

## Financial Advisory in Classroom: Educational Innovation Based on Project-Based Learning (PBL)

Isabel Abinzano, Harold Bonilla, Pilar Corredor, Cristina Del Rio, Elena Ferrer, Ana González, Jose Manuel Mansilla, Beatriz Martínez, Luis Muga

Department of Business Administration, Public University of Navarre (UPNA), Pamplona, Spain.

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### Abstract

*This paper aims to describe an educational innovation in teaching-learning based on Project-Based Learning (PBL) carried out in the subjects of "Basic Finance" taught in the Double Bachelor's Degree in Management, Business Administration, and Law of the Public University of Navarre (UPNA). These are Financial Markets and Instruments, Corporate Finance I, and Corporate Finance II. Specifically, in each of the subjects, the project consisted of preparing an advisory report. Thus, the classroom becomes a financial consultancy covering its different areas of work.*

*Furthermore, this study evaluates the educational innovation, analysing both quantitative and qualitative aspects across subjects and gender. In summary, there is a significant improvement in grades after the introduction of PBL. Students also support the implementation of PBL, with gender differences found. Our findings motivate the continued use of dynamic teaching methods and underline the importance of adapting approaches to improve educational outcomes.*

**Keywords:** *Educational innovation; PBL; financial advisory; finance classroom.*

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### 1. Introduction

The European Higher Education Area (EHEA) is undergoing a transformation, emphasising student-centred approaches over traditional lectures. Project-based learning (PBL) plays a central role in this process, reshaping educational experiences and promoting 21st century skills. Several authors, such as Ausín et al. (2017), argue in favour of PBL in the EHEA, citing its role in promoting problem-solving and creativity. Guo et al. (2020) further highlight the positive perceptions of students, associating PBL with autonomy, self-confidence and increased motivation.

This paper explores a PBL-focused pedagogical innovation implemented in the 'Basic Finance' subjects of the Double Bachelor in Management, Business Administration and Law at the Public University of Navarra (UPNA). Supported by a UPNA Educational Innovation Project, the initiative transforms finance classes into different facets of financial advisory work. Additionally, the study evaluates the impact of PBL on grades and shows a significant improvement compared to the period before the innovation.

The following sections follow this structure: Section 2 outlines the theoretical framework of PBL. Section 3 provides a detailed account of the PBL project in the Basic Finance subjects at UPNA. Section 4 presents the results. Finally, section 5 summarises the main conclusions, confirming the value of PBL in improving the teaching-learning process within the EHEA context.

## **2. Project-Based Learning (PBL)**

In response to the evolving demands of the labour market, higher education is faced with the urgency of preparing students with the cognitive, instrumental and attitudinal skills necessary to face advanced challenges and make effective decisions in the 21st century. Fleming (2000) emphasises that PBL enables students to improve their cognitive and critical thinking skills through collaborative problem analysis and the application and organisation of knowledge. Wu et al. (2020) and Kłeczek et al. (2020) point out that cooperative learning and reflection are encouraged. The emphasis on the acquisition of technical competences has often overshadowed the importance of transversal or soft skills. Silva and Maturana (2017) highlight the shift from content to activities, emphasizing the alignment for successful implementation. Teachers engage students as sources of mutual learning, involving them as protagonists in the learning process. Formative assessment strategies guide pathways during the week (Leenknecht et al., 2021) whereas Power (2019) highlights the crucial role of student participation and collaboration in consolidating newly acquired knowledge. We believe that PBL in finance encourages the practical application of financial concepts in real-world contexts more than other active methodologies, enhancing the development of problem-solving and decision-making skills, essential in this dynamic and complex field.

## **3. Financial Advisory in the Classroom: Transformation of the Educational Model**

### **3.1. Starting Point**

The innovation presented in this paper consists of a change in the teaching methodology of the subjects of the "Basic Finance" area, including Financial Markets and Instruments, Corporate Finance I and Corporate Finance II, in the Double Bachelor's Degree in Management, Business Administration and Law. This transformation incorporates the active methodology of PBL. The

initiative came from the UPNA Financial Economics teaching team when they presented the project "Financial Advisory in the Classroom: Transforming the Educational Model" which is part of the PINNE 21<sup>1</sup> project. The chronological details of the project implementation are shown in Figure 1<sup>2</sup>. To find out more information on the development of the projects, see Abinzano et al. (2022 and 2023).



