

# Learning Based on Co-Creation Processes: A Glimpse of the (Demola) Pedagogical Innovation Training Course at IPV

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**Abstract:** The development of technologies, services and products in our increasingly global, interconnected, and digital world implies the training of future professionals capable of solving challenges, embracing diversity, and co-constructing innovative and disruptive scenarios. Higher Education (HE) has been adapting to these times of change and, consequently, the academy has started to open doors to partnerships with local organisations, in synergies that go beyond internships to include research and a modernisation agenda, with clear benefits for all the stakeholders and with positive effects on the national economy. Thus, pedagogical practices need to be updated, and Demola model aims at contributing to innovation processes by fostering academia-industry collaboration. In this study, we will focus on the first edition (January-June 2021) of the project entitled “Learning based on co-creation processes,” funded by POCH, developed in a partnership with Demola Global, and in close connection to another project, Link Me Up, integrated in a consortium of 13 Polytechnic Institutes, including the Polytechnic Institute of Viseu (IPV). Specifically, we will focus on 1) the Demola methodology and tools used by the participants in the Pedagogical Innovation Training course at IPV, Viseu, Portugal; 2) the questionnaires applied to the team of IPV trainees/facilitators; and 3) the reports they wrote at the end of the process to a) analyse the profile of the teaching staff seeking alternatives to improve their teaching practice; b) assess their perception of the Demola pedagogical innovation course, and c) the implications on their future practices. Our findings reveal that this project that offers pedagogical innovation is highly valued by the participants at IPV, as they feel they are more open: to collaboration within and outside the academia; to use innovative tools and platforms; to acknowledge the need to accept and manage uncertainty and to facilitate societal challenges in multidisciplinary teams of (inter/national) students.

**Keywords:** co-creation, pedagogical innovation, Higher Education Institutions, Demola methodology and tools, Polytechnic Institute of Viseu (IPV)

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## 1. Setting the scene: From knowledge production and transfer to hands-on knowledge co-creation and sharing

*... they [Higher Education Institutions] are seen as essential engines of development, fertile grounds for new generations of professionals, and indispensable providers of smart solutions to future questions. (Noorda, 2018, p. 25)*

The Bologna Declaration of ministers from 29 European countries, signed in June 1999, and which resulted in the so-called Bologna process (now with 49 signatory countries), intended to create a European Higher Education Area (EHEA), establish the Bachelor-Master system, increase staff and students’ mobility, and facilitate employability within and across Europe. Even though it failed to fulfil its convergence ambitions, it is arguably a dynamic force for the competitiveness of European Higher Education Institutions (HEI), and it has contributed to reforms and deep transformations, such as:

*... the adoption of a system of easily understandable and comparable degrees; the adoption of a system essentially based on two cycles (...); the establishment of a system (of accumulation and transfer) of credits; the encouragement of students’, teachers’, researchers’ and other personnel’s mobility; cooperation in quality assessment and the European competitive dimension regarding higher education. (Ramos et al., 2013, p. 69)*

The Bologna Process paradigm has been linked to the massification and democratisation of education, internationalisation, the growth of a knowledge society, and market and economic imperatives, which envisioned an alignment of Higher Education (HE) with these market-driven trends. This became even more prevalent with the Lisbon Strategy in 2000, an initiative that connected HE to the goals of economic growth and competitiveness.

This reliance of knowledge production and acquisition upon HEI is not new, albeit being associated with the cultivation of a virtuous character in Aristotelian times rather than with practical skills. HEI have always been thought of as spaces of excellence and knowledge production, as Lis (2021, p. 1) puts it: “the raison d’être of a university is to fulfil the role of a citadel of knowledge to its environment”, but it has had to adapt and adjust to

the changing needs of our fast-paced and capitalist society and, consequently, be ready to prepare students for a technologically advanced, innovative, entrepreneurial, and globalised labour market. In light of this, and according to Noorda's words, quoted in the epigraph to this scientific article, we may say that HEI have played a decisive role in this connection between research and teaching and, more recently, they have also had to respond to the challenges posed by the marketisation and commercialisation of what once was considered but a mission and now "appear[s] to be conscious strategies to translate university knowledge into revenue" (Shore & McLauchlan, 2012, p. 267). This academic entrepreneurialism, which some call "third missions" to distinguish them from the two traditional core missions mentioned above, has called for a technical intelligentsia with imaginative minds and hands-on learning that applies knowledge outside academic environments and is able to strengthen the dialogue between HE and Industry (Perkmann et al., 2013; Pinheiro et al., 2015; Rybnicek & Königsgruber, 2019). Manuel Heitor (2015, p. 277), Portuguese Minister of Science Technology and Higher Education, further extends this partnership to include the government into the "so-called 'Triple Helix' of university-industry-government relations," reflecting upon a metaphor that emerged in Amsterdam in 1996.

