

PROJECT-BASED LEARNING IN HIGHER EDUCATION: NEEDS AND EXPECTATIONS FROM ROMANIAN, PORTUGUESE, AND TURKISH TEACHERS

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Abstract

Higher education teachers have been challenged to respond to an increasing diversity of students and to help them develop skills for the 21st century. Acknowledging the potential of supportive pedagogical relationships and student-centered practices, Project-Based Learning (PBL) constitutes an active teaching method that seems to benefit both teachers and students. This work is embedded on the Project Restart for Education in a Digital Era through Project-based E-learning (RESTART4EDU) and aims at describing the needs and expectations regarding project-based learning from Romanian, Portuguese, and Turkish higher education teachers. Participants included 39 teachers (69.2% female) from Romania (41%), Portugal (23%), and Turkey (36%), with one to 30 years of teaching experience ($M = 13.85$, $SD = 8.77$) in several fields (e.g., Education, Psychology, Medicine). Teachers completed a questionnaire regarding their PBL-related conceptions, needs, and expectations. Descriptive statistics results suggested that most teachers had no previous PBL training (89.7%) and frequently used an expository method of teaching (61.5%). Still, most participants were slightly familiar with PBL (64.1%), convinced that it could hold a positive impact on teaching-learning processes (100%), and willing to learn more and use it in their practice (100%). Results from cross-country difference tests indicated that Turkish teachers felt significantly less confident to use PBL than Romanian and Portuguese teachers, which might be due to variations in the organizational support provided to teachers' practice. These findings support the need to create tools and conditions to improve higher education teachers' knowledge and experience on active methods, such as PBL.

Keywords: project-based learning, higher education, teachers' professional development.

1 INTRODUCTION

Following the volatility, uncertainty, complexity, and ambiguity of the contemporary society, job polarization has increased and stimulated a growing search for continuous education and training [1]. According to UNESCO, although variations exist across countries, there are currently approximately 235 million students attending higher education worldwide. Besides the number of students, also its heterogeneity has augmented, with higher education population being featured by various generations, work experiences, social-economic levels, cultures, and nationalities [2].

Hence, higher education has been challenged to better respond to students' different needs and to prepare them for the future [3, 4]. To overcome such challenges, social-political and scientific debates have been claiming for a transformation of teaching-learning practices [5]. In European higher education institutions, traditional teacher-centered practices seem to prevail [6]. These practices rely on a view of teachers as the masters/experts of knowledge, highlighting the transmission of information during classes and the use of evaluation methods that mostly require memorization and information reproduction. However, teacher-centered practices seem insufficient to effectively respond to the higher education challenges of the 21st century. Calls have, therefore, been made to move from teacher-centered to student-centered practices [7]. Student-centered practices rely on a constructivist view of the teaching-learning process, in which both teachers and students are conceived as agents and co-constructors of knowledge. Within this framework, student-centered practices highlight the active development of projects and joint discussions, as well as employ evaluation methods that require students' critical appraisal, application, and construction of knowledge. By fostering active, significant, and collaborative learning, more effective linkages between academic contents and the working world,

as well as students' hard and soft skills, student-centered practices offer potential to transform and reinvigorate higher education [6, 8, 9, 10].

Student-centered practices encompass various methods (e.g., flipped classroom, service learning), among which Project-Based Learning (PBL) has been capturing attention [11]. PBL can be conceived of "an inquiry-based instructional method that engages learners in knowledge construction by having them accomplish meaningful projects and develop real-world products" [12, p. 2]. It involves the critical analysis of authentic problems, the development of potential explanations and solutions, as well as requires a focus on the learning process and knowledge construction featured by communication, cooperation, research, perspective-taking, and project management. There are essential elements of PBL, such as: ongoing inquiring; acknowledgment of students' perspectives and choices; revision and reflection; sharing and presentation of the developed project and products to an audience [13].

