

DEVELOPING TRANSFERRABLE SKILLS THROUGH ENTREPRENEURSHIP PROJECTS: STUDENT'S EXPERIENCES AND CHALLENGES

S. Fernandes¹, A. Regueiro², M. Magalhães², Dinis-Carvalho³, C. Costa-Lobo¹

¹ *Instituto de Neuropsicologia e Neurociências Cognitiva e Comportamental Portucalense (INPP) / Universidade Portucalense (PORTUGAL)*

² *Universidade Portucalense (PORTUGAL)*

³ *University of Minho (PORTUGAL)*

Abstract

This paper aims to analyse the impact of the curricular unit “Entrepreneurship” on the development of student’s transversal skills. The study takes place in a curricular unit that is transversal to all third year bachelor programs of the Portucalense University, located in the north of Portugal. “Entrepreneurship” is part of the study plan of programs such as Psychology, Social Education, Tourism, Economics, Law, Management, Informatics, Management and Information Systems and Hospitality Management. In this curricular unit, students are challenged to develop an entrepreneurial project based on a business idea that must be explored and improved throughout the semester. In this paper, results from an ongoing study based on the development of a questionnaire, designated “Evaluation of Psychopedagogical Practices of the Entrepreneurship Project – QAPPPE”. The questionnaire was applied, at the end of the semester, to all students participating in the Entrepreneurship course unit, in the academic year of 2016/2017. Issues concerning student satisfaction with the project, developed skills, teamwork, teacher’s role, student assessment and the overall evaluation of the project are explored in the paper.

Keywords: Entrepreneurship, transferable skills, project-based learning, professional practice.

1 INTRODUCTION

The profile required for today's graduates is increasingly more demanding and diverse, as communication skills, teamwork, critical thinking and problem solving are at the top of the list of most of the job requirements and also on the evaluation criteria for recruiting professionals. This paper aims to analyse the impact of the curricular unit “Entrepreneurship” on the development of student’s transversal skills. The study takes place in a curricular unit that is transversal to all third year bachelor programs of the Portucalense University, located in the north of Portugal. Therefore, “Entrepreneurship” is part of the study plan of programs such as Psychology, Social Education, Tourism, Economics, Law, Management, Informatics, Management and Information Systems and Hospitality Management. In this curricular unit, students are challenged to develop an entrepreneurial project based on a business idea that must be explored and improved throughout the semester.

2 ENTREPRENEURSHIP PROJECTS IN HIGHER EDUCATION

The entrepreneurship concept was included in the European higher education strategy in the beginning of this century [1] with the purpose of developing entrepreneur spirit among students. The idea was not only to include the entrepreneurship activity in higher education but also in other levels of education as well as in the Lifelong learning.

The “Entrepreneurship” curricular unit aims to develop the entrepreneurship competencies in the “enterprising person” sense as described in [2]. In this sense it is expected that students develop several transversal skills such as the ability to be creative, to have initiative, to have the ability to take decisions, to do and conclude activities, demonstrate leadership and “do things” in different and unexpected ways. Other different characteristics such as risk propensity, work by objectives and economic evaluation of advantages are also associated to entrepreneurship [3]. The economy is nowadays strongly related to entrepreneurship activity, playing a major role in job creation [4] and economic growth [5]. Although the entrepreneurship activity being accepted as important in the economy most published entrepreneurship initiatives in high education are found in the areas of engineering [6]. The introduction of entrepreneurship attitude in academic environments as academic

spin off formed by recent graduates or employees of the university or other public research centers [7] but also as enterprises created by people outside of academic environments that aim to commercialize research results.

Higher education institutions are now more aware than ever about the importance and the role that transversal competences play in the preparation of students for the labour market [8], [9], [10], [11], [12]. By creating learning environments, where students are actively engaged in the learning process, teachers are challenged to develop and assess not only technical competences based on their knowledge field, but also provide special attention to skills such as teamwork, problem solving, leadership, communication, project management, responsibility, creativity, decision making, flexibility, amongst others. Project-based Learning (PBL) has proven to be an effective teaching and learning method to enhance the development of these skills and to engage students in the learning process [13], [14], [15].

