

IN-CLASS GAMIFICATION FOR SPURRING EXPERIENTIAL LEARNING IN ENTREPRENEURSHIP EDUCATION: THE EDUCATIONAL CROWDFUNDING GAME

Antonios D. Livieratos, Department of Business Administration, National and Kapodistrian University of Athens, Greece

Athanasios Dimas, National Documentation Center of Greece, Greece

ABSTRACT

As the importance of entrepreneurship education is growing within and beyond universities, educators are facing two challenges. Lean startup, the methodology currently used in most entrepreneurship classes, is giving emphasis on action rather on theory leading thus to the need for experiential learning. Moreover, educators need to integrate in their curricula elements related to new tools financing startups that implicate the crowd. Responding to those challenges, the authors developed the Educational Crowdfunding Game (ECG), an in-class simulation game that enables peer-to-peer evaluation of student ventures. By wearing both the entrepreneur's and the investor's hat, the game aims to make students understand what it takes to develop investable startups. The main aim of the research is to review the game and assess its application. After an initial pilot application, the game was applied in four classes enabling the collection of quantitative and qualitative data via questionnaires and focus groups. Findings indicate that the ECG contributed significantly to the learning outcomes of the courses, and it was assessed as a very useful educational activity that is more effective than traditional teaching methods. Overall participants expressed the opinion that they were highly satisfied from participating in it. The essence of ECG may be summarized in the words of one of the participants who claimed that "when I started judging the entrepreneurial ideas of others..., I understood what was wrong with my idea, why an investor would not invest in my idea and what my next steps should be to make my idea investable". The contribution of this paper is threefold. Firstly, it introduces a new validated in-class game especially designed for entrepreneurship and/or innovation classes. Secondly, it contributes to the discussion on experiential learning in entrepreneurship education suggesting that in-class games, like ECG, could significantly enhance students' experience and engagement. Finally, findings provide evidence that in-class games spurring interaction both between students and the educator as well as among students can advance the reflective process that is crucial for entrepreneurship education.

Keywords: Entrepreneurship Education, Lean Start-up, Crowdfunding, In-Class Simulation Game, Start-up.

INTRODUCTION

Entrepreneurial education is an important module for most universities going well beyond the departments of business and economics (Peris-Ortiz et al., 2016). It is also offered in the framework of accelerators, incubators, and other startup support schemes flourishing in the

era of the entrepreneurial society (Cohen et al., 2019; Audretsch, 2009). As the entrepreneurial environment is changing, so do expectations of relevant educational programs (Bauman & Lucy, 2019). Traditional lecturing gives place to an action-oriented class that emphasizes the need to connect teaching to ‘real-world’ environments (Hägg & Gabrielsson, 2019; Lackeus, 2018). In this booming environment, instructors are facing two important challenges when designing their entrepreneurship modules. The first is related to lean startup that is currently the dominant approach in entrepreneurship education (Felin et al., 2019; Sarooghi et al., 2019). This approach is emphasizing on action rather on theory (Blank, 2013), leading thus to the need to integrate experiential learning (Harms, 2015; Mansoori, 2017; Ramsgaard & Christensen, 2016). The second is related to the increasing importance of new tools for financing startups that are implicating the crowd (Cumming & Hornuf, 2010).

OBJECTIVES OF THE STUDY

Acting as entrepreneurship educators in various frameworks, the authors face the two challenges described earlier. Aiming to stimulate experiential learning through interaction in class the two authors designed an in-class simulation game that enables peer-to-peer evaluation of entrepreneurial projects. The game stimulates interaction and experiential learning in class by providing students two hats: the hat of the founder seeking capital and the hat of the investor. The main objective of the paper is to review the game and asses its application in entrepreneurship courses.

The rest of the paper is structured as follows. In section 2 we review the literature leading to the need of integrating experiential learning in entrepreneurship education and actionable knowledge about crowdfunding as well as relevant work conducted up to this point. In section 3 we present the methodology and in section 4 the findings of this research. Section 5 is dedicated to discussion as well as limitations and further research.

BACKGROUND OF THE RESEARCH

Experiential Teaching and In-Class Entrepreneurship Games

In experiential learning students actively exchange knowledge and information in a certain learning situation, abstract their own understanding of knowledge through reflection, and in turn apply this understanding in practice to further sublimite learner’s knowledge and emotions (Kayes & Kayes, 2021; Li, 2021; Kassean et al., 2015). From an experiential teaching lens, the central point is the learner and emphasis is placed on the learning process, rather than the outcome (Hawtrey, 2007). The learning process can be divided into four stages: (a) concrete experience, (b) observation and reflection, (c) forming abstract concepts and (d) testing in new situations. In other words, it is a “*spiral where the learner touches all the bases – experiencing, reflecting, thinking and acting*” (Kolb & Kolb, 2006).

As the internal and external environment of firms is complexified as well as evolving, learning is a key tool for management, playing an important role beyond traditional training and education (Dixon, 2017; Senge, 1990). Experiential learning is considered as essential for organizational processes such as scenario planning and problem-solving (Van der Heijden et al., 2002), strategic planning, research and development, organizational culture (Thomas et al., 2018), and cross-cultural adaptation of executives (Yamazaki & Kayes, 2007). Experiential learning is also found to be positively connected to the development of expertise (Ericsson et al.,

2006), mastery (Block et al., 1971) and entrepreneurial skills (Harms, 2015; Mansoori, 2017; Ramsgaard & Christensen, 2016).

As a process that is emphasizing on the learner's experience, educational games have a number of commonalities with experiential learning. Both (i) contain the idea of "*learning by doing*" emphasizing on practical operations, (ii) emphasize on the learning situation i.e. the context in which learning occurs and (iii) focus on the learner's subjectivity (Ma & Zhihua, 2010). Therefore, experiential learning is a solid theoretical background for the design and application of educational games (Li, 2021).

