

FROM FACE-TO-FACE TO ONLINE LEARNING: DESIGNING A PEDAGOGICAL MODEL FOR AN HIGHER EDUCATION CONTEXT

A. Loureiro¹, I. Messias², D. Rocha³, N. Ricardo Oliveira⁴

¹*Polytechnic Institute of Santarém; LE@D; CIEQV (PORTUGAL)*

²*Polytechnic Institute of Santarém; LE@D; ISTAR (PORTUGAL)*

³*Polytechnic Institute of Santarém (PORTUGAL)*

⁴*Polytechnic Institute of Santarém; ISEC Lisboa; LE@D (PORTUGAL)*

Abstract

Nowadays, online and virtual platforms play a key role in contemporary society. Digital technology has become ubiquitous and indispensable to our daily routines, whereas the educational field is not an exception. Higher Education Institutions (HEI), due to the transition to emergency remote learning during CoViD-19 pandemic, had to change the way programmes were delivered. This paper aims to present the concept of the distance learning pedagogical model of a HEI in development for a quality distance learning offer. An extensive literature review was carried out, which allowed to know different pedagogical models applied in diverse contexts. A comparison of the different models was made, according to a set of defined criteria that emerged from the needs diagnosed in the HEI. This resulted in a draft proposal for a pedagogical model, based on the following principles: quality and learning experience; ethics and academic integrity; digital inclusion and accessibility; open science and environmental sustainability; flexibility; and interaction. The model will be validated by eLearning and pedagogical experts before it can be implemented as a model in the HEI.

Keywords: e-learning, Pedagogical Model, Higher Education, Online Learning, Distance Education.

1 INTRODUCTION

Digital tools and virtual platforms have shown to be essential today. They have become ubiquitous and indispensable personally and professionally, whereas the educational field is not an exception. Specifically, regarding Higher Education Institutions (HEI), and most recently due to the transition to emergency remote learning during CoViD-19 pandemic, the urgency in changing the way programmes are delivered has been stressed. To answer this call HEIs' decision-makers and the educational community in general, has been investing in the development and redesign of pedagogical models, as a social responsibility of the institution, besides the legal compliance with the accreditation agencies, of courses and institutions that promote distance learning. Online and distance education became a methodology that was acquired during the confinement moments and that, in some situations, prevailed on time. However, teaching and delivering online learning has its own specificities and requires certain pedagogical adaptations, to which, sometimes faculty is not aware of. According to the Portuguese Decree-Law 133/2019 [1], which approves the legal system of higher education provided at a distance, certain criteria are required to be reflected in the HEIs' official documents, on this teaching-learning modality. Therefore, the design and conception of a pedagogical model for online and distance education is crucial, since HEIs have the responsibility, regardless of the contexts, to provide quality and inclusive education. Many online programmes are available for training, but HEI have a significant role in providing a formal and certified training, founded on criteria of quality, flexibility and effectiveness and based on virtual learning platforms, grounded on adapted and tailored pedagogical models.

2 ONLINE EDUCATION

2.1 E-Learning and Emergency Remote Learning

The concept of online education (including online teaching and learning) and eLearning is not new, having been widely discussed over the years, although without consensus. Sangrà, Vlachopoulos, and Cabrera (2012), in an attempt to define the concept of eLearning in a consensual manner, conducted a study where they brought together various experts from around the world to discuss the term, intending it to be more inclusive. This study has therefore defined eLearning as "an approach to teaching and learning, representing all or part of the educational model applied, that is based on the use of electronic

media and devices as tools for improving access to training, communication and interaction and that facilitates the adoption of new ways of understanding and developing learning" [2]. Within the scope of this article, we have chosen to consider this definition because we agree that it is more inclusive and equitable definition and is in line with the principles of the 2030 Agenda for Sustainable Development (2015), namely fulfilling Sustainable Development Goal 4 (SDG4): "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" [3]. HEIs must define and provide quality training programmes, keeping in mind the idea that anyone around the world is a potential student. The OECD Future of Education and Skills 2030 (2018) "aims to help education systems determine the knowledge, skills, attitudes and values students need to thrive in and shape their future" [4]. To achieve this outcome and to prepare citizens for the 21st century, HEIs should provide training programmes to develop transformative competencies among students. These skills, along with digital, emotional, and soft skills, allow students to "contribute to our world and shape a better future: creating new value, reconciling tensions and dilemmas, and taking responsibility" [4]. Although the HEI (IPSantarém) where this study is being conducted already has, to some extent, experience in the online education ecosystem, a structured, organised, and institutionalised training offer is needed. Thus, the 2030 Agenda for Sustainable Development has become a structuring and transversal document to address the needs of the population in all societies, emphasising that "no one is left behind". This was particularly important during CoViD-19 pandemic, when students and teachers went home and took classes online in a model that was called as emergency remote teaching (ERT) without prior planning and designing for that purpose and modality. Hodges, Moore, Lockee, Trust and Bond (2020) defined ERT as a "temporary shift of instructional delivery to an alternate delivery mode due to crisis circumstances" [5]. The education system was not prepared for the sudden shift from face-to-face teaching to ERT. In the absence of such preparation there was an adaptation of all actors (teachers, students, and family) to a new educational context. It is worth remembering that the two realities are not the same, i.e., ERT cannot be considered a form of eLearning, as it replicates for online what is done in a face-to-face context without any type of methodology or online pedagogy applied. Synchronous classes were dynamized in the students' and teachers' effective timetable, when eLearning's pedagogical model requires a more student-centred, flexible and mostly asynchronous method.