In this paper, authors will present the case of a curricular unit designated “Entrepreneurship”, transversal to several bachelor degree programmes at a private Higher Education Institution in Portugal, where students from different knowledge fields work together in teams to develop an entrepreneurial project. The course is based on the PBL principles and interdisciplinary.

3 CONTEXT OF THE STUDY

Portugalense University (UPT) is a private higher education institution, located in Oporto, in the north of Portugal. It is organized in four Departments: Law, Economics, Management and Informatics, Heritage and Tourism and Psychology and Education that teach 1st and 2nd cycle programmes and post graduations, structured according to the Bologna Process. More than acquiring theoretical knowledge, the students have the chance to develop practical work and research projects, developing different kinds of skills that prepare them for jobs in future career and for living in a competitive global society. Courses are structured so as to respond flexibly to changing labor market needs, through various teaching methods empirically based on significant case studies whenever applicable. UPT has its own dedicated staff and also counts on the input of practicing professionals from different industrial and commercial sectors, through the medium of guest seminars on various themes, thereby promoting its relationships with the corporate world with the goal of preparing students for future professional demands.

3.1 Entrepreneurship course in 2016/2017

The study takes place in a curricular unit that is transversal to all third year bachelor programs of the Portugalense University. The Entrepreneurship course is part of the study plan of programs such as Psychology, Social Education, Tourism, Economics, Law, Management, Informatics, Management and Information Systems and Hospitality Management. In this curricular unit, students are challenged to develop an entrepreneurial project based on a business idea that must be explored and improved throughout the semester.

The learning outcomes of the Entrepreneurship course include the following: to choose one of different types of entrepreneurship projects: social, business, cultural, educational, urban, rural, ecotourism and intrapreneurship; to identify market opportunities and sources of innovative ideas; to apply the Canvas methodology to "design" the business model that demonstrates a priori economic and financial feasibility; to validate the viability of the idea and its chosen business model; to design and draft a business plan; to properly prepare and communicate on a Pitch; to defend the business plan with potential investors; to decide how to finance the business project. The teaching and learning method is based on the principle of “learning by doing”, with special focus on project-based learning. Throughout the semester, students have several opportunities to develop not only technical knowledge on the subject matter, but also learn from doing and creating their own project. One of the most important outcomes of project-based learning approaches, strongly recognized in the literature, is the development of students’ transversal skills. In this particular approach, student participate in three Pitch sessions, where external evaluators are invited to give feedback to students in regard to their project ideas. These are important milestones of the project, which contribute to the development of students’ skills, mostly those related to oral communication, project management, teamwork, critical thinking and problem solving.

Student assessment is based on a set of elements. Table 1 presents the assessment elements and their weight on student's final classification. In general, assessment is based on student participation in the seminars, pitches, project simulation to NET-UPT and class participation.

Table 1: Student Assessment in the Entrepreneurship course.

Assessment components	Participation in Seminars	Pitch1	Pitch2	Pitch3	Project Simulation to NET-UPT application	Class Participation
Weight	15%	15%	15%	15%	20%	20%

In regard to student participation in the seminars, with the weight of 15% on their final classification, student presence is mandatory. The Seminars focus on relevant topics within the Entrepreneurship field and include prestigious invited speakers that aim to inspire students' projects. Table 2 presents a brief summary of the Organizations invited to present a talk on the Entrepreneurship Seminars, during the year 2016/2017.

Table 2: Seminars of the Entrepreneurship course.

Seminars	Topic / Title of the Talk	Organization	Date
Seminar 1	"Being young entrepreneur"	Amorim Venture Capital	October'16
Seminar 2	"How to write a Business Plan"	AEP	November'16
Seminar 3	"Pitch is the time to sell your project to potential investors"	Bankinter Bank	December'16

The Pitch sessions aim to properly prepare students to communicate on a Pitch. They play an important role on student assessment. Throughout the semester, students have the opportunity to participate in three different Pitches, that have different objectives at each stage of the project (as seen in Table 3). The purpose of these milestones is to provide students with feedback on the project idea and also allow students to practice and train their communication skills.

