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Prefácio

Prezado/a leitor/a,

Num mundo em constante transformação é fundamental pensar e repensar as práticas pedagógicas em busca de formas diversificadas de ensinar e aprender. Importa assumir que, no processo de ensino e aprendizagem, os/as aprendentes não são apenas os/as estudantes, o/a professor/a também está em contínua aprendizagem.

Conscientes da importância da dimensão das práticas pedagógicas nas discussões e na reflexão sobre educação, o Seminário Internacional de Práticas Pedagógicas surge do pressuposto que a divulgação das práticas pedagógicas dos/as professores/as altamente qualificados do ensino superior facilita a construção e a promoção de espaços de reflexão e de cocriação sobre a atividade docente. Assenta ainda no pressuposto que o desenvolvimento profissional é contínuo, implicando uma intensa atualização em relação às tendências e pesquisas nas diferentes áreas do saber.

Acreditamos que a atividade docente, quando desenvolvida mediante práticas colaborativas, permite a construção de processos de ensino e de aprendizagem promotores da cocriação dos conhecimentos. Sabemos também que estas práticas implicam ambientes inclusivos e inovadores que garantam aprendizagens significativas para os/as estudantes. Por isso, ao divulgar as práticas pedagógicas desenvolvidas pelos nossos pares, docentes do ensino superior, de forma clara e acessível, pretendemos estimular a curiosidade e o interesse de toda a comunidade docente pelos diferentes modos de construção do conhecimento. Além disso, a divulgação destas práticas permite fomentar o diálogo e o debate, confrontar práticas discutindo-as e estimulando o pensamento crítico.

Deste modo, neste e-book pretendemos divulgar as práticas pedagógicas apresentadas no Seminário Internacional de Práticas Pedagógicas desenvolvidas nos últimos anos, tanto no contexto do ensino superior nacional quanto internacional. Discutiremos desde o uso de tecnologias digitais até metodologias ativas de ensino, passando por estratégias colaborativas e de cocriação.

O principal objetivo é fornecer ao/à leitor/a uma visão ampla e atualizada sobre algumas das tendências e dos desafios das diferentes práticas pedagógicas, mediante a apresentação e a discussão de casos concretos que possam inspirar e orientar as práticas pedagógicas docentes no Ensino Superior e de um modo muito especial no Instituto Politécnico de Setúbal.

Esperamos que a divulgação de todas as experiências contribua para a construção de uma educação superior mais criativa, mais participativa e mais significativa para todos/as os/as envolvidos/as nos processos de construção do conhecimento.

Boa leitura!

A Presidente do Instituto Politécnico de Setúbal,

Ângela Lemos

Índice

The design thinking method applied in the context of the E³UDRES² I LIVING LABS

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Abstract

The European Universities Project E3UDRES2 establishes I-Living-Labs (ILL) for future universities and smart and sustainable regions. The present manuscript describes an experience of conducting these ILL with learners who perform a self-registration in each partner institution, aiming to add skills to their curriculum beyond the traditional offer and thus expect to increase future competencies in a complex world. The enrolled learners have different nationalities and education backgrounds and they are coached by two educational entrepreneurs that guide them throw a design thinking stage process to achieve a solution to a specific problem. All ILL has an external stakeholder that helps in the reflection of the problem and in the main focus to be challenged. The strategy used follows the Stanford Design Thinking model, allocating one week to each stage of the process. The methodology applied consists of the following five stages: 1) Empathy with the challenge and the workgroup, 2) Definition of the challenge, 3) Idealization of a possible solution, 4) Prototype design, and 5) Testing the solution. The results obtained in each ILL showed a positive impact at different levels on the development of future skills, namely, communication, self-confidence, teamwork, and the improvement of pedagogical contents about the theme.

Keywords: Design Thinking Method; Co-creation; European Universities; Future Skills.

Resumo

O Projeto Universidades Europeias E³UDRES² dinamiza I-Living-Labs (ILL) para futuras universidades e regiões inteligentes e sustentáveis. O presente trabalho descreve uma experiência de realização destes ILL com alunos que se inscrevem em cada instituição parceira, com o objetivo de acrescentar competências ao seu currículo para além da oferta tradicional e na perspetiva de aumentar as competências futuras num mundo complexo. Os estudantes inscritos têm diferentes nacionalidades e formações e são orientados por dois empreendedores educativos que os conduzem num processo de conceção e reflexão para alcançar uma solução para um problema específico. Todos os ILLs têm um interveniente externo "stakeholder" que ajuda na reflexão do problema e no foco principal do desafio. A estratégia utilizada segue o modelo de "Stanford Design Thinking", atribuindo uma semana a cada fase do processo. A metodologia aplicada consiste nas cinco fases seguintes: 1) Empatia com a temática dinamizada e o trabalho de grupo, 2) Definição do desafio, 3) Idealização de uma solução possível, 4) Desenho de protótipos, e 5) Testagem da solução. Os resultados obtidos em cada ILL mostraram um impacto positivo a diferentes níveis no desenvolvimento de competências futuras, nomeadamente, comunicação, autoconfiança, trabalho de equipa e melhoria dos conteúdos pedagógicos sobre o tema.