2.2 Pedagogical Model for Online Education

Often and with today's new normal in learning, it is crucial to design hybrid-flexible courses based on a pedagogical model that is able to support and to respond to multimodal and online distance learning environments. "Multimodal learning environments allow instructional elements to be presented in more than one sensory mode (visual, aural, written)" [6]. We agree that "different modes of instruction might be optimal for different people because different modes of presentation exploit the specific perceptual and cognitive strengths of different individuals" [7], and the same can be applied when we think about learning through different times and modes of communication (synchronous, asynchronous) and various spaces (online, onground, virtual). Usually, online and onground students with a limited set of resources (time, faculty, space) tend to lead to the necessity of a multi-modal delivery solution. "When students are given the freedom and ability to choose which mode to participate in from session to session, they are able to create their own unique hybrid experience" [8]. However, students must master certain skills to be able to learn, especially in an online distance mode. "The readiness model for students consists of six components: competency of technology usage, self-directed learning, access to technology, confidence in prerequisite skills and in themselves, motivation, and time management. The model implies that the student must have computer and technology skills prior to eLearning, must have good study habits and independent learning skills, and must be motivated in attending online classes" [9]. Having a good pedagogical model for online (and hybrid) learning will help students and teachers to better perform. From the study we carried out we tend to agree with Branch and Dousay (2015) conclusions when referring that "effective online learning results from careful instructional design and planning, using a systematic model for design and development" [10]. In the design of a proper model for online education, some criteria must be considered. Means, Bakia, and Murphy (2014) had defined nine dimensions: "modality, pacing, student-instructor ratio, pedagogy, instructor role online, student role online, online communication synchrony, role of online assessments, and source of feedback" [11].

As for the design of the pedagogical model for online education to be implemented in this specific HEI (IPSantarém), we took into account the institution's strategic axes, values and principles. The pedagogical model's mission is to innovate, stimulate, and encourage the use of active and innovative pedagogical practices, allowing traditional barriers, such as space and time, to be overcome, facilitating the development of an information and knowledge society of all and for all. The proposal of the pedagogical model was, therefore, and after the analysis of other models, based on the following

principles: quality and learning experience; ethics and academic integrity; digital inclusion and accessibility; open science and environmental sustainability; flexibility; and interaction. The changes fostered by the CoViD-19 pandemic in the teaching-learning process have led to a questioning of pedagogical practices, leading us to view online distance learning and innovation in pedagogical practices as core elements of the HEI, allowing it to remain current, active, competitive, and efficient, positioning itself as a local, national, and international academic and scientific reference. Resulting from the needs felt at the level of Online Education identified at IPSantarém, in the SDGs and based on the recent recommendations of UNESCO regarding Open Science [12], the design of a pedagogical model is proposed, with a view to developing an innovative, inclusive, and sustainable eLearning pedagogy. "The SDGs define global priorities and aspirations for 2030 in areas that affect the quality of life of all citizens of the world and those yet to come" [3]. By cross-referencing the SDGs of the 2030 Agenda for Sustainable Development with the goals of the pedagogical model, we can position it in 6 distinct SDGs, thus aiming to: contribute to quality education (SDG4); foster gender equality (SDG5); promote decent work and economic growth (SDG8); reduce inequalities (SDG10); support climate action (SDG13) and encourage peace and justice and achieve more effective institutions (SDG16). Ultimately, we can say that it facilitates and promotes the participation of the whole community involved in the development of research through creative learning and citizen science. Note that "Open Science has the potential to make the scientific process more transparent, inclusive and democratic. It is increasingly recognized as a critical accelerator for the achievement of the United Nations Sustainable Development Goals and a real game changer in bridging the gaps in science, technology and innovation and fulfilling the human right to science" [12]. On the other hand, it seemed relevant to us, in this context, to verify to what extent the pedagogical model meets the Social Responsibility Indicators for Higher Education Institutions [13], namely regarding the personal and professional training of students and educational agents and the socially responsible management of knowledge production and dissemination, including issues related to ethics and academic integrity.