Lean Start-up is Changing the Way Entrepreneurship is Taught

Till recently it is assumed that 'a startup is a small version of a big company' (Blank & Dorf, 2012) and in this respect the tools that were typically taught in an entrepreneurship class were identical to those which are taught in the framework of an MBA giving emphasis on business planning (Bliemel, 2013). The lean startup model (Blank, 2013; Blank & Dorf, 2012; Ries, 2011) seems to have irreversibly changed how entrepreneurship is perceived and applied at all levels including how it is taught (Harms, 2015). A business idea at an early stage is not something that could be implemented in the form of a business plan (Bliemel, 2013). On the contrary, it is just a number of assumptions that is needed to be verified by 'getting out of the building' (Blank & Dorf, 2012). Aiming to provide students with skills that help them test the assumptions of a new venture, a number of new tools and methodologies were introduced like, the Business Model Canvas (Osterwalder & Pigneur, 2010), the Value Proposition Canvas (Osterwalder et al., 2014), the Minimum Viable Product (Ries, 2011), the Disciplined Entrepreneurship (Aulet, 2013), the Lean Model Canvas (Maurya, 2012), the Customer Development (Blank, 2006), or Saint Startup (Livieratos, 2017). This hasn't only changed the content of the entrepreneurship curricula; it also changed the perception on how the entrepreneurship is taught, by emphasizing more on experiential learning (Ramsgaard & Christensen, 2016). A modern entrepreneurship class promotes active learning so that students can become active participants in their learning (Periz-Ortiz, 2016; Neck et al., 2014) improving the entrepreneur's critical thinking skills related to opportunity identification and venture design (Elia et al., 2014).

Crowdfunding in Entrepreneurship Education

Entrepreneurial finance has evolved tremendously over the last few years. Aiming to respond to the 'valley of death' for startups and building on the concept of crowdsourcing initially coined by Howe (2006), several new financial tools evolved in the markets under the 'umbrella' term crowdfunding (Kuppuswamy & Bayus, 2018). The global crowdfunding industry is experiencing during the last years a frenzy growth (Massolution, 2015; Valuates, 2019) and it is expected to grow further in the years to come (Mordor intelligence, 2021). Despite empirical evidence demonstrating that crowdsourcing in general, and crowdfunding in particular, may add significantly to the establishment and growth of startups, this field remains up to now 'uncharted waters' (Livieratos et al., 2020a; Livieratos et al., 2020b). This evolution cannot be left out of the entrepreneurship class (Tutko, 2018; Voelker & McGlashan, 2013). Therefore, a rather new challenge for an entrepreneurship educator is help students in developing skills required to run a crowdfunding campaign (Livieratos et al., 2020b; Shneor et al., 2020).

Entrepreneurial Crowdfunding Games and Experiments

As crowdfunding is rising, several in-class games and experiments are being developed. The most relevant work in relation to the here-presented game, as well as a source for inspiration was IBM's '1X5' (or 'Enterprise Crowdfunding') initiative in which the company's employees use funds supplied by IBM in order to invest in other employees' projects (Muller et al., 2014; Muller et al., 2013; Feldmann & Gimpel, 2016). Another relevant work that is close to the here-proposed game is the 'Entrepreneurship and Venture Capital Game' organized by Prof. Martin Varsavsky at Columbia University. The Entrepreneurship Game is a role-playing workshop in which the professor is the moderator and the students play two simultaneous roles: a) the role of the entrepreneur and b) the role of the venture capitalist. The game focuses on the 'magical moment' in which an idea becomes a funded enterprise (Columbia, 2019). Besides these two initiatives other similar though not that relevant initiatives can be found in bibliography. Smith & Green (2015) describe a class exercise to explore crowdfunding, Lane & Tampien (2017) 'print money' in class to evaluate new products, Elkuch et al., (2013) introduce reciprocal crowdfunding as a means to enable graduate entrepreneurship in Africa, DeSimone (2016) presents exemplary exercises for entrepreneurship education including crowdfunding elements and Wash & Solomon (2014), Solomon et al. (2015) and Solomon et al. (2016) simulate a reward-based crowdfunding game in the lab.

METHODOLOGY

Aiming to review the game and assess its application in entrepreneurship courses the present research follows an exploratory approach that is a valuable means of finding out "*what is happening; to seek new insights; to ask questions and assess phenomena in a new light*" (Robson, 2002, p.59). To that end, the paper's research strategy is based on surveys that enabled the collection both quantitative and qualitative data (mixed method). In particular, qualitative data were collected via focus groups to explore responses given in standardized questionnaires (Healey & Rawlinson, 1994). Aiming to explain the process, the next paragraph of this part describes the game followed by the data collection and the data analysis.

The Game

Prerequisite for implementing the game is that students work individually or in teams on original entrepreneurial ideas presented in class in the form of a pitching event at the end of the semester. The aim of the game is to make students 'wear two hats' by putting them both at i) the entrepreneur's position aiming to raise capital (from fellow students who act as investors) as well as ii) the investor's position who has to decide how to invest his money choosing among fellow students' ventures. The scope is to make students understand what it takes to convince investors helping them to build 'more attractive' entrepreneurial proposals.

The game is implemented during the in-class pitching event that is conducted usually at the end of the semester. Aiming to stimulate interaction students are handed at the beginning of the process 10.000 Euros in the form of ten 1.000 Euro bills printed on paper. Students can invest this amount to the entrepreneurial ideas presented from fellow students. They cannot invest in themselves. Students can split this amount in as many entrepreneurial projects they like with a minimum investment of 1.000 Euros and a maximum of 10.000. Moreover, students are not

obliged to spend the whole amount. They can invest part of the amount or even not invest this amount at all.