*Figure 1. Implementation of PINNE 21*

### **3.2. Key Element: The Project**

The project design followed the methodology outlined by Dickinson et al. (1998) to ensure a project structure that guarantees effective learning. The project involved transforming the classroom into a financial consultancy, in which the students have to produce a financial report.

Regarding the Financial Markets and Instruments course, the project consists of a fixed and variable income portfolio advice. Students have to propose the optimal investment of €100,000 in the Spanish financial markets, building a diversified portfolio according to the investor's risk profile. The autonomy allows students to choose a client profile and take into account different contexts. The Corporate Finance I course involves preparing a financial feasibility study of an investment project. For this course, a company located in Navarre that wishes to invest in a low-carbon bus, using the government aid outlined in the BOE of 16 November 2021. The Corporate Finance II course guides a financial round in which students advises a start-up company headquartered in Barcelona, which seeks 1,500,000€ in 2023 and 2,300,000€ in 2024 for project committed to the Sustainable Development Goals 11 and 1.

The result of the consultancy is a comprehensive report presented to the client, consisting of a dossier (6-page PDF document with annexes) and an Excel file with calculations and analyses. A PowerPoint presentation of the report is also provided. The project is carried out in seven weeks and constitutes 50% of the first unit of the course, with the remaining half (Unit 2) using traditional methodologies.

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<sup>1</sup> In 2021, the Public University of Navarra issued the first call for Educational Innovation Projects (PINNE-2021)

<sup>2</sup> The PINNE' subjects are developed over 15 weeks, all of them of 6 ECTs.

### 3.3. Work Dynamics: The Puzzle Method

Students form teams of three members, and organise themselves into advisory teams with defined roles. Each member becomes an expert on each of the subjects. Interaction and collaboration between experts are crucial. The project begins with a puzzle activity aimed at covering three syllabus topics. Each team member was randomly assigned a piece of puzzle corresponding to one of these topics, requiring them to become experts through individual study and subsequent collaborative exploration in small groups. Once each member mastered their puzzle piece, they joined forces to assemble the puzzle collectively. During this phase, each member shared their expertise with the team, ensuring that all members gained a thorough understanding of all three topics.

### 3.4. Project Evaluation

Table 1 shows the evaluation system for the project, which is the first unit of the course.

**Table 1. Project Evaluation**

<b>On-time delivery (20% PLB) - Non-recoverable</b>
<b>PBL 60% - Non-recoverable</b> <ul style="list-style-type: none"><li>• Version 1 of the project (15% PBL) - group mark</li><li>• Version 2 of the project (30% PBL) - group mark</li><li>• Individual exercise (15% PBL) (0 if it is not correct, 5 if it is correct and 10 only if everyone in the group has it correct)</li></ul>
<b>Test of basic knowledge (20% PBL) - Recoverable</b> <ul style="list-style-type: none"><li>• it is necessary to pass the basic knowledge test</li></ul>

At the beginning of the course, students are given a rubric containing the assessment criteria for versions 1 and 2, which also includes aspects related to the delivery of the project, and written and oral presentation skills. Table 2 shows an example of the final rubric, with a number of items for subject-specific appropriateness. In all subjects, report structure is assessed with 9 items and general skills are assessed through 7 items.

**Table 2. Final Rubric**

		Item	Score	Mark
Adequacy (4 points)	Version 0	Nº Item	0	
	Version 1	Nº Item	0	
	Version 2	Nº Item	0	
	Total		0	
Structure of the Report (2 points)	Version 0	9	0	
	Version 1	9	0	
	Version 2	9	0	
	Total	9	0	
Generic Competencies (2 points)	Version 0	7	0	
	Version 1	7	0	
	Version 2	7	0	
	Total	7	0	
<b>Total Mark</b>				

## 4. Assessment of the Innovation

Evaluating the impact of PBL compared to traditional methodologies is crucial for improvement. Quantitative analysis and qualitative surveys, including a gender perspective to address inequalities in the finance profession, will inform future course improvements.