Thus, it will attempt to respond to the following indicators, provided for in the ORSIES [13]:

- #3. Principles of Ethics, Social Responsibility or Sustainability in Teaching, Research and Knowledge Transfer - HEI acts according to commonly defined principles and values recognized by all and strives to apply these guidelines in the three spheres of action: teaching, research and transfer to the community;
- #5. Participation and management of initiatives on Ethics, Social Responsibility and Sustainability - HEI engages in internal and external initiatives to promote Ethics, Social Responsibility and Sustainability;
- #9. Personal and professional development - HEI values the contribution of each employee and promotes conditions for each one's personal and professional growth through training in relevant areas;
- #19. Collaborative learning - HEI provides learning contexts that value collaborative work;
- #21. Innovation in Teaching-Learning - HEI is awake to the importance of curricular innovation, provides training, technological resources, and support for teachers to define methodologies that meet new demands and needs;
- #23. Lifelong learning - HEI offers differentiated training that is appropriate to the needs of new audiences, in new formats and different media;
- #26. Collaborative research - HEI favours the development of research topics that integrate multiple fields of knowledge and that values the interaction between internal and external actors of the HEI;
- #30. Scientific dissemination and transfer practices integrated into teaching - HEI values the acquisition of skills by students for the transmission of information to non-specialized audiences;
- #31. Open Science - HEI is guided by the national guidelines of Open Science and implements measures to encourage open publication among the academic community.

HEIs must then become open knowledge institutions, operating with the principles of openness at their core and working across borders and with extended communities to generate shared knowledge resources for the benefit of citizens. Openness implies participation, collaboration, resource sharing, data reuse, in short, a process that seeks to increase the social value of education and science. It is also important to emphasise the link between the development of Open Science and its connections with the global learning environment. Open Science enables, or can contribute to, higher quality open

online learning, grounded in public policies and the latest developments in digital technologies (like cloud facilities), massive advances in online learning tools and courses (such as MOOCs) and a myriad of other platforms and services [14].

The digital society in which we live, increasingly rooted in the use of technology, demands professionals who are proficient, autonomous, and capable of lifelong learning. This context represents a possible increase in demand for online learning programmes that allow students the greatest possible flexibility in their learning path, which makes it essential that the pedagogical model adopted is mandatorily designed based on student-centred pedagogical strategies. That is, where the learning experiences are not only magisterial, but seek active learning moments, seeking teacher-student, teacher-content-student, and student-student interaction, where pedagogical practices are designed based on autonomous learning strategies by the student, and where interaction is key to the co-creation of knowledge, giving rise to reflection. The teacher/tutor has a facilitating and guiding role, where feedback should happen at key moments that help the flow of knowledge creation.

Knowing that the pedagogical model is centred on the student and on his/her active and proactive attitude towards knowledge creation, it becomes essential to adopt User Experience Design for Learning (UXDL) principles to design learning experiences based on the user and his/her learning styles. Thus, learning activities should be created first by defining the problem and learning objectives. The distance education context implies thinking about a set of methodologies that are also appropriate to the specific reality of distance learning, where interaction is key. Thus, in a second step it will be necessary to understand/define the typical students, idealising and designing the experiences and the instructional design based on their profiles, specifying the means, tools, and evaluation metrics. The design of the content should be done thinking about the different moments of interaction essential for the construction of knowledge, designing for the implementation of the learning experience, choosing the tools and digital educational resources best suited to the context, content and learning objectives, giving place to interaction for the joint construction of knowledge and for reflection, also trying to design methods to also evaluate the perceptions of the learning achieved.

The quality of the student experience is essential for the reputation of IPSantarém and to attract more students. Thus, learning outcomes must evidence student progression. The design of the assessment methods must illustrate how to reach these outcomes.

2.3 Online Teacher's Profile

In September 2019, before the COVID-19 pandemic context that impacted education globally, the Portuguese Presidency of the Council of Ministers published a Decree-Law [1], approving the legal norms concerning distance learning on higher education. This decree specified about the faculty that will be teaching at distance, clarifying that they must be trained and certified in pedagogical strategies for distance education. It also notes the relevance of a technician team that collaborates with the faculty for the curriculum design, study plans and resources' creation/adaptation necessary to teach in distance education environments.