After giving instructions and having distributed the bills, students are called to conduct their elevator pitch in front of their fellow students. Each presentation is followed by a Q+A session. The aim at this point is to simulate the class to a closed business angels network meeting in which entrepreneurial ideas are presented. At the end of the session one ballot box per entrepreneurial project is put in place. In turn, each student is called to invest his/her money anonymously by putting money to the corresponding ballot boxes. To this end, a peer-to-peer evaluation is conducted keeping the anonymity of the ‘voters’ (investors). The winner is the student (or the team of students) that will raise the highest amount of capital by his fellow students (most investable venture). To motivate students, a prize for the winner is announced from the beginning of the process (e.g. +10% to the student’s final note). It should be noted that only one winner is announced to the students.

The game was piloted in 2018 in an Entrepreneurship MBA class. At the end of the game students were asked (informally) to express their opinion and give feedback. Based on the experience of the pilot application and the informal positive feedback, the game was adjusted, and rules were formally written down. In turn, the game was applied in two more occasions in 2019 and participants were asked to respond to a survey.

Data Collection

A questionnaire based on Davis (1989) was developed to investigate student understanding and satisfaction of the game. After having conducted the pilot application, the game was implemented in two more cases of face-to-face classes and two online classes. The first face-to-face class was an executive training class conducted in early 2019 and the second during an acceleration program addressed to startups in autumn 2019. The two courses were implemented by the first and the second author respectively. To test the validity of the game it was decided to initially explore it in two very distinct cases. In the first case students were executives from one of Greece’s leading banks following an internal MBA organized by the National and Kapodistrian University of Athens. In particular, in February 2019 eighteen bank executives followed the class “*Entrepreneurship and Innovation*” conducted in six full days. Approximately one month later (March 2019), the game was implemented in an entrepreneurship class. More precisely, the National and Kapodistrian University of Athens is organizing every year an entrepreneurship program addressed to founders of startups at an early stage. The program is an acceleration program combining teaching and coaching. On this occasion, the game was applied once more. At the end of the game the questionnaire was handed to the participants (18 participants in each class). Moreover, two focus groups were organized in which four bank executives and five university students had the opportunity to express their opinion and share their experience from participating in the game. Furthermore, the game was implemented in two more cases, this time in the framework of online classes. Note that both were face-to-face classes that were forced to be conducted online due to the pandemic. Moreover, both were undergraduate classes of ‘Entrepreneurship’ as part of a business administration curriculum. The first was implemented at the end of the spring semester of 2020 (June – 25 participants) and the second at the end of the spring semester of 2021 (June – 32 participants). As it will also be discussed later, online classes in general had less interaction among the participants.

Data Analysis

Considering the distribution for all variables tested (Bryman & Cramer, 2001) since the sample refers in different populations it is important to choose the appropriate test for the analysis. If the data are normally (or non-normally) distributed, the nonparametric tests will constitute a powerful tool to assess such a relationship. However, in the case of nonnormality, nonparametric tests are always preferred. For this reason, the non-parametric Mann–Whitney U test (Hair, et al., 2010) was used to understand whether there were differences in the perceptions between the different groups participating in the study. The Mann–Whitney test is more powerful than the median test because it compares the number of times a score from one of the samples is ranked higher than a score from the other sample rather than the number of scores which are above the median (Bryman & Cramer, 2001).

The test is used to explore significant differences between two conditions of the independent variable in this game where the dependent variable involves ranked data for assessing the groups of participants. This test is similar to an independent group's t-test; however, this test presents better results when the dependent variable is measured on an ordinal scale (Majumdar, 2010). It is used to test for significant differences between two conditions of an independent variable in an experiment where the dependent variable involves ranked data for assessing groups of observations and it is one of the most powerful non-parametric tests (Nachar, 2008; Gibbons & Chakraborti, 1991; Hanagl, 2009; George, 2009). If the Asymptotic significances (P value) of the U test is smaller than 0.05, researcher can reject the null hypothesis and if the P value is large than 0.05, the data do not give permission to reject null hypothesis because overall medians do not differ (Sunder & Rechred, 2009).

FINDINGS

Demographics

In relation to gender, most of the respondents at the bank are women and the same accounts for the university students. The percentages regarding gender are reverse among the startup funders. In relation to age, bank respondents are relatively concentrated; students are highly concentrated while startup founders are more diverse (Table 1).

Table 1				
GENDER AND AGE OF PARTICIPANTS				
	Gender		Age	
Bank	Male	44.4%	26-35	50.0%
	Female	55.6%	36-45	38.9%
			46-55	11.1%
Startup founders	Male	61.5%	18-25	7.7%
	Female	38.5%	26-35	38.5%
			36-45	23.1%
			46-55	30.8%
Undergraduates A	Male	40%	18-25	92%
	Female	60%	36-45	4%
			46-55	4%
Undergraduates B	Male	46.9%	18-25	96.9%
	Female	53.1%	46-55	3.1%

			46-55	4%
--	--	--	-------	----

Findings in relation to the educational level are related to the prerequisites of “*being part of that class*”. For both bank executives and startup founders having a bachelor’s degree was a prerequisite for applying for the program. In this respect, it can be claimed that the two groups have a compatible educational level. On the other hand, the majority of the university students are relatively young and again this is linked to the type of educational framework in which the game was conducted. In relation to the occupation background, in the case of the bank it is obvious that all students are employees of the bank while in the case of the startup founders, this varies (Table 2).