Academia-industry collaboration is advantageous to all parties involved: it enables the latter to benefit from new knowledge generated in HEI, minimising internal R&D costs; academia also benefits from these partnerships since it can receive research funding not only from the government and other public agencies but also from the private sector, while also participating in, and providing students with, real-life challenges that the industry faces, and contributing to the economic and social wellbeing of society; students can take advantage of innovative learning environments in which classrooms are transformed into hubs for innovation and co-creation (Catalá-Perez et al., 2020; O'Dwyer et al., 2022). If HEI have become business corporations, and professors, rather than just devoting their time to research and teaching, have been turning into entrepreneurial academics, then students have these role models to look up to. Additionally, today's students know that entrepreneurial attributes are key aspects of most jobs, since permanent positions or long-term contracts with one employer are scarcer day by day forcing them to engage in freelance work and, therefore, they feel the urge to acquire enterprising skills. As Scarborough & Cornwall (2018, p. 20) remind us, "the principles of entrepreneurship apply to every avenue of life." But can these principles and skills be taught/learnt at HEI? As Amante et al. (2021a, pp. 221-222) point out:

Enterprising skills and behaviours, such as autonomy, confidence, divergent thinking and creativity, flexibility, and problem solving have been stimulated by immersion in real-life situations required by the [Project-Based Learning] PBL method in which students develop and pursue solutions to problems, ask and redefine questions, and share and debate ideas and findings, making the most of their hands-on experience, and, consequently, being empowered intellectually, emotionally, and socially.

PBL is a teaching method that has been highly valued in HE, renewing educational practices and allowing for interdisciplinary, student-centred, meaningful, flexible, and collaborative work (European Commission, 2018; Amante et al., 2021a; Amante et al., 2021b). While both the teaching staff and students become more motivated and engaged in their hands-on work, the latter clearly benefit from these learning environments based on co-creation processes (Davies et al., 2013; Pocol et al., 2022), undertaking action research, and developing competencies that will be of great importance in their forthcoming professional lives.

In this study, we will take a closer look at this interplay and the forces that drive innovation from the point of view of the teachers that participated in the project entitled "Learning based on co-creation processes," funded by POCH, and developed in a partnership with Demola Global. Therefore, in the next sections, we will focus on the Demola Portugal Initiative and, then, provide the reader with a glimpse of the Demola methodology and tools. After analysing pedagogical innovation and co-creation at the Polytechnic of Viseu, through the Demola programme, we will present a summary of the data collected from the questionnaires applied to the team of IPV trainees/facilitators and the key findings that emanated from the reports they wrote at the end of the process.

## **2. Demola Portugal Initiative**

Starting formally in January 2021, Demola Portugal Initiative is a programme launched by thirteen Portuguese Polytechnic Institutions and Demola Global, supported by the Portuguese government through POCH and COMPETE funds.

The teacher training programme, “Learning based on co-creation processes” (POCH-04-5267-FSE-000818), is a three-year project, run through 6 semesters, and that aims at involving “900+ teachers” from the consortium. It is completely interrelated with and dependent upon Link Me Up – 1000 Ideias (POCI-03-33B5-FSE-072070), a project that operationalises the information and learning gained from the training course, by turning the participating teachers/trainees into facilitators of societal challenges that mobilise “600+ partner organizations and 4000+ students”<sup>1</sup>. Link Me Up focuses on students’ skills development for employability and on improving companies’ services/products and it will be addressed fully in another publication.

Focusing specifically on the teacher training programme in Portugal, it is important to refer that it is directed not only at the teaching staff working in HEI, but also the ones working in vocational schools, in an attempt to create an ecosystem that increases the percentage of vocational education graduates continuing their studies in HE. Therefore, in each edition, each of the thirteen Polytechnic Institutes guarantees the participation of two vocational schoolteachers from the surrounding areas to take part in training sessions together with eight other HE lecturers, the only exceptions being Coimbra and Leiria, as they always have two teams, so doubling the number of participants. But who trains these teachers?