Table 3: Pitches of the Entrepreneurship Course.

Pitch	Objectives	Evaluators	Date
Pitch 1	to validate the viability of the idea and its chosen business model;	Course's Teachers	October'16
Pitch 2	to design and draft a business plan;	UPT Teachers	November'16
Pitch 3	to defend the business plan with potential investors	Potential Investors	December'16

In regard to the number of students enrolled in the Entrepreneurship course, in the academic year of 2016/2017, this included approximately 150 students. These students were divided in teams of students that varied from 2 to 4 members. The students were responsible for the group formation, at the beginning of the semester. There were no mandatory criteria for the team composition, although it was recommended that teams should include members from different Bachelor degree Programs. The following table (Table 4) presents a summary of the student projects and the composition of the teams in terms of number of students and Bachelor degree programme which students belong to.

Table 4: Student Entrepreneurship Projects in 2016/2017.

Team	Project Title	Student's Bachelor Degree / Number of Students
Team 1	Cork cup	Management (4)
Team 2	Retractable electrical outlet	Management (4)
Team 3	Easy health	Management (4)
Team 4	Pop Clean	Management (4)
Team 5	Trip 4 you	Management (4)
Team 6	Glasses 3D – Lendsdimension	Tourism (1); Management (2)
Team 7	Shrimp peeler	Economy (4)
Team 8	I98	Management (4)
Team 9	Ecotray	Economy (4)
Team 10	Virtual Fashion	Management (4)
Team 11	Pharma Express	Management (4)
Team 12	SOSme	Solicitor (4)
Team 13	Better Life	Solicitor (3)
Team 14	Aidu4you	Management (4)
Team 15	Bip Bip	Social Education (2); Management (2)
Team 16	Ideallbox	Social Education (3); Management (1)
Team 17	Eazzzy Rider	Management (3); Economy (1)
Team 18	STM	Management (3)
Team 19	Lapicanna	Management (2); Law (2)
Team 20	Carfé	Law (1); Management (2); Tourism (1)
Team 21	Poupa Rápido	Informatics-Programming (2), Management (1); Tourism(1)
Team 22	Icewave	Law (1); Management (1); Tourism (2)
Team 23	Iuris Notify	Law (3); Tourism (1)
Team 24	True Care	Law (5)
Team 25	Estagi@	Informatics-Programming (2); Tourism (2)
Team 26	AEIOU Juridico	Law (4)
Team 27	On Ticket	Law (5)
Team 28	Corkup	Law (3)
Team 29	DIGIMAPS	Law (4)
Team 30	4U	Law (2)
Team 31	With and Without	Law (4)
Team 32	Law Bag	Law (4)
Team 33	CinTravel	Psychology (3) + Law (1)
Team 34	Institute of the Mind	Psychology (3)
Team 35	CinzClip	Psychology (4)
Team 36	We Go	Psychology (5)
Team 37	Break	Psychology (4)

4 METHODOLOGY

This paper is part of a broader study (INTEGRATE Project), in progress, at the Portuguese University. For the aim of this paper, we will focus on the analysis of the impact of the Entrepreneurship course on the development of student's transversal skills. To attain this goal, the research methodology included both quantitative and qualitative data, collected in different phases of the Project (at the beginning, during and end of the project). Data collection was based on a questionnaire (quantitative) applied to students participating in the course and on a non-participant observation (qualitative) of the Pitch sessions. Table 5 presents this articulation between research methods, phases of the project and the focus of the analysis for each one.

Table 5: Phases and Methods of Data Collection.

