



EN.GA.G.E.

Intellectual Output 1-A5

1

Study/research on game-based entrepreneurial learning methodologies in Europe

RESEARCH CONSOLIDATION AND GUIDELINES FOR ENTREPRENEURIAL EDUCATION

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1. Context: Entrepreneurship Education (EE)

Entrepreneurship education is considered nowadays an important tool to address the challenges of the 21st Century. Developing the *entrepreneurial skills* of citizens became a main priority for EU policies regarding the economic development in the knowledge society. It is more and more obvious that entrepreneurial skills, knowledge and attitudes can be learned and are of a great importance toward EU strategic aims and values.

Several EU policy documents like: [*European Green Paper on Entrepreneurship in Europe*](#) (2003), the identification of a *sense of initiative and entrepreneurship* as one of the eight key-competences necessary for all members of a knowledge-based society, the [*Small Business Act for Europe*](#) (2008), the [*Communication on Rethinking Education*](#) (2012), the [*Entrepreneurship Action Plan 2020*](#) (2013), the [*European Parliament Resolution on promoting youth entrepreneurship through education and training*](#) (2015), and more recently the [*New Skills Agenda for Europe*](#) revealed the importance of promoting and spread *entrepreneurship learning* and *entrepreneurship education* in Europe.

As the [*Eurydice Report*](#) shows, the approaches to and objectives of entrepreneurship education can vary depending on each country's context and understanding of the concept. At one end of the spectrum is a narrow understanding focusing on developing the *attitudes and skills* that young people need to set up and run their own businesses or to become self-employed. The other end puts emphasis on entrepreneurship as a *key competence*, which seeks to empower young people and provide them with the *transversal skills* for active citizenship, employability and possibly, but not necessarily entrepreneurship and intrapreneurship (p.21). Thus, the objectives for entrepreneurship education can be grouped under the four areas of *active citizenship, social entrepreneurship, venture creation and employability* (*idem*, p.48)

The European Commission defines entrepreneurship as the capacity *to act upon opportunities and ideas to create value for others*. The value that is created can be financial, cultural, or social. Defining it as an individual's ability to *turn ideas into action*, to be innovative, take the initiative, take risks, plan and manage projects with a view to achieving objectives, the EC is focusing on promoting the learning about entrepreneurship from primary school through to university and considers that the success of the European Union in meeting the challenges of competitiveness and economic growth to depend on *dynamic entrepreneurship*. In this respect, education should develop awareness of entrepreneurship from an early age. Introducing young people to entrepreneurship develops their initiative and helps them to be more creative and self-confident in whatever they undertake and to act in a socially responsible way (EC, 2004).

The Commission recommendations include the necessity for Member States to develop more systematic strategies to promote entrepreneurship training through:

- a) *a coherent framework,*
- b) *support for schools,*
- c) *fostering entrepreneurship in higher education,*
- d) *support for teachers,*
- e) *participation by external actors and businesses,*
- f) *practical experience.*

Based on these recommendations, it is necessary to revise the curriculum to explicitly include entrepreneurship as an educational objective, to support teachers in incorporating entrepreneurial activities in the curriculum, design new teaching materials, implement projects, partner with businesses on entrepreneurial training of teachers or setting up and running mini-companies.

For each level of general education and for the phase of initial vocational education, can be identified three broad approaches of how entrepreneurship education is integrated into *curricula*:

- a) *a cross-curricular approach, where entrepreneurship education objectives are expressed as being transversal and horizontal across different subjects;*
- b) *entrepreneurship education is taught as a compulsory separate subject, or as part of (a) compulsory subject(s);*
- c) *entrepreneurship education is taught as an optional subject, or as part of (an) optional subject(s)* (Euridyce, 2016, p. 65).

In 2006 and reinforced in 2012 in its *Rethinking Education Communication* the EC included entrepreneurship as one of the eight *key-competences* for lifelong learning in a modern knowledge-based society. It became an important objective at national level being included in the educational strategy of all Member States. The entrepreneurship key-competence is defined as *a sense of initiative and entrepreneurship*, being the ability to turn ideas into action through creativity, innovation and risk taking as well as ability to plan and manage projects (EU, 2016).

In 2016, the EU developed the European Entrepreneurship Competence Framework ([EntreComp](#)) that proposes a shared definition of entrepreneurship as a competence, with the aim to raise consensus among all stakeholders and to establish a bridge between the educational institutions and workplace. It defines entrepreneurship as a transversal competence, which applies to all spheres of life: from nurturing personal development, to actively participating in society, to (re)entering the job market as an employee or as a self-employed person, and also to starting up ventures (cultural, social or commercial). It is defined as follows: *"Entrepreneurship is when you act upon opportunities and ideas and transform them into value for others. The value that is created can be financial, cultural, or social"* (FFE-YE, 2012).

This definition focuses on value creation, no matter what type of value or context. It covers value creation in any domain and possible value chain. It refers to value creation in the private, public and third sectors and in any hybrid combination of the three. It thus embraces different types of entrepreneurship, including intrapreneurship, social entrepreneurship, green entrepreneurship and digital entrepreneurship (Bacigalupo *et al*, 2016, p.10.).

EntreComp represents the European reference framework for the understanding and development of entrepreneurship as a competence, set to become a reference *de facto* for any initiative aiming to foster entrepreneurial capacity of European citizens. It consists of 3 interrelated and interconnected competence areas:

- a) *ideas and opportunities,*
- b) *resources,*
- c) *into action.*

Each of the areas is made up of 5 competences, which, together, constitute the building blocks of entrepreneurship as a competence. The framework develops the 15 competences along an 8-level progression model and proposes a comprehensive list of 442 learning outcomes:

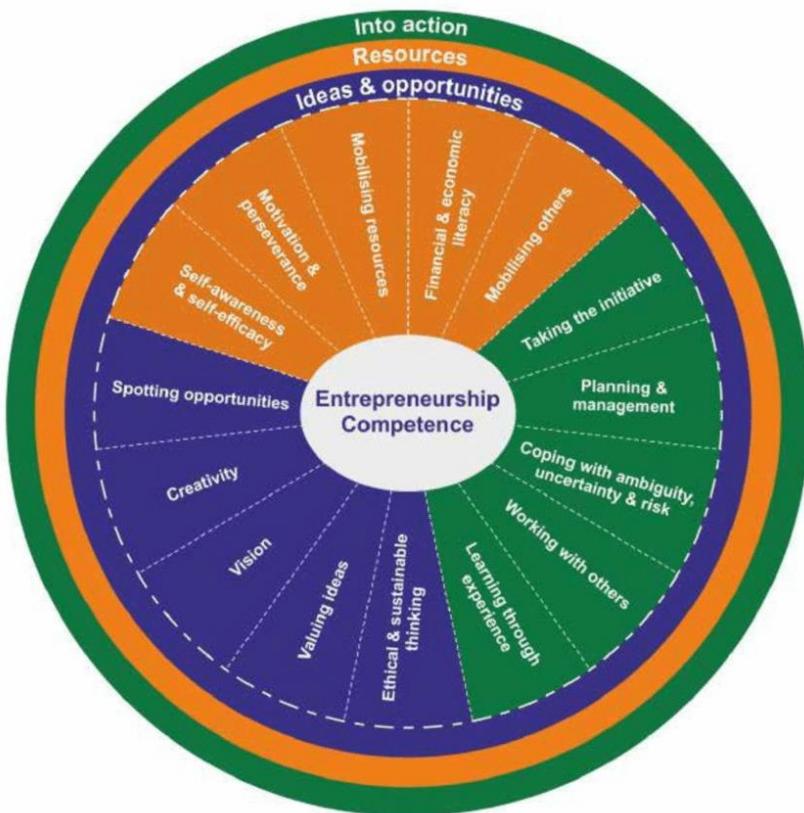


Fig. 1. The EntreComp Framework

EntreComp defines *entrepreneurship* as a *transversal competence*, which applies to all spheres of life: from nurturing personal development, to actively participating in society, to (re)entering the job market as an employee or as a self-employed person, and also to starting up ventures (cultural, social or commercial).

The framework can be used as a basis for the development of curricula and learning activities fostering entrepreneurship as a competence. Also, it can be used for the definition of parameters to assess learners' and citizens' entrepreneurial competences (Bacigalupo *et all*, 2016).

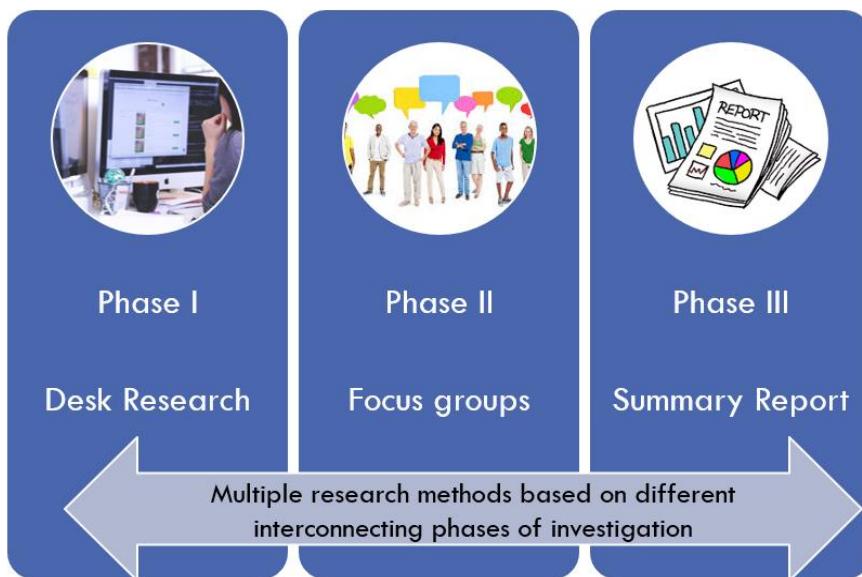
1.2 The EN.GA.G.E Project

The Erasmus+ Project 2017-1-IT02-KA201-036947, ENtrepreneurial GAmes for Growing Europeans - [EN.GA.G.E.](#), aims to rethink education by fostering the entrepreneurial transversal skills and entrepreneurial culture with the help of digital games and by involving the educational communities of the partner countries in order to foster the entrepreneurial transversal skills through the use of digital games. Its main goals are the following:

- a) the implementation of a widest possible review of the educational games directly or indirectly focused on the entrepreneurial learning,
- b) the evaluation of their potential in terms of entrepreneurial learning outcomes and to adapt them for the project's target group, by involving and training the professionals who will be eventually responsible for their exploitation with the pupils and the local community,
- c) the co-creation, assessment and review of two digital games with the collaborative participation of all the actors involved.