Demola Global is a Finnish company that was created in 2008, within the “Creative Tampere 2006-2011” programme and, after experiencing great success at regional level, primarily due to the support of the Nokia Research Centre and Hermia Group, but also aided by the Council of Tampere Region and three Universities located in the same city, it soon expanded across the world (Catalá-Perez et al., 2020).

## **2.1 A glimpse of the Demola methodology and tools**

Demola makes use of a standardised model to engage the participants in reflective practice and dialogue with their peers to adopt a focus on problem-solving, innovation and creativity in a structured and systematised way. Using MsTeams, Demola trainers bring together a group of teachers from different Portuguese Polytechnic Institutes and from multiple knowledge domains on Mondays and another on Tuesdays so that they are prepared to facilitate the implementation of tools for a comprehensive view on trends and megatrends that will shape the future and for ensuring enriched interaction during co-creation processes. Whether in a single online room or in breakout rooms and boot camps, teachers share experiences and resources, rely on feedback to design assumptions, improve ideas and prototypes over multiple iterations, have the opportunity to integrate a community of experts, inspire and lead their team of talents, beyond textbooks, on field trips to companies and research centres.

In such intensive online training course, in a total of 344 hours, teachers start by contacting different organisations to design a challenge based on societally relevant phenomena. Meanwhile, they interact using Demola Chat, explore Atlas (<https://atlas.demola.net>) to manage different tasks associated with the challenges they identified, and they are introduced to Miro, a visual collaboration platform, where they test hypotheses and strategic frameworks such as the PESTLE analysis, beforehand, so that they can later guide students more effectively into thinking about the phenomenon through political, economic, social, technological, legal and environmental factors.

In their weekly training, they learn about co-creative facilitation tools, namely personal mind maps; stakeholder/user group identification maps; design research, preparing students to collect qualitative data through observations and interviews; affinity diagrams to organise, compare and make connections between ideas, contrast and draw inferences from their findings; megatrend selection and future persona profiles to attempt to look ahead making predictions; ideation, and, among others, low and high-fidelity prototyping. Students follow the process submitting all those tasks on Demola Portal, some completed individually and discussed in groups afterwards, and many others in co-creation, in an eight-week period.

In the next few pages, we will look at the Demola training course at IPV, by bringing forward the teachers’ own needs, and their experience resulting from their participation in this pedagogical innovation programme and mentoring activities.

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<sup>1</sup> Quoted from <https://portugal.demola.net/teachertraining>

### 3. Pedagogical innovation and co-creation at the Polytechnic of Viseu through the Demola programme

To understand and assess the needs, levels of satisfaction, and implications on the future practices of the IPV participants in the first edition of the Demola training programme (Jan.-Jun. 2021), it is now time to analyse the questionnaires applied prior to the beginning of the course, in the middle-end, and at the end, and conclude using some thoughts shared in their final reports. Methodologically speaking, then, this study relies upon mixed methods' data analysis, in which, according to Johnson et al., there is a combination of "elements of qualitative and quantitative research approaches" (2007, p. 123). In other words, through the questionnaires and excerpts from the trainees' reports, we intend to find out their perception of the effectiveness of the training programme towards their mission as facilitators of innovation, co-creation among the several stakeholders, and regional development.

Starting with the analysis of the first questionnaire, a preliminary one to assess the teachers' needs, we realise that all those who took part in the first edition of the training course at IPV were female (90%), except for one participant (10%). However, rather than confirming that HEI in Portugal are female dominated, which is actually not accurate as, throughout the years, there has always been a higher number of men than women in Portuguese academia according to pordata.com<sup>2</sup>, it may allow us to infer that women are generally more concerned with their teaching practices or probably they feel they need to invest more in upskilling than men.

From these ten teachers, two work at a vocational school in Viseu, Escola Profissional Mariana Seixas, and eight work at IPV: three of the trainees work at the School of Education (30%), two at the School of Technology and Management in Viseu (20%) and one in Lamego (10%), one at the School of Health (10%) and one at the Agrarian School (10%). All of them had permanent employment contracts, except for the two vocational schoolteachers and one IPV teacher who had fixed-term contracts. Besides that, the most predominant age group of the participants was between 40 and 49 years (70%), followed by teachers in-between 50 and 59 (20%), and the remaining 10% were over 60 years old. This leads us to infer that pedagogical innovation is correlated with age and job stability, that is, it depends on the teachers' availability which is directly related to maturity, job satisfaction and organisational commitment. However, their approaching retirement age may also be an obstacle that hinders investment in innovative pedagogical practices.