Research Method	Phases of the Project	Focus of the Analysis
Document Analysis	Beginning of the Project	- Course Syllabus - Pedagogical Materials
Non Participant Observation	During the Project	- <i>Pitch 2 and 3</i> - <i>Seminars</i> - Student satisfaction - Skills developed - Teamwork
Questionnaire (QAPPPE)	End of the Project	- Teacher's role - Student Assessment - Overall evaluation of the Project - Entrepreneurship as an Optional Course

The questionnaire, designated "Evaluation of Psychopedagogical Practices of the Entrepreneurship Project - QAPPPE" was adapted from previous existing research on the evaluation of student perceptions in regard to PBL approaches [16]. The questionnaire was applied, at the end of the semester, to all students participating in the Entrepreneurship course unit, in the academic year of 2016/2017. In addition to sociodemographic data, the QAPPPE questionnaire included 41 items, which, within the scope of the Entrepreneurship curriculum, enhance the evaluation of the evolution of the project, throughout the semester. The QAPPPE questionnaire includes 40 closed-response items, answered using a Likert scale with four points, where 1 corresponds to "disagree" and 4 corresponds to "totally agree", and includes one final item, open response, item that allows to indicate if the students would attend the course of Entrepreneurship as an optional course.

4.1 Participants

The sample is non-probabilistic, constituted by convenience and composed by 131 students of seven degree courses, courses corresponding to the offer of the Department of Psychology and Education (DPE; n =31, 25%), Department of Law (DD; n=29, 22.1%), Department of Tourism, Heritage and Culture (DTPC; n =13, 10.4%) and to the offer of the Department of Economics, Management and Informatics (DEGI; n = 56, 42.7%). In the group of participants, 36 (27.5%) have more than three enrolments in higher education. Most of the participants don't have previous internship experience (n = 103, 78.6%), don't have student-worker status (n =101, 77.0%) and are not are not students with associative status in the academy (n=82, 62.6%).

4.2 Data Collection and Analysis

QAPPPE was subjected to validity and reliability analysis, showing good psychometric qualities. The internal consistency of itens presented in each of the six sub-scales constituents of the QAPPPE questionnaire, measured by the Cronbach's α stratified, was high, with $\alpha = .87$. Regarding the QAPPPE subscales, as shown in table 6, all of them showed high internal consistency.

Table 6: Internal Consistency of QAPPPE Subscales.

Subscales	Number of Items	Alpha
Student Satisfaction	6	.86
Skills Developed	7	.92
Teamwork	7	.81
Teacher's Role	5	.92
Student Assessment	7	.91
Overall Evaluation of the Project	8	.84

The results of the factorial analysis identified six factors that explain approximately 68% of the total variance. The instrument showed satisfactory validity.

After the quantitative data collection process was completed, they were entered into the IBM SPSS program for analysis. The analysis of the sociodemographic data for the characterization of the sample resorted to the descriptive statistics. The psychometric properties of the instruments used were studied. Initially, the data were submitted to a sensitivity analysis, describing the minimum, maximum, mean, standard deviation, asymmetry and kurtosis, considering as critical points an asymmetry above 1 and kurtosis above 3. Subsequently, an exploratory factorial analysis was carried out by means of an analysis of main components with varimax rotation, recognizing the validity of the scales through the study of the commonalities of the items and their saturations in the factors, as well as of the total explained variance for each identified factor (student satisfaction, skills developed, teamwork, teacher's role, student assessment, and overall evaluation of the project).

Finally, the reliability study used the analysis of internal consistency through Cronbach's alpha, and the item's correlation with the corrected total of the respective subscale was examined, as well as the alpha variation if the item was eliminated. Studies of differences between groups were performed using the t-test and Anova unifactorial, using the Bonferroni Post-Hoc test. The study of the relations between variables was made through the analysis of Pearson's correlations, both for the total sample and for the subsamples constituted according to sex, as a function of age, as a function of the degree attended, as function of the department in which the degree attended is enrolled, as a function of the number of enrolments in higher education, according to previous internship experience, and according to the student status.

5 RESULTS

This section presents the results of the study, organized in two main topics: quantitative data and qualitative data. For each approach, results will be presented and discussed, according to students' experiences and challenges in the Entrepreneurship course, carried out in 2016/2017.

