Developing Skills for Innovation and Entrepreneurship Thought Gamification

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Abstract – **This paper puts forward the idea that gamification in education helps to develop innovation and entrepreneurship skills, particularly in higher education. It argues that learning through games can help to bridge the gap between academic life and future professional life of students by providing a more hands on approach and project based learning that develops the 21st century skills (e.g. teamwork, creativity, communication). In order to explore the potential advantages of gamification in the context of innovation and entrepreneurship education, the paper examine two entrepreneurship initiatives that were conducted at ISEP, involving multidisciplinary teams of engineering students from a broad range of areas: systems engineering, computer engineering, industrial engineering and management which used a gamified approach (ideaChef®) to develop ideas for a common challenge. Findings show that gamification approach increases students' motivation and engagement with the entrepreneurial activities and objectives, preparing them more successfully for professional environment challenges.**

Keywords – Gamification, Entrepreneurship, Innovation, Skills, Higher Education, Engineering.

Introduction

Gamification in education is a hot topic, already explored by many researchers and practitioners (Borges, Durelli, Macedo, & Isotani, 2014; Dicheva, Dichev, Agre, & Angelova, 2015). The learning skills of the 21st century require a highly engaging learning environment and the presence of interactive didactic elements for the (university) teacher's toolbox (Kingsley & Grabner-Hagen, 2015; Taspinar, Schmidt, & Schuhbauer, 2016). Students can learn and by playing games, either video games (Helms, Barneveld, & Dalpiaz, 2015; Kingsley & Grabner-Hagen, 2015) or board games (Bogers & Sproedt, 2012; Taspinar et al., 2016).

Many authors are arguing that gamification, i.e. the use of game elements in non-game contexts, can be an effective way to address the educational challenges. It has the potential to motivate and engage students with the learning goals and development of a new set of critical competencies for the knowledge society and business, e.g. creative problem solving and entrepreneurship. (Antonaci et al., 2015; Awwal, Alom, & Care, 2005; Bogers & Sproedt, 2012; Helms et al., 2015; Kingsley & Grabner-Hagen, 2015; Qian & Clark, 2016; Sahin, 2009; Taspinar et al., 2016).

The purpose of this paper is to extend the knowledge in the field of entrepreneurship education by proving valuable insights of real and concrete application of this type of approach in the context of a concrete initiative conducted by ISEP-Start with engineering students.

Methodology

The relationship between gamification approaches and the development of innovation and entrepreneurship skills was examined during two consecutive years at ISEP entrepreneurship one-day events, organized by ISEP.start, the Entrepreneurship unit of ISEP, to address imaginary challenges that could unleash the creative problem-solving potential of multidisciplinary engineering teams. During the event, a workshop session was conducted with multiple teams using a gamification method and tool to develop a chosen idea/concept. The events were open to all ISEP engineering students and the organization accepted the registration of multiple teams from different areas of knowledge.

The selected gamified approach was ideaChef® method and tool, a board game that helps to engage and develop student's' entrepreneurial and innovation capabilities. It was chosen for this purpose since game approaches are more stimulating than traditional sticky notes, lecturing or just simply playful approaches. ideaChef® is designed for teams of 4 up to 6 students. It can be applied in many fields and courses, at classes, during group assignments or for project presentations. Despite being used in a company environment for concept testing, education and training is one of the most interesting applications of ideaChef®. Instructors and professors are using this approach to address case studies, company concrete challenges or to support specific topics related to the course programs.

Two weeks before the workshop session, organizers submitted the challenge/problem and the chosen idea to the teams to provide them the opportunity to collect valuable data and insights. Then, at the workshop teams developed the idea give by discussing and rating different contributions

in a very structured way. Finally they all drafted a report and presented a pitch of the proposed concept/solution for the challenge to an evaluation panel.

Debriefing survey (12 respondents), team and individual interviews were conducted to grasp the feelings and more concrete views of students. On top of that, workshop sessions were video recorded, which allowed to crosscheck observations and better understand students' opinions and key outcomes.

FINDINGS

It was observed that the gamified approach (ideaChef®) motivated and enhanced teams in the development of creative and structured concepts that addressed the challenges outlined by the event organizers. Based on the workshop observations and feedback from the debriefing interviews, this gamified approach increased engagement and motivation, particularly in the following survey items: relationships between team members (4,8/5.0), game environment/atmosphere (4,8/5.0) and using a playful approach (4,7/5.0). As mentioned by one of the participants, "this new approach allows us to expand a possible solution in a collaborative and efficient manner".

These findings were very much in line with the outcomes of another application of ideaChef® in higher education (SERVDES2018 – 26 respondents), where the following items received the highest score: relationships between team members (4,8/5.0), using a new approach (4,8/5.0), game environment/atmosphere (4,6/5.0), and dialogue between team members (4,6/5.0) (Patricio & Morozumi, 2018).

From the perspective of the entrepreneurial and innovation capabilities, this type of approach increased the engagement and motivation of teams by promoting debate and accepting opposing viewpoints, explaining things in a different way, collaborating in a more open manner, competing fairly, taking risks, questioning assumptions, getting everyone on the same page, gaining valuable insights and taking action in the same direction.

Teams were able to generate actionable concepts by enhancing, enriching and developing the initial ideas and addressing the challenge in a more structured manner. The pitch delivered at the end of the session reflected the concept proposals, which have been developed by all participants even from the more reserved team members (Patricio, 2017).

CONCLUSIONS

The entrepreneur gamified events conducted at ISEP provided a precious learning environment for skills development. By collaborating in a gameful environment, students were able to unleash their creative minds and generate valuable concepts for real life complex problems.

Gamification approaches have the power to improve student engagement and provide the interactive didactic elements that are needed to develop the learning skills of the 21st century.

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