### 4.1. Quantitative Results

The results for Unit 1, post-PBL application compared to pre-PBL, are shown in Table 3. Across the three subjects, PBL has had a positive impact on marks, both in the final exam and in the final mark. This increase is more significant for the female gender. The statistical *t*-test shows significant differences between pre-PBL and PBL means, with minor exceptions for the male gender<sup>3</sup>.

**Table 3. Pre-PBL vs PBL results**

Course	Nº Obs	Total Sample			Female			Male		
		Unit 1	Exam	Final Mark	Unit 1	Exam	Final Mark	Unit 1	Exam	Final Mark
<b>Corporate Finance I</b>		<b>8.03</b>	<b>7.22</b>	<b>7.65</b>	<b>7.96</b>	<b>7.22</b>	<b>7.62</b>	<b>8.21</b>	<b>7.22</b>	<b>7.73</b>
Pre -PBL (21-22)	30	7.34	6.96	7.20	7.18	6.79	7.04	7.72	7.34	7.56
PBL (22-23)	41	8.94	7.56	8.25	8.93	7.76	8.35	8.95	7.04	8.00
t-test		0.00	0.26	0.01	0.00	0.14	0.01	0.08	0.75	0.45
<b>Corporate Finance II</b>		<b>6.37</b>	<b>7.28</b>	<b>7.32</b>	<b>6.31</b>	<b>7.22</b>	<b>7.35</b>	<b>6.49</b>	<b>7.40</b>	<b>7.28</b>
Pre -PBL (21-22)	34	5.72	6.73	7.26	5.54	6.69	7.16	6.27	6.84	7.57
PBL (22-23)	35	6.97	7.80	7.38	7.28	7.90	7.59	6.60	7.67	7.14
t-test		0.00	0.00	0.70	0.00	0.01	0.24	0.58	0.22	0.44
<b>Financial Markets and Instruments</b>		<b>7.76</b>	<b>6.37</b>	<b>7.21</b>	<b>7.85</b>	<b>6.27</b>	<b>7.17</b>	<b>7.56</b>	<b>6.60</b>	<b>7.32</b>
Pre -PBL (20-21)	39	6.41	5.59	6.45	6.41	5.37	6.26	6.42	5.92	6.74
PBL (21-22)	41	8.11	6.93	7.52	8.08	6.65	7.36	8.21	7.94	8.08
t-test		0.00	0.05	0.01	0.00	0.11	0.02	0.00	0.24	0.16
<b>Total mark</b>		<b>7.42</b>	<b>6.82</b>	<b>7.34</b>	<b>7.46</b>	<b>6.74</b>	<b>7.32</b>	<b>7.35</b>	<b>6.98</b>	<b>7.39</b>

<sup>3</sup> Before the implementation of PBL, traditional methodologies were employed. The results obtained could be due to innovation and/or a change in evaluation. The methodological change makes it difficult to distinguish between the two causes.

Table 4 shows the results for Unit 1, displaying comparatively higher marks for Version 2 than for Version 1 in all subjects. They suggest the influence of teacher feedback on the learning process. The mark of the essential knowledge test is relatively lower than the dossier/report mark, which requires further analysis for possible corrective measures. The average mark for project delivery and commitment is 9, with slight variations between subjects. No gender differences are observed, except for Corporate Finance II, where no significant difference is observed using mean difference tests.

**Table 4. Project Marks (PBL Unit 1)**

Subject	N° Obs	On-time delivery	Version 1	Version 2	Individual Exercise	Basic Knowledge	Unit 1 (PBL)
<b>Corporate Finance I</b>		<b>9.89</b>	<b>9.26</b>	<b>9.63</b>	<b>8.80</b>	<b>6.80</b>	<b>8.94</b>
Female (22-23)	30	9.89	9.26	9.61	8.73	6.86	8.93
Male (22-23)	11	9.90	9.27	9.69	9.00	6.58	8.95
t-test		0.93	0.98	0.51	0.48	0.77	0.96
<b>Corporate Finance II</b>		<b>9.00</b>	<b>5.60</b>	<b>7.96</b>	<b>6.74</b>	<b>4.79</b>	<b>6.97</b>
Female (22-23)	19	9.47	5.97	8.11	7.13	4.94	7.28
Male (22-23)	16	8.44	5.16	7.78	6.28	4.60	6.60
t-test		0.08	0.06	0.20	0.44	0.70	0.17
<b>Financial Markets and Instruments</b>		<b>9.95</b>	<b>7.94</b>	<b>8.37</b>	<b>8.91</b>	<b>6.93</b>	<b>8.41</b>
Female (21-22)	32	10.00	7.19	7.83	8.28	7.06	8.08
Female (22-23)	25	10.00	8.59	8.90	10.00	7.07	8.87
Male (21-22)	9	10.00	7.94	8.11	7.78	7.08	8.21
Male (22-23)	12	9.67	8.61	8.91	9.17	6.17	8.51
t-test		0.21	0.03	0.21	0.55	0.38	0.85
<b>Total Mark</b>		<b>9.69</b>	<b>7.54</b>	<b>8.46</b>	<b>8.33</b>	<b>6.36</b>	<b>8.13</b>