5.1 Quantitative data

Based on the identified items for each of the six factors, scores for the dimensions were calculated through the arithmetic mean value of the answers to the items that integrate each of the dimensions. In the six factors identified, the answers oscillate between their theoretical minimum and maximum.

The mean scores of the student satisfaction, skills developed, and of overall evaluation of the project are above the theoretical midpoint of the scale. The standard deviation of these scores indicates a good dispersion of the results. The average response in the teamwork is below the midpoint of the scale ($M = 1.97$, $SD = .09$). The standard deviation indicates adequate dispersion. The dimensions of student assessment and teacher's role have an average response below the midpoint of the scale. The standard deviation indicates a good dispersion of the responses. There are no significant deviations from normality in the distribution of the dimensions evaluated.

In the representative dimensions of the overall evaluation of the project, there were statistically significant differences between the sexes [$t(127) = 3.06$, $p < .001$], with boys ($M = 2.82$, $SD = .11$) evaluating more positively the project, when compared to girls ($M = 2.49$, $SD = .26$). By analysing the distribution of results according to age, it is possible to verify that the mean of responses of all dimensions increased with increasing age, demonstrating, in particular, that students over 21 years of age have an overall evaluation of the Project than younger students. In the student satisfaction category, the highest response rate is found among students over the age of 21. Analysing the results according to the number of enrolments in higher education, presented in table 6, there are statistically significant differences between students with more than three enrolments and the rest with respect to student satisfaction [$t(128) = 2.21$, $p < .05$], being students with more than three enrolments ($M = 2.48$, $SD = .14$) presenting higher levels than the others ($M = 2.02$, $SD = .19$). Statistically significant differences were also found regarding the teacher's role [$t(128) = -2.14$, $p < .05$], with students with more than three enrolments in higher education presenting higher scores ($M = 2.37$, $SD = .19$) when compared to those with three enrolments in higher education ($M = 2.00$, $SD = .18$).

Table 7 -Descriptive Statistics of Student Satisfaction and Teacher's Role, According to the Number of Enrolments in Higher Education.

	More than Three Enrolments in Higher Education		Three Enrolments in Higher Education		<i>t</i>	<i>gl</i>
	<i>M</i>	<i>DP</i>	<i>M</i>	<i>DP</i>		
Student Satisfaction	2.48	.14	2.02	.19	2.21*	128
Teacher's Role	2.37	.19	2.00	.18	-2.14*	128

* $p < .05$

According to previous internship experience, there are statistically significant differences in student satisfaction [$t(127) = 2.45, p < .05$] among students with internship experience and without internship experience, with students with an internship experience ($M = 2.89, SD = .17$) present higher levels when compared to students without an internship experience ($M = 2.06, SD = .23$).

Statistically significant differences were also found regarding skills developed [$t(128) = -2.14, p < .05$], among students with internship experience and without internship experience, with students with an internship experience ($M = 2.48, SD = .12$) present higher levels when compared to students without an internship experience ($M = 2.09, SD = .31$). Statistically significant differences were also found regarding teamwork [$t(128) = -2.00, p < .05$], among students with internship experience and without internship experience, with students with an internship experience ($M = 2.38, SD = .41$) present higher levels when compared to students without an internship experience ($M = 2.01, SD = .28$). Statistically significant differences were also found regarding the teacher's role [$t(128) = -2.03, p < .05$], among students with internship experience and without internship experience, with students with an internship experience ($M = 2.81, SD = .49$) present higher levels when compared to students without an internship experience ($M = 2.11, SD = .38$). Statistically significant differences were also found regarding the student assessment [$t(128) = -2.67, p < .05$], among students with internship experience and without internship experience, with students with an internship experience ($M = 2.62, SD = .30$) present higher levels when compared to students without an internship experience ($M = 2.21, SD = .31$). Statistically significant differences were also found regarding the overall evaluation of the project [$t(128) = -1.45, p < .05$], among students with internship experience and without internship experience, with students with an internship experience ($M = 2.91, SD = .38$) present higher levels when compared to students without an internship experience ($M = 2.42, SD = .28$).