Table 2 EDUCATION AND OCCUPATION OF PARTICIPANTS				
	Education		Occupation	
Bank	BA	83.3%	Private company	100%
	MSc	16.7%		
Startup founders	BA	69.2%	Unemployed	7.7%
	MSc	23.1%	Freelancer	30.8%
	PhD	7.7%	Private company	61.5%
Undergraduates A	Students	100%	Student (not working)	52%
			Private company (part time)	36%
			Private company (full time)	12%
Undergraduates B	Students	96.9%	Student (not working)	68.8%
	BA	3.1%	Private company (part time)	25%
			Private company (full time)	6.3%

Acceptance of Crowdfunding

As crowdfunding, and in particular equity crowdfunding, is a rather new phenomenon and a central concept for the game, the initial aim is to examine if crowdfunding is an acceptable investment practice among respondents. To this end, participants were asked if they would invest their own money in a company via equity crowdfunding.

Table 3 ACCEPTANCE OF EQUITY CROWDFUNDING					
				Non-parametric independent Sample Test	
How possible is to invest your money in equity crowdfunding?				Mann-Whitney test	
		Mean	Std. Deviation	U	Asym. Sig.
	Bank	3.71	0.985	92.740	0.386
	Start-up founders	3.92	1.320		
	Undergraduates A	4.12	0.748		
	Undergraduates B	4.06	0.910		

As shown in Table 3, equity crowdfunding is widely accepted as a means of investment and the majority of the participants were very positive in investing their own money with equity crowdfunding. Responses of all groups were on a similar track. Interestingly university students

where in general even more positive and thus ready to embrace this rather new method of investing.

Learning Outcomes and the Game

As shown in Table 4, participants of all groups expressed that the objectives of the entrepreneurship course they participated were clear. In turn, participants were asked to evaluate if the game contributes to a number of learning outcomes that are typical for entrepreneurship courses and were also set as learning outcomes for the two participating classes. More specifically, participants were asked if the game contributes to six learning outcomes (Table 5).

Table 4					
OBJECTIVES OF THE COURSE					
				Non-parametric independent Sample Test	
				Mann-Whitney test	
		Mean	Std. Deviation	U	Asym. Sig.
The objectives of the course were clear?	Bank	4.56	0.511	126.500	0.621
	Startup Founders	4.62	0.650		
	Undergraduates A	4.76	1.347		
	Undergraduates B	4.53	1.442		

As shown in Table 5, all participants expressed positively that the game is contributing to all learning outcomes by answering either “Yes” or “Somehow”. Moreover, the Asymptotic significance (P-value) for the questions “*Evaluation of different sources of funding*”, and “*Evaluation of the growth opportunities of a company*” and finally the “*Cultivating entrepreneurial spirit*” is less than 0.05 hence the null hypothesis is rejected.

Table 5					
CONTRIBUTION TO LEARNING OUTCOMES					
				Non-parametric independent Sample Test	
				Mann-Whitney test	
	Students	Yes	Somehow	U	Asym. Sig.
1. Learning the process from the idea to the market	Bank	88.9%	11.1%	113,200	0.623
	Startup founders	84.6%	11.1%		
	Undergraduates A	84%	16%		
	Undergraduates A	84.4%	6.3		
2. Assessing the commercial prospects of a business idea	Bank	50%	50%	110,230	0.889
	Startup founders	53.8%	46.2%		
	Undergraduates A	44%	52%		
	Undergraduates B	56.3%	37.5%		
3. Identifying entrepreneurial opportunities and challenges related to the organizing and financing of new ventures	Bank	77.8%	22.2%	118,200	0.928
	Startup founders	76.9%	23.1%		
	Undergraduates A	60%	32%		
	Undergraduates B	59.4%	37.5%		
4. Evaluation of different sources of funding	Bank	77.8%	22.2%	51,500	0.003
	Startup founders	23.1%	76.9%		
	Undergraduates A	84%	12%		
	Undergraduates B	81.3%	9.4%		

5. Evaluation of the growth opportunities of a company	Bank	94.4%	5.6%	67,000	0.007
	Startup founders	53.8%	46.2%		
	Undergraduates A	64%	16%		
	Undergraduates B	65.6%	18.8%		
6. Cultivating entrepreneurial spirit	Bank	69.2%	30.8%	71,250	0.040
	Startup founders	92.3%	7.7%		
	Undergraduates A	72%	20%		
	Undergraduates B	71.9%	21.9%		

ECG as an Educational Tool

Having verified that the game contributes to a series of typical entrepreneurship learning outcomes, the third set of questions is trying to assess the game as an educational tool (Table 6).

Table 6 ECG AS PART OF THE EDUCATIONAL EXPERIENCE					
				Non-parametric independent Sample Test	
				Mann-Whitney test	
		Mean	Std. Dev.	U	Asym. Sig.
How do you assess the game as an educational activity based on your experience so far from attending the entrepreneurial course?	Bank	4.67	0.485	83,500	0.089
	Startup founders	4.92	0.227		
	Undergraduates A	4.84	1.502		
	Undergraduates B	4.75	1.832		

Overall, it is evident that participants from both groups have positively assessed the game as part of the entrepreneurial experience. All respondents from both groups answered that the game was either ‘useful’ or ‘very useful’ as an educational activity.

Besides finding the game useful, participants expressed that it is also more effective than traditional teaching methods. In fact, 94.4% of the bank executives and all university students answered that the game is more effective than traditional teaching methods (Table 7).

