8th International Conference on Higher Education Advances (HEAd'22)
Universitat Politècnica de València, València, 2022
DOI: http://dx.doi.org/10.4995/HEAd22.2022.14196

Enhancing Learning in the Finance Classroom

Isabel Abinzano, 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), Arrosadia Campus, 31006, Pamplona, Spain.

Abstract

This paper aims to describe a teaching-learning experience based on Project-Based Learning (PBL). This experience is part of an educational innovation project devoted to transforming finance classes in various facets of financial advice. Specifically, the article focuses on the transformation process of a subject that studies financial markets and the assets traded in them. Based on this experience, the classroom becomes a financial consulting firm that advises investors on how to invest their capital. The results show us a remarkable active dedication of the students to the course, improved knowledge, and marks. In addition, the development of skills and values such as teamwork, autonomy, solidarity, equality, and professional skills are elements that encourage us to continue along this line.

Keywords: *PBL; financial advisory; professional skills; teamwork; financial markets.*

1. Introduction

This paper aims to describe a teaching-learning experience based on Project-Based Learning (PBL). This experience is part of an educational innovation project of the Public University of Navarre (UPNA) to transform finance classes in various facets of financial consulting. Specifically, we show the transformation process of a traditional subject of the Business Administration and Management degree (ADE for its acronym in Spanish) that studies financial markets and the assets traded in them. Based on this experience, the classroom becomes a financial consulting firm that advises investors on how to invest their capital.

The paper is structured as follows: the second section briefly presents the theoretical framework of the methodology used, PBL. Section 3 explains the context in which it is carried out. Section 4 describes the experience, and section 5 shows its results. Finally, section 6 presents the main conclusions drawn from the experience.

2. Brief literature review about PBL

The PBL methodology is a form of learning centered on John Dewey's idea of "learning by doing." With this methodology, the learning takes place in a specific context; the student is actively involved in the learning process and achieves the proposed goal through social interaction. Du and Han (2016) further develop this definition. This methodology is close to problem-based learning (Helle et al., 2006) and also shares characteristics with puzzling (Aronson et al., 1978). PBL engages students in elaborating a final product through collaboration with each other. Collaboration is its main differentiating element. In addition, the teacher does not explain the topics that the students must know to produce the product, i.e., the learning itself is part of this PBL. Butler (1998), Thomas (2000), Duan and Han (2016), Kokotsaki et al. (2016), and Condliffe et al. (2017), among others, conducted an exhaustive review of the literature on this methodology showing a comparative advantage over other methodologies.

However, PBL is more demanding in time and resources than traditional methodologies (Al-Balushi and Al-Aamri, 2014). Therefore, for this methodology to succeed in the classroom, the teacher's involvement is essential. Kokotsaki et al. (2016) include additional issues to maximize success. We highlight the scheduling project, getting started, managing student groups, teacher support, practical group work, and the assessment emphasis on reflection, self and peer evaluation, among others.

Most of the applications of this methodology have been in fields such as language learning and health, although it has recently been extended to other fields such as finance. As an example, Parrado-Martínez and Sánchez-Andújar (2020) show the usefulness of PBL to improve compentences for employability and for learning about finance .

3. Context

The experience presented here is carried out in the "Financial Markets and Instruments" course. It is a compulsory course that students must take in the fourth semester (spring semester) within the Business Administration and Management degree. The course is taught four hours per week for 15 weeks, with a course load of 6 ECTs. Students taking this course have basic knowledge of financial asset valuation, acquired in the first semester of the degree, and macroeconomics in the third semester.

The topics of the course are the following:

- Macroeconomic environment, interbank and money markets
- Fixed income markets
- Equity markets
- Foreign exchange markets
- Derivatives markets

Prior to the experience described in this paper, the course used lectures, combined every two weeks with seminars working with actual market data. The proposed transformation covers the first three points and occupies half of the semester.

4. Experimental course

One of the main aspects of applying this methodology is detecting a "saleable" product. In the case of this course, the product that our students will be able to sell to potential customers is an investment advisory service. When requested, this financial advisory service will have a report on the state of the financial markets and offer a diversified asset portfolio with bondsand equities, individualized for an investor with a specific risk profile. A student who finishes the degree could have this job position, thus seeing the direct application of what they learn to their professional life. It is a simulation of a possible professional environment.

4.1. Formation of the teamwork

The first step in this experience is the formation of teamwork. In our case, three students form a group. This number seems ideal for creating positive interdependence among students. If one of the members leaves, the work that impacts the two remaining team members is 1/3 of the total work, which means a considerable amount of additional work. This fact can generate more responsible and supportive behaviors among team members, reflected in lower dropout rates. In our experience, there were no dropouts. The students grouped themselves on the condition that the teamworks were mixed. This condition requires the formation of gender-diverse groups.

