GAMIFICATION IN BUSINESS AND ENTREPRENEURSHIP EDUCATION – THEORY AND APPLICATIONS

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Abstract

The aim of this study is to systematize the main advantages and difficulties in the use of game elements in entrepreneurship education. It will examine the expected effects of their application on the quality of education and the level of skills acquired. The first part discusses the need to rethink the way in which entrepreneurship education is conducted in relation to new opportunities provided by technology, but also due to the changing needs and ways of training new generations. The next section analyzes the

various possibilities for applying "gaming" practices in training and linking them with a systematic framework for the acquisition of knowledge, skills and competencies. The last part presents the methodology used by the authors to create a gaming platform for entrepreneurship education. The final part summarizes some conclusions and makes recommendations for the use of gamification in education in the field of business, entrepreneurship and economics in secondary and higher education.

Keywords: entrepreneurship, entrepreneurship education, gamification, EntreComp, Game of Business.

Introduction

The reality we currently live in is changing very dynamically. This change is related to groups of factors: on the one hand, highly accelerated technical progress, the emergence and adoption of information and communication technologies and digitalization in business and everyday life; while on the other, the paradigmatic transformation of the perceptions, values and way of thinking of the new generations, who were born and grew in this new reality. Despite this and partly due to this, dynamic, entrepreneurship has not only retained its importance for innovation, business, national economies and the world economy, but has also enhanced its significance. It is becoming increasingly preferred as an opportunity for the professional development of new generations. However, the changes are forcing us not only to rethink the new reality and the place of entrepreneurship therein, but also to re-evaluate the methods we use in entrepreneurship and business education, in order to align them with new technologies and new ways of doing business, as well as with the needs, wants and interests of new and future entrepreneurs. This is important for their successful realization. Education in the field of business and entrepreneurship is among the most dynamically developing areas in terms of attempts to apply flexible methodologies and pedagogical methods, in order to bring the classroom closer to real life. Gamification is increasingly used as a means of bringing learning content to the perception and interests of new generations.

The aim of this study is to systematize the main advantages and difficulties of using game elements in entrepreneurship education. It will consider the expected effects of their application on the quality of education and the level of skills acquired. The first part examines the need to rethink the way in which entrepreneurship education is conducted from two points

of view: the new opportunities provided by technology; and in relation to changing needs and the way in which new generations learn. The next part provides an analysis of the various possibilities for the application of "gaming" practices in entrepreneurship and business education and their linking with a systematized framework for acquiring knowledge, skills and competencies (for example, the European framework for competencies in entrepreneurship education EntreComp). The last part presents the methodology used to create a gaming platform for entrepreneurship education and its connection to the competencies embedded in EntreComp. Finally a summary is presented of the conclusions and recommendations for the use of gamification in business, entrepreneurship and economics education in secondary and higher education.

Entrepreneurship training in the new reality

Entrepreneurship training programs can help learners determine if entrepreneurship could be their choice of career (Slavtchev, Laspita, and Patzelt 2012). They can also create added value not only for future entrepreneurs but for all learners, regardless of their professional area (Kuckertz 2013). An increasing number of researchers are examining the impact of entrepreneurship education on entrepreneurial intentions, behavior and societal potential (Bae et al. 2014; Fayolle & Gailly 2015; Liñán & Fayolle 2015; Rauch & Hulsink 2015). Entrepreneurial skills are seen as a broad foundation for building adaptive businesses, active citizens and knowledge-based societies (Isabelle 2020).

Entrepreneurship education relies on both traditional lecture methods and "learning by doing" – e.g., business planning, case studies, online simulations, games and collaborative activities. The goal of entrepreneurship education is to develop an entrepreneurial mindset, i.e. a set of attitudes, skills and behavior to discover entrepreneurial opportunities, access resources and create value (Honig 2004; Matlay 2008; Isabelle 2020). A wealth of research shows that experiential learning as well as learning as a process of discovery and social activity improve learner outcomes. Through business planning, students learn to examine, interpret and integrate data to describe the current state and perceived future of an organization (Honig 2004). In recent times, entrepreneurship education has shifted to teaching business models through practical cases. Case studies allow students to thoroughly review a real or hypothetical situation, analyze information, formulate assumptions, and come up with alternatives and recommendations (Osterwalder & Pigneur 2010). While case studies can help develop

strong analytical skills, learners fail to apply their recommendations and to actually learn from the results. Thus, the acquisition of practical skills and competencies through other flexible approaches and simulations is increasingly being advocated in training.

