A gamified collaborative course in entrepreneurship: Focus on objectives and tools

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ABSTRACT

The paper deals with the hot issue of entrepreneurship education and describes the rationale behind the gamified and collaborative courses for university students conceived, developed and deployed in the framework of the eSG (stimulating entrepreneurship through Serious Games) project, funded under the EU lifelong learning (LLP) Programme. The project aims to help students becoming familiar, mainly through practice, with basic concepts of entrepreneurship and company management and to stimulate the emergence of their entrepreneurial attitudes. In the framework of the project specific courses mainly grounded on the concepts of gamification and collaboration were designed and carried out in three different partner countries: Italy, Spain and the Netherlands. The main objectives of the courses are presented in this paper and a theoretical model supporting the choice of Serious Games is shown which keeps into account usability, pedagogy and the entrepreneurship skills expressed by state of the art models.

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1. Introduction

Entrepreneurship is recognized as one among the so-called 21st century skills (Voogt & Pareja Roblin, 2010), namely those skills that are required to succeed in learning, working, and living in the knowledge society (Trilling & Fadel, 2009).

The Education & Training 2010 EU Work Programme (2004) includes the "sense of initiative and entrepreneurship" in a reference framework of eight key competences for lifelong learning. With reference to today's knowledge-based society, such eight competences are considered necessary for "personal fulfillment, social inclusion, active citizenship and employability".

In particular, the "sense of initiative and entrepreneurship" is defined as "the ability to turn ideas into action" and it is argued that: "it involves creativity (Alfantookh & Bakry, 2013), innovation and risk-taking, as well as the ability to plan and manage projects in order to achieve objectives".

In this light, the EU commission has also stressed the importance of entrepreneurship education by recognizing that entrepreneurship competence should be acquired throughout lifelong learning but should also be fostered at all school levels, from primary school to University.

In the light of the EU recommendations mentioned above, entrepreneurship education should be regarded as not limited to teaching how to "run a business, being an employer/self-employed" (EC, 2004). It should rather include (EC, 2002) domain-specific knowledge and both the training of specific skills on how to set up and manage a business and the development of personal entrepreneurial attitudes.

If we look at the European panorama, nevertheless we must acknowledge that entrepreneurial education is still relatively immature and that it is rarely adequately addressed at strategic level by national policies. This results in the fact that in most EU countries, entrepreneurship education is *de facto* scarcely practiced in both schools and Universities. This is true also for the technical universities, where students, due to their technological studies and researches, have a high potential and could highly benefit from acquiring an entrepreneurial mindset so to be able to build on their technological competence and fully exploit their innovation potential. The reasons behind this widespread situation can be found in the lack of a well-established tradition for this type of studies, which, in turn, reflects in the dearth of specific, consolidated

teaching methodologies and in the limited availability of appropriate, suitable educational tools.

In this context, innovative educational strategies such as gamification (Deterding, Sicart, Nacke, O'Hara, & Dixon, 2011) and collaboration (Pozzi & Persico, 2011) can effectively contribute to enhance and sustain entrepreneurship education and that, in particular, Serious Games (SGs) can be considered powerful tools at this end.

As a matter of fact, gamification techniques are increasingly adopted for educational purposes and SGs are widely considered as effective educational tools (Caponetto, Earp, & Ott, 2014). Actually, SGs are innovative applications, mostly web based, that combine instruction and game play (Bellotti, Berta, De Gloria, & Primavera, 2009; Prensky, 2003; Zyda, 2005), by challenging and involving players in motivating learning contexts. In addition, they also allow for personalized learning and can be used in a variety of learning contexts (Colace, De Santo, & Greco, 2014; Colace & De Santo, 2010), including mobile learning experiences (Minovic, Milovanovic, & Starcevic, 2011). From a methodological perspective, SGs can foster learning since they offer the students a genuinely "situated" learning experience (Van Eck, 2006) and can concretely support the "learning by doing" approach which is particularly effective if it is true that students can only remember 10% of what they read, but almost 90%, if they engage in the job, even if a simulation (Dale, 1969).