Palavras-Chave: Método Design Thinking; Cocriação; Universidades Europeias; Competências Futuras.

1. Introduction

The E³UDRES² project, which stands for Engaged and Entrepreneurial European University as Driver for European Smart and Sustainable Regions integrates international partner universities and aims to build a strong and lasting alliance between universities across Europe to improve the European Higher Education Area, thus enabling a new generation of creative Europeans to cooperate in Europe's societal challenges. The I-Living-Labs (ILL) propose challenges that use the Design Thinking method to develop Future Skills (Andone et al., 2022). These are competencies that offer significant added value to the labor market: problem-solving thinking; dealing creatively with obstacles; learning to deal with uncertainties; being able to adapt to an ever-changing reality; creating sense (Blumenstein et al., 2021; Deming, 2017; Ehlers, 2020). This process is also used to create innovative solutions to prototype and test. There have been so far three rounds of ILL – in the first and second semesters of the 2021/2022 academic year and the first semester of the 2022/2023 academic year. These ILL were aligned with the three main research areas of the E³UDRES² project: (i) Circular Economy, (ii) Well-being and Active Ageing, and (iii) Human Contribution to Artificial Intelligence. This paper documents the pedagogical methods used in the E³UDRES² ILL. An ILL is a safe working and learning space that allows learners (students) to put ideas to test, succeed or fail and learn from these experiences. They choose the future skills to grow on a professional and personal level and all the methodologies take into consideration the feedback and reflection as an essential role in supporting this process (Balliester & Elsheikhi 2018). Various assessment methods show the personal learning success of each learner through the ILL.

2. Description of the Pedagogical Experience

2.1. Goals and Participants

An ILL aims to contribute to a solution to a real problem in society in different areas. Also, the methodology used according to the stages of Design Thinking focuses on Future Skills development during the ILL, where each learner selects what he/she thinks he/she needs or can improve during the ILL (Dorst, 2011; Plattner, 2010).

Various learners from different institutions and countries in different scientific areas get together over the experience trying to contribute with a new idea that can add technical and scientific knowledge to the challenge that they had selected. Also, two Educational Entrepreneurs (coaches) accompany all processes during the ILL. They guide the learners in their co-creative design thinking process and stimulate them to evolve their selected future skills. Together with the stakeholder, they work towards smart and sustainable ideas and prototypes for the challenge presented in the ILL.

The external stakeholder, considered as the owner of the challenge, can be anyone from the regional society: a business owner, a local authority, a civilian, a (nonprofit) organization, or any other regional player. Together with learners and Educational Entrepreneurs (EE), they start a process of co-creation within the ILL. Finally, we also have T-Shaped Innovators working in each university participating in E³UDRES² Alliance. They support the EE and together they evaluate, reflect, and evolve the concept of the ILL (Frow, Nenonen, Payne & Storbacka, 2015).

2.2. Methodological Process

First of all, the ILL characterization has some specificities in the context of higher education, as a variety of challenges in different areas are tried to perform a solution to a societal problem. Each week usually consists of two online sessions of 2.0 hours each or a single session of three hours with some extra sessions to perform eventually tasks. Each iLL or challenge correspond to 6 ECTS and is organized in 6 weeks, following the steps of the Stanford Design Thinking model:

a) Empathise stage – exercises between learners in groups using breakout rooms and tasks, to explore video and different digital tools and techniques, learn about some thematic, and also perform some interviews to understand better both the end users and the challenge of the selected ILL;
b) Creation stage – definition about the strategy to be used to take into consideration the participation of all learners;
c) Ideation stage – presentation and discussion of ideas about solutions to answer the needs of the society in some area;
d) Prototype stage – definition of all stages to produce the prototype using different techniques that can be used in the final pitch;
e) Test stage - presentation of the pitch and production of a poster about the challenge in each ILL (Noweski, Scheer, Büttner, von Thienen, Erdmann & Meinel, 2012). After finishing the ILL all the learners are evaluated in an individual assessment interview.