The generation born between 1982 and the mid-90s, often referred to as NetGen or Millennials, is more receptive than the older generations to entrepreneurship as a career option. Generation Z (from the mid-1990s to 2010) is defined as one of the most entrepreneurially minded ever. These two generations will define business and societal development in the next few decades. Their greater emphasis on entrepreneurial skills, capabilities and potential places new demands on entrepreneurship education, especially in terms of methods, motivation and accessibility. The new generations are highly tech literate (Rosentiel 2010) and generally avid users of interactive media and online video games (Hanus & Fox 2015). Therefore they expect more sophisticated simulations in the classroom (El-Masri et al. 2015). Still, there must be a balance between modeling real-world complexity and the ease of use and learning curve of simulations (Karriker & Aaron 2014).

It is becoming increasingly important for learners to motivate themselves to spend time studying. Time devoted to learning activities is becoming a scarce resource. In choosing how to spend time, traditional learning activities compete with many other available options, most of which are generated by advanced information technology (Simionescu & Mascu 2016). Today's students have little patience for lectures, instructions or step-by-step thinking or traditional testing. Compared to their experience with digital technologies, they find traditional teaching methods tedious (Black 2010). Generation Y seeks an interactive, participatory learning environment (Simionescu & Mascu 2016). From this it follows that there is a need for a fundamental change in the resources used by teachers to transmit information, knowledge and skills.

Everything stated so far implies the development and application of new concepts and tools in educational activity. One of these new approaches is the use of a variety of game elements in the learning process.

Gamification and its opportunities for entrepreneurship education

In 2014, Merriam-Webster University Dictionary introduced a new word: "gamification", with the following definition "the process of adding games or game-like elements to something (such as a task) to encourage the participation" (Merriam-Webster's 2014). Gamification is generally defined as the use of game mechanics for non-game applications, i.e.

"the use of video game elements to enhance user experience and user engagement in non-game services and applications" (Deterding et al. 2011). Gamification includes a number of game elements such as: points, badges, levels, leaderboards, status, trophies, rewards and progress bars (Deterding et al. 2011; Seaborn & Fels 2015). These elements are included in learning activities and tasks, in order to help engage, motivate and reward learners to learn new skills or change their behavior in a particular direction (Deterding 2012). Gamification is an opportunity for motivation leading to psychological and behavioral outcomes (Hamari, Koivisto and Sarsa 2014).

Research investigating the effectiveness of different elements of gamification shows mixed results. However, evaluations are challenging due to the different implementation of game mechanics and the variety of contexts (Hamari, Koivisto, and Sarsa 2014; Hanus & Fox 2015). Some studies have shown that extrinsic rewards can undermine learner motivation and their desire to learn (Deci, Koestner, and Ryan 2001). However, competition and cooperation prove to be good sources of both extrinsic and intrinsic motivation. Other studies have shown that gamification improves collaborative and social work, abilities highly needed in entrepreneurship (Antonaci et. al. 2015). Overall, empirical research findings have shown that gamification improves user experience and engagement, motivational capabilities, and behavioral outcomes (Deterding et al. 2011; Hamari, Koivisto and Sarsa 2014; Hanus & Fox 2015; Isabelle 2021).

At the current time, gamification in education is mostly applied in a variety of courses in computer science and information technology, programming and engineering (Abrahams & Singh 2010; Abrahams & Singh 2011). However, the field is also rapidly developing in areas of education related to business, marketing, corporate management and training (Isabelle 2021). So far, research on the use of game elements in entrepreneurship education is quite limited, consisting mostly of empirical tests of single experiments.

The benefits of gamification in entrepreneurship education can be deduced and summarized in several main guidelines based on the characteristics of gamification and entrepreneurship education themselves. *Firstly,* gamification creates a personalized learning experience by encouraging collaboration between students and providing an opportunity for constant feedback. Game elements render topics related to entrepreneurship more exciting. Games motivate discussions about important business concepts such as marketing, customer strategies, long-term planning or even financial management. Turning learning into a challenge or a game with rewards is conducive to interactive engagement. *Secondly,* gamification makes learn-