In 2022, a norm published by the Higher Education Courses Accreditation Agency (A3ES), sets relevant criteria to approve degrees ministered in non in-person means, highlighting the relevance of using specific methodologies for these modality, detailing that the faculty should prove to have training about teaching methodologies specific for non-presential teaching, have experience in teaching curricular units/modules based in active learning methodologies, and have a portfolio of recent academic/scientific publication/activities' developed and used no more than 5 years, on the fields related to methodologies and/or digital mediation to support non in-person teaching [15].

Hence it becomes essential to define the faculty profile for distance education, so that it can be possible to design courses in this modality, as well as to understand the competencies that Higher Education faculty should develop/master to be able to teach at distance, specifically in e-learning. The European Commission, OCDE, UNESCO, UNICEF, among other organisations and researchers have been studying in detail the essential competencies that faculty should have to be able to teach at distance, and knowledge of how to design pedagogical strategies specific to teaching/learning in these contexts. One of the organisations that aimed to determine the faculty's profile for distance education was the "Education Development Center" (EDC), their published document [16] suggest that a good teacher must have specialised knowledge of the content he is going to teach, use structured instructional approaches that foster complex thinking development, design pedagogical strategies specifically adapted to learning the content they teach, possess knowledge about cognitive development and adapt their strategies accordingly to the level of development. It is highlighted that the faculty's level of self-

perception about their efficiency is a key aspect to motivate himself and the students, as it is essential that the teacher is secure of his knowledge for the students to perceive the class's environment as safe for learning. The same authors present a set of competencies and knowledge that faculty should have to be specialised in distance learning, such as:

- Learn to teach in the same environment they will use to teach;
- Focus on the key areas of teaching: Knowledge of content, organisation to learn and to access;
- To be familiar with the bases of instructional teaching for distance education;
- Mimic key behaviours for effective distance education, such as give timely feedback to keep the student motivated and interested, promote interaction and shared/group reflection, know when to offer guidance/supervision in person and mediated by technology;
- Differentiate instruction from supervision, accordingly to the students' needs;
- Work with the students both in distance and in person environments;
- Know how to use technology to plan and teach with technology;
- Create assessment instruments that profit the particular benefits of distance education;
- Understand the administrative proceedings to publish grades, particularly while using a LMS.

To master the area of knowledge that one is going to be teaching is crucial to help students to develop knowledge in an online distance education environment [16]. The author identifies as a key aspect that faculty should know how to articulate and integrate pedagogy, technology, and context, in a way that it's possible to foster significant learning experiences and produce effective learning via technology enhanced learning. Hence, it suggests that faculty should learn in a context that they can experience this need in several environments. Still the same researcher suggests that distance education teachers should experience multiple forms of communication and interaction in distance education environments, so that they know how to establish their online presence, and to understand how communication and collaboration are essential to acquire knowledge in these environments. Writing for digital environments is also suggested and an important competence, to facilitate communication for learning and to potentially increase discussion and collaborative work.

In 2015, UNESCO together with UNICEF along with other partners, during the World Education Forum, have drawn, within the Incheon Declaration, a framework for implementing quality education accessible to all as a goal to reach until 2030 [17]. Whereas the access to education should be equal and affordable to all, for all ages and all levels of education, including University level. It also identifies that the number of adults with relevant skills for employability must increase. Other highlighted aspects are the importance of eliminating disparity of gender in education, as well as the ease of access to all people with handicaps or in vulnerable situations. The percentage of adults proficient in ICT and Digital Literacies is set as a key indicator for determining the quality of education.

The European Institute for E-Learning together with eTTNet TwG2, have set a competencies framework specifically for distance education teachers [18]. The authors highlight as this framework's fundamental purpose the application of knowledge, information, and learning, mediated by technology to achieve high quality distance education in an e-learning context. The two elements they consider essential for a teacher to be able to articulate the development of the other competences are the prerequisites of knowledge and the performance criteria specific to the area of teaching. This framework proposes the mastery of six key competences for the development of other specific competences. Thus, they propose that the teacher should understand and apply: Organisational context; Health and Security; Legal; Learning Technology; Learning and Development; Give support; Monitor and evaluate; Manage resources; Communication; Continuous improvement; Accessibility; Professional Ethics.

Although not directly related or completely applicable to the profile of Distance Education Faculty, it is still worthy of note to reflect on the competencies' framework for the ICT teacher, later proposed by UNESCO [19]. This document proposes a competencies profile based on six principles that unfold in a framework of 18 competencies, implicating a progression of three levels of knowledge (*cf.* Figure 1).