## 4.2. Qualitative Results

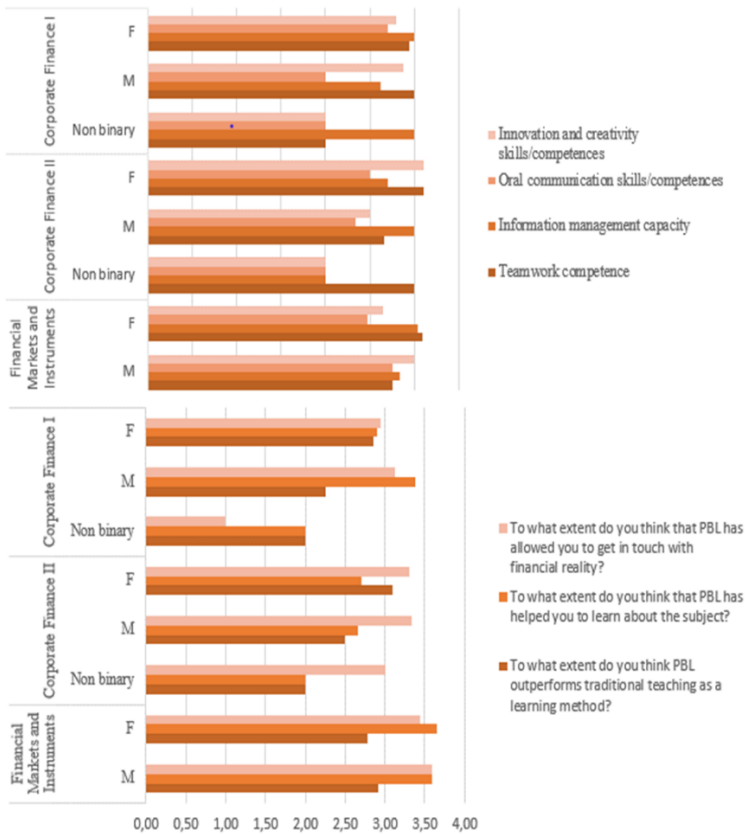
Students are surveyed about their opinion on certain qualitative aspects of the PBL methodology. First, the results suggest that the percentage of students that would recommend this teaching method ranges from 83.35% to 88.57% (Table 5).

**Table 5. Commitment and Recommendation**

Subject	N° Hours/week	Recommendation
<b>Corporate Finance I</b>	6	86.21%
Female	6	90.00%
Male	6	75.00%
Non binary	3	100.00%
<b>Corporate Finance I</b>	6	82.35%
Female	6	90.00%
Male	7	66.67%
Non binary	6	100.00%
<b>Financial Markets and Instrumen</b>	7	88.57%
Female	7	86.96%
Male	6	91.67%
<b>Total Mark</b>	6	86.42%

Open-ended responses on methodology reveal concerns about high workloads, which reflects the weekly hours spent outside the class in Table 5. Despite this, students highlight autonomy and collaboration as strengths, bridging the academic and professional worlds.

Second, Graph 1 shows the results for questions assessing the usefulness of the methodology, with values predominantly close to 3<sup>4</sup>. Notably, female students express slightly higher receptivity. In open-ended questions, students perceive the high workload as a disadvantage, but emphasise the autonomy and collaboration as strengths, bridging the gap between academia and the realities of the workplace. Assessments of the relevance of the experience to the role of a financial advisor receive very positive scores above 3, with slightly higher marks for females.