The EN.GA.G.E. project promotes the importance of nurturing the entrepreneurial mindset in Primary and Secondary schools and it focuses on the findings of the integrated desk and field research and the feedback collected during the EN.GA.G.E. training sessions for teachers (Learning Teaching Training Activities) and the designing and testing of two digital games aimed to encourage entrepreneurial competencies.

The project team undergone a complex study on game-based entrepreneurial learning methodologies in Europe by using a multiple research method based on three phases of investigation. Three simultaneous procedures have been applied, each of one aimed to collect feedback from Project Knowledge Partners (teachers and students), Project Technical Partners and Experts:





The 1st phase of research presupposed the implementation of a Desk Research where each Country (Knowledge Partner and Practice Partner) has been committed to investigate into the following topics of the project:

- ➲ State-of-the-art of EE at local, national and EU level
- ➲ Game based-learning (GBL) and significance of gaming in education
- ➲ Identification of existing digital educational games aimed at promoting entrepreneurial competencies (see Annex I).

Focused on the good practices related to both Entrepreneurship Education activities and digital educational games based on simulated activities methodology designed for encouraging entrepreneurial competencies, the research activities also provided a valuable insight into national or international projects and digital educational games.

The 2nd phase of the research aimed at the implementation of Focus groups in each partner Country:

- ✓ Focus groups with experts and teachers on the entrepreneurial culture and the use of digital educational games for the acquisition/development of entrepreneurial competencies.
- ✓ Focus groups with students to assess learners' appreciation of the use of digital games for EE.

The 3rd phase consisted in the elaboration of a Summary Report (Joint Report, Annex II). Both Desk Research and Focus Group activities were carried out in Partner countries by gathering data, documents and information with respect to the key topic of the Project: the game-based entrepreneurial learning methodologies across Europe and created a Summary Report containing an analytical overview of the main results and features deriving from the National Reports, in order to further investigate into the current situation and possible developments for the future.



2. Research findings

2.1 Some relevant experiences of EE and entrepreneurship digital games: good practices

The Desk research carried out in the EN.GA.G.E. project revealed various perspectives on entrepreneurship education at national and European level, each partner Country focusing on the wider EU perspective on entrepreneurship but with specific approaches and priorities.

One relevant issue addressed by the research methodology was the identification of good practices and experiences in partner Countries regarding both EE and digital educational games for EE (Annex II contains a full description of all the good practices selected by Project Partners):

B-KIDS



[Business Kids \(B-Kids\)](#)¹ does not intend to provide ready-made instructions for school staff. It aims to give an answer to the primary pupils' and teachers' need of nurturing the entrepreneurial spirit. B-KIDS aims to experiment the integration of the entrepreneurship in the curriculum, assisting both teachers and pupils to incorporate entrepreneurial culture into existing school curricula. So, participants children and teachers became producers of innovation and their collaborative work is the main key for promoting entrepreneurial mind-set.

Based on pupils' authentic experience, both partners (Direzione Didattica Magione Primary School -Italy; Escola Veinat Primary School - Spain) developed two business ideas throughout the Project:

- Italy: A map of the local area (Magione and Trasimeno Lake) and three touristic itineraries.
- Spain: A guide to Girona and its legends

Being so cross-curricular, the practice can be transferred to other educational communities (Primary and Secondary Schools).

The project gained many awards at international level. Besides providing a positive impact on the participants directly involved in the activities (teachers, students, families, local communities), B-KIDS also supported igniting entrepreneurial mindsets at an early age.



[Transnational Business Groups \(TBG\)](#)² aimed to help students create their own business by taking full informed responsibility for the decisions and respecting ecology, regional identity but global market. Therefore, Secondary students and teachers had the opportunity to learn how to make business in a formal and informal way, meet people from different nations, exchanges ideas and

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entrepreneurial practices, develop their soft and hard skills and see how it feels to be included into the big European labour market. TBG also focused on the creation a new e-learning course ([MOODLE](#)), tools and resources which will foster mixed teams' company's competition. The training modules designed are currently used by different educational communities across Europe.



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[ENTRInno](#)³ aims at optimizing the development of entrepreneurship and innovation in Europe. Its main focus is to enhance the skills of young EU citizens, a crucial population of a progressive, entrepreneurial and market-based economy and society. For that purpose, an interactive online game is being developed, which will be accessible online and offline, and can be adapted to fit various contexts.

Assessment should be considered an important aspect of the game. Players should be able to assess and rate themselves after finishing a level/stage of the game. Seeing their improvements could encourage them to keep on playing.



[SimVenture](#): a single-player, computer-based and strategy game on business ventures. One player (or a small group of players sharing a computer) can take any of a wide range of actions to set up a virtual business and make it a success. The game comes with a tutorial video, and it can be played at varying levels of complexity, ranging from easy to advanced. A license is required, and it is necessary to install the software. Although the 2D player interfaces are functional, they may appear somewhat outdated.



[TeamUp](#): a 3D-digital, multi-player (4 pp.) game about team communication and leadership. The game was built by the TU Delft game lab using the Unreal Development Kit (UDK). A team of four players has become stranded on a tropical island filled with Mayan ruins (a high-quality 3D game world). The four players must communicate and self-organize (e.g. pick up cues, establish a language, arrange leadership, coordinate actions) - in order to move their avatars to the other

³ Project funded with the support of EU Commission under the Framework of Erasmus+ KA2 (Project Nr: 2015-1-CY01-KA204-011868)
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side of the island, while solving a series of collaborative puzzles as quickly as possible and with few mistakes.

<e-Adventure>

eAdventure platform: a research project aiming to facilitate the integration of educational games and game-like simulations in educational processes in general and Virtual Learning Environments (VLE) in particular. It is being developed by the e-UCM e-learning research group at Universidad Complutense de Madrid, with three main objectives: a) Reduction of the development costs for educational games, b) Incorporation of education-specific features in game development tools, c) Integration of the resulting games with existing courseware in Virtual Learning Environments.

The research carried out in the EN.GA.G.E. project revealed various and country specific approaches of EE related with the implementation of the EntreComp Framework. It showed that in all of the countries there are important initiatives regarding the implementation of EE in schools, in formal, but, also, in nonformal or informal educational settings. The identified examples can be used by the schools across EU to further apply them in their specific educational settings in order to generate similar entrepreneurship initiatives.

The good practices identified covers various entrepreneurship competence areas and target groups. They address to children from primary to postsecondary or even higher education. They focus on the ways to nurture the entrepreneurial spirit and to integrate the entrepreneurship in the school curriculum using a cross-curricular approach.

It was revealed the possibilities for students to focus on their business ideas with a local/regional identity but aiming to develop the venture in the global market or were intended to foster the development of entrepreneurship and innovation in EU and to facilitate the learning environment that teachers can use to teach and enhance the entrepreneurial skills, communication and leadership.

Also, the research showed the innovative link that exist between EE and digital games and their pedagogical value for the development of the entrepreneurship competence by providing young learners with practical *learning by doing* experiences before they leave the compulsory education.



2.2. Recommendation for EE initiatives based on educational games

The research findings of the ENGAGE project point out to the following landmarks to be considered in developing EE initiatives based on educational games that teachers can implement integrating into the school curricula: in

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The game specifics:

- linked with the curriculum objectives,
- adapted to the students' psycho-individual characteristics and interests,
- goal oriented and challenging,
- immediate feedback and transferrable outputs,
- multiple ways to reach the targets,
- competition,
- learning centered.

The teaching-learning strategies:

- teacher - facilitator of learning and students - experts in game
- student-centered and interactive,
- team work and cooperative learning,
- interactive and engaging learning environment,
- decision and problem-solving,
- experimentation and risk-taking,
- game results linked to curriculum goals.

2.3. EN.GA.G.E. Focus Groups: Highlights

As a complementary research tool, Project partners organized some Focus Groups (FGs) with Teachers/Experts and Learners. There was gathered relevant feedback about knowledge, interest, needs and obstacles for the development of entrepreneurial competencies culture and the use of business games in the classroom from the main target groups' (learners, teachers and experts).

The EN.GA.G.E FGs also play a key role in investigating the relevant elements to be considered for the design of the two EN.GA.G.E. digital games which will be designed and tested during the second year of the project.

The main results of the FGs with experts/teachers and students are grouped below. For a detailed description of the FGs and the cross-sectional analysis based on FG participants' feedback on entrepreneurial culture, the interest towards EN.GA.G.E and the use of digital educational games in the classroom, please see Annex II).

EN.GA.G.E Focus Groups with Teachers/Experts

The FG discussion with teachers/experts has been based on the investigation into the following key aspects:

- a) the interest toward the EN.GA.G.E project,
- b) possible benefits of the promotion of Entrepreneurship Education,
- c) direct/indirect experiences,
- d) the game-based learning process,
- e) the pedagogical value and the potentialities of business games,
- f) the opportunities and critical issues linked to the use of business games in classroom,
- g) the competencies needed for the teachers.

⌚ Awareness and Perceptions of Entrepreneurship Education

There was a strong consensus among all FG members on the importance of spreading entrepreneurial culture in the classroom to cultivate innovation. Such assumption should not be underestimated.

The promotion of entrepreneurship among students and teachers is seen as a largely unexploited opportunity, an opportunity which is not fully explored. However, according to the participants, the development of Entrepreneurial Culture has enormous potential, also considering the special attention the UE is devoting to entrepreneurship training and education. Participants claim that fostering Innovation driven Entrepreneurship has enormous potential for development, employment and personal fulfilment, as it entails a set of knowledge, skills and competencies needed for the realization and development of active citizenship, social inclusion and employment.

Regarding game-based learning and its benefits to learners, participants believe educational digital games bring educational benefits and they have the potential to support teaching and learning. FG members agree that by using educational digital games, young users can learn and enhance their interests and curiosity. In particular, digital games for entrepreneurial education are seen as valuable tool for enhancing and integrating the traditional teaching activities and fostering decision - making, risk - taking, flexibility, problem solving and team work.

⇒ Challenges and perspectives facing the development of EE

When participants were asked about the top difficulties that they have been facing in practicing Entrepreneurship Education, the focus lied on the limits of the educational system. In fact, participants pointed out:

- The need for flexible, personalized and responsive curriculum
- The demand of better training of teachers about the EE.

EN.GA.G.E Focus Groups with Learners

The FGs with students have been carried out in partner countries involving a total number of 59 learners of Primary or Secondary Schools.

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The group discussion has been based on the investigation into the following key aspects:

- a) the use of digital games out of school (type of games and time of use),
- b) the social value of the game (playful, relational, cognitive, rules respect etc.),
- c) knowledge - or not - of entrepreneurial digital games,
- d) the interest toward the EN.GA.G.E project,
- e) the degree of agreement with the introduction of business games into the clas.
- f)

⇒ Digital games can create meaningful learning experience

According to the participants, while playing videogames, they learn through play! The list of game genres is wide: action, strategy, role-playing etc. The most popular games are Minecraft, Subway Surfers and The Sims 4.