Some of the competencies proposed by this framework are key competencies to be mastered by distance educators, such as knowledge of how to articulate pedagogical practices to respond and support institutional and national policies; being able to identify how ICT can be used pedagogically to the acquisition of educational principals; being able to make adequate choices to support their teaching and learning methodologies, specific for the use of ICT in their pedagogical practices; knowledge of how

to correctly implement ICT for the diverse learning contents, teaching and assessment processes, creating a learning environment augmented with ICT whereas students, using ICT, meet the curricula goals; know how to plan project based learning activities where students use ICT to solve complex problems; Integrate OERs to set an educational environment that fosters the development of Higher-order thinking; using digital tools to facilitate collaborative learning and interaction; implement adequate active learning practices; and create learning communities that use digital tools to support ubiquitous learning.

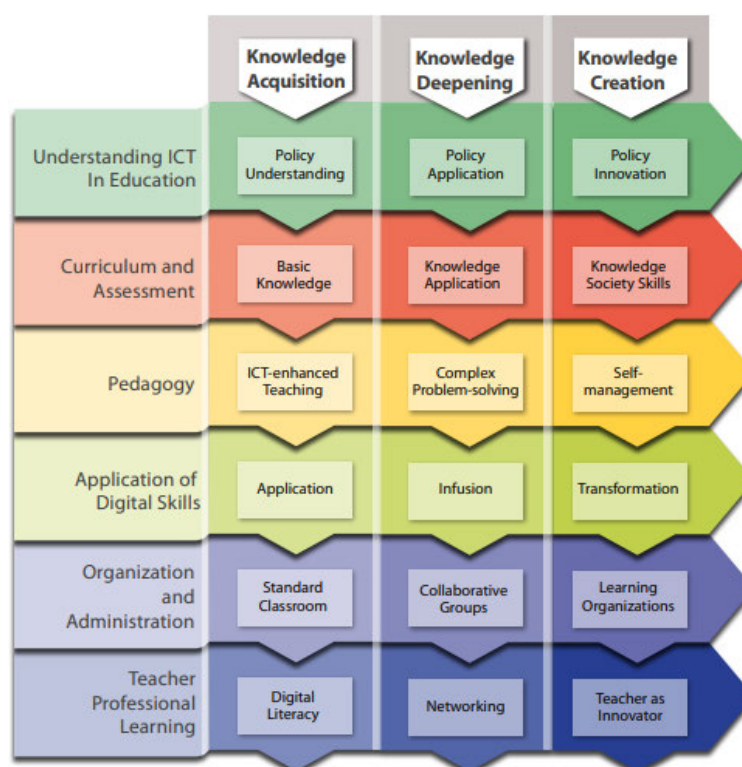


Figure 1: UNESCO ICT Competency Framework for Teachers. Version 3. (2018)

UNESCO [20], after the pandemic, in 2021, presents a teachers' guide to help with the digital transformation to distance teaching and learning. Here it notes the need to guide and educate faculty to help them understand the main issues related to distance learning, acknowledging the complementary connection between formal and non-formal learning. It presents a set of competencies that the teacher must have, such as: a) create environments for distance education; b) To give emotional support and to accompany the learning process; c) Plan micro-curricula; d) Plan instructional design; e) Act like a tutor. In a later document [21], the impact of the COVID-19 is considered, noting that the adequate preparation of faculty for distance teaching and learning is fundamental, stressing the need to create opportunities for teachers to develop these skills that will allow them, in similar contexts, were the integration of digital technology and innovative pedagogical practices are shown to be paramount.

Whereas the document "Educators' Digital Competency Framework" [22] that results of a partnership between the European Union and UNICEF proposes a set of competencies for XXI century teachers, emphasising faculty should, among other skills:

- Comprehend how to interconnect curricula basis with the use of technology to support learning;
- Know how to research, plan and interlink digital tools to augment the effectiveness of inclusive teaching practices;
- Understand and know how to incorporate student centred learning pedagogical practices, to foster collaborative learning;
- Knowledge of how to use digital resources;
- Use digital technologies to tutor students.

3 METHODOLOGY

To collect the data to design a pedagogical model for online learning a systematic literature review was carried out. Not only concerning the concepts related with online learning but also an analysis and comparison of online learning models already in use in different HEI. In addition, a framework defining the profile of an online teacher was conceived based on the different official European reports (such as UNESCO, UNICEF, EU and EIFEL) and national legislation in this field.

The work methodology included defining the composition of the team for the development of the pedagogical model and defining premises for the justification of the selected elements, such as: scientific and pedagogical competences around online education; knowledge of the context of the scientific areas of IPSantarém; experience in lifelong learning; organisational change.

The need to know and define structuring axes for the design of the pedagogical model imposed the need for reflection on the perspectives of the various business areas of IPSantarém, with regard to the implementation of online and distance learning. It was necessary to listen to the educational community of IPSantarém and external partners (stakeholders) to understand the specific needs of this Model in the specific context of IPSantarém. For the collection of this information, the qualitative methodology of *focus group* data collection was used, since it allows group interaction through the discussion of a "focus" theme [27]. The data collected supported the design of the Model with respect to the definition of the fundamentals of online and distance education at IPSantarém and the Model's application methodology.