Table 8 -Descriptive Statistics of Student Satisfaction, Skills Developed, Teamwork, Teacher's Role, Student Assessment and Overall Evaluation of the Project, According to the Previous Internship Experience.

	With Previous Internship Experience		Without Previous Internship Experience		<i>t</i>	<i>gl</i>
	<i>M</i>	<i>DP</i>	<i>M</i>	<i>DP</i>		
Student Satisfaction	2.89	.17	2.06	.23	2.45*	127
Skills Developed	2.48	.12	2.09	.31	-2.00*	128
Teamwork	2.38	.41	2.01	.28	-3.15*	128
Teacher's Role	2.81	.49	2.11	.38	-2.03*	128
Student Assessment	2.62	.30	2.21	.31	2.67*	128
Overall Evaluation of the Project	2.91	.38	2.42	.28	-1.45*	128

* $p < .05$

According to the student status, there are no statistically significant differences between the categories created for this purpose.

In table 9 it is possible to verify statistically significant differences between the students that attend the Management degree and those who do not attend the Management degree, at the level of skills

developed [$t(128) = -3.15, p < .01$], being the participants attend the Management degree ($M = 1.88, SD = .10$), compared to those who do not attend the Management degree ($M = 1.51, SD = .72$). Statistically significant differences were also found regarding the overall evaluation of the project [$t(128) = -2.16, p < .05$], with students attending the Management degree ($M = 3.33, SD = .19$) compared to those who do not attend the Management degree ($M = 3.02, SD = .18$).

Table 9 -Descriptive Statistics of Skills Developed and Overall Evaluation of the Project, According to the Frequency of the Management Degree.

	Attending the Management Degree		Do not Attend the Management Degree		<i>t</i>	<i>gl</i>
	<i>M</i>	<i>DP</i>	<i>M</i>	<i>DP</i>		
Skills Developed	1.88	.10	1.51	.72	-3.15	128
Overall Evaluation of the Project	3.33	.19	3.02	.18	-2.16*	128

* $p < .05$

When questioned about the frequency of this curricular unit, if it was presented in the curriculum of the degree as an optional curricular unit, and not as a compulsory frequency, the majority of participants ($n = 70, 53.4\%$) said they would choose not to attend. Most students ($n = 39; 55.7$) in the group that does not attend the curricular unit if this is optional, do not attend the undergraduate degrees offered in the Department of Economics, Management and Informatics. The group of students who do not attend the Curricular Unit if it is optional is mostly composed of students attending law degree ($n = 23, 58.9\%$). These data refer to the signaling that 79% of the students involved in the degrees offered by the Law Department would choose not to attend this course unit if it were allowed.

5.2 Qualitative data

In regard to the open-ended question of the QAPPPE, aimed at comments and suggestions, students' opinion about the Entrepreneurship course was, in general, not very positive. According to the comments presented in the open-field question, students claimed about the lack of relevance that the course and its contents add to their professional area. Despite two students, out of the sixteen who answered this question, the majority of students mentioned issues related to the inadequacy of the entrepreneurship course for their field of studies and other issues that they considered less positive. These comments and suggestions can be summarised by the following ideas expressed:

- relevance of the Entrepreneurship course (not relevant for specific professional areas e.g. Tourism, Law; lack of articulation of the course with student's professional area);
- workload and time spent on the Entrepreneurship course (classes not very useful; difficult to be successful in other courses due to the workload the course required; classes were monotonous and only aimed at the clarification of doubts, most of the work was done outside of class);
- issues concerning student assessment (weight of the Pitches and Seminars, poor interest and relevance of the Seminars);
- support provided by teachers (different involvement of the various faculty members of the course, lack of orientation for the last Pitch, few classes during the semester).