ing addictive for learners. The more they learn and experience new things, the better they do. The desire to learn something new engages the learner and taps into natural curiosity. The result is an addictive, deep engagement with each topic. *Thirdly,* entrepreneurship is a skill like any other, but not everyone learns it at the same pace. For those who possess different learning styles or perhaps not the same entrepreneurial flair as others, learning through play can be beneficial since it breaks big concepts into smaller, more manageable pieces. *Next,* through the use of game aspects such as winning prizes, competing with friends or working together, gamification helps to create and maintain player focus to move forward. With the gamification of entrepreneurship education, this means either learning about or completing one more task for a product to be sold. *Fifthly,* this way of learning can keep learners engaged and more motivated for longer through rewards, incentives and points. This is especially helpful for those who have trouble completing all the assignments since they are not fundamentally interested in what they are learning. *Sixthly,* when learners can choose different learning paths related to their primary interests, they are much more likely to have fun and stay focused while retaining information better. In addition, after seeing the value of building a foundation of knowledge and experience, they will take ownership of the topics. *Seventhly,* "learning by doing" is one of the main channels of learning through gamification. Whether the learner is an adult playing the game or a child, each player improves skills such as persistence, communication, cooperation, creative thinking, and task performance, inter alia. After being learned and consolidated, each of these skills then carries over into other aspects of the player's life. *Last but not least,* gamified training provides players with a safe way to build and practice their leadership and management skills. Players can make decisions and then see the outcome for themselves, their team or their company. This encourages even the youngest player to make decisions independently, confidently and take responsibility for their choices.

There are clearly many potential benefits of gamification in economics, business and entrepreneurship education. However, in order to deliver them, an effective framework needs to be formulated of the knowledge and skills learners should acquire.

A framework of competencies in entrepreneurship education

Entrepreneurship education traditionally refers to teaching in the field of entrepreneurship and the training of entrepreneurs. This includes activities aimed at developing a specific way in which learners perceive their world, themselves and others, and how they handle their resources. This is

the result of the accumulation of extensive knowledge and many interrelated skills which can be represented and systematized in the form of different competencies.

Given current trends, entrepreneurship as a competence can be defined as the ability to create, implement and develop opportunities and ideas to create value for society (McCallum et al. 2018). This value can be social, cultural or financial. In this sense, entrepreneurship as a competence has different dimensions and covers a wide range of skills, knowledge and actions affecting the social and economic activity of people. Viewing entrepreneurship as a universal competence involves it being developed and built into life. Entrepreneurial skills and mindset are equally important in starting and building a career; in starting and developing a new business idea; in expanding a business or professional portfolio.

Entrepreneurial competence includes the following elements: creativity; adaptability; ethics; literacy (financial; economic and social) and a number of other dimensions. Therefore, all these dimensions of entrepreneurship need to be linked into a systematized framework to allow for an adequate and concise shaping of the field of entrepreneurial competence. Without such a framework, this competence may be diluted and, accordingly, entrepreneurship education as a set of knowledge and skills may not yield good results.

In 2016, the European Commission (EC) developed the European Entrepreneurship Competence Framework (EntreComp). EntreComp is composed of 3 main areas of competence: Ideas and Opportunities; Resources; In action. Each of these areas is made up of 5 competencies. According to this framework, entrepreneurial skill includes a total of 15 competencies. Each of them is further defined through threads describing the competence in different practical dimensions. At the end of this tree structure are learning outcomes. These are the things an entrepreneurship learner should be able to know and/or do, after mastering a given thread, as part of a competence within the three core areas of competence.

The reference framework developed by the EC was proposed to be applied in different sectors, as well as for different purposes by a variety of entities: educational institutions; professional organizations; employers; business structures; policy makers. Due to the broad applications of the framework, the learning outcomes are structured into 8 levels of progress, divided into 4 groups:

Core Competencies Group:

- Level 1: "Discover"
- Level 2: "Explore"

Intermediate Competences Group:
- Level 3: "Experiment"
- Level 4: "Dare"

Advanced Competencies Group:
- Level 5: "Improve"
- Level 6: "Reinforce"

Expert Competencies Group
- Level 7: "Expand"
- Level 8: "Transform"

The eight levels of progress include a total of 442 outcomes (see Figure 1).
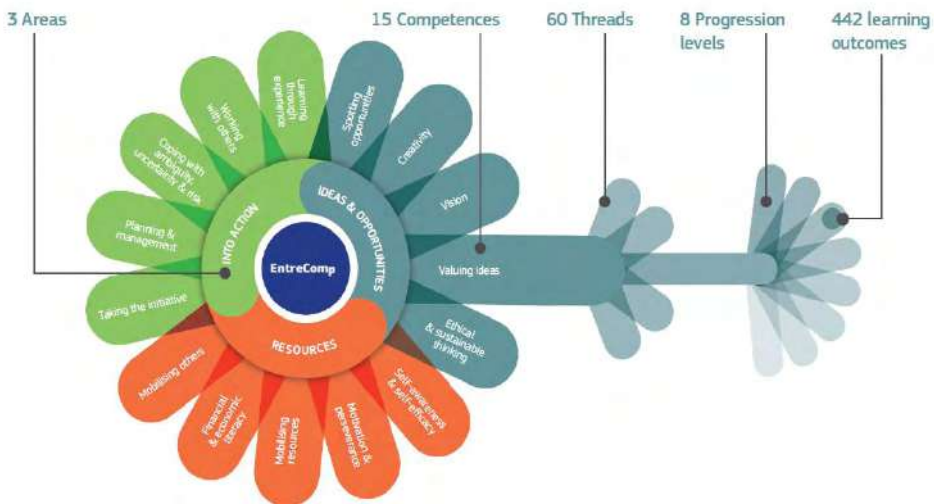