4.2. Puzzle

We began the project by working on a puzzle. Three syllabus topics are worked on: macroeconomic environment, bond markets, and equity markets. Each team member is assigned a piece of the puzzle corresponding to each of these topics. The student receives theoretical and practical material and must become an expert on its part of the puzzle.

To become an expert, the student works in two stages. The first stage consists of individual work on its material. The student must review it and try to understand and assimilate the main concepts described in that material. The second stage consists of the experts´ in-depth study on a topic by getting together in groups of 3-4 students. They delve into the assigned material, answering some questions that guide them in their learning. In this second stage, experts interact and work on the material among equals. Subsequently, they must understand aspects that they might not have understood individually.

Once the puzzle pieces are ready, the next step is to assemble the puzzle. The initial components of the team are already experts. Now it is when they join together. In this new phase, each member must explain the topic they are experts on and facilitate learning the main aspects of that topic to their teammates. In other words, all team members should know and understand the fundamentals of the three topics.

To achieve this global knowledge, each student must provide an overview of his/her puzzle piece to his/her teammates (a theoretical and practical explanation). In a group session, they must transmit the essential ideas necessary to understand the topic. At the moment, each member evaluates the material and explanations provided by the other team members. Our experience in this aspect is that, at the time being, students evaluate correctly even if the explanations and materials have not been satisfactory. In other words, at this stage, the tendency is still not to negatively evaluate the work of the other team members. Although peer assessment is not taken into account for the final mark, it is useful for detecting opportunistic behaviour within teams.

4.3. Product elaboration

Once all team members acquire the basic knowledge of the topics, the teamwork must prepare an initial version, “version 0”, of the product within a week. This version is a product that meets all the requirements but that needs to be improved for the final sale. The students must suggest to the customer the best way of investing 100,000 euros in Spanish financial markets. The proposal should be a diversified portfolio that fits the investor´s risk profile. Each group of students decides the customer profile that they have to advise, so students can consider different contexts.

When the proposal is ready, it should be submitted to the teacher, who acts as the company's director, and comments to improve the proposal to become a saleable product for the

customer. In one week, the students will correct "version 0" of their product to elaborate the next version, "version 1", which could already be offered to the customer. This version is finally presented to the customer. Students must submit a detailed investment portfolio report containing expected returns, risks, and convincing arguments. In this presentation, the teacher takes the role of the customer to whom the product is sold. The customer offers the possibility of an additional investment of 20,000 euros, along the same lines but is dedicated to acquiring other types of assets, e.g., assets with ESG characteristics. This last installment is what we call "version 2"

4.4. Evaluation

The PBL evaluation comprises three parts. The first part represents 20% of the mark, obtained by completing all the deliveries on time. Moreover, it is compulsory to hand in 80% of the installments; otherwise, the student fails.

The second part represents 60% of the mark and includes several aspects. The mark for "version 1" represents 15%, and for "version 2", 30%, both grades are the same for all team members. This fact generates positive interdependence within group. The versions are evaluated through a rubric given to the students at the beginning of the project. The remaining 15% is evaluated through an individual exercise on each team's project, implying interdependence since it takes 0 if the exercise is wrong, 5 if it is satisfactory, and 10 only if everyone in the group gets it right.

The third part represents the remaining 20% and measures the achievement of the basic knowledge measured by an exam.

5. Results from the experience

Knowing the experience results helps us to decide on its continuation and future extension to other finance subjects.

5.1. Results from PBL

Satisfaction with the results obtained from the PBL is very high. On the one hand, the implementation of the project has significantly increased the number of queries made to the teacher since the first week of the course. It was usual to have around five queries from students in this subject and always on dates close to weeks 10-12. On no occasion did this occur during the first five weeks. With the experience of the PBL, these consultations have occurred from the first week, which is related to student's superior work at the beginning of the semester. This observation is already a first result favorable to the methodology. Table 1 shows the data of several indicators for two consecutive years: before implementing the experience in which the traditional methodology was followed (previous academic year), and

the current one (actual academic year). Actual period is the period in which we use the PBL methodology. For the comparison we employe the information obtained from Sakai, which is the Learning Management System (LMS) employed in this course.

Table 1. Results of PBL

Period	emails	Downloads in Sakai	Sakai access	Basic knowledge
Previous	90	1148	2424	6.21
Actual	132	1977	4464	7.06
Diference	47%	72%	84%	0.85*

Source: Own elaboration. * significant at the 10% level.

There are clear signs of improvement in the students' course follow-up and interest. Firstly, emails received by the teacher in comparable periods have increased by 47%. Secondly, the visits to the Sakai platform have grown by 84%. Thirdly, the documents read by the students on the LMS increased by 72%. This increase in activity has been observed since the first week.

As for the product generated by the students, in 85% of the cases, the product could be sold to a potential customer, and the arguments used to offer it was credible in most cases. It leads us to assume that their learning was more internalized and reflective than traditional methodology. With the development of the advisory service, the students have developed autonomous learning, teamwork, and professional skills, so we consider the results to be outstanding.