The positive comments referred by two students focused on the role of teamwork and knowledge sharing from different areas and also referring that the Entrepreneurship course was the most important course of the semester. The following quotes from students confirm this:

"I think all members that were part up my group were relevant and this was very important because you can have knowledge of several areas." (Student_QAPPPE#31)

"For me, Entrepreneurship is the most important course of the 3rd year, in my view." (Student_QAPPPE#54)

Besides the qualitative data analysed from the QAPPPE, the researchers, also authors of this paper, were able to carry out a non-participant observation of two of the pitch sessions (2nd and 3rd Pitch). Therefore, some notes taken during these sessions highlight a set of issues related to students, teachers and the nature of projects developed. The conclusions are summarised in Table 10.

Table 10: Notes from the Non Participant Observation of Pitch Sessions.

Theme	Observations
Students	<ul style="list-style-type: none"> - some lack of enthusiasm / motivation for the project, by its own team, during the project presentation; - some insecurity and lack of confidence felt by students; - few interest, by students who are assisting the presentation, in the project of the other teams; - few competitiveness amongst teams; - little ambition of students towards their own projects; - existence of different levels of performance within the group (e.g. in the discussion phase, it was always the same member of the group who answered the questions) - At the beginning of the presentation, students do not refer to the bachelor programme that they belong to (irrelevant?) - some groups of only 2 members
Teachers	<ul style="list-style-type: none"> - the evaluation panel, made up of 3 teachers from different Departments at UPT (2nd Pitch) and 3 external members from business organizations (3rd Pitch), provided students with formative feedback in regard to the project ideas presented; - the course coordinator, moderator of the Pitch sessions, kept students engaged throughout the session and provided real-life examples based on his own experience and the suggestions presented by the evaluators.
Nature of Projects	<ul style="list-style-type: none"> - the projects presented were not necessary related to the area / professional field of the bachelor programme that students were attending; - most of the teams did not integrate students from different knowledge areas; <p>Some questions can be raised:</p> <ul style="list-style-type: none"> - Could the existence of a project related to student's professional field increase their motivation? - Do students mobilize knowledge from other curricular units of their bachelor programme to develop the entrepreneurship project? Is there curriculum integration? - What is the role of the other curricular units of the semester (from each bachelor programme) for the development of the Entrepreneurship project? - What kind of collaboration exists between the teachers of the Entrepreneurship course and the teachers of the other curricular units of the semester?

6 FINAL REMARKS

This paper analyses students' perceptions in regard to the Entrepreneurship course, transversal to all third year bachelor programs of the Portucalense University. It discusses student's experiences and challenges, based on quantitative and qualitative data, collected in different moments and phases of the project.

In regard to the most positive items rated by students on the QAPPPE, these are related to student satisfaction, skills developed and the overall evaluation of the project, with mean scores above the theoretical midpoint of the scale. The less positive items rated by students include teamwork, student assessment and teacher's role, with an average response below the midpoint of the scale.

In regard to the analysis of relations between variables, the following results were achieved:

- statistically significant differences between the sexes, with boys evaluating more positively the project, when compared to girls;
- statistically significant differences between students with more than three enrolments and the rest with respect to student satisfaction;
- students with an internship experience present higher levels when compared to students without an internship experience;
- the mean of responses of all dimensions increased with increasing age, demonstrating, in particular, that students over 21 years of age have an overall evaluation of the Project than younger students;

- there are statistically significant differences between the students that attend the Management degree and those who do not attend the Management degree, at the level of skills developed and the overall evaluation of the project.

When asked about the possibility of the curricular unit of Entrepreneurship to be optional, the majority of participants (n = 70, 53.4%) said they would choose not to attend it. Interestingly, the group of students who answered that they would not attend the Curricular Unit if it was optional is mostly composed of students attending the Law Bachelor degree. This means that 79% of the students involved in the degrees offered by the Law Department would choose not to attend this course unit if they had the possibility to choose. This opinion was also expressed by students, during informal conversation with teachers, especially by Law degree students, who admitted that, in the future, they preferred to work for others rather than thinking about the possibility of creating their own business.