Participants explained they play video games after doing homework. Middle School students pointed out they also play during the journey from school to home. Usually, they do not play more than two hours per day. Some learners explained that when the weather's fine, they do not give up going out and they underlined that they are also engaged in other kind of activities (music, sport etc.).

Most virtual games youngsters like are problem-solving games and the video games that foster cognitive abilities and boost strategic thinking skills, as well as skills for reflection.

Many digital games used by youngsters are focused on creating, making decisions and being responsible. There are rules that have to be respected. To pass the levels, users need to work hard and this makes challenges exciting! Participants claim playing video games is important for training reflexes and imagination, it also trains the brain to be more patient. They assume that through online games, they can make new friends and improve their teamwork skills.

⇒ Entrepreneurial culture and youngsters: the lack of insight into entrepreneurship and the students' power of interest

When the FG Facilitator asked the students the question "Have you ever played entrepreneurial digital games?", no positive response has been provided, but most videogames they play with are focused on the entrepreneurial mindset. In fact, in such games activating users' thinking skills, making decisions, turning ideas into action, knowing the market etc. is crucial.

Although EN.GA.G.E. FGs have pointed out the lack of insight into entrepreneurship, the topic has caught the participants' interest. In fact, students' engagement and active participation throughout the sessions was remarkable.

⇒ Digital games for entrepreneurial learning: Students-approved!



All FGs participants are favorably disposed towards using digital games for entrepreneurial learning in schools and integrating such tools in the educational curriculum. To them, such change is feasible and stimulating! However, they are aware that this innovation brings a change in teaching/learning practice and that some teachers can be reluctant in adopting it.

They believe that some digital games could be integrated into the everyday educational activities, as they can support students to have fun and learn loads (through The Sims 4, for example, it could be possible to involve many different subjects). Youngsters and teens like digital games with stunning graphics and not only based on quizzes.

As for the students' feedback on the EN.GA.G.E. Project, it has attracted huge interest from FG participants, there's no doubt about it. Students' expectations are high and they wish to take a challenge as soon as possible!



3. Evaluating and field testing digital games for EE

The EN.GA.G.E. project focuses on the organization of multiple sessions for teachers (LTAs) working in primary and secondary educational settings, in order to collect and assess their perspective on digital educational games.

Together with the LTAs, the [1st EN.GA.G.E INTERNATIONAL CONFERENCE & COMPETITION](#) - a Contest addressed to digital game designers and developers in the field of entrepreneurial education from all over the world - played a key role in the implementation of the project. Experts, researchers and digital game designers from all over Europe have been invited to present their digital game/tool for entrepreneurial education. The Applications have been evaluated by the Technical Partners of the Consortium, and representatives from each selected digital game have been invited to participate in the Event which took place during the [Social Hackathon Umbria 2018 \(#SHU2018\)](#).

During the LTA in Foligno, participants have been asked to test the three digital games for entrepreneurship previously identified by the EN.GA.G.E Knowledge Partners, assessing their adaptability using the EntreComp competence areas. Technical Partners select the winner for the 1st EN.GA.G.E Contest and the Conference.

The Contest and the Conference represented a milestone of the EN.GA.G.E. project and an opportunity for reflection on the benefits of Entrepreneurial Education at various levels of education, as well as its changing role for promoting personal development, learning and employability skills. This joint Event has been organized to share the intellectual outputs of a project with a wider audience making results available to a wider public. The 1st EN.GA.G.E INTERNATIONAL CONFERENCE & COMPETITION aimed to make the European educational communities understand about the importance and benefits of entrepreneurial education, as well as promoting the establishment of an informal network of experts and stakeholders who are potentially interested in being involved in the following steps of the EN.GA.G.E. project for both the evaluation and exploitation of its results.

The three digital games for entrepreneurial education which have been selected by the EN.GA.G.E. Technical Partners were:

- a) [GEM Game](#)
- b) [AGROPOLY](#)
- c) [VARIANT LIMITS](#)



Below a short summary of the feedback collected after the test sessions:



Pro's

- a) the game gives students the opportunity to handle different real life situations and find the best solutions to each problem;
- b) the game is a good model for entrepreneurial learning;
- c) the questions are good and diverse;
- d) students must react immediately and are pushed to take initiative;
- e) students have to think critically before choosing the answer;
- f) students become more responsible by taking the risk;
- g) by playing the game students can develop transversal skills;
- h) the game is easy to play, it has a nice graphics, the idea behind is good, and students' attention levels are kept high.

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Con's

- a) it is not properly a game, but a sort of personality test;
- b) students have no previous experience in how to deal with the presented problems: they simply try (with some difficulties, perhaps) to imagine the situation for the first time;
- c) the game is not interactive because it is played individually;
- d) scenarios are often complex: there is too much information to handle and interpret sometimes;
- e) there is no feedback after the answers;
- f) the English language used is too complex for Primary school students, and there are also grammatical mistakes.

EntreComp

- a) taking the initiative;
- b) planning & management;
- c) coping with ambiguity, uncertainty & risk;
- d) working with others;
- e) learning through experience;
- f) creativity;
- g) motivation & perseverance;
- h) vision;
- i) valuing ideas:
- j) Spotting opportunities



Pro's

- a) It is an interactive game;
- b) The game has a catchy background music;
- c) The game has an attractive graphics;
- d) There are good instructional videos;
- e) There is a good variety of games and mini-games, which are short and diverse;
- f) It is inspired by the game "Monopoly", which is familiar;
- g) The idea of famous historical characters as "mentors" - each mastering a certain competence - is brilliant;
- h) The game can be played in groups;
- i) It fosters competitiveness among students;
- j) It fosters creativity among students;
- k) The topics in the game are interesting;
- l) It is a good game for teaching contents;
- m) Answers can be checked at the end of the game;
- n) The game is realistic;
- o) There is the possibility to play again, so to improve the score;
- p) There is a permanent feedback throughout the game;
- q) The English language used is simple to understand;
- r) The glossary is helpful.

Con's

- a) The game is specific for the agricultural sector;
- b) The game demands a lot of time to develop an agricultural farm;
- c) The game has lots of activities/quizzes, it is like a maze;
- d) There is too much information to handle;
- e) The vocabulary used is very technical, too professional;
- f) The English language used in the game is too complex for younger students;
- g) It is a rather complicated game for the inexperienced students
- h) There are technical problems with the online platform/website;
- i) It is a very long game to play.

EntreComp

- a) Working with others;
- b) Creativity;
- c) Vision;
- d) Valuing ideas;
- e) Ethical & sustainable thinking;
- f) Learning through experience;
- g) Planning & management;
- h) Motivation & perseverance;
- i) Self-awareness & self-efficacy;
- j) Financial & economic literacy;
- k) Mobilizing resources;
- l) Taking the initiative;
- m) Spotting opportunities.



Pro's

- a) 3D graphics makes the game interesting and familiar to young students;
- b) The game is user-friendly;
- c) Math is learnt through a fun and simple way;
- d) The game itinerary is easy to follow;
- e) While playing the game the user has a good environmental vision;
- f) The game can be played in groups, and, by doing so, license costs can be saved.

Con's

- a) There are no clues/instructions to help the inexperienced gamer;
- b) The user cannot choose any weapon;
- c) The level of English is way too much advanced for a non-native speaker;
- d) The game is a bit too "flat" and there is no possibility to jump;
- e) No kind of reflection and creative thinking are encouraged, as well as no planning & management skills are developed, only action;
- f) The game does not encourage team working;
- g) The game does not provide any economic and financial literacy to the students.

EntreComp

- h) Taking the initiative;
- i) Coping with ambiguity, uncertainty & risk;
- j) Learning through experience;
- k) Ethical & sustainable thinking;
- l) Vision;
- m) Motivation & perseverance;
- n) Mobilizing resources;
- o) Self-awareness and self-efficacy;
- p) Spotting opportunities.

4. EN.GA.G.E. Entrepreneurship Education Glossary

Nr.	Concept	Definition
1.	<i>Competence</i>	The capacity to mobilize various acquisitions (eg. knowledge, skills and attitudes) in order to solve complex professional or life situations
2.	<i>Creativity</i>	The capacity to imagine new ways to solve specific or complex situations
3.	<i>Critical thinking</i>	The capacity to objectively assess a situation based on a logical judgment
4.	<i>Educational (digital) game</i>	Games (based on digital technologies) that are explicitly designed with a specific educational outcome
5.	<i>Digital entrepreneurship</i>	The capacity to start new ventures by using the new digital technologies
6.	<i>EntreComp</i>	The EU Entrepreneurship Competence Framework that defines entrepreneurship as a transversal competence, which applies to all spheres of life: from nurturing personal development, to actively participating in society, to (re)entering the job market as an employee or as a self-employed person, and also to starting up ventures (cultural, social or commercial)
7.	<i>Entrepreneur</i>	The person that develop skills, knowledge, and attitudes necessary to achieve personal goals or to start a new venture
8.	<i>Entrepreneurship</i>	Is an individual's ability to turn ideas into action. it includes creativity, innovation, risk taking, ability to plan and manage projects in order to achieve objectives
9.	<i>Entrepreneurial/Entrepreneurship education</i>	The process of developing responsible and enterprising individuals with skills, knowledge, and attitudes necessary to achieve the goals they set out for themselves
10.	<i>Entrepreneurship competence</i>	The capacity to turn ideas into action in order to create personal or social added value
11.	<i>Experiential learning</i>	The process of acquiring key-competences through personal or social direct experience
12.	<i>Digital game-based learning</i>	The digital play designed with specific educational outcomes
13.	<i>Gamification</i>	The process of using game specifics in educational settings

14.	<i>Initiative</i>	The capacity to independently act before others do
15.	<i>Innovation</i>	The capacity to initiate new things or new approaches (innovation for EU competitiveness)
16.	<i>Intrapreneur</i>	The person which promotes innovation of personal or professional practices inside an organization
17.	<i>Intrapreneurship</i>	The process of developing the capacity to innovate personal or professional practices inside an organization
18.	<i>Key-competences for LLL</i>	The European Commission reference framework of the (8) key-competences for life-long learning (LLL) defined as the knowledge, skills, and attitudes needed by all for personal fulfilment and development, employability, social inclusion and active citizenship
19.	<i>Learning</i>	The process of acquiring the key-competences for LLL
20.	<i>Learning autonomy</i>	The learner capacity to acquire the competences without teacher support
21.	<i>Learning outcomes</i>	The predesigned educational acquisitions of an educational program
22.	<i>Life-long learning</i>	The autonomous and continuous process of acquiring the competences
23.	<i>Motivation</i>	The personal or social factors that determines/influences the behavior in a specific situation
24.	<i>Risk management</i>	The process/capacity to anticipate and control the threats
25.	<i>Simulation</i>	The process of modelling a real professional or life-situation in educational settings
26.	<i>Skills</i>	The ability to solve a problem or situation linked to a specific field of action
27.	<i>Sustainable development</i>	The development that meets the need of the present without affecting the needs of future
28.	<i>Team work</i>	The ones capacity to collaborate and share ideas with others
29.	<i>Transversal skills</i>	The ability to solve a problem or a situation not linked with a specific field of action, but common to a family of professional or real-life situations

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Annexes

Annex I: Sheet for identifying and assessing digital games

Annex II: Research Activity Summary Report



Annex I: Sheet for identifying and assessing digital games

1) Name of the game:

2) Producer/Creator:

3) The game is:

- Free-to-play
How/Where can you find it?
- Fee-to-play
Cost: €

4) Target:

5) The game has been specifically created for educational/training purposes?