The sessions were developed by two coaching professors abbreviated as EE, at a convenient time for all participants in the ILL and the selected tools for the online sessions were Zoom (zoom.us) and Microsoft Teams.
The learners were encouraged to communicate using different platforms, such as WhatsApp, Zoom, Discord, and Messenger, to perform all team tasks and also to increase engagement in all team tasks.
Since this ILL took place completely online, a collection of web-based tools was used and recommended for the learners to work with, alongside Basecamp (https://basecamp.com) in the academic year of 2021/2022 and Unicampus (https://unicampus.ro) in the first semester of 2022/2023.

To be able to create working teams and link the challenge to the learner's background, different strategies were used, such as icebreaker games, Kahoot or the Menti online platform (mentimeter.com), and also Miro/Mural online platform (miro.com; mural.com) was used to create quick retrospective boards and generate start-point ideas. The proposed solutions were reviewed during an online interview with the invited stakeholder, where learners presented their team's concept, highlights, and foreseen implementation. The stakeholder also provided an experienced overview of the implementation (positive and negative parameters), which helped learners to further refine (and even rethink) some parts of their concepts.

2.3. Assessment Process

During the applied methodology, learners must perform a video pitch and a poster as a team, and an individual E-Portfolio for their evaluation. Moreover, 360-degree feedback is given during all the process. Each learner develops their skills individually based on their personal goals and prior knowledge. Already in the first days, learners are encouraged to reflect on their personal goals. Therefore, learners set their personal goals related also to some Future Skills at the beginning and deepen them within the context of creating their E-Portfolio. The goals are set together with the EE. This creates a clear plan for the learner and for the responsible EE to follow and give feedback on.
Personal goals are defined as smart goals. During the process, checking if the goals are still appropriate or need to be adjusted or changed is useful. In principle, personal goals should be linked to the learning outcomes of the ILL. The alignment of personal goals includes the following topics: life and professional skills, learning, and innovation skills, information, media, and technology skills, critical thinking and problem-solving, communication, collaboration, and creativity.

Assessment of the learners was completed at the end of the ILL in a dedicated personal session and addressed the effort for creating the requested deliverables and their quality, as well as teamwork and implication. The learners were also asked to assess themselves based on their perspectives about the results produced.
The final grading consisted of a letter-based quantitative assessment of learners according to Table 1.

Table 1
Grading Guide for learners

ECTS Grade		Definition	
A	Excellent	90-100%	Outstanding performance with only minor errors
B	Very Good	70-89.9%	Above the average standard with some errors
C	Good	70-79.9%	Generally sound work with a number of notable errors
D	Satisfactory	60-69.9%	Fair but with significant shortcomings
E	Sufficient	50-59.9%	Performance meets minimum criteria
F	Fail	Under 49.9%	Considerable further work is required before credit can be awarded

3. Result in Discussion

During the ILL, all learners create their own E-Portfolio. Also, in the beginning, each learner chooses a "reflection partner". Bi-weekly they meet and reflect on their entries in the E-Portfolio. They also exchange "sparkling moments of the week related to the project" (e.g. something that worked out very well, an innovative idea that emerged). By performing an E-Portfolio, learners evolve their ability to reflect and learn as reflective practitioners integrating the development of the selected Future Skills. Table 2 shows the representative participation of Portuguese learners in the classic/online ILL compared to all learners in the different countries.

Table 2
Distribution of the Portuguese students in the ILL

ILL - round	Learners (n)	Portuguese Learners (n)	ILL (n)
1st	63	12	12
2nd	112	9	16
3rd	93	22	15

In the final of all processes, above the assessment period, the most Future Skills developed were: Communication, Self-Effectiveness, Innovation, Ambiguity, and Capacity for Reflection. Nevertheless, most of the learners were between 1 and 2 levels and want to achieve 3 or 4. In this case, several activities were also developed to achieve the improvement level, mainly: a video mapping, a poster, and a video pitch illustrating the creative process that includes in some way the representative prototype that was developed in the ILL.

4. Final Considerations

From the point of view of the EE, this course type is effective and engaging with the learners and the learning process.
As for the students some have expressed that this course was an experience of self-discovery and personal growth, as well as a promiscuous collaboration with peers from other European universities.
The Design Thinking Model is an interesting methodology to achieve quick results to find solutions for real problems, so all ILL are promising. Nevertheless, in the future, more evidence is needed to reveal the real impact of the level of learners involved in the learning process and the development of Future Skills in terms of quantitative outcomes. Thus, the effectiveness of this pedagogical approach is required to be improved according to qualitative and quantitative results.

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