Finally, the two final tests show the results obtained in the knowledge. In the test about the product, 70% of the groups obtained the maximum mark, and only four students did not pass the test. In the general knowledge test, only five students could not achieve a score of 5 points, which means a 100% pass rate once the product results are taken into account. These grades also represent a substantial improvement concerning those obtained in the evaluation of general knowledge using the previous methodology, since in the last course they were 6.21 on average and in this course the grade has risen 0.85 points, being this difference statistically significant.

5.2. Feedback from the students

In order to assess student satisfaction with this methodology, a survey was carried out, with items scaled from 1 to 5. Table 2 shows the descriptive data.

Table 2. Student´s Opinions

Items	NºObs	Mean	St.D
Methodological adequacy	40	2.45	0.93
Possible future career	40	2.44	1.17
Hours per week	40	8.00	3.17
General satisfaction	40	3.05	1.13

Source: Own elaboration.

Students do not find this methodology better than the traditional one, and they indicate a workload of about 6-8 hours per week. Perhaps, the assesment is conditioned by the the greater workload that PBL implies for them. However, although this workload may seem excessive to them, is consistent with the number of hours that must be dedicated to it according to the ECTS of the course. The general satisfaction shown by the students was about the average. Finally, few students see financial advicing as a possible future career.

6. Conclusions

The use of the PBL methodology for learning financial assets and the markets in which they are traded is an opportunity for students to acquire knowledge about these aspects more deeply. Moreover, this methodology adds additional advantages to the mere fact of learning since it allows for developing skills linked to self-learning, teamwork, solidarity, and professional skills.

In addition to developing the skills mentioned above, this proposal aims to help reducing the gender gap evident in different aspects of the financial profession. Previous studies show that men have a greater preference for finance than women. However, the percentage of female students in the degree program is 50%. If our students see themselves as financial advisors, they can change the male perception of this career and consider this profession within the spectrum of possibilities to which they can dedicate themselves.

Our experience in this course has allowed us to learn a few things:

- Students need more guidance than we thought. We must develop a tutorial or practical guide to help them.
- Students are not able to put together very scattered information. We need to develop some primary material to guide them, which they can supplement with additional material.

- Students tend to value their peers well in the project's first stage. However, they do not do so much in the end. We must stress the importance of detecting wrong behaviors in the puzzle assembly phase, where these behaviors can still be corrected.
- Teamwork among students is not easy. However, they must get used since collaboration will be essential in their professional future.

The global vision of the results encourages us to continue developing this methodology in the subsequent courses and even implement it in other subjects related to the finance, such as the one related to the economic viability of investments. Future course extensions will allow us to analyse results in more detail. The pending task for the teaching team is to convince our students that this way of learning improves the necessary skills for their professional future, which are difficult to achieve with traditional methodologies.

References

Al-Balushi, S. M., & Al-Aamri, S.S. (2014). The effect of environmental science projects on students´ environmental knowledge and science attitudes. *International Research in Geographical & Environmental Education,* 23(3), 213-227. doi: 10.1080/10382046.2014.927167

Aronson, E., Blaney, N., Stepahan, C., Sikes, J. & Snapp, M. (1978). *The Jigsaw Classroom*. Sage Publications, Beverly Hills. California.

Butler, S. M. (1998). The process of problem-based learning: A literature review. *Journal of Health Occupations Education,* 13(1), 9, 132-168. Available at: https://stars.libray.ucf.edu/jhoe/vol13/iss1/9.

Condliffe, B., Quint, J., Visher, M.G., Bangser, M.R., Drohojowska, S., Saco, L., & Nelson, E. (2017). *Project-based learning. A literature review*. Working Paper. New York, NY. MDRC. Available at: www.mdrc.org.

Du, X., & Han, J. (2016). A literature review on the definition and process of Project-based learning and other relative studies. *Creative Education*, 7, 1079-1083. doi:10.4236/ce.2016.77112

Helle, L., Tynjälä, P., & Olkinuora, E. (2006). Project-based learning in post-secondary education –theory, practice and rubber sling shots. *Higher Education*, 51, 287-314. doi:10.1007/s10734-004-6386-5

Kokotsaki, D., Menzies, V., & Wiggins, A. (2016). Project-based learning: A review of the literature. *Improving Schools*, 19(3), 267-277. doi:10.1177/1365480216659733

Parrado-Martínez, P., Sánchez-Andújar, S. (2020) Development of competences in postgraduate studies of finance: A project-based learning (PBL) case study. *International Review of Economics Education*, 35, 100192. doi: 10.1016/j.iree.2020.100192

Thomas, J. W. (2000). *A review of research on project-based learning.* San Rafael, CA: The Autodesk Foundation.