Regarding the teachers' qualifications, seven hold a PhD (70%), two a master's degree (20%) and one a licentiate degree (10%). Their teaching areas are diverse, ranging from the Humanities, particularly language teaching (20%), to Communication Sciences (10%), Psychology (20%), Natural (10%) and Agronomic Sciences (10%), Mathematics (10%) and ICT (20%). All participants acknowledge the need to develop skills related to innovation, co-creation, (social) entrepreneurship and they value lifelong learning, as one would expect, because they had to apply to be part of the course. For them, pedagogical innovation is not a novelty, as 70% of the respondents claimed that they had previously attended actions (over three hours) aimed at improving teaching, learning and evaluation processes in educational models in the last two years.

Closer to the end of the process, Demola trainers asked the participants to answer a questionnaire, but because some of the questions are similar to the ones that were part of the questionnaire developed by the consortium and applied in July 2021, we decided to focus on the ZedGraph below only:



**Figure 1:** ZedGraph created by Demola Global, before the end of the training course

All the questions regarding facilitation hovered around 80%. Later, in July, when asked about the extent to which the training course met their expectations, we realise that the respondents' overall satisfaction with the training course was quite positive, as, in a 7-point Likert scale, all the answers were 4, that is neutral, with 20%, or above,

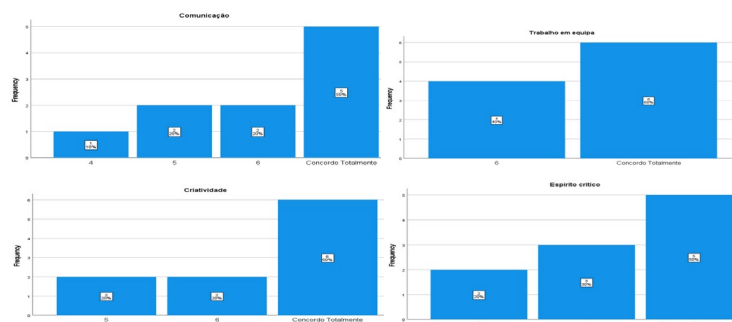
<sup>2</sup><https://www.pordata.pt/Portugal/Docentes+do+ensino+superior+total+e+por+sexo-666>

with 30% of trainees being satisfied, 40% very satisfied and 10% completely satisfied. Diving deeper into their reasoning for choosing these options, we could understand that, generally speaking, they believe that the course objectives were clearly met: 20% strongly agree with the assertion (7 points), 40% agree with it (6 p.), 20% somewhat agree (5 p.) and the remaining 20% are neutral (4 p.).

Interestingly, despite the very positive answers to the previous questions, 10% of the respondents were not that much satisfied (3 p.) with the way the course was structured, 10% seem to be neutral (4 p.), again 10% agree with its organisation (6 p.), and 70% of the respondents say they somewhat agree (5 p.) with it. Regarding the appropriateness of the blended-learning model, there was no consensus, as 20% strongly agreed with it, 30% agreed with the model, 20% felt somewhat satisfied with it, 20% neither agreed nor disagreed with it, and 10% considered it was somehow not efficient. Maybe this lack of consensus is justified by the fact that, with the spread of COVID-19, and in the context of lockdown and working from home, face-to-face interaction was (almost) non-existent, and the only moment when it occurred, in case it did not happen virtually instead, was during implementation when the facilitators visited the partner company with their teams. Congruent with the above, when asked the extent to which they agreed that the teaching methodologies were innovative, we once again found that 20% strongly agreed with it, 30% agreed with the assertion, 40% somewhat agreed with it, and 10% were undecided or neutral on the matter. We believe that these percentages were quite high bearing in mind that 70% of the participants had already attended actions whose purpose was to improve teaching practice, as mentioned.

Focusing on the tools (e.g., miro, canva, problem tree, ...), it was found to be at a high level, with 40% of respondents strongly agreeing with its effectiveness, 10% agreeing with it, 40% somewhat satisfied with getting acquainted with it, and 10% neutral or undecided. The use of platforms (e.g., Atlas, Demola Chat) was also viewed very positively, as 30% strongly agreed that they were helpful, 30% agreed with it, again 30% somewhat felt them as useful, and 10% remained neutral.