Table 7 EFFECTIVENESS COMPARED TO TRADITIONAL TEACHING METHODS					
Do you consider that the “Educational Crowdfunding Game” as an educational process is more effective than traditional teaching methods?			Non-parametric independent Sample Test		
			Mann-Whitney test		
Bank	Don’t know	5.6%	111,00	Asympt. Sig	
	Yes	94.4%			
	TOTAL	100%			
Startup founders	Yes	100%			
	TOTAL	100%			
Undergraduates A	Don’t know	4%			
	Yes	96%			
	TOTAL	100%			
Undergraduates B	No	3%			
	Don’t know	9%			
	Yes	88%			

	TOTAL	100%		
--	-------	------	--	--

Overall Understanding and Satisfaction

The next set of questions aims to sum up the findings and examine the overall appropriateness of the game by asking participants if on the one hand the game was understandable and assess on the other the level of participants' satisfaction.

Table 8					
UNDERSTANDING AND SATISFACTION					
				Non-parametric independent Sample Test	
				Mann-Whitney test	
		Mean	Std. Dev.	U	Asym. Sig
The action was understandable?	Bank	4.56	0.616	93,500	0.234
	Startup founders	4.77	0.439		
	Undergraduates A	4.76	1.347		
	Undergraduates B	4.84	1.910		
Overall, how satisfied were you from participating in the game?	Bank	4.56	0.511	114,000	0.702
	Startup founders	4.62	0.506		
	Undergraduates A	4.50	1.369		
	Undergraduates B	4.55	1.377		

As shown in Table 8, both the level of understanding and the level of satisfaction are high for all participants. More specifically, 94.4% of the bank executives responded that their level of understanding is very much or absolutely while all startup founders have expressed that their level of understanding is very much or absolutely. Undergraduate students have also a high level of understanding as all students of the first group responded that their level of understanding is very much or absolutely while 96.9% of the second group have expressed that their level of understanding is very much or absolutely. In relation to the overall satisfaction, all bank employees and startup founders answered that they are either very much or absolutely satisfied by participating in the game. Among university students satisfaction remains high as 86% of the respondents of the first group and 84.6% of the second group answered that they are either very much or absolutely satisfied by participating in the game.

DISCUSSION

In relation to demographics, most of the respondents at the bank are women and this is compatible to the overall picture in the bank (55% of woman according to the bank's annual report). The percentages regarding gender are reverse among the university students. This is compatible to the GEM report (2019) indicating that entrepreneurship is mainly a man-driven activity (70% of startup founders were men and 30% women). In relation to age, bank respondents are approximately 10 years younger than the average employee in the bank according to the bank's annual report and this can be expected if we think that the bank is investing in educating younger employees that are expected to be promoted in the forthcoming years. Startup founders are more diverse regarding age. The overall picture of startup founders students is also compatible to the overall picture of entrepreneurship in Greece. According to GEM (2019), in Greece the percentage of founders between 18-24 is 29.1%, between 25-34 it is

27%, between 35-44 it is 14.4% and between 45-54 it is 14.8%. For university students this no surprise that more women study business administration than man (Carter & Silva, 2010).

Based on the participants' answers regarding the acceptance of crowdfunding, it can be argued that it is not considered any more as an 'exotic' or 'weird' way of investment but an existing reality in financing entrepreneurship. Comments during the focus group are in line with findings indicated in previous research that highlight on the necessity to integrate crowdfunding in entrepreneurship education (Voelker & McGlashan, 2013; Jasinski, Tomczyk & Dunn, 2017). In the words of a bank executive *"I work in a rather conservative bank and it takes a long time to integrate new things. However, I can feel the pressure for alternatives by our (business) clients and crowdfunding has become the first alternative they mention. This was of course spurred also by the (Greek) crisis during which banks had little to offer to SMEs"*.

Overall participants responded that the game contributes positively in achieving the course's learning outcomes. In three learning outcomes (evaluation of different sources of funding, evaluation of growth opportunities and entrepreneurial spirit) we may see differences between the groups that are supported by the background of the respondents. Although the same educational flow followed in both groups, the different background of the respondents in the two groups affects their evaluation in the questionnaire. Bank executives believed that the game gives them the opportunity to evaluate different sources of funding while startup founders evaluate with lower percentage this opportunity. As a bank executive mentioned *"we all have heard about crowdfunding, but we are too concerned with our everyday work and most of us do not really know how it works"*. On the other hand, a startup founder mentioned *"one of the things that I have to solve by starting my business is to find investors. To this end, exploring my options is something that I have done early on. So, I have a pretty good picture of what crowdfunding is"*.

Bank executives give the highest percentage (94.4%) to the opportunity that the game offered to them for the evaluation of growth opportunities of a company while university students also evaluated very high this learning outcome (80% and 84.4% the two groups respectively). On the other hand, startup founders parceled their evaluation out between "Yes" and "Somehow". For a bank executive *"working more than 10 years in the bank (in the department for loans for SMEs), I only see investable or not investable companies. For our clients, growth comes through funding and this is somehow a state of mind"*. In other words, the socialization process of the employees in the bank is fully impacted by the organizational culture of the bank (Hanagal, 2009) and affects their opinions about the *"sources of funding"* or the *"growth opportunities of the company"* due to their prior experience in the financial sector. Finally, the university students give higher percentage to the cultivation of the entrepreneurial spirit as a leaning outcome of the game than the bank executives. In the words of a startup founder *"working as an employee and aiming to start my own business, one of my main quests is to get an entrepreneurial spirit. In other words, to get out of the 'comfort zone' of a stable job. The game spurred interaction with other people being in a very similar situation raising thus what one may call entrepreneurial spirit which in my interpretation is 'being able to recognize opportunities'"*. This difference may also exist due to the strong organizational culture of the bank which had already been cultivated to the bank executives before their participation to the game as also other researchers have supported (Tellis et al., 2009).