- Yes
To which subject can be the game applied/referred?
- No

6) What is the target player age/ level of education?

7) Has the game already been used in educational / training fields?

- Yes
Where? If possible, provide a description and/or references
- No
- N/A

8) How did you select this game?

- Internet
- Expert's recommendation
- Other (please specify)

9) Game description

Story telling description	
Aims	
Rules	
Is it possible to select the character?	



Is it a 2D or 3D game?	
Does the game develop in 1st or 3rd person?	

10) In which languages is the game available?

11) Infrastructure/tools/ software required

12) Time and space resources needed

13) Are there prerequisite needed for playing the game?

- Yes
Which one?
- No

14) Describe the main playful and educational features

15) Is the game easily attributable to the official school curricula?

- Yes
Please explain
- No

16) Can the game activate a multidisciplinary / transversal educational methodology?

- Yes
Please explain
- No
Please explain

17) Does the game experience change depending on the abilities and competencies of the specific user?
(Personalized learning)

18) Does the game allow to gain progressive knowledge about the topic on which it is based?



19) Assessment of the potentialities of the game based on the Area “IDEAS AND OPPORTUNITES” of the EntreComp conceptual framework.

AREAS	COMPETENCES	HINTS	DESCRIPTORS	Assessment of the Game (0-10)
1. IDEAS AND OPPORTUNITIES	1.1 Spotting opportunities	Use your imagination and abilities to identify opportunities for creating value	<ul style="list-style-type: none"> Identify and seize opportunities to create value by exploring the social, cultural and economic landscape Identify needs and challenges that need to be met Establish new connections and bring together scattered elements of the landscape to create opportunities to create value 	
	1.2 Creativity	Develop creative and purposeful ideas	<ul style="list-style-type: none"> Develop several ideas and opportunities to create value, including better solutions to existing and new challenges Explore and experiment with innovative approaches Combine knowledge and resources to achieve valuable effects 	
	1.3 Vision	Work towards your vision of the future	<ul style="list-style-type: none"> Imagine the future Develop a vision to turn ideas into action Visualise future scenarios to help guide effort and action 	
	1.4 Valuing ideas	Make the most of ideas and opportunities	<ul style="list-style-type: none"> Judge what value is in social, cultural and economic terms Recognise the potential an idea has for creating value and identify suitable ways of making the most out of it 	
	1.5 Ethical and sustainable thinking	Assess the consequences and impact of ideas, opportunities and actions	<ul style="list-style-type: none"> Assess the consequences of ideas that bring value and the effect of entrepreneurial action on the target community, the market, society and the environment Reflect on how sustainable long-term social, cultural and economic goals are, and the course of action chosen Act responsibly 	

COMMENTS

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20) Assessment of the potentialities of the game based on the Area “RESOUCRES” of the EntreComp conceptual framework

AREAS	COMPETENCES	HINTS	DESCRIPTORS	Assessment of the Game (0-10)
2.RESOURCES	2.1 Self-awareness and self-efficacy	Believe in yourself and keep developing	<ul style="list-style-type: none"> · Reflect on your needs, aspirations and wants in the short, medium and long term · Identify and assess your individual and group strengths and weaknesses · Believe in your ability to influence the course of events, despite uncertainty, setbacks and temporary failures 	
	2.2 Motivation and perseverance	Stay focused and don't give up	<ul style="list-style-type: none"> · Be determined to turn ideas into action and satisfy your need to achieve · Be prepared to be patient and keep trying to achieve your long-term individual or group aims · Be resilient under pressure, adversity, and temporary failure 	
	2.3 Mobilizing resources	Gather and manage the resources you need	<ul style="list-style-type: none"> · Get and manage the material, non-material and digital resources needed to turn ideas into action · Make the most of limited resources · Get and manage the competences needed at any stage, including technical, legal, tax and digital competences 	
	2.4 Financial and economic literacy	Develop financial and economic know how	<ul style="list-style-type: none"> · Estimate the cost of turning an idea into a value-creating activity · Plan, put in place and evaluate financial decisions over time · Manage financing to make sure my value-creating activity can last over the long term 	
	2.5 Mobilizing others	Inspire, enthuse and get others on board	<ul style="list-style-type: none"> · Inspire and enthuse relevant stakeholders · Get the support needed to achieve valuable outcomes · Demonstrate effective communication, persuasion, negotiation and leadership 	

COMMENTS

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21) Assessment of the potentialities of the game based on the Area “INTO ACTION” of the EntreComp conceptual framework

AREAS	COMPETENCES	HINTS	DESCRIPTORS	Assessment of the Game (0-10)
3. INTO ACTION	3.1 Taking the initiative	Go for it	<ul style="list-style-type: none"> Initiate processes that create value Take up challenges Act and work independently to achieve goals, stick to intentions and carry out planned tasks 	
	3.2 Planning and Management	Prioritize, organize and follow-up	<ul style="list-style-type: none"> Set long-, medium- and short-term goals Define priorities and action plans Adapt to unforeseen changes 	
	3.3 Coping with uncertainty, ambiguity and risk	Make decisions dealing with uncertainty, ambiguity and risk	<ul style="list-style-type: none"> Make decisions when the result of that decision is uncertain, when the information available is partial or ambiguous, or when there is a risk of unintended outcomes Within the value-creating process, include structured ways of testing ideas and prototypes from the early stages, to reduce risks of failing Handle fast-moving situations promptly and flexibly 	
	3.4 Working with others	Team up, collaborate and network	<ul style="list-style-type: none"> Work together and co-operate with others to develop ideas and turn them into action Network Solve conflicts and face up to competition positively when necessary 	
	3.5 Learning through experience	Learning by doing	<ul style="list-style-type: none"> Use any initiative for value creation as a learning opportunity Learn with others, including peers and mentors Reflect and learn from both success and failure (your own and other people's) 	

COMMENTS



22) In short

Strong points detected	
Weak points detected	
Overall assessment of the digital game (please refer to the feedback provided in the previous sections)	

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23) How did you learn about the EN.GA.G.E Contest?

- Istituto Comprensivo Statale Panicale Piegaro Paciano
- European Grants International Academy SRL (EGInA)
- Universitatea Din Pitesti
- Palatul Copiilor Pitesti
- Anaptixiako Kentro Thessalias (Aketh)
- Mousiko Scholio Trikalon
- Conservatoire National des Arts et Métiers des Pays-de-la-Loire (CNAM)
- Lycée R.Couzinet
- Project website
- Other (please specify)



Annex II: Research Activity Summary Report

Research Activity Summary Report

(November 2017 - June 2018)



X

NATIONAL DESK RESEARCH

Partners from IT, GR, RO and FR carried out a Desk Research focused on the key issues about:

- *Entrepreneurship Education at local, national and European level*
- *Game based-learning (GBL) and significance of gaming in education*

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FOCUS GROUPS

A set of 10 Focus groups was conducted from March to May 2018 in the 4 partner countries.

Participants (Primary/Secondary School Students and Teachers; Experts) expressed their feedback about knowledge, interest, needs and obstacles for the development of entrepreneurial competencies culture and the use of business games in the classroom.

1. Context

Digital competence, sense of initiative and entrepreneurship represent some of the most required competencies by the labour market and, therefore, their development is being strongly promoted by the European Union for citizens of all ages and origin.

The [EN.GA.G.E.](#) project aims at answering to this priority by promoting the entrepreneurial mindset in Primary and Secondary Schools across Europe. Focusing on the findings of the integrated desk and field research (IO1, A1/2/3) and the feedback collected during the LTTAs, the *EN.GA.G.E. Guidelines on entrepreneurial education*⁴ (IO1, A4) will be provided as theoretical framework for understanding, analyzing, and designing the two EN.GA.G.E. digital educational games aimed to encourage entrepreneurial skills (IO2).

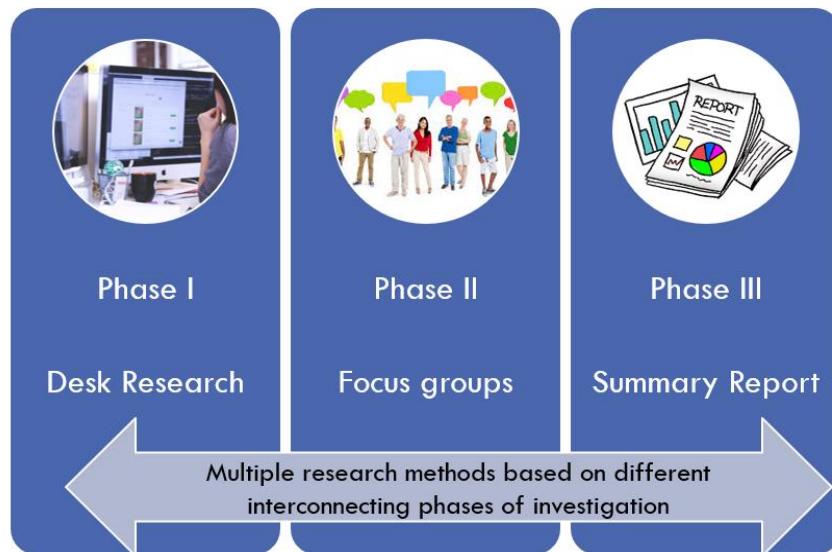
Presenting an evaluation of three interconnecting phases of investigation based on Entrepreneurial Education (EE) and Digital Game-Based Learning (DGBL), this Report represents the final step of a Research activity carried out in Partner countries (IT,FR,GR,RO). The aim of this paper is to summarize the main findings from research activities.