Research has suggested that PBL can benefit both students and teachers. On the one hand, PBL seems to foster students' problem-solving skills, writing and oral presentation skills, teamwork, academic engagement, autonomy, connection with faculty and peers [12, 14]. On the other hand, teachers that use PBL seem to improve their abilities to establish and formulate learning goals, as well as to increase their job motivation and teaching self-efficacy [14, 15]. It is also worth noticing that the appropriate use of information and technology supports, besides the number of hours devoted to PBL and to its supervision seems to moderate its effects, whereby these factors need to be acknowledged when planning and using PBL [16].

Based on evidence highlighting advantages of active teaching methods and specifically of PBL for students and teachers, it is crucial to stimulate a shift from teacher-centered to student-centered practices in higher education [6]. Various reasons have been identified to justify the prevalence of traditional practices in higher education, such as teachers' perceived lack of organizational support for innovative pedagogy, lack of opportunities to learn more about active teaching methods, struggle with technological solutions that might be used/created by students, and difficulty to take risks and try new approaches with large class groups [17]. Hence, opportunities for higher education teachers' professional development and supportive networks would be important to overcome the current situation and improve higher education [7, 17]. It would be particularly useful to support higher education teachers' use of PBL, as they seem to sometimes struggle with creating learning goals, integrating technology in projects, and providing students ongoing feedback and advice [18]. Still, research on higher education teachers' PBL-related knowledge and training needs is scarce.

These issues have been acknowledged by the *Project Restart for Education in a Digital Era through Project-based E-learning* (RESTART4EDU; <https://restart4edu.eu/#>). The RESTART4EDU Project is an Erasmus+ project that intends to contribute to improve higher education teaching practices, by articulating PBL with technology. This project is coordinated by the Universitatea Ovidius Constanța (Romania) and counts with the Initiatives pour Une Formation Efficace ASBL (Belgium), the Universidade Católica Portuguesa (Portugal) and the Eskisehir Osmangazi Universitesi (Turkey) as partner institutions. Embedded in this project, this work aims at describing the needs and expectations regarding PBL from Romanian, Portuguese, and Turkish higher education teachers.

2 METHODOLOGY

2.1 Participants

Participants included 39 higher education teachers from Romania ($n = 16$, 41%), Portugal ($n = 9$, 23%), and Turkey ($n = 14$, 36%). A total of 27 (69.2%) women and 12 (30.8%) men collaborated in the study (Romania: nine 56.3% women, seven 43.8% men; Portugal: eight 88.9% women, one 11.1% man; Turkey: 10 71.4% women, four 28.6% men). Participants' age ranged from 29 to 58 years old ($M = 43.23$, $SD = 8.60$). Particularly, a mean age of 44.94 years old was found for Romanian participants (Min. = 29, Max. = 58, $SD = 8.21$), 47 years old for Portuguese participants (Min. = 31, Max. = 57, $SD = 10.4$), and 38.86 years old for Turkish participants (Min. = 31, Max. = 53, $SD = 6.14$).

The participating teachers held between one to 30 years of teaching experience in higher education ($M = 13.85$, $SD = 8.77$). Specifically, a mean length of teaching experience of 15.81 years was found for Romanian participants (Min. = 5, Max. = 28, $SD = 6.98$), 15.67 years for Portuguese participants (Min. = 2, Max. = 29, $SD = 11.1$), and 10.43 years for Turkish participants (Min. = 1, Max. = 30, $SD = 8.56$). Teachers served in various scientific fields, with Education ($n = 9$, 23.1%), Psychology ($n = 7$, 17.9%),

Medicine ($n = 10.3\%$), Environmental Sciences ($n = 4, 10.3\%$), Computer Sciences ($n = 3, 7.7\%$), and Industrial Engineering ($n = 3, 7.7\%$) as the more frequently represented ones.