In what concerned the pedagogical models we also have mapped the ones in use in several HEIs and we identified, compared, and analysed aspects such as the guidelines, teachers' profile and methodological implementation. From there, we draw an index of the most relevant topics to integrate in the Model to be implemented and developed at the IPSantarém. Where we intend it to be a transversal model to all organic units, which is in connection with the Decree-Law No. 133/2019 [1] that approves the legal regime of higher education provided at a distance and the mission and strategy of the IPSantarém for Distance Learning.

To develop the pedagogical model, we used a design-based research (DBR) approach, which "is a form of inquiry characterized by iterative cycles of development, testing, and refinement of an intervention that is developed in collaboration with stakeholders and then deployed and evaluated in the rich, real-world contexts. DBR is simultaneously committed to providing theoretical contributions and practical solutions to educational problems" [23]. Some authors also sustain that "In an educational setting, design-based research is a research approach that engages in iterative designs to develop knowledge that improves educational practices" [24]. DBR researchers play the role of informed experts in order to create, "test[ing] and refin[ing] educational designs based on principles derived from prior research" [25] and it "may include curricula, practices, software, or tangible objects beneficial to the learning process, [such as] the development of technological tools [and] curricula" [26] and pedagogical models.

As for the development of the iteration progress concerning the pedagogical model, we considered the three core processes of DBR (Cf. Figure 2) from McKenny and Reeves [28]: (a) analysis and exploration, (b) design and construction, and (c) evaluation and reflection.

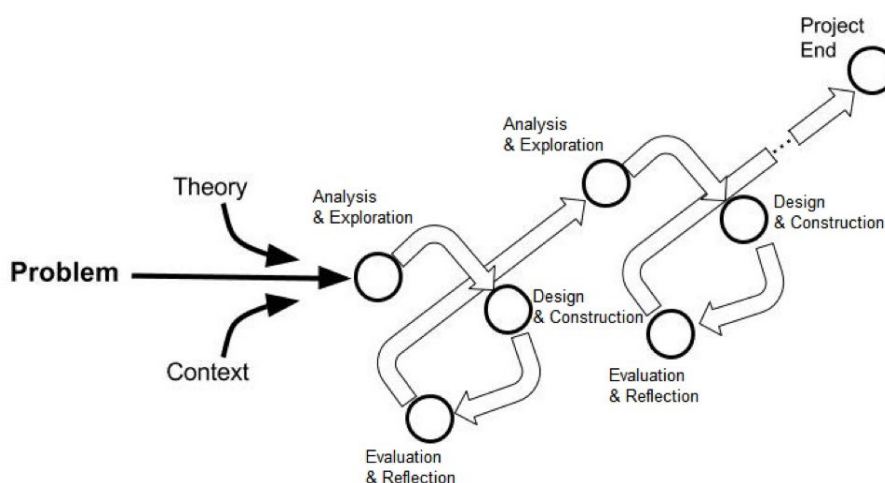


Figure 2: The Iterative Process of Design-Based Research

Considering the post pandemic new normal learning we grounded our model in the NNL Framework from Khan (2022) which is more adoptable and adjustable (Cf. Figure 3), where “the inner octagon represents the characteristics of the new normal learning environment while the outer octagon represents the guiding elements to help the design of the learning environment” [29]. The framework has 8 dimensions to consider when design online distance learning programmes: Pedagogical, Technological, Interface Design, Evaluation, Management, Resource Support, Ethical, Institutional.

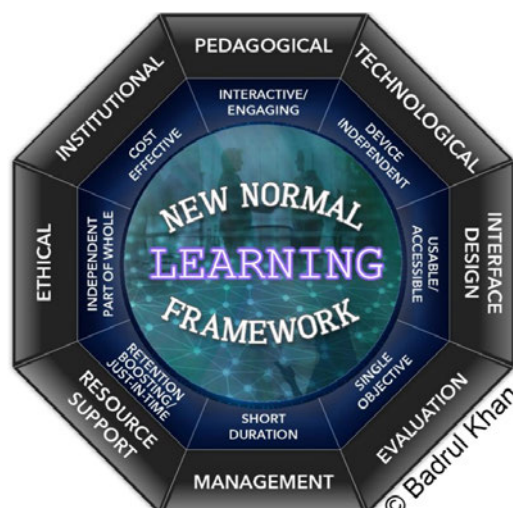


Figure 3: The New Normal Learning Framework

As referred by Khan, “in the new normal, learners will require learning environments with characteristics as interactive/engaging, device independent, usable/accessible, single objective focused, short duration, retention boosting/just-in-time, independent but part of the whole, and cost effective” [29]. An online learning model must be as flexible, adaptable, and customizable.