2. Development

The implementation of the *Study/research on game-based entrepreneurial learning methodologies in Europe* (IO1) has been focused on a multiple research method based on three phases of investigation-

Three simultaneous procedures have been applied in order to get feedback from:

- ⌚ Knowledge Partners (Primary/Secondary Teachers and Learners)
- ⌚ Experts
- ⌚ Technical Partners



⁴ The National Desk researches and the National Focus Group Reports were carried in English. This Summary report is available in EN. The EN.GA.G.E. Guidelines on entrepreneurial education and the Glossary will be available in national languages (IT, GR, RO, FR).

Phase I: National Desk Research

Each Country (Knowledge Partner and Practice Partner) has been asked to investigate into the following topics of the project:

- ⌚ State-of-the-art of Entrepreneurship Education at local, national and EU level
- ⌚ Game based-learning (GBL) and significance of gaming in education

Focusing on the good practices related to both EE activities and DGBL based on simulated activities methodology for promoting entrepreneurial competencies, the Desk Research also provides a valuable insight into:

- ⌚ National/international projects on Entrepreneurship
- ⌚ Existing Digital educational games

Phase II: Focus Groups

Implementation of different FGs in each Partner Country:

- ⌚ FGs with Experts/Teachers on the entrepreneurial culture and the use of digital educational games aimed to promote entrepreneurial mindset
- ⌚ FGs with Primary/Secondary school students to assess their appreciation of the use of digital educational and entrepreneurship games.

Phase III: Summary Report

Both Desk Research and FGs activities were carried out in Partner countries by gathering data, documents and information with respect to the key topic of the Project: the game-based entrepreneurial learning methodologies across Europe.

This Joint Report aims to provide an analytical overview of the main results and features deriving from the National Reports, in order to further investigate into the current situation and possible developments for the future.

Providing an effective basis for the development of the project activities (with a special focus on LTTAs), the findings of the research activities also play a key role in identifying some fundamental issues to be considered for the designing of the two EN.GA.G.E digital games (IO2) aimed to facilitate primary and secondary school teachers in developing entrepreneurial competencies of kids and youngsters.



3. Summary of the Desk Research

3.1 Entrepreneurship Education (EE) in Europe: a State-Of-The-Art

This Section provides an evaluation of the state-of-the-art of entrepreneurship education in the EU and the Partner countries.

Entrepreneurship culture involves a full range of competencies needed to adapt to a constantly changing economy and competitive labour market, such as creativity, problem-solving, sense of initiative, decision making, teamwork, languages or communication. Whereas these skills are closely linked to young people's chances of finding a job, but also their ability to realise ambitions and find their place in society, according to the Report published by the European Commission in 2016, very few countries include entrepreneurship in schools' curricula.

The European Entrepreneurship Competence Framework ([EntreComp](#)) proposes a shared definition of entrepreneurship as a competence. The framework develops 15 competences along an 8-level progression model and proposes a comprehensive list of 442 learning outcomes. The framework focuses on "3 interrelated and interconnected competence areas: 'Ideas and opportunities', 'Resources' and 'Into action'. Each of the areas is made up of 5 competences, which, together, constitute the building blocks of entrepreneurship as a competence. The framework can be used as a basis for the development of curricula and learning activities fostering entrepreneurship as a competence".

The 'competence' is defined all across European policy documents regarding education and lifelong learning (LLL) as a combination of knowledge, skills and attitudes appropriate to the context, which all individuals need for personal fulfilment and development, active citizenship, social inclusion and employment. Established in 2006, the eight key-competences for LLL became the most important aim of all the education systems of the member States.

The [EU Entrepreneurship 2020 Action Plan](#) initiated in 2013 focuses on three areas for immediate intervention:

- ⌚ Entrepreneurial education and training to support growth and business creation
- ⌚ Strengthening framework conditions for entrepreneurs by removing existing structural barriers and supporting them in crucial phases of the business lifecycle
- ⌚ Dynamizing the culture of entrepreneurship in Europe: nurturing the new generation of entrepreneurs.

Also, at European level there is a great emphasis on the necessity that Member States develop more systematic strategies to promote entrepreneurship training through:

- ⌚ a coherent framework
- ⌚ support for schools
- ⌚ fostering entrepreneurship in higher education
- ⌚ support for teachers
- ⌚ participation by external actors and businesses
- ⌚ practical experience

Based on these recommendations, it becomes European priority to revise the curriculum to explicitly include entrepreneurship as an educational objective, to support teachers in incorporating entrepreneurial activities in school curricula, to design new teaching materials, to implement projects, partner with businesses on entrepreneurial training of teachers or setting up and running mini-companies.

What is *entrepreneurial education*?

Entrepreneurship entails a set of competencies that can be acquired. Entrepreneurship in Education is “about inspiring entrepreneurial potential. People need the mind-set, skills and knowledge to generate creative ideas, and the entrepreneurial initiative to turn those ideas into action” (European Commission, [Entrepreneurship education](#)). Entrepreneurship is “a skill that can be learnt. You don't have to be born an entrepreneur to run a successful business. You can become one by developing an entrepreneurial mind set and skills. As Europe needs more entrepreneurs creating jobs, it's necessary to support this type of education in all EU countries. The main objective of the European Commission is to promote entrepreneurship education and stress its importance at all levels from primary school to university and beyond” (European Commission, [Entrepreneurship education](#)).





Key issues and challenges for entrepreneurial education in the EU

- ⇒ A good strategy at policy level
- ⇒ training of teachers
- ⇒ assessment of entrepreneurial skills learnt by young people

Commission actions and support to entrepreneurial education

“Education policies are the competence of EU countries but the Commission acts as a catalyst and a facilitator to support:

- ⇒ making entrepreneurship education a basic feature in education systems
- ⇒ sharing of ideas, knowledge, experience, and best practices among countries, stakeholders, and practitioners
- ⇒ developing models, common instruments, and projects with a high added value at EU level.

The improvement of students’ education is encouraged through work experiences while at school, a wider knowledge of the European Union and better digital skills” (European Commission, [Entrepreneurship education](#)).

3.2 The current situation of EE at local/national level



Italy

The picture of the situation of entrepreneurship education in Italy is well showed by a paper written in 2014 by Nicola Curci and Alessandra Micozzi and published on the Banca d’Italia.

Global Emerging Markets’ data were used to present descriptive evidence of the weaknesses of Italy’s entrepreneurial environment: according to the document, new entrepreneurs in Italy had, on average, a lower level of educational attainment than new entrepreneurs abroad and Italy had also the lowest rate of entrepreneurship training for the adult population. Individuals with higher educational qualifications did not show a higher probability of becoming entrepreneurs in Italy.

However, entrepreneurship education is gradually being introduced across all levels of education in Italy, both nationally and regionally and it is now recognised as a key competence.



France

In France, while many critical factors affecting entrepreneurship are covered by specific indicators, the list should not be considered as exhaustive. On the one side, the selection of indicators reflects the current availability of data, meaning that important indicators may be missing, for instance in the determinant area “access to finance”, just because no source of international data was found.



On the other side, research on entrepreneurship is still young, especially on topics such as the relationship between culture and entrepreneurship, with the result that appropriate indicators are yet to be identified. In 2013, the Entrepreneurship 2020 Plan "Reviving Entrepreneurship in Europe" presented entrepreneurship education as "one of the most profitable investments" in the face of an economic crisis and high youth unemployment. In France, actions in favour of entrepreneurship have been taking place for several years now: the "student centres for innovation, transfer and entrepreneurship" (PEPITE) and the twelve "school-business" measures announced in December 2015, such as the creation of a MOOC to improve the reception of third year trainees or the introduction of compulsory time in companies in the initial training of school heads.



Greece

In Greece, entrepreneurship education is included as part of the strategy for the New School (2010). This strategy links entrepreneurship to the learning objectives connected to the enhancement of innovation, creativity and the entrepreneurial spirit. Primary schools in Greece widely recognise the need to include entrepreneurship, through creativity and problem solving. At upper secondary level, pupils are introduced with subjects such as the Basic Principles of Organisation and Business Administration which explicitly deal with managerial and administrative functions within companies. In addition to formal education opportunities, Junior Achievement Greece works with pupils through non-formal and extracurricular teaching and learning methodologies. Since its establishment in 2005, the organisation has been supporting entrepreneurship development and helping young people create their own jobs.



Romania

In Romania, the development of entrepreneurship competence is a priority among all the relevant agencies working in education and economic sectors, but there is still much to do to implement it, due to poor ratio between research, knowledge, education and industry. The Romanian Human Resources Development Sectoral Operational Programme for the 2007-2013 period focused on the growth and development of a knowledge-based society. A range of initiatives was setup to support this priority including teacher education in VET with a special focus on interactive teaching and learning methodologies. The Ministry of Education adopted the legal framework and introduced subjects related to entrepreneurship education in the National Curriculum since 2005. The Romanian Ministry of Education promoted entrepreneurship by approving alternative textbooks for a new discipline called Entrepreneurial education, by introducing new subjects and optional disciplines related to entrepreneurship beginning with primary education and as well as some disciplines and professional guidance for competence development, launching programs that contribute to financial education and entrepreneurial culture. In higher education, entrepreneurship education is less systematically approached than in other European Member states although in recent years there are increasingly more initiatives in this area. The Entrepreneurial Education discipline is included in the curriculum framework for upper secondary education (10th grade) for all profiles and specializations, being allotted minimum one hour per week. Entrepreneurial Education syllabus satisfy the requirements of 2011 Romanian Education Act, complying with the educational ideal and the general aims of education.

3.3 The significance of gaming in education

Most people need effective and interactive experiences that motivate them to actively participate in the learning process. One of the ways to do this is through *game-based learning*.

Game-based learning today involves the use of computer and video games specifically aimed to produce learning outcomes. “An effective game-based learning environment helps learners work toward a goal while choosing actions, and experience the consequences of those actions” (William Butler Yeats, [Game-based Learning: What it is, Why it works and where it's going](#))

While students/players make mistakes, the risk-free setting of a game environment allows failures to become challenges, which then incites them to devise and revise their actions until they arrive at the correct way of doing things (Maricel Rivera, [Is Digital Game-Based Learning The Future Of Learning?](#))

Researchers have stated that play is a primary mechanism of learning and socialization common to all human cultures.