Figure 1: Structure of EntreComp framework
Source: McCallum et al. 2018, p. 26.

The detailed description of entrepreneurship as a competence with 8 levels of mastery allows the EntreComp model to be used to systematize and coordinate educational activities on entrepreneurship for different target groups and different purposes: from non-specialized groups (e.g. students) to professional educational activities; and specialized groups (e.g. managerial staff; management and governance students). According to the EC guidelines for the application of the framework, it can be used in a number of ways:

– As a tool to improve policies or practices for the development of entrepreneurial skills;

– To assess entrepreneurial skills;

– For "train the trainer" initiatives for trainers, teachers, mentors;

– To structure programs and training modules;

– For certification of entrepreneurial skills.

The tree-like structure of the frame allows it to be applied at different depth levels.

Additionally, the EntreComp framework is suitable for application in the development of entrepreneurship teaching methods. This is due to the fact that it is a reference framework for the EU countries. This allows easy comparison, analysis and transfer of methodologies from one member state to another, as well as the development of uniform training approaches in several countries.

Methodology for the creation of the Game of Business gaming platform

The idea of a gaming platform for entrepreneurship education is based on two main factors as discussed above:

– The review and analysis of current trends in entrepreneurship education and the definition of entrepreneurial skills as a universal competence.

– The need to rethink traditional forms and approaches of teaching and learning in general by introducing more engaging and interactive methods and tools.

The "Game of Business" (GoB) game platform is being developed within the project "Game of Business: Simulation Environment for Entrepreneurial Education" with reg. No. 2020-1-BG01-KA201-078958 under the Erasmus+ Program, KD2 "Cooperation for innovation and exchange of good practices", activity "Strategic partnerships", sector "School education", sub-activity "Strategic partnerships to support innovation".

GoB is a broad platform for entrepreneurship education. It incorporates modules covering core competencies which enable students to acquire knowledge and skills for personal and business development. As learners go through the tasks and answer the questions, they acquire entrepreneurial knowledge, skills and competencies important for their professional and personal development. The overall goal is to teach students the basics of economic thinking and entrepreneurial culture, including professional

orientation and development, business idea generation and business development.

The immediate goal we set for ourselves in the pilot development of the game platform is to create entrepreneurial skills in high-school students in non-specialized schools. The entire platform is structured as a game with different levels and modules. A number of game elements enhance the experience of platform users and make learning/acquiring knowledge and skills easier, fun and interactive.

We tried to create a structure of activities within the GoB that would correspond to the European Framework for Entrepreneurial Competence (EntreComp). This would enable the creation of relevant content and link it both to the education provided in the school curriculum, but more importantly to real-life entrepreneurial skills and knowledge. At the moment, the GoB is composed of 143 activities/tasks linked to the 60 competence threads of EntreComp with the possibility of linking to the 442 expected learning outcomes (distributed in 8 levels of progress). Linking the activities in the GoB platform to the components of the EntreComp framework at the lowest level allows the platform to be updated and the "game" adapted to target different groups of learners/users depending on the existing and desired level of entrepreneurial competencies.

For the purposes of this project, it was decided to develop the GoB platform for use in the secondary education system. Therefore, it is envisaged that the maximum level achievable by students playing on the platform will be up to the 4th progress level of the EntreComp framework (Groups "Core Competences" and "Intermediate Competences").

Part of the modules/activities go beyond the basic and intermediate competencies, enabling the platform to be used by more specialized users and students. The game platform allows the content to be customized, both in the direction of complicating game modules (respectively, reaching an advanced and expert level of competence) and simplified, in order to adapt to target groups of a lower age or with lower targets in terms of gained competencies.

The structure of the platform is based on the following principles and includes the following approaches:

– The entire platform is structured according to the "know – see – do approach": each of the steps / activities includes guidance, explanation, advice and real examples;

– The different topics/modules and sub-modules follow an identical content structure: information (explanation, guidelines), examples

(if possible, more video and online content); performance (tasks and assignments).