*Graph 1. Satisfaction Survey*

<sup>4</sup> The satisfaction survey, on a scale of 1 to 4, measured students' perceptions of the PBL methodology

## **5. Conclusions**

This paper outlines the implementation of Project-Based Learning (PBL) in the area of "Basic Finance" at UPNA, transforming classrooms into financial consulting firms. The courses involved are Financial Markets and Instruments, Corporate Finance I and Corporate Finance II. The pedagogical innovation resulted in an average score increase of more than one point compared to the previous academic year. The surveys reveal positive feedback on the acquisition of workplace skills, with workload identified as the main disadvantage. In terms of gender, female students generally outperform their male counterparts. Ongoing evaluation explores expectations of project development times.

Reflecting on the initiative, tutors express satisfaction at observing an actively engaged and motivated classroom. This increased student satisfaction and engagement could be an indication that innovation leads to improved student academic performance, which would support our initial results, supporting the arguments in favor of the PBL methodology. However, students perceive the increased workload as a disadvantage, placing a greater burden on teachers. The choice of active methods requires consideration of the optimum group size.

## **References**

- Abinzano, I., Bonilla, H., Corredor, P., Del Rio, C., Ferrer, E., González, A., Mansilla, J.M., Martínez, B., & Muga, L. (2022). Enhancing learning in the Finance classroom. *8th International Conference on Higher Education Advances (HEAd'22)*. <http://dx.doi.org/10.4995/HEAd22.2022.14196>
- Abinzano, I., Bonilla, H., Corredor, P., Del Rio, C., Ferrer, E., González, A., Mansilla, J.M., Martínez, B., & Muga, L. (2023). Analysis of the feasibility of investment projects in real assets with PBL: a very real experience. *9th International Conference on Higher Education Advances (HEAd'23)*. <http://dx.doi.org/10.4995/HEAd23.2023.16127>
- Ausín, V., Abella, V., & Delgado, V. (2017). Implicación del alumnado en la evaluación a través del portafolio electrónico. *Infancia, Educación y Aprendizaje*, 3(2), 77-81. <https://doi.org/10.22370/ieya.2017.3.2.703>
- Dickinson, K.P., Soukamneuth, S., Yu, H.C., Kimball, M., D'Amico, R., Perry, R., Kingsley, C., & Curan, S.P. (1998). Providing Educational Services in the Summer Youth Employment and Training Program. Technical Assistance Guide.
- Fleming, D. S. (2000). A teacher's guide to project-based learning. Washington, DC: Rowman & Littlefield Education
- Guo, P., Saab, N., Post, L. S. & Admiraal, W. (2020). A review of project-based learning in higher education: Student outcomes and measures. *International Journal of Educational Research*, 102, 101586. <https://doi.org/10.1016/j.ijer.2020.101586>
- Kleczeck, R., Hajdas, M., & Wrona, S. (2020). Wicked problems and project-based learning: value-in-use approach. *International Journal of Management Education*, 18, 100324. <https://doi.org/10.1016/j.ijme.2019.100324>



- Leenknecht, M., Wijnia, L., Kohlen, M., Fryer, L., Rikers, R., & Loyens, S. (2021). Formative assessment as practice: the role of students' motivation. *Assessment & Evaluation in Higher Education*, 46(2), 236-255. <https://doi.org/10.1080/02602938.2020.1765228>.
- Power, R. (2019). *Technology and The Curriculum*. Power Learning Solutions, [eBook]. ISBN ISBN: 978-1-9993825-1-3 Surrey, BC, Canada; Available at <https://pressbooks.pub/techandcurr2019/chapter/pbl-competences/>
- Silva Quiroz, J., Maturana Castillo, D. (2017). Una propuesta de modelo para introducir metodologías activas en educación superior. *Innovación educativa* (México, DF),17(73), 117-131. <https://www.redalyc.org/pdf/1794/179450594006.pdf>
- Wu, T. T., Wu, Y. T. (2020). Applying project-based learning and SCAMPER teaching strategies in engineering education to explore the influence of creativity on cognition, personal motivation, and personality traits. *Thinking Skills and Creativity*, vol. 35, p. 100631. <https://doi.org/10.1016/j.tsc.2020.100631>