Introducing the concepts:

- ⌚ Game: form of play or sport, especially a competitive one played according to rules and decided by skill, strength, or luck
- ⌚ Learning: acquiring the skills and thought processes needed to respond appropriately under pressure, in a variety of situations
- ⌚ Game-based learning (GBL): the use of games to enhance the learning experience
- ⌚ Gamification: applying the game elements (such as points, badges, leader boards, competition, achievements) to a non-game setting

GBL is a multi-sensory approach to learning that helps children absorb the lesson through visuals, soundtracks and using their fingers to manipulate screens and buttons. It is a game play that has defined learning outcomes designed to balance subject matter with gameplay and the ability of the player to retain and apply subject matter to the real world. It is considered an efficient approach to teaching, where students explore relevant aspect of games in a learning context designed by teachers through lessons which are competitive, interactive, and allow the learner to have fun while gaining knowledge. In this case, children learn better through play and experience than through “chalk and talk”

According to Rula Al-Azawi, Fatma Al-Faliti, and Mazin Al-Blushi ([Educational Gamification Vs. Game Based Learning: Comparative Study](#)), the basic Benefits of GBL:

- ⌚ Increases User’s Memory Capacity
- ⌚ Computer & Simulation Fluency
- ⌚ Helps with Fast Strategic Thinking & Problem-Solving
- ⌚ Develops Hand-Eye Coordination
- ⌚ Beneficial Specifically for Learners with Attention Disorders
- ⌚ Skill-Building (e.g. map reading)



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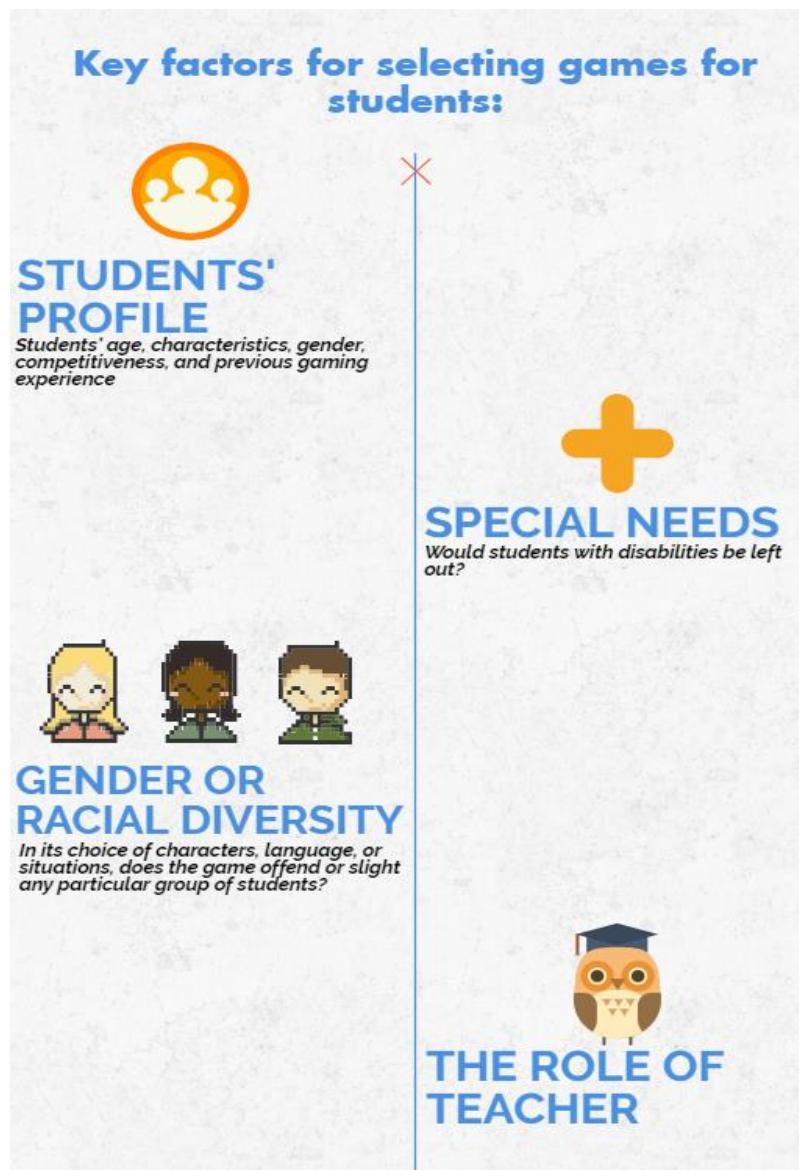
Research on learning and behaviour shows that students learn faster when there's a shorter interval between behaviour and reinforcer. Although more studies need to be done and more games have to be developed to prove its lasting power in the field of education, game-based learning can offer many advantages when done properly (Rula Al-Azawi, Fatma Al-Faliti, and Mazin Al-Blushi).

What are the components of digital game-based learning?

According to Patricia Deubel "DGBL has the potential to engage and motivate students and offer custom learning experiences while promoting long-term memory and providing practical experience" (Patricia Deubel, [Game on](#)).

DGBL involves activities that can range from completing very simple tasks to the development of intricate problem-solving skills. According to Patricia Deubel, games can be categorized as "action, adventure, fighting, puzzle, role-playing, sports, and strategy".

According to Deubel, teachers should take into account some crucial information when selecting games for students:



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Additionally, teachers should consider whether the game will cause too much competitiveness, if it will be ongoing, and the effectiveness of the difficulty level.

One of the most famous example of DGBL is [Hour of Code](#). The Hour of Code is a global movement reaching tens of millions of students in 180+ countries. Anyone, anywhere can organize an Hour of Code event. One-hour tutorials are available in over 45 languages. There students from all over the world can learn computer science through digital games playing time. They can learn programming, and not just programming through Scratch (which is meant for children education) but learn advanced programming languages like Javascript, Python etc.

Another famous example of DGBL is [SimVenture](#), a game that simulates business and entrepreneurship skills.

3.4 Good practices: some relevant experiences of EE at Schools

B-KIDS



Business Kids (B-Kids)⁵ did not intend to provide ready-made instructions for school staff. It aims to support igniting entrepreneurial mindsets at an early age and giving an answer to the primary pupils' and teachers' need of nurturing the entrepreneurial spirit. B-KIDS aims to experiment the integration of the entrepreneurship in the curriculum, assisting both teachers and pupils to incorporate entrepreneurial culture into existing school curricula. So, participants children and teachers became producers of innovation and their collaborative work is the main key for promoting entrepreneurial mind-set.

Based on pupils' authentic experience, both partners (DD Magione Primary School - Italy; Escola Veinat Primary School - Spain) developed two business ideas:

- ✓ Italy: A map of the local area and three touristic itineraries addressed to young tourists
- ✓ Spain: A guide to Girona and its fairy tales

Being so cross-curricular, the practice can be transferred to other educational communities (Primary and Secondary Schools). The project provided a very positive impact on the participants directly involved in the activities (teachers, students, families, local communities).



A Scuola di Impresa

A Scuola di Impresa (Business at School)⁶: the 3rd edition of 'A scuola di impresa' involved 218 Italian High School students aged 16-17. The project has been supported by a network of experts to help the students design a business plan starting from their own business idea. The objective of the project is to spread Entrepreneurial culture in young learners and develop entrepreneurship through the activation of practical learning experiences.

The project aimed to promote the development of the Entrepreneurial culture through training courses and seminars based on a practical experience, as well as create and manage innovative networks at regional, national and international level.

To achieve these aims, the project involves fourth grade students of High school to participate in regional competitions with experimental and innovative business ideas. The students, divided into teams, follow a targeted training to simulate a business plan, and then start implementing the business idea they have conceived.

The students participating to the different editions of the Project are 700. The aims and the methodology of the Project (encouraging the entrepreneurial culture and promoting the entrepreneurial spirit through practical learning experiences) have been integrated into the School Curricula of many of the Umbrian High School which joined the Project.

⁵ Project funded with the support of EU Commission under the Framework of Erasmus+ KA2 (Project Nr: 2014-1-IT0-KA201-003407_1)

⁶ Project promoted by AUR-Agency Umbria Research co-financed by the European Social Fund (ESF) under the Regional Operational Programme (ROP) Umbria ESF "Regional Competitiveness and Employment '2007-2013

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[Transnational Business Groups \(TBG\)](#)⁷ aimed to help students create their own business by taking full informed responsibility for the decisions and respecting ecology, regional identity but global market. Therefore, Secondary students and teachers had the opportunity to learn how to make business in a formal and informal way, meet people from different nations, exchanges ideas and entrepreneurial practices, develop their soft and hard skills and see how it feels to be included into the big European labour market. TBG also focused on the creation a new e-learning course ([MOODLE](#)), tools and resources which will foster mixed teams' company's competition. The training modules designed are currently used by different educational communities across Europe.

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CANOPÉ

Canopé: the creative network and pedagogical support. Placed under the supervision of the Ministry of National Education, Canopé Network publishes transmedia educational resources (print, web, mobile, TV), meeting the needs of the educational community. A major player in the rebuilding of the school, it combines innovation and pedagogy to bring the school into the digital age.

100000 ENTREPRENEURS

[100 000 Entrepreneurs](#): transmitting culture for entrepreneurship. This is an association which wants to give young people the desire to undertake. That is why it organizes testimonies from entrepreneurs in middle school, high school and higher education classes. The entrepreneurs concerned are project leaders, whether they are business leaders, association leaders, "intrapreneurs" within a group, chargés de mission in the public sector, etc. Created two years ago, this association is developing very rapidly: 1500 entrepreneurs have already volunteered and nearly 30,000 young people have been affected. The long-term objective of 100,000 entrepreneurs is to reach three million young people in France (i.e. one in two young people between the ages of 13 and 25).

Réseau Entreprendre

[Réseau Entreprendre](#) was created on the initiative of business leaders who wanted to revitalize their territory. Even today, the governance of the associations and the Federation is ensured by committed volunteer business leaders. Supported by a team of permanent staff, volunteers. Réseau Entreprendre started out in 1986 when André Mulliez, an industrialist based in northern France faced with massive layoffs at his company Phildar, launched this visionary, common sense motto: "To create jobs, let's create employers." ». His idea: give entrepreneurs with job-creation potential the tools for success by sharing the

⁷ Project funded with the support of EU Commission under the Framework of Erasmus+ KA2 (Project Nr: 2014-1-PT01-KA202-001059)
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know-how and experience of active business leaders, through 1 to 1 support. The concept of entrepreneurial mentoring was born!



[Entreprendre pour apprendre](#) offers young people practical experience that complements academic knowledge. It enables knowledge to be applied and skills to be developed; makes people discover the professions and opens up perspectives; initiates to economic life and group work; it develops autonomy, responsibility, creativity, self-confidence and initiative. Supporting young people in the implementation of entrepreneurial projects directly feeds the Corporate Social Responsibility (CSR) policy, Entreprendre Pour Apprendre enables entrepreneurs and employees of partner companies to contribute their expertise, skills and time to the youth project. In this way, everyone develops their entrepreneurial spirit, trains their skills and reveals their talents.



[Entrinno](#)⁸ aims at optimizing the development of entrepreneurship and innovation in Europe. Its main focus is to enhance the skills of young EU citizens, a crucial population of a progressive, entrepreneurial and market-based economy and society. For that purpose, an interactive online game is being developed, which will be accessible online and offline, and can be adapted to fit various contexts.