4 RESULTS

In a HEI context, and bearing in mind the new normal in education, having a pedagogical model for online learning is crucial, although it's not an easy task due to the diversity of user profiles, contents, methodologies, and digital tools. The concept, development and implementation of a pedagogical model requires a lot of work from a vast and skilled team (from pedagogy and instructional design, to technical, to emotional and social skills). At this point, based on the models we mapped, we have traced a draft of a pedagogical model for online learning that needs to be tested and validated, prior to use.

Built on the different official documents around the competencies of a teacher, we have also established a framework that defines the profile of an online distance education teacher in higher education, and some characteristics arose: have mastery of the area of knowledge that will teach; master the basic ICT skills; have experience as a teacher/student in online distance education (Cf. Figure 4).

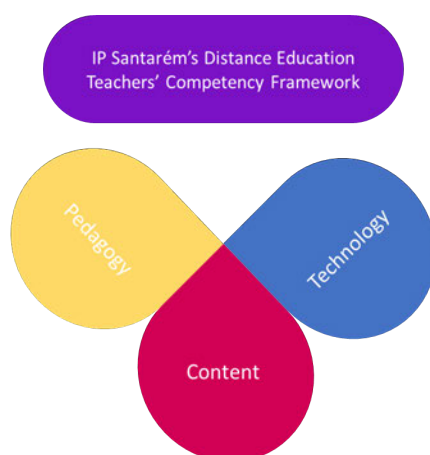


Figure 4: IPSantarém's Distance Education Teachers' Competency Framework

The framework bases the profile in three dimensions related with the main skills one must master: pedagogy, technology, content. Therefore, a proficient online distance education teacher in higher education must:

- Have knowledge of how to apply digital skills in their teaching practices;
- Be aware of specific pedagogical tools and strategies for augmented teaching with ICT;
- Know how to articulate and interconnect pedagogy, technology, and content.

5 CONCLUSIONS

Hybrid-flexible courses based on a pedagogical model that can support and to respond to multimodal learning environments is vital. The diversity of contexts, students, faculty, contents, resources, devices, tools, environments, profiles is huge, and HEI must be able to give a proper and effective response to fulfil the needs in terms of teaching and learning.

From the analysis we made of the various pedagogical models used in several HEI we concluded that we should ground ours under the principles of quality and learning experience; ethics and academic integrity; digital inclusion and accessibility; open science and environmental sustainability; flexibility; and interaction. Having a tailored model that fits the needs of the students and faculty is mandatory, so that education can occur independent from time, space, and digital devices.

Define the right profile of an online distance education teacher in higher education is also important to establish the needs for capacity building to develop the necessary competences (pedagogy, technology, content). More than ever teachers must be updated concerning their many skills, due to the fast pace, the on demand, and the just-in-time characteristic of the contemporary society.

ACKNOWLEDGEMENTS

#eCapacitar - Capacity building for digital inclusion in the core business areas of IPSantarém. Project reference POCI-05-5762-FSE-000254 (co-funded by COMPETE2020, Portugal2020, UE-FSE).

REFERENCES

- [1] Ciência, Tecnologia e Ensino Superior, “Decreto-Lei n.º 133/2019”, de 3 de setembro, 2019. Retrieved from https://dre.pt/dre/detalhe/decreto-lei/133-2019-124392062?_ts=1673395200034
- [2] A. Sangrà, D. Vlachopoulos, N. Cabrera “Building an Inclusive Definition of E-Learning: An Approach to the Conceptual Framework”, *IRRODL*, Vol 13, N.º 2, pp. 145-159, 2012. Retrieved from <https://files.eric.ed.gov/fulltext/EJ983277.pdf>
- [3] UN General Assembly, “Transforming our world: the 2030 Agenda for Sustainable Development”, 2015. Retrieved from: <https://www.refworld.org/docid/57b6e3e44.html>
- [4] OECD, “The future of education and skills Education 2030”, 2018. Retrieved from [https://www.oecd.org/education/2030-project/about/documents/E2030%20Position%20Paper%20\(05.04.2018\).pdf](https://www.oecd.org/education/2030-project/about/documents/E2030%20Position%20Paper%20(05.04.2018).pdf)
- [5] C. Hodges, S. Moore, B. Lockee, T. Trust, A. Bond, “The Difference Between Emergency Remote Teaching and Online Learning”, 2020. Retrieved from <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>
- [6] M. Sankey, D. Birch, M. Gardiner, “Engaging students through multimodal learning environments: The journey continues”. In C.H. Steel, M.J. Keppell, P. Gerbic & S. Housego (Eds.), *Curriculum, technology & transformation for an unknown future*, pp.852-863. Proceedings ascilite Sydney, 2010.
- [7] H. Pashler, M. McDaniel, D. Rohrer, R. Bjork, “Learning Styles: Concepts and Evidence”, *Psychological Science in the Public Interest*, 9(3), pp. 105-119, 2008.
- [8] B. J. Beatty, *Hybrid-Flexible Course Design* (1st ed.). EdTech Books, 2019. Retrieved from <https://edtechbooks.org/hyflex>
- [9] C. Nolasco, “Online Distance Learning: The New Normal In Education”, 2022. Retrieved from <https://elearningindustry.com/online-distance-learning-the-new-normal-in-education>