– The modules and the stylistics used are brought down to the level of the students: no redundant terminology; and the structure of a textbook/linear text is deliberately avoided. The different parts of the platform are formulated in a stimulating way, with the aim of encouraging pro-activity and motivating users to take action. The texts, names, guidelines are presented in an easy-to-read/under-stand way, with a sequence and formulation of the modules close to the way of thinking and logic of the users.

– The modules cover core competencies enabling students to acquire the knowledge and skills for personal and business development, in-cluding all topics normally included in a business development plan, but not exclusively. As learners go through the tasks and answer the questions, they will gain entrepreneurial knowledge, skills and com-petencies important for their professional and personal development. Progress is measured by achieving the 60 threads of competence and learning outcomes according to the EntreComp framework.

– The purpose of the platform is to develop the skills and knowledge required for business and professional development, without actu-ally writing a business plan. The aim is for users to understand how business ideas are generated and how a business evolves (not only the knowledge and toolkit for filling out a business plan). As they go through the sections and complete the tasks, a business plan is automatically generated. In one of the final modules, the automati-cally generated business plan becomes visible and users will be able to see the progress they have made and revise it (if necessary). The business plan is only one of the learning outcomes. The learning objective is broader: entrepreneurship and business development competencies.

– Flexibility in training modules: the possibility to introduce new, up-to-date topics and tools.

– Hidden content for educators/trainers (additional menus, progress trackers, learning resources, platform customization tools).

– The game platform allows for teamwork (team play) but can also be used individually.

Gamification often includes three main game concepts: activity goals, reward mechanisms, and progress tracking (Glover 2013). Each of them is represented in the GoB through specific tools and mechanisms.

The objectives of the platform are fully aligned with the principles of gamification: players are presented with tasks/challenges that they must complete in order to move forward. Their progress is measured by their achievements in completing the tasks in the game. At any moment, users know their progress through progress bars. The goal is not to achieve a certain grade, but to reach a certain level.

Game reward mechanisms are implemented in GoB: player leaderboards progress and achievement badges; a system of motivational messages at certain levels of game progress.

Along with reward mechanisms, tracking and evaluating progress is achieved by incorporating a method of tracking development analogous to giving feedback in the traditional learning process. The teacher (mentor, manager, trainer) has more rights in the platform and verifies the quality of the tasks, to enable the player/team to move forward. In certain places, the quality of task implementation is automated (for example, in the financial part of the platform). Here players receive automatic feedback and advice on the quality and correctness of the entered data/decisions.

The automatic completion of a business plan, only visualized when all components are completed, is an additional element of reward/incentive to continue the game. The financial module of the platform allows many versions of a budget/financial plan to be modeled and a comparison between them to be made when analyzing the most suitable income-expenditure model of the idea.

GoB game platform is structured in 8 main modules. We foresee the development of additional modules, both as part of the game and as additional resources such as a dictionary, additional educational content (if the user is interested), and a library of useful resources. The majority of the first seven modules of the game are intended for work with secondary school students. Some parts of the seventh module and the whole eighth module include tasks requiring a deeper interest. They lead to a higher level of entrepreneurial competence, making it suitable for specialized training in entrepreneurship, including universities and professional organizations.

Conclusion

Learning today goes beyond the simple transmission of data. It involves spending time with other people and participating in a range of activities. When young people engage in learning through action, they acquire new skill sets while developing an intellectual curiosity to try new things. Gamification helps make tedious learning seem exciting.

The use of game elements and gamification in economics, business and entrepreneurship education has the potential to increase learner motivation and outcomes. As a result of their digital upbringing, Generation Y and Z students expect the use of information and communication technologies in the classroom. For them, this is natural and they feel attracted by collaborative, interactive and engaging learning environments. They prefer learning environments which include the active use of information and communication technologies.

The Game of Business game platform for entrepreneurship training is structured according to the main concepts in gamification. The platform enables the acquisition of entrepreneurial competence by different groups of users without specialized knowledge and skills. Methodologically, the platform is based on the European framework for entrepreneurial skills EntreComp, enabling the universal application of the platform in different countries and at different levels of education. In terms of content, the platform offers a non-academic text style with useful information and examples to help platform users move forward. The modular structuring of the platform follows the logical sequence of questions asked by the user. Progression in the game is stimulated through the natural curiosity of the players, thus resolving the logical problems that arise in their minds in the process of generating an idea and transforming it into a business concept.

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