Overall participants of both groups assessed positively the game considering it as being more effective than traditional teaching methods. As stated by one of the startup founders *"when I started judging the entrepreneurial ideas of others as an investor, I understood what was wrong with my idea, why an investor would not invest in my idea and what my next steps should be to*

make my idea investable". Along these lines, as a bank student mentioned *"we work for a bank. We can hardly see beyond a business plan. For us lean startup is a totally different logic and this early interaction and iteration highlighted in lean startup must somehow also be reflected in class"*. In relation to the understanding and satisfaction a student expressed his joy: *"all this pitching and the game was exciting and fun. My venture for example created a lot of controversy. The other students either liked it or hated it. Observing the common characteristics of the people that liked it (and those that did not like it) helped me reshape my value proposition"*. Along these lines another student mentioned *"I particularly liked the fact that we all had the 'money' in our hands... it felt like it is ours and we have to spend it properly. Eventually that has to do with our culture – still a lot of transactions are in cash in Greece – however, thinking back I believe this created a nice tension"*.

The game was tested in four entrepreneurship courses by two different instructors. Even though the curricula were very much alike, bank executives and startup founders in terms of expectations representing the two ends of a continuum. In the case of the bank executives, participants were employees with a stable job (most likely expecting a promotion soon) aiming to create empathy with their (business) clients. In the case of the startup founders these were aiming to directly and immediately apply knowledge from the course to their venture. Despite these substantial differences, in both cases the game was understandable contributing significantly to the learning outcomes of the courses and it was assessed as a very useful educational activity that is more effective than traditional teaching methods. Overall participants expressed the opinion that they were highly satisfied from participating in it. Besides these two extreme cases, the game was also implemented in the case of two undergraduate courses. Despite the fact that these were forced to be implemented in a very different format (online) that hindered interaction and in-class 'tension', results is similar validating the game.

The contribution of this paper is threefold. Firstly, it introduces a new validated in-class game especially designed for entrepreneurship and/or innovation classes. Without altering the basic format of the class, ECG is an add-on that promotes experiential learning and develops skills for recognizing an entrepreneurial opportunity. Secondly, it contributes to the discussion on experiential learning in entrepreneurship education. Findings suggest that in-class games could significantly enhance students' experience and engagement. In our case, the ECG participants are *"learning by doing"*, the learning situation is emphasized, and the game focuses on the learner's subjectivity. Thirdly, findings provide evidence that in-class games spurring interaction both between students and the educator as well as among students can advance the reflective process that is crucial for entrepreneurship education.

PRACTICAL IMPLICATIONS

Entrepreneurship education is a complex and multidisciplinary approach, and the design of a relevant class requires a portfolio of practices that lead to a more holistic teaching approach with a desired outcome to help students think and act more entrepreneurially (Neck et al., 2021). Towards that aim, Neck et al. (2021) recognize five core practices of entrepreneurship education: the practice of play; the practice of empathy; the practice of creation; the practice of experimentation and the practice of reflexion. As ECG is directly linked to all of these practices, it is argued that its application helps students think and act more entrepreneurially.

From applying the game several practical implications emerged in relation to its implementation. Aiming to stimulate interest, interaction and increase competition a prize needs

to be announced before the game. The prize is suggested to be something that the students should be interested in, however it should not be very high otherwise this will jeopardize the game spurring over-competition and initiating strategies of collaboration among participants. In other words, the prize must be something ‘nice to have’ (not must have). In the case of bank executives, the members of the first team got one extra mark, while the first among the university students got a perk (cloud services) donated by one of the program’s sponsors. It should be noted that only one winner is announced to the students. The reason is that often good entrepreneurial ideas are addressing niche markets that are not easily understood by a general audience. In this respect, the aim of announcing one winner is (besides stimulating interaction and competition mentioned earlier) on the one hand to give a positive signal to the winner and not give a negative signal to anyone else.

CONCLUSION AND LIMITATIONS

Limitations of research derive from the fact that the game was applied in only two cases and even though this involved two different instructors and two very different types of classes the way the courses were structured, and their content was very similar. Further research will indicate if it can be applied by other instructors, in other countries with more advanced startup ecosystems and other educational settings such as graduate and postgraduate university students. Furthermore, future research could indicate the investment behavior in terms of investment criteria of the participants and compare it with the investment behavior of real investors. Finally, what is suggested here is a peer-to peer evaluation with an investment twist where decision makers (‘investors’ in our case) can break their ‘vote’ in several parts. It is to further research to examine if this type of peer-to-peer evaluation can be used as a decision making proceed initiating the ‘wisdom of the crowd’ in also other types of decisions.

REFERENCES

- Audretsch, D.B. (2009). The entrepreneurial society. *The Journal of Technology Transfer*, 34(3), 245-254.
- Aulet, B. (2013). *Disciplined entrepreneurship: 24 steps to a successful startup*. John Wiley & Sons.
- Bauman, A., & Lucy, C. (2019). Enhancing entrepreneurial education: Developing competencies for success. *The International Journal of Management Education*, 100293.
- Blank, S. (2006). The four steps to the epiphany. *Cafepress. com*.
- Blank, S. (2013). Why the lean start-up changes everything. *Harvard business review*, 91(5), 63-72.
- Blank, S., & Dorf, B. (2020). *The startup owner's manual: The step-by-step guide for building a great company*. John Wiley & Sons.
- Bliemel, M.J. (2013). Getting entrepreneurship education out of the classroom and into students’ heads. *Entrepreneurship Research Journal*, 4(2), 237-260.
- Block, J.H., Airasian, P.W., Carroll, J.B., & Bloom, B.S. (1971). *Mastery learning: Theory and practice*. Holt, Rinehart and Winston.
- Bryman, A., & Cramer, D. (2002). *Quantitative data analysis with SPSS release 10 for Windows: A guide for social scientists*. Routledge.
- Carter, N.M., & Silva, C. (2010). Women in management: Delusions of progress. *Harvard Business Review*, 88(3), 19-21.
- Cohen, S., Fehder, D.C., Hochberg, Y.V., & Murray, F. (2019). The design of startup accelerators. *Research Policy*, 48(7), 1781-1797.
- Columbia. (2019). The Entrepreneurship and Venture Capital Game, Fall MBA Course.
- Cumming, D., & Hornuf, L. (Eds.). (2018). *The economics of crowdfunding: Startups, portals and investor behavior*. Springer.
- Davis, F.D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.