SGs challenge and implicitly motivate the learners (Iacovides, 2009; Kirriemuir & McFarlane, 2004) by placing them in an active role, and stimulating them to think critically. De Grove, Mechant, and Van Looy (2010), while exploring the experts' opinions on the opportunities and limitations of SGs for supporting learning, stress that SGs should be considered "de facto effective learning environments because games challenge and support players to approach, explore and overcome problems". As matter of fact, SGs challenge players by trying out their capacity to set different alternatives and experience the consequences and they provide also immediate feedback, which is efficient for procedural learning (Jarvis & de Freitas, 2009) and assessment. Furthermore, SGs lend themselves to collaborative and social use (Romero et al., 2012) thus offering significant added value to a specific area of education – such as that of entrepreneurship – where social and collaborative abilities are strongly required.

In the case of entrepreneurship education, SGs have also the capacity to show the concrete relevance and application of topics and skills that may be difficult to explain in words; actually, this peculiar characteristic is particularly important for sustaining the development of entrepreneurial mindset as well as of other soft skills.

These considerations, together with the recognition of the emerging social relevance of entrepreneurship education, led the University of Genoa, the Institute of Educational Technology of Italian National Research Council, the Technical University of Delft and the ESADE business school of Barcelona to join their forces in the eSG project (stimulating entrepreneurship through Serious Games). It was co-financed in the Lifelong Learning Erasmus Fostering Excellence and Innovation in HE (FEXI) programme and involved Higher Education students in a gamified learning experience. Students were engaged in a variety of learning activities and appropriate Serious Games were adopted at this end; in this way, students had the opportunity, for instance, to run their own business and take decisions to support its growth.

In the following we sketch out a picture of the eSG project and then, drawing on the experience conducted, briefly discuss around the key objectives of courses in entrepreneurship (in particular those devoted to university students in the scientific and technological field) and investigate issues related to the choice and adoption of SGs for the intended purpose.

This is done with the final aim of paving the way for a wider adoption of the game-based collaborative approach to entrepreneurship education.

2. The eSG project

The eSG project (stimulating Entrepreneurship through Serious Games) is a three years project financed by the Education, Audiovisual and Culture Executive Agency (EACEA) in 2011 within the LLP (Lifelong Learning) programme in the sub program Erasmus-Fexi (Fostering Excellence in Higher Education). It represents a pioneer attempt of gamifying a collaborative course in the field of entrepreneurship education in non-business technical universities. Its main aim is to stimulate innovative and entrepreneurial mindsets of higher education students of non-business faculties and to provide them with some of the needed theoretical and operational skills. Specific eSG courses that make an extensive use of Serious Games (together with other, more traditional media) were carried out in the three partner countries (Italy, Spain and the Netherlands) for the three levels of students: Bachelor, Master, PhD.

These courses were grounded on the concept of collaboration among peers and on the idea that introducing game elements in the course can sustain students' motivation and, as consequence, increase the effectiveness of the learning actions.

All the courses carried out in the three partner countries made an in-depth use of SGs and, in particular, the Italian course was also "gamified" in that students were divided into teams (2/3 players each) that could collect points for each course activity with the final aim of acquiring a high ranking on the leaderboard for the final-day playoffs. Competition and collaboration among students (Romero et al., 2012) were among the pillars of the learning interventions and proved to be good sources of both external and internal motivation and sensibly increased engagement in learning tasks (Bellotti et al., 2012).

During the courses, the students were exposed to a range of topics and to an increasing level of difficulty in games, game-play and home assignments. Various types of activities (performed both in class and at home) were foreseen (Mohamed, 2013) among which:

- Short theoretical introductions, where teachers present business topics relevant to entrepreneurship.
- Talks by invited entrepreneurs presenting their experience in building and managing a company, and also speaking about a particular entrepreneurship topic.
- Games played at home (homework and competitions), preceded by an in-class game debriefing and concluded with a debriefing.
- Home assignments in the form of writing a report and filling thematic questionnaires.
- "Playoff" competition matches in the final day among all teams.

The overall eSG project was structured in two main experimental cycles (leading up to the two editions of the courses) involving:

- Definition of the objectives.
- Scouting, assessment and choice of the most appropriate Serious Games (SG).
- Planning of the course (definition of the content and modalities of each lecture, definition of the home-works and home SG-based competition, definition of the entrepreneurs' talks) and preparation of the relevant material.
- Execution of the courses, with: lectures, organization of the student teams, briefing, SG-playing sessions, debriefing, entrepreneurs' talks, play-offs, final competition, pre and post-questionnaires.
- Analysis of the results.