The consortium questionnaires also revealed that the training programme helps develop different skills, such as communication, group work, creativity, and the ability to think critically, so important to co-work and facilitate innovation, as the following graphs show:

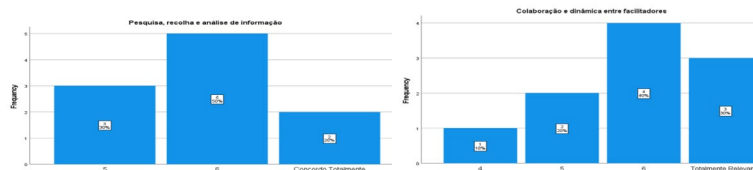


**Figure 2:** Graph 1, above left, refers to communication skills; on its right, teamwork; below left, creativity, and, on its right, critical thinking

The same is felt regarding other skills equally important, such as leadership, entrepreneurship, ability to work with the team of students, and to collaborate with the partner organisations. It is worth mentioning that entrepreneurship and the ability to work with partner organisations received the same ranking of 7, 'strongly agree', by 60% of the participants, whereas 20% agree that they are important skills that the training course was meant to impart, and 20% say they somewhat agree with it. There is also little doubt that the training course provided the teachers with the opportunity to work with their team of students, as 40% strongly agree with it, followed by 40% who say they agree, and 20% who somewhat agree with it. Leadership failed to garner that much consensus, even if 40% strongly agreed it is a skill developed by Demola in its training course. 20% of the respondents agree with it, and some other 20% somewhat agree with it, but 10% are neutral or undecided and the remaining 10% are not very confident about it, awarding it 3 points only.

Maybe because digitalisation has been playing an important role in today's ever-changing and globally connected world, when asked about the importance of the development of digital competencies and the course's contribution to unlocking opportunities for internationalisation, 20% of the respondents strongly agreed with it, 60% agreed the training course fulfilled their expectations and the remaining 20% somewhat

agreed with it. Research, data collection and analysis, as well as collaboration and networking among facilitators were also highlighted as very positive aspects of the training, as we observe below.



**Figure 3:** Research, data collection and analysis, on the left, and collaboration and networking among facilitators, on the right, assessed as highly positive

Focusing on the last questions, when asked if they thought it would be possible to implement co-creation projects at IPV, their answers were favourable: 30% believe they can do it within the next 12 months, 60% within 12-24 months, and 10% answered it seems hard to implement co-creation projects at all. In line with the needs analysis conducted at the beginning of the project, results show that 80% of the respondents see this course as incremental innovation, whereas 20% see it as disruptive innovation. Finally, when asked whether they would recommend the training programme to other colleagues, 90% answered positively, which is crucial to assess the success of this initiative that aims to forge academia-industry partnerships.

#### 4. Conclusion: Looking back and moving forward

“Learning based on co-creation processes,” a project that has been substantiated via the training course presented above, designed and led by Demola Global, offered pedagogical innovation and was highly valued by the participants at IPV. In one of the final reports, we could read that...

It was the first time I worked in a co-creation process, so personally it was enriching. I learned new platforms (Miro Board) and tools that I can apply in the future in my professional life and in the classroom context. The team that I facilitated does not see us as the teacher to whom they have to obey, but as someone who guides them to achieve a goal... (H.E.C., 1st batch, June 2021)

By participating in the project, IPV teachers became trainees and facilitators, and they claim they are more open to use innovative tools and platforms; to collaborate within and outside the academia; to acknowledge the need to accept and manage uncertainty and to facilitate societal challenges in multidisciplinary teams of (inter/)national students. In brief, they are better equipped to explore the potential of learning environments based on co-creation processes and to be closer to the Bologna objectives mentioned above. The opinion of another teacher, also stated in her final report, confirms the above findings:

We want teaching methodologies to be more centered on the student, but our practices show a tradition focused on the passive role of the student, placing the teacher as a specialist. In this course, teachers were students too. And the students proved to be experts in the challenge explored, in the technologies and tools used, in their relationships with others. (...) [S]tudents found (...) a new partner, people who are in the labor market, (...) and who allowed them to transfer to the real world academic learning that is usually kept in the higher education institution, between classroom walls (which in this project were replaced by the windows of the online platforms) or between pages of academic works. (R.F., 1st batch, June 2021)

Much more could be said about the teachers’ reflections upon the training programme, but word limits prevent a fuller examination of this training that attempted to engage so many stakeholders around concepts such as co-creation and innovation, trends and megatrends. Together, they have looked ahead exploring new teaching methods; new possibilities; exciting, new directions, tracing new paths not just in a classroom, but locally, regionally, nationally and ultimately internationally, because the world is globally connected.

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