- DeSimone, J.A. (2016). Exemplary exercises for entrepreneurship education. *Management Teaching Review*, 1(3), 170-175.
- Dixon, N.M. (2017). *The organizational learning cycle: How we can learn collectively*. Routledge.
- Elia, G., Margherita, A., Secundo, G., & Moustaghfir, K. (2011). An "activation" process for entrepreneurial engineering education: The model and application. *Journal of Enterprising Culture*, 19(02), 147-168.
- Elkuch, A., Brunner, C., & Marxt, C. (2013). Reciprocal crowdfunding as means to enable student and graduate entrepreneurship in Africa—a case study of Rwanda. *International Journal of Entrepreneurship and Small Business*, 19(4), 498-516.
- Ericsson, K.A., Hoffman, R.R., Kozbelt, A., & Williams, A.M. (Eds.). (2018). *The Cambridge handbook of expertise and expert performance*. Cambridge University Press.
- Feldmann, N., & Gimpel, H. (2016). Financing Projects through Enterprise Crowdfunding: Understanding the Impact of Proposal Characteristics on Funding Success. *24th European Conference on Information Systems*, Istanbul, Turkey, 5-7 May.
- Felin, T., Gambardella, A., Stern, S., & Zenger, T. (2019). Lean startup and the business model: Experimentation revisited. *Long Range Planning*, 53(4) 123-134.
- GEM (2019). *Entrepreneurship in Greece*. Athens, IOBE, Greece.
- George, J.G. (2009). *Assessing SERVQUAL and the automotive service quality model: A comparative study* (Doctoral dissertation, Dissertation Submitted to Northcentral University Graduate Faculty of the School of Business and Technology Management in Partial Fulfillment of the Requirements for the Degree of Ph. D).
- Gibbons, J.D., & Chakraborti, S. (1991). Comparisons of the Mann-Whitney, Student's t, and alternate t tests for means of normal distributions. *The Journal of Experimental Education*, 59(3), 258-267.
- Hägg, G., & Gabrielsson, J. (2019). A systematic literature review of the evolution of pedagogy in entrepreneurial education research. *International Journal of Entrepreneurial Behavior & Research*, 5, 829-861.
- Hair, J.F., Anderson, R.E., Tatham, R.L., & Black, W.C. (2010). *Multivariate Data Analysis*, Prentice-Hall Inc, New Jersey.
- Hanagal, D.D. (2009). *Introduction to applied statistics: a non-calculus based approach*. Alpha Science International.
- Harms, R. (2015). Self-regulated learning, team learning and project performance in entrepreneurship education: Learning in a lean startup environment. *Technological Forecasting and Social Change*, 100, 21-28.
- Hawtrey, K. (2007). Using experiential learning techniques. *The Journal of Economic Education*, 38(2), 143-152.
- Healey, M.J., & Rawlinson, M.B. (1994). Interviewing techniques in business and management research. *Principles and Practice in Business and Management Research*, 12345. <https://www.wiley.com/en-us/The+Sixth+Sense:+Accelerating+Organizational+Learning+with+Scenarios-p-9780470844915>
- Heijden, K.V.D., Bradfield, R., Burt, G., Cairns, G., & Wright, G. (2002). The sixth sense: accelerating organizational learning with scenarios. *San Francisco, CA. Jossy-Bass*, 320.
- Howe, J. (2006). The rise of crowdsourcing. *Wired Magazine*, 14(6), 1-4.
- Isabelle, D. A. (2020). Gamification of entrepreneurship education. *Decision Sciences Journal of Innovative Education*, 18(2), 203-223.
- Jasinski, D., Tomczyk, D., & Dunn, S. (2017). What Students Should Really Learn to Be Successful Crowdfunders. *Journal of Higher Education Theory and Practice*, 17(1), 58-73.
- Kassean, H., Vanevenhoven, J., Liguori, E., & Winkel, D.E. (2015). Entrepreneurship education: a need for reflection, real-world experience and action. *International Journal of Entrepreneurial Behavior & Research*, 21(5), 690-708.
- Kayes, D.C., & Kayes, A.B. (2021). Experiential Learning and Education in Management. In *Oxford Research Encyclopedia of Business and Management*.
- Kolb, A.Y., & Kolb, D.A. (2005). Learning styles and learning spaces: Enhancing experiential learning in higher education. *Academy of Management Learning & Education*, 4(2), 193-212.
- Kuppuswamy, V., & Bayus, B.L. (2018). Crowdfunding creative ideas: The dynamics of project backers. In *The economics of crowdfunding*. Palgrave Macmillan, Cham, 151-182.
- Lackéus, M., & Middleton, K. W. (2018). Assessing experiential entrepreneurship education: Key insights from five methods in use at a venture creation programme. In *Experiential learning for entrepreneurship* (pp. 19-49). Palgrave Macmillan, Cham.
- Lane, T.C., & Tampien, J.K. (2017). Understanding access to capital issues for entrepreneurs through simulations.
- Li, Y. (2021). Educational Game Design Based on Experiential Learning Theory. In *2021 9th International Conference on Information and Education Technology (ICIET)*. IEEE, 190-193.