2.2 Measures

Data was collected with a questionnaire designed by the RESTART4EDU research group to assess higher education teachers' conceptions, needs, and expectations regarding PBL. The questionnaire included 27 questions, namely 13 open-ended questions (e.g., "Number of years teaching in higher education"), and 14 close-ended questions (e.g., "How frequently do your classes focus on content exposition?"). Answers to the close-ended questions considered dichotomous scales or various five-point Likert-type scales adjusted to the items' content, such as the degree of importance assigned to a specific item (e.g., from 1 *Not important at all* to 5 *Very important*), or the frequency in which an action reported in an item was done (e.g., from 1 *Almost never* to 5 *Almost always*). Answers to the social-demographic and social-professional open-ended questions and to the close-ended questions were considered in this study.

2.3 Procedures

The questionnaire was designed and examined by the research group members to assure that the targeted content was covered, and the items were clearly formulated. Following this procedure, items were added, and the order of their presentation was revised to facilitate participants' comprehension.

Due to COVID-19 security measures and the international nature of the RESTART4EDU Project, data was collected in *Google Forms* in January 2022. Researchers from the collaborating Romanian, Portuguese, and Turkish universities invited local teachers interested in the project to individually complete the questionnaire online. Anonymity and confidentiality were guaranteed.

2.4 Data analysis

The collected data was analysed with the Statistical Package for the Social Sciences (IBM SPSS), version 28 for Mac. Descriptive statistics were performed to characterize participants' conceptions, needs, and expectations regarding PBL. Non-parametric Kruskal-Wallis tests were conducted to explore differences for Romanian, Portuguese, and Turkish higher education teachers. Whenever statistically significant results from Kruskal-Wallis tests were found, subsequent Mann-Whitney tests with Bonferroni correction were performed to identify the specific differences, thus minimizing the Type I error [19].

3 RESULTS

3.1 Descriptive statistics results

Most participants had no previous PBL training ($n = 35, 89.7\%$), and frequently used traditional teacher-centered content exposition practices ($n = 24, 61.5\%$, $Mdn = 4$, $IQR = 0$). Still, most participants considered they frequently tried to instill students' participation ($n = 21, 53.8\%$) and soft skills ($n = 30, 76.9\%$). Teachers also indicated they frequently employed practical tasks during classes ($n = 33, 84.6\%$). The participating teachers globally felt they were effective in their teaching ($n = 28, 71.8\%$, $Mdn = 4$, $IQR = 0$).

Most teachers conceived the pedagogical relationship ($n = 29, 74.4\%$, $Mdn = 5$, $IQR = 1$) and the promotion of students' soft skills ($n = 21, 53.8\%$, $Mdn = 5$, $IQR = 1$) as very important aspects in higher education. Teachers mostly considered themselves as slightly familiar with PBL (64.1% , $Mdn = 2$, $IQR = 2$), although three (7.7%) teachers indicated they were not familiar at all with such a method. All the participating teachers were convinced that PBL could positively impact higher education teaching-learning processes and were willing to learn more and implement it in their classes ($Mdn = 4$, $IQR = 1$). However, there were variations in participants' confidence to use PBL ($Mdn = 3$, $IQR = 2$), with 10 (25.6%) teachers presenting low confidence levels, 14 (35.9%) teachers presenting moderate confidence levels, and 15 (38.4%) teachers presenting high confidence levels to do so.

3.2 Cross-country difference results

Results from non-parametric Kruskal-Wallis tests found no differences between higher education teachers working in the partner institutions from Romania, Portugal, and Turkey in the importance assigned to the pedagogical relationship and the promotion of soft skills in higher education, the

frequency with which they employed content exposition, instilled opportunities for students' participation and practical tasks, perceived teaching efficacy, the positive expectations for PBL, the familiarity with and willingness to use PBL in their classrooms.

However, there were statistically significant differences for teachers from Romania, Portugal, and Turkey in their perceived confidence to use PBL, $\chi^2 (2) = 8.35, p = .02$. Mann-Whitney tests with Bonferroni correction suggested that teachers working in Turkey presented significantly lower confidence levels than Romanian and Portuguese teachers to use PBL (Table 1).