The stakeholders agreed that online games can be a great medium for teaching and enhancing entrepreneurial skills. They are attractive and they give incentives such as rewards and advancements through point systems. These were agreed by the stakeholders that are basic to be included in a good game for a general audience. One of the stakeholders, who is also a professor at a private university had mentioned that online games are also great for creating communities, for examples within university students, through competitions.

Assessment should be considered an important aspect of the game. Players should be able to assess and rate themselves after finishing a level/stage of the game. Seeing their improvements could encourage them to keep on playing.

Active School-Enterprise Partnerships to improve initial training - FPI Steps: the active school-enterprise partnership to improve initial training (FPI STEPS) was a project implemented by the National Centre for Development of Vocational and Technical Education in partnership with the General Union of Industrialists of Romania. The project was financed through the European Social Funds and it explored and piloted a more active social partnership between schools and businesses. Through the curriculum the project targeted pupils in vocational and technical education. The results of the cooperation brought the curriculum closer to the real needs of the market and established much needed ties between two important social stakeholder groups.

⁸ Project funded with the support of EU Commission under the Framework of Erasmus+ KA2 (Project Nr: 2015-1-CY01-KA204-011868)

The [FPI Steps Project](#) aims to a) the improvement of the knowledge of concrete market needs of the VET actors, of public authorities and of the public education beneficiaries and the creation of a framework that will

facilitate the partnership between school and companies, b) piloting of several active partnerships between schools and companies in order to improve the VET offer.

Main activities: a) opportunity studies, b) dissemination activities, c) training, d) working groups activities, e) piloting the information and counselling materials for students on the career development, f) the week of active partnership between school and companies, g) development of a guide on school-companies partnership.

Results: a) mutual knowledge of the market specifics of the school representatives and of the companies' representatives, b) the improvement of the decision framework of various counselling bodies with impact on school offer, c) the improvement of recruiting strategies of companies through a better knowledge of

The training mechanisms used in school and of the important factors that influence the initial training of students, d) the creation of direct ways of collaboration between schools and companies and e) the development of a network of partnerships between schools and companies in order to shorten the gap. The project produced a study regarding the importance and the specifics of developing an active partnership between school and companies, a guide on good practices for schools and companies to better know and assess the partnership and an online platform that facilitates direct contact between schools and various companies.

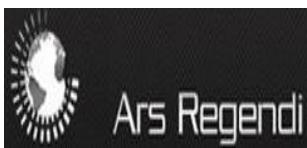
The Entrepreneurial University: launched in 2016 by Junior Achievement Romania, the project focuses on promoting a new approach on entrepreneurship and innovation in the academic field and on transforming universities in key factors for generating progress and prosperity in community. Its main goal is to support universities to develop entrepreneurial and intrapreneurial approaches in its own management strategies, in relation with the business community and in preparing students for an entrepreneurial economy.

The project has three main components:

- diagnosis - evaluating the universities in order to determine the level of the entrepreneurial/innovative approaches by using instruments developed by OECD and EU-HEInnovate
- research-development in joint groups (faculty staff, business community and experts) and specific workshops and case studies - Innovation Days,
- implementation of the solutions and recommendations in universities.



3.5 Good practices: some entrepreneurship and educational digital games based on simulated activities methodology



[Ars Regendi](#) is a browser-based and multiplayer political game that lets you take the reigns of your own, realistically simulated states. You will be asked to weigh in on various matters of state and - faced with a number of choices - any decision you make will have ramifications for the well-being of your virtual populace! In addition, you will be able to form alliances with other countries, initiate reforms and adjust the budget. Ars Regendi is a highly realistic and complex economic simulation that squares you off against other state leaders and puts your political and financial abilities to the test.



[Beat-the-Market: A Microeconomics Game](#): online economics simulation games provide a method of learning economic concepts that students find much more *meaningful & exciting* and build *critical thinking* skills. Students manage a firm competing against each other and/or computer managed firms, individually or in teams, in a variety of market environments. Students "*learn-by-experience*" many key economic principles including: how markets function, demand and supply relationships, consumer and firm behavior, price elasticity and revenues, production and cost relationships, economies of scale, short-run versus long-run decision-making, gaming theory, profit maximization and much more.

[Geo](#) is an Internet-based gaming simulation for business management. It includes 10 generic nations and six generic industries. Participants register individually, but can optionally be assigned to groups. As typically configured, the nations of the game have differing trade policies, namely free trade, export promotion, strategic trade, and import substitution.

Each participant receives a line of credit that can be applied to found up to a limit of eight companies in their selected nation and industry. Typically, the industries include banking, service, natural resources, and manufacturing. The game maximizes participants' freedom to strategize by enabling companies to issue shares that may be traded, to acquire other companies, and to switch from one industry to another along the supply chain that extends from services to manufacturing. The game can be administered as a one-day competition, as a project for weekly reports and presentations, or as a continuously available field for practice. In the field-for-practice application, students taking various business courses are encouraged to consider the game as an intramural-sport-like activity, where they may join with others to practice business-management skills, with those doing well having their grades raised by one or two steps.



[Traction](#) is a strategic simulation game. Students develop their startup company in both pre and post revenue stages. Focusing on the team, funding, product development, business models, internal processes. This simulation combines academic concepts and practical experience. Professors discuss the concepts with the class and the players can see how the concepts integrate within the simulation.



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[SimVenture](#): a single-player, computer-based, strategy game on business ventures. One player (or a small group of players sharing a computer) can take any of a wide range of actions to set up a virtual business and make it a success. The game comes with a tutorial video, and it can be played at varying levels of complexity, ranging from easy to advanced. A licence is required, and it is necessary to install the software. Although the 2D player interfaces are functional, they may appear somewhat outdated. Figures 5 and 6 provide an impression of SimVenture screens and EAW students playing the game.



[TeamUp](#): a 3D-digital, multi-player (4 pp.) game about team communication and leadership. The game was built by the TU Delft game lab using the Unreal Development Kit (UDK). A team of four players (impersonal avatars wearing red, green, yellow or blue sweaters) has become stranded on a tropical island filled with Mayan ruins (a high-quality 3D game world). The four players must communicate and self-organise (e.g. pick up cues, establish a language, arrange leadership, coordinate actions) - in order to move their avatars to the other side of the island, while solving a series of collaborative puzzles as quickly as possible and with few mistakes. Figures 1 and 2 provide an impression of a TeamUp player screen and EAW students playing the game.



[Industry Player](#) : real time massive multiplayer online games simulating world economy



[eAdventure platform](#): a research project aiming to facilitate the integration of educational games and game-like simulations in educational processes in general and Virtual Learning Environments (VLE) in particular. It is being developed by the e-UCM e-learning research group at Universidad Complutense de Madrid, with three main objectives: a) Reduction of the development costs for educational games, b)



Incorporation of education-specific features in game development tools, c) Integration of the resulting games with existing courseware in Virtual Learning Environments.

EUTOPIA Platform: a platform useful to create and organize Educational Multiplayer On-Line Role-Playing Games (EMORPG). It implements the psychodrama methodology in a digital “scene”. This approach permits to a small group of people to give a theatrical performance for educational or psychological purposes (counselling, diagnosis, therapy, coaching and training in soft skills). Each actor (or learner) controls an avatar and interacts with other avatars in a virtual 3D scene. Psychologists, Pedagogues, Teachers, Trainers, Educators can have different functions. They can write a storyboard as a playwright; they can assign the characters as a casting director; they can guide the action as a movie director; finally, they can give feedback to the group recording the scene action and adding personalized comments (debriefing phase).

4. Summary of the Focus Groups Findings

4.1 EN.GA.G.E FGs in Partner Countries

During the KoM of the Project (October 2017), Project Partners agreed on implementing some FGs as a complementary research tool. So, as a second step towards the research on entrepreneurial competencies consisted in the organization and conduction of FGs to investigate into the relevant elements to consider for the design of the two EN.GA.G.E. digital games which will be designed and tested during the second year of the project.

A set of 10 focus groups was conducted from March to May 2018 in the 4 partner countries. Our FG Research wanted to obtain feedback about knowledge, interest, needs and obstacles for the development of entrepreneurial competencies culture and the use of business games in the classroom from the main target groups' (learners, teachers and experts).

These next two Sections aim to highlight the main results obtained during the FG sessions. We begin this cross-sectional analysis focusing on participants' feedback on entrepreneurial culture and the interest towards EN.GA.G.E and the use of digital educational games in the classroom.

A comparative analysis of the above-mentioned aspects will be presented throughout the following sections.

This research was qualitative in nature, not quantitative. Hence the results provide an indication of the participants' views about the issues explored, but cannot be generalized.

4.2 "Let the experts/teachers have their say": main results of the FGs with experts/teachers

The group discussion has been based on the investigation into the following key aspects:

- the interest toward the EN.GA.G.E project;
- possible benefits of the promotion of Entrepreneurship Education;
- direct/indirect experiences;
- the game based learning process;
- the pedagogical value and the potentialities of business games
- the opportunities and critical issues linked to the use of business games in classroom
- the competencies needed for the teachers

A total number of 50 teachers and experts took part in the group discussion. They were selected on the basis of the degree of interest in the project activity. We also tried to "give voice" to most of the teaching disciplines. Game developers and experts who designed digital games to stimulate the entrepreneurial spirit of young people have been also involved. With regard to the description of the FGs (methods of recruitment of participants, venue, date and duration) and presentation of participants (name and role), please refer to the National FG reports.

Highlights

1. Awareness and Perceptions of Entrepreneurial Education

EE is Essential to individual achievement but it doesn't still play such a prominent role in education systems.

There was a strong consensus among all GF members on the importance of spreading entrepreneurial culture in the classroom to cultivate innovation. Such assumption should not be underestimated.

The promotion of entrepreneurship among students and teachers is seen as a largely unexploited opportunity, an opportunity which is not fully explored. However, according to the participants, the development of Entrepreneurial Culture has enormous potential, also taking into account the special attention the UE is devoting to entrepreneurship training and education. Participants claim that

fostering Innovation driven Entrepreneurship has enormous potential for development, employment and personal fulfilment, as it entails a set of knowledge, skills and competencies needed for the realization and development of active citizenship, social inclusion and employment.

In all partners countries, the FGs promoted by E.N.G.A.G.E gave the opportunity to focus on the benefits of Entrepreneurship Education on young learners, as it involves preparing the pupil for practical everyday life, developing self-efficacy, self-confidence, independence, and support for critical thinking, flexibility, creativity, risk taking and problem-solving abilities. All participants shown a genuine interest and curiosity towards E.N.G.A.G.E.