- Livieratos A. (2017). *Saint Startup: The Founder's Guidebook* (2nd Edn.). Pubbuh, Berlin.
- Livieratos, A., Tsekouras, G., Vanhaverbeke, W., & Angelakis, A. (2020). An Open Innovation Moves in SMEs: Disentangling the OI journey. Paper presented at *BAM Conference in the cloud*.
- Livieratos, A., Tsekouras, G., Vanhaverbeke, W., & Tsiliki, G. (2020). OI moves in SMEs. Pathways to success, Paper presented at *XXXI ISPIM Innovation Conference*.
- Ma, Y., & Zhihua, S. (2010). A Study on the Immersive Design Strategy of Educational Games Based on Flow Theory. A Study on the Dynamic Control of the Difficulty of Educational Games Activities. *e-Education Research*, 3, 54-57.
- Majumdar, P.K. (2010). *Applied Statistics: A Course for Social Sciences*. Rawat Publications.
- Mansoori, Y. (2017). Enacting the lean startup methodology: The role of vicarious and experiential learning processes. *International Journal of Entrepreneurial Behaviour & Research*, 23(15).
- Massolution. (2015). *Crowdfunding industry report*. Massolution, New York.
- Maurya, A. (2012). *Running lean: Iterate from plan A to a plan that works*. O'Reilly Media Inc.
- Mordor intelligence (2021). *Crowdfunding market - Growth, trends, covid-19 impact, and forecasts (2021 - 2026)*. Mordor intelligence, India.
- Muller, M., Geyer, W., Soule, T., & Steven, D. (2013). Grassroots innovation and collaboration through enterprise crowdfunding. In *Seventh International AAAI Conference on Weblogs and Social Media*.
- Muller, M., Geyer, W., Soule, T., & Wafer, J. (2014). Geographical and organizational distances in enterprise crowdfunding. In *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing*, 778-789.
- Nachar, N. (2008). The Mann-Whitney U: A test for assessing whether two independent samples come from the same distribution. *Tutorials in quantitative Methods for Psychology*, 4(1), 13-20.
- Neck, H.M., Greene, P.G., & Brush, C.G. (Eds.). (2014). *Teaching entrepreneurship: A practice-based approach*. Edward Elgar Publishing.
- Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: A handbook for visionaries, game changers, and challengers* (1st Edn.). John Wiley & Sons.
- Osterwalder, A., Pigneur, Y., Bernarda, G., & Smith, A. (2014). *Value proposition design: How to create products and services customers want* (2nd Edn.). John Wiley & Sons.
- Peris-Ortiz, M., Gómez, F., Vélez-Torres, C., & Rueda-Armengot, C. (2016). *Education Tools for Entrepreneurship Creating an Action-Learning Environment through Educational Learning Tools*. Springer, Berlin.
- Ramsgaard, M.B., & Christensen, M.E. (2016). Missing links between lean startup, design thinking, and experiential learning approaches in entrepreneurship education.
- Ries, E. (2011). *The lean startup: How today's entrepreneurs use continuous innovation to create radically successful businesses*. Crown Business, New York.
- Robson, C. (2002). *Real World Research* (2nd Edn.). Oxford.
- Sarooghi, H., Sunny, S., Hornsby, J., & Fernhaber, S. (2019). Design thinking and entrepreneurship education: Where are we and what are the possibilities? *Journal of Small Business Management*, 57, 78-93.
- Senge, P. (1990). *The Fifth Discipline: The Art and Practice of the Learning Organization*. Doubleday, New York.
- Shneor, R., Zhao, L., & Flåten, B.T. (2020). *Advances in crowdfunding: Research and practice*. Springer Nature, 531.
- Smith, M.W., & Green, K.M. (2015). A Class Exercise to Explore Crowdfunding. *Business Education Innovation Journal*, 7(33).
- Solomon, J., Ma, W., & Wash, R. (2015). Don't wait! How timing affects coordination of crowdfunding donations. In *Proceedings of the 18th ACM conference on computer supported cooperative work & social computing*, 547-556.
- Solomon, J., Ma, W., & Wash, R. (2016). Highly successful projects inhibit coordination on crowdfunding sites. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, 4568-4572.
- Sunder, R.P.S.S., & Rechred, J. (2009). *Introduction to Biostatistics and Research Methods* (4th Edn.) Prentice Hall of India, New Delhi.
- Tellis, G.J., Prabhu, J.C., & Chandy, R.K. (2009). Radical innovation across nations: The preeminence of corporate culture. *Journal of Marketing*, 73(1), 3-23.
- Thomas, N.K., Sugiyama, K., Rochford, K.C., Stephens, J.P., & Kanov, J. (2018). Experiential organizing: Pursuing relational and bureaucratic goals through symbolically and experientially oriented work. *Academy of Management Review*, 43(4), 749-771.

- Tutko, M. (2018). The use of crowdfunding in entrepreneurship education in higher education institutions. *Horyzonty Wychowania*, 17(44), 59-71.
- Valuates (2019). *Global crowdfunding market size, status and forecast 2019-2025*. Valuates Reports, London.
- Voelker, T.A., & McGlashan, R. (2013). What is crowdfunding? Bringing the power of Kickstarter to your entrepreneurship research and teaching activities. *Small Business Institute Journal*, 9(2), 11-22.
- Wash, R., & Solomon, J. (2014). Coordinating donors on crowdfunding websites. In *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing*, 38-48.
- Yamazaki, Y., & Kayes, D.C. (2007). Expatriate learning: Exploring how Japanese managers adapt in the United States. *The International Journal of Human Resource Management*, 18(8), 1373-1395.