domínguez, 2018). Fourth, the teacher should exploit as much as possible all different resources and functions provided by real-time communications, so that students get used to online environments, meet their expectations with respect to the course and can perform equal or better than in the traditional classroom.

In order to make this process as easy as possible for the teacher, the course divides the adoption of the synchronous VC in three different stages: planning, implementation and evaluation. Before the course starts, a good preparation of the interface is fundamental to ensure a proper use and avoid most of the problems that may arise once it is implemented. The VC planning module explains how to propose adequate course outcomes that will be the basis for student achievement in the course, which tools can be applied and different considerations to be made with respect to group size and time management. With respect to implementation, four ideas are pointed out for the teacher to get into action: 1) to encourage all students to interact and contribute to the conversation, 2) to organize class time so as to achieve learning outcomes in the expected times, 3) to get used to technology and anticipate technical problems that are likely to arise during the sessions and 4) to know how to carry out group activities in the context of an online classroom. Finally, the importance of evaluation is highlighted not only as an obligation for the students, but as a way to instill purposeful learning and help them achieve their professional goals. Evaluation tools to be used through the VC are pointed out, together with the keys to develop self-evaluation abilities on the student.

CONCLUSIONS AND IMPLICATIONS

The digital era imposes new approaches, tools and skills for teachers in higher education. As a result, this paper shows an ambitious project, conformed by a selection of teams skilled in different disciplines and with varied cultural backgrounds to provide a suitable online tool for teachers. These two factors provided a myriad of perspectives on the common, future challenges in education which enriches the intellectual output of the project. Both, the resulting interactive book with theoretical concepts, examples and interactive activities (cBook) and the coordinated in-person sessions with practical case studies and guided discussions (iLab), are aimed to improve digital skills in the higher education systems, facilitate the interaction between teachers and students in online and technology-mediated environments and establish new communication alternatives to plan, execute and assess educational programs. As a result of this project, we propose a series of recommendations for other professionals in the academic field on the verge of carrying similar undertakings, obtained from the design and implementation of this initiative. This advice is summarized in ten commandments that encompass the most relevant experiences of the project and can be of use to overcome the different stages of an international, academic project of these characteristics.

First, this article intended to highlight the relevance and suitability of the project. This is one of the cornerstones of the project, since properly defining the gaps that exist in the interest area and how your contribution can expand

knowledge frontiers is fundamental to make your idea attractive for stakeholders, especially for financing entities. In this study we started by highlighting the impact that digital technologies have and will have in learning environments, with a special focus on online synchronous communication and teaching through web-based conferencing as an alternative to traditional settings. The advantages of teaching through these settings are pointed out.

Second, the gap between teachers and students in the usage of digital issues in higher education is addressed. We described the situation of most current higher studies teachers, their concerns with respect to the application of technology in the classroom and the principles they should follow to adapt their own teaching style to the new times, without forgetting the crucial role that the teacher still holds in the educational process. Third, we also consider the profile of new generations of students, especially Generation Z, their command of technology, new communication patterns and the importance of adapting teaching to their personal and psychological idiosyncrasy. This implies proposing new means to connect students with teachers and among themselves, giving higher responsibility to the students on their own learning, and working on the appropriate ways to give feedback to students. These two elements of our theoretical framework stress the importance of knowing the different dimensions of the issue covered and the processes that are affected. In our case, we cover all the aspects of education altered by the irruption of new technologies.

Fourth, the need of choosing a didactic and easy-to-understand approach is shown. In this case, we chose storytelling due to its well-proven effects on memory, clarification of complex concepts and classroom discussion. Furthermore, we also explain the importance of a blended learning format in our specific case: this approach was ideal to recreate the typical learning format that teachers will be likely to use in the future. Moreover, combining online and face-to-face teaching offered some advantages, in particular the self-regulation allowed by an online classroom with the easier interaction perceived in a physical space. The core idea to be highlighted is the importance of generating and structuring contents in accordance with stakeholders' characteristics and background, and how your selected learning format should be adapted to the target's needs and priorities.