- [10] R. Branch, T. Dousay, "Survey of Instructional Design Models," Association for Educational Communications and Technology (AECT), 2015.
- [11] B. Means, M. Bakia, R. Murphy, *Learning Online: What Research Tells Us about Whether, When and How*, New York: Routledge, 2014.
- [12] UNESCO, "UNESCO Recommendation on Open Science", 2021. Retrieved from <https://unesdoc.unesco.org/ark:/48223/pf0000379949.locale=en>
- [13] ORSIES, "Indicadores de Responsabilidade Social das Instituições de Ensino Superior", 2020. Retrieved from https://www.orsies.forum.pt/images/PDF/IRSIES_Livro_Indicadores_RS.pdf
- [14] Euraxess, "Understanding Open Science", 2021. Retrieved from <https://euraxess.ec.europa.eu/>
- [15] A3AES, "Despacho 16/2022 - Ensino Não Presencial", 2022. Retrieved from <https://a3es.pt/pt/acreditacao-e-auditoria/quadro-normativo/ensino-nao-presencial>
- [16] M. Burns, *Distance Education for Teacher Training: Modes, Models, and Methods*, EDC, Washington, DC, 2011. Retrieved from <https://www.edc.org/sites/default/files/uploads/Distance-Education-Teacher-Training.pdf>
- [17] UNESCO, "Education 2030: Incheon Declaration and Framework for Action", 2016. Retrieved from <https://unesdoc.unesco.org/ark:/48223/pf0000245656>
- [18] EIFEL, "The eLearning Competency Framework for Teachers and Trainers", 2016. Retrieved from <https://docplayer.net/21073611-The-elearning-competency-framework-for-teachers-and-trainers.html>
- [19] UNESCO, "UNESCO ICT Competency Framework for Teachers - Version 3", 2018. Retrieved from <https://unesdoc.unesco.org/ark:/48223/pf0000265721>
- [20] UNESCO, "Garantir um ensino a distância eficaz durante a interrupção", 2021. Retrieved from https://unesdoc.unesco.org/ark:/48223/pf0000375116_por
- [21] UNESCO, "Transforming education from within: Current trends in the status and development of teachers" 2022. Retrieved from <https://unesdoc.unesco.org/ark:/48223/pf0000383002>
- [22] UNICEF, "Educators' Digital Competence Framework", 2022. Retrieved from <https://www.unicef.org/eca/reports/educators-digital-competence-framework>.
- [23] K. Crippen, J. Brown, (Eds.), Vols. 1-4. SAGE Publications, 2018. Retrieved from <https://dx.doi.org/10.4135/9781506326139>
- [24] M. Armstrong, C. Dopp, J. Welsh, "Design-Based Research", In R. Kimmons, *The Students' Guide to Learning Design and Research*. EdTech Books, 2018. Retrieved from https://edtechbooks.org/studentguide/design-based_research
- [25] A. Collins, D. Joseph, K. Bielaczyc, "Design research: theoretical and methodological issues". *Journal of the Learning Sciences*, 13(1), pp. 15–42, 2004.
- [26] S. Barab, K. Squire, "Design-based research: putting a stake in the ground", *Journal of the Learning Sciences*, 13(1), pp. 1–14, 2004.
- [27] S. Mckenney, T.C. Reeves, *Conducting Educational Design Research*. New York: Routledge; 2012.
- [28] I.S. Silva , A.L. Veloso, J.B. Keating" Focus group: considerações teóricas e metodológicas". *Revista Lusófona de Educação* [internet]. 26: 175-190. CeIED, 2014. Retrieved from <https://revistas.ulusofona.pt/index.php/rleducacao/article/view/4703>
- [29] B. Khan, "The New Normal Learning Framework" (Position Paper), 2022. Retrieved from <https://badrulkhan.com>