However, it is important to point out that the cross-sectional analysis of the national FG Reports emphasizes that very a *limited* number of teachers have been involved in practicing EE activities or have had prior experience in this field (just the Italian experience of B-KIDS and the French one Backstage Game Publisher).

Regarding game-based learning and its benefits to learners, participants believe educational digital games bring educational benefits and they have the potential to support teaching and learning. FG members agree that by using educational digital games, young users can learn and enhance their interests and curiosity. In particular, digital games for entrepreneurial education are seen as valuable tool for enhancing and integrating the traditional teaching activities and fostering decision - making, risk - taking, flexibility, problem solving and team work. As one participant stated: "when using a digital game to teach and develop skills, everything is simpler: students become a lot more receptive and even more willing to learn" and "the digital game is a pedagogical tool that works well with young people (...) when the game is used at schools, no one is reticent, everyone wants to play!".

The main opportunities in the introduction of business games are: the enhancement of different skills, the increase in motivation and self-esteem, the possibility of expressing one's creativity, increasing the sense of responsibility, increasing the school commitment . EN.GA.G.E is perceived as an excellent opportunity to renew the school and to offer students the knowledge and skills that can be spent in their everyday life. As one participant stated: " young people know and make anteroom of the adult world, from a social and economic point of view (....)".

2. Challenges and perspectives facing the development of entrepreneurship education. The Educational Systems stifle Entrepreneurial culture: time to rethink education

When participants were asked about the top difficulties that they have been facing in practicing Entrepreneurial Education, the focus lied on the limits of the educational system. In fact, participants had discussions about the importance of rethinking education with a new flexible, cooperative and cross-curricular approach.

One of the most common complaints was about inflexible curricula and ways of teaching. For them, this is one of the main obstacle to entrepreneurial education.

According to the participants, to support an effective integration of digital games into the educational curricula, the activities have to be well planned in advance. They do assume that it is crucial to involve both teachers and students in such preparatory activities. This is considered one of the key issues in the use of digital games for entrepreneurship in the classroom.

The majority of the participants, however, reported that they have inadequate competence in entrepreneurial teaching, and called for better training opportunities.

Another extremely important thing is to know and better understand the key issues related to young students' learning process. As one participant explained: "the curiosity and interest in new pedagogical tools are sufficient to overcome the fears (...) moreover, faced with technical difficulties, teachers can definitely make use of the help of their students".

4.3 “Let the students have their say”: main results of the FGs with students

The FGs have been carried out in partner countries involving a total number of 59 learners of Primary or Secondary Schools.

The group discussion has been based on the investigation into the following key aspects:

- the use of digital games out of school (type of games and time of use)
- the social value of the game (playful, relational, cognitive, rules respect etc)
- knowledge - or not- of entrepreneurial digital games
- the interest toward the EN.GA.G.E project
- the degree of agreement with the introduction of business games into the class

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Highlights

1. Blurred lines between games and social media

Digital media influence our daily life more and more; the impact they have on youngsters is of particular importance, as ICT affects young users' social relationships, study activities, access to information and culture.

New technologies offer various ways of learning, which are more active, effective and engaging for students. All the students participating in the FGs explained they would use ICT tools in a more extensive way.

The use of such tools in schools depends on some crucial aspects. Not only on ICT equipment in schools, but also on teachers' competencies and positive attitude towards the use of ICT.

Almost all participants can use the Internet at home and they have Internet-connected devices: mobile phones - and especially tablets for getting information, studying, watching movies online. Youngsters are video game passionate fans, they enjoy playing different types of games (adventure, action, sport, organization, etc.). When playing, they particularly like game consoles such as PlayStation, Xbox, Nintendo, Wii, etc. The current consoles have built-in social sharing systems, so players can easily meet and talk while working collaboratively on social networks without leaving the game and youngsters particularly like this feature!

Videogames allow users to combine social networking and game playing. This is the reason why youngsters particularly like playing using the smartphone and the game console. Participants claim no social isolation occurs while playing: through the combination of social networking and video games, users can exchange messages, have fun with brothers and / or sisters and - in some cases - with parents.

More interesting insights emerge from the French FG Report. In fact, considering 30 participants, 85% play video games, 70% play every day or several times a week, 64% play on average two or three hours a day on all types of media: mobile, gaming consoles and computers. Many of them play up before going to bed and sometimes in bed. Many of them have different devices in their room.

2. Digital games can Create Meaningful Learning Experiences

According to the participants, while playing videogames, they learn through play!

Which are the most popular digital games? The list of game genres is wide: action, strategy, role-playing etc). The most popular games are Minecraft, Subway Surfers and The Sims 4.

Participants explained they play video games after doing homework. Middle School students pointed out they also play during the journey from school to home. Usually, they do not play more than two hours per day. Some learners explained that when the weather's fine, they do not give up going out and they underlined that they are also engaged in other kind of activities (music, sport etc)

Most virtual games youngsters like are problem-solving games and the video games that foster cognitive abilities and boost strategic thinking skills, as well as skills for reflection.

Many digital games used by youngsters are focused on creating, making decisions and being responsible. There are rules that have to be respected. To pass the levels, users need to work hard and this makes challenges exciting!

Competition does not make young users scared, rather the opposite! It supports players in learning to persevere and never give up. By playing videogames, users have the chance to experience virtual situations which are linked to the real world.

Participants claim playing video games is important for training reflexes and imagination, it also trains the brain to be more patient. They assume that through online games, they can make new friends and improve their teamwork skills.

3. *Entrepreneurial culture and youngsters: the lack of insight into entrepreneurship and the students' power of interest*

When the FG Facilitator asked the students the question “Have you ever played entrepreneurial digital games?”, no positive response has been provided, but most videogames they play with are focused on the entrepreneurial mindset. In fact, in such games activating users’ thinking skills, making decisions, turning ideas into action, knowing the market etc. is crucial.

During the FGs, participants realized that, even if in a virtual context and even though unconsciously, they have already experienced some entrepreneurial activities!

FGs show the lack of sufficient knowledge in entrepreneurial culture and the role of entrepreneur. For the Primary students an *entrepreneur* is seen as the “Manager of a company”, someone making money, “who always wants to win” and, according to some participants, “someone trying to swindle you”.

The Secondary school students have a different opinion. According to them, the entrepreneur is seen as someone “working hard for creating things, value and wealth”, he/she needs to be “persuasive, a resolved person skilled in public speaking and planning”.

Although EN.GA.G.E. FGs have pointed out the lack of insight into entrepreneurship, the topic has caught the participants’ interest. In fact, students’ engagement and active participation throughout the sessions was remarkable.

4. *Digital games for entrepreneurial learning: Students-approved!*

All FGs participants are favourably disposed towards using digital games for entrepreneurial learning in schools and integrating such tools in the educational curriculum. To them, such change is feasible and stimulating! However, they are aware that this innovation brings a change in teaching/learning practice and that some teachers can be reluctant in adopting it.

They believe that some digital games could be integrated into the everyday educational activities, as they can support students to have fun and learn loads (through The Sims 4, for example, it could be possible to involve many different subjects).

Youngsters and teens like digital games with stunning graphics and not only based on quizzes.

Another important feature linked to the video game stories: according to the participants, there must be a progression, the game has to develop, showing continuous improvement. They do not want to play a repetitive game.

Participants were also asked to outline the benefits/added values of the digital games they usually play:

- learning new things about life
- training reflexes
- training the brain to be more patient
- developing imagination
- boosting team performance
- creating a challenge mind-set
- making new friends (online games)
- using the English language while playing (online games)
- having positive feelings
- fostering perseverance / learning not giving up

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5. Students' feedback on EN.GA.G.E.

EN.GA.G.E. attracts huge interest from FG participants, there's no doubt about it. Students' expectations are high and they wish to take a challenge as soon as possible!

As some participants stated "I like this project and I would like to learn more about entrepreneurship", "In my point of view, these games are indeed crucial, due to the leadership skills they teach. It's all about learning new things by playing online and it makes all of us pretty interested and excited".

5. Conclusions

The findings of this Summary Report are organized along 2 sets of interrelated discourses that we found particularly illuminating.

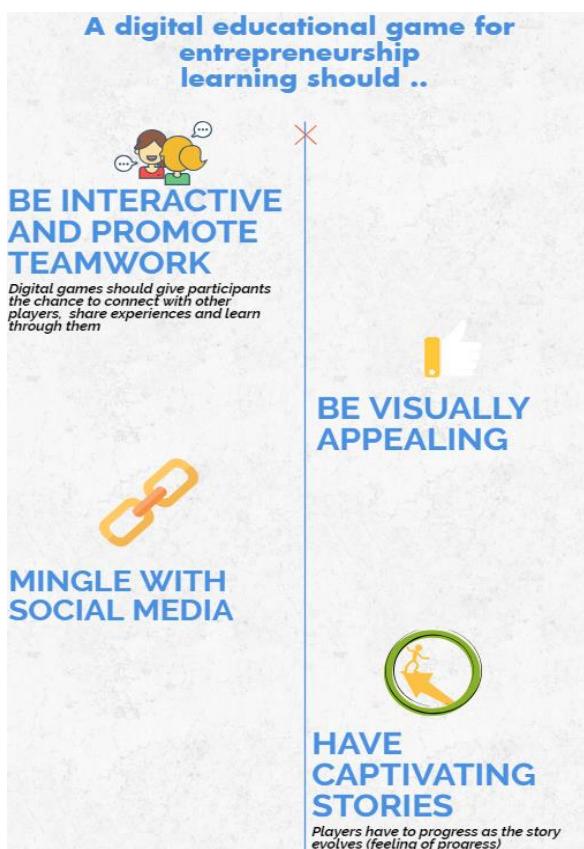
5.1 Increasing interest in EE

The findings of the research activities unveil that for most Schools involved in the Project, EE is a completely new world, ready to be discovered. The results of the FGs across the 4 countries are quite homogeneous, as they mostly highlight the very positive attitudes and interest in EE and DGBL. However, the Research revealed several areas that need to be considered for the development of entrepreneurial education. In fact, although the Research activities display high levels of topic interest and FGs participants unanimously recognized the benefits of EE and DGBL, in most countries entrepreneurship still remains on the fringes of education. Teachers pointed out the lack of direct practical entrepreneurship experience in education and support needed for integrating such activities into the school curricula.

5.2 Key factors to consider for designing EN.GA.G.E digital games for EE

The Research also provided a valuable insight into the main issues to consider for designing and realizing the two EN.GAG. E. digital games aimed to facilitate primary and secondary school teachers in developing entrepreneurial competencies of kids and youngsters.

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With this Summary report, we have achieved the first milestone of the EN.GA.G.E project and we are now even more convinced that the following implementation activities can deliver remarkable improvements in the development of an entrepreneurial culture across Europe.