In sum, several issues need to be explored to greater depth, such as improvements in the course planning and also ways to motivate students for the importance of the development of entrepreneurship skills. Future work will focus on group interviews to student teams and to teachers in order to explore, to a greater extent, some of the findings that emerged from the current data analysis.

REFERENCES

- [1] de Castro Almeida, R., Chaves, M. "Entrepreneurship as an aim of the European Union policy for higher education", *Educacao e Pesquisa*, 41 (2), pp. 513-526, (2015).
- [2] Gibb, A. "In pursuit of a new 'enterprise' and 'entrepreneurship' paradigm for learning: creative destruction, new values, new ways of doing things and new combinations of knowledge". *International Journal of Management Reviews*; 4, pp. 213–69, (2002).
- [3] Vesperi, W., Reina, R., & Gentile, T., "Academic Knowledge Vs Entrepreneurship : The Spin off way". 16th European Conference on Knowledge Management – ECKM 2015, pp. 828–836, (2015).
- [4] Cohen, A.M., F.B. Brawer, and C.A. Kozeracki, "Jumpstart I Summary Report". Los Angeles, CA: Center for the Study of Community Colleges, (ERIC Document Reproduction Service No. ED 416198), (1998).
- [5] Narayan, R., "An Engineering Entrepreneurship Course for ChE seniors." *Proceedings, American Society of Engineering Education*, (2002).
- [6] Ohland, M. W., Frillman, S. A., Zhang, G., Brawner, C. E., & Miller, T. K. I. "The effect of an entrepreneurship program on GPA and retention". *Journal of Engineering Education*, 93(4), 293–301. <http://doi.org/10.1002/j.2168-9830.2004.tb00818.x>, (2004).
- [7] Stankiewicz R. "Spin off companies from Universities", *Science e Public Policy*, 21, 2, (1994).
- [8] Andrews, J. & Higson, H., "Graduate Employability, 'Soft Skills' Versus 'Hard' Business Knowledge: A European Study", *Higher Education in Europe*, 33, pp. 411-422, (2008).
- [9] Hawkins, P. & Winter, J., "Skills for Graduates in the 21st Century. London: Association of Graduate Recruiters, (1995).
- [10] Vieira, D. & Marques, A. P. "Preparados para Trabalhar". Um estudo com Diplomados do Ensino Superior e Empregadores". *Fórum Estudante. Consórcio Maior Empregabilidade*.
- [11] Cabral-Cardoso, C. Estêvão, C. V. & Silva, P., "Competências Transversais dos Diplomados do Ensino Superior – Perspetiva dos Empregadores e Diplomados", *Guimarães: TecMinho*, (2006).
- [12] Markes, I. "A review of literature on employability skill needs in engineering". *European Journal of Engineering Education*, 31(6), pp. 637-650, (2006).
- [13] Powell, P. C., & Weenk, W., "Project-led engineering education". *Utrecht: Lemma*, (2003).
- [14] Mesquita, D., Lima, R. M., & Flores, M. A. "Developing professional competencies through projects in interaction with companies: A study in Industrial Engineering and Management Master Degree". *Proceedings of Fifth International Symposium on Project Approaches in Engineering Education (PAEE'2013): Closing the Gap between University and Industry*, Eindhoven, The Netherlands, [1-7] ID103., (2013).

- [15] Fernandes, S., Mesquita, D., Flores, M. A., & Lima, R. M., "Engaging students in learning: findings from a study of project-led education". *European Journal of Engineering Education*, 39 (1), pp.55-67, (2014).
- [16] Alves, A., Mesquita, D., Moreira, F., & Fernandes, S., "Team-work in Project-based Learning: engineering students' perceptions of strengths and weaknesses". In N. van Hattum, R. M. Lima, D. Carvalho & L. C. Campos (Eds.). *Proceedings of the Fourth International Symposium on Project Approaches in Engineering Education (PAEE'2012)*. (pp. 23-32). 26-27 July 2012, São Paulo, Brazil. ISBN: 978-989-8525-14-7. (2012).