Table 1. Cross-country differences in teachers' perceived confidence to use PBL.

	Teachers working in Romania (n = 16) Mean Rank	Teachers working in Portugal (n = 9) Mean Rank	Teachers working in Turkey (n = 14) Mean Rank	$\chi^2 (2)$
Perceived confidence to use PBL	21.75	26.67	13.71	8.35*

* $p < .05$

4 CONCLUSIONS

This work derives from the RESTART4EDU Project and intended to describe PBL-related needs and expectations among higher education teachers from Romania, Portugal, and Turkey. Results globally suggested that most teachers often use content-exposition practices, which are aligned with a traditional teacher-centered paradigm that still prevails in European higher education institutions [3, 6]. However, the higher education teachers who participated in this study seemed receptive to deepen their knowledge about active student-centered practices, particularly PBL. Teachers recognized the importance of investing in the pedagogical relationship and promoting students' soft skills in higher education, as well as demonstrated openness to learn more and use PBL in their practice. These findings might suggest that teachers are aware of the higher education challenges in the 21st century [1, 3, 4, 5] and willing to try different teaching methods that might help them improve practices and better prepare students for the future.

Variations in higher education teachers' perceived confidence to use PBL were also found in this study. Cross-country differences were particularly found, suggesting that teachers from Turkey seemed less confident to use PBL than peers from Romania and Portugal. Such cross-country differences might be related with the length of professional experience, as participants from Romania and Portugal presented more years of teaching experience than Turkish participants. It might also be the case that opportunities for higher education teachers' professional development vary across countries, which can impact perceived teaching confidence [17]. Future mixed-method studies, coupling these results with qualitative data from interviews or focus groups with Romanian, Portuguese, and Turkish teachers would be useful to better capture their PBL-related knowledge, perceived opportunities for professional development, and suggestions to improve teaching confidence and efficacy addressing students' needs.

Despite the relevance of this work given the scarcity of research addressing higher education teachers' PBL-related knowledge and training needs, two main limitations can be highlighted. First, as this study relied on teachers' self-report, their responses might have been biased by social desirability. If similar studies are conducted in the future, the use of a social desirability measure could be useful to better control for such a bias. Moreover, coupling the questionnaire herein used with a qualitative data collection technique, such as a semi-structured interview, could also be relevant to control for such a bias and to obtain complementary information. Second, this study relied on data collected with higher education teachers who had already demonstrated interest in the RESTART4EDU Project. This might have led to more positive and optimistic responses regarding teaching practices and willingness to learn more and use PBL. It would be important to replicate this study with a broader sample of higher education teachers, regardless their interest in the RESTART4EDU Project. Such an effort could sustain an authentic diagnostic of higher education teachers' beliefs, knowledge and needs regarding active student-centered methods, namely PBL.

Still, this study stimulates reflection for future research and practice. Regarding research, this work illustrates the importance of international collaboration to address common topics of concern. It would

be important to keep future collaborative cross-cultural studies and projects regarding the use of student-centered practices and particularly PBL in higher education. Future studies might also amplify this work to identify professional development needs and opportunities of higher education teachers not only among additional Romanian, Portuguese, and Turkish institutions, but also in other countries. Research might also deepen knowledge on the effects of student-centered practices and particularly PBL on teachers, students, and classroom/organizational climate [12, 14, 15, 16]. Moreover, future studies might explore how to integrate technology in teaching practices, such as PBL, as it seems to constitute a current challenge for higher education teachers [17, 18]. As for practice, results from this study seem to support the need to create tools and conditions to improve higher education teachers' knowledge and experience on active methods, such as PBL. Higher education institutions might support teachers and their own reinvigoration by stimulating and congratulating innovative pedagogical practices, as well as by creating conditions for teachers to deepen knowledge on student-centered methods, to share experiences and to jointly learn within supportive networks [7, 9, 17].

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