Fifth, given the international reach of this project and its applicability in higher education institutions of different countries, knowledge areas and learning systems, this project needed of a multicultural and multidisciplinary partnership. This principle is applicable to any other type of supranational project, since the consideration of different cultures in team members provides a more open look to national differences, integrating them in the project development and taking them as an opportunity to enrich the final output. Additionally, groups with different specializations provide different insights, which improve the results of the project, especially in a multidimensional topic such as educational research.

Sixth, the establishment of guidelines for teams' organization and work dynamics are fundamental after group formation. In this project, it was decided to combine individual work with joint sessions in order to share knowledge and perfect the quality of learning materials. Furthermore, the use of online tools for team communication (i.e. web-based conferencing software) facilitates interactions no matter the country where the members are. Last but not least, establishing control mechanisms was a must to assess the performance of each team and fulfill project obligations in the required deadlines.

Seventh, we present an overview of the relevant contents of the project, divided into the different modules that the teachers will go through when taking the course. The project has a clear orientation to the integration of digital technologies, especially latest ICT possibilities, to undertake course management and organize learning outcomes and processes. Such a proposal covers different challenges, from the skill development needs to the effective integration of elements such as LMS, social media or synchronous communication in the learning process. This does not underestimate the importance of on-campus activities though, which are adapted to future technological challenges. All these points are eventually summarized in a proposal for a blended learning course. Eighth, we highlight the particular importance of our contributions to the project. New VC alternatives go beyond LMS to include synchronous communication software and its additional functionalities to develop lectures through computer-based settings. In order to master these resources, a change in the mind of the teacher is required, who will adapt the roles to the new generation of students' needs and the tools provided by the software. Moreover, in order to structure the whole learning process, advice on how to plan, implement and evaluate a course fully or partially taught through synchronous VCs is provided, using real examples and existing frameworks to clarify the concepts. Having clear which are the results of your research is of special interest for several reasons. First, for disseminating your findings in academic or non-academic events. Second, for promoting the final product to the target users, in this case higher education teachers. Third, for reporting your work to the financing institutions.

Ninth, in order to ensure the realization of the project in due time, we encourage future team members of such an enterprise to establish a series of milestones or stages with a linked deadline, similar to the ones employed in our project. This helps to decompose the objectives of the project in smaller, short-term aims, simplify apparently complex tasks and keep track of the advancements of different team members, with the possibility of providing feedback on specific aspects of the project giving enough room for improvements in realistic time lapses. Tenth, all these efforts are materialized in intellectual output: in our case, two specific outcomes. First, the interactive cBook for teacher self-learning (cBook) and a supplementary in-site training that develops the considered topics and adapts them to a more customized, interactive environment (iLab). It is important to keep in mind two aspects before deciding which is the final shape of all the members' work. On the one hand, to consider your stakeholders (i.e. those that will use or benefit from the knowledge acquired through this program), both direct and indirect ones. In our case, we speak about current teachers in with different teaching specializations, backgrounds and expertise, but also about the students who will be supervised by these teachers and will definitely integrate technologies such as Moodle, LinkedIn or WebEx in their future career. Second, to do an empathetic effort to personalize the characteristics of the final product according to what becomes more profitable but also convenient to the specific situation of each user.

LIMITATIONS AND FUTURE DEVELOPMENTS

Our study includes two main limitations. First, it covers an ongoing project that is not completed and requires further testing of the blended learning program in

university and other higher education settings. Thus, the results on teacher performance and attitudes towards the introduction of digital technologies in teaching practices are yet to be completely clarified. Second, the structure and undertaking guidelines of the project are focused on an Erasmus + educational innovation project, and therefore some aspects related to the intellectual outcome and reporting of results could not be applicable to other projects from alternative knowledge areas and/or requested from other institutions.

Future developments of the current study include additional testing on other professionals beyond higher education teachers, such as coaches, consultants or trainers, to make the project extensive to other collectivities highly involved in teaching. Additionally, we conceive as a key point the extension of the learning process in higher education to immersive technologies such as mixed reality.

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