

Introduction

The internationalization of companies is an important issue for EU and in the recent years. Nevertheless there is a lack of internationalization spirit and knowledge to ensure that a company will have success abroad with a certain stability ensured. So, there is a gap between the need for knowledge and the knowledge that is needed to ensure an internationalization company success. By developing internationalization abilities among SMEs, start-ups, potential entrepreneurs, providing them with the necessary knowledge, we seek to fill that gap.

The specific project aim is to embed strategic management Virtual Games (VG) within business education by enhancing trainers' competencies to create virtual reality contents and use it on strategic management training.

The pursued, specific objectives of the project are:

- To deepen the assessment of the actual competencies of the trainers for using virtual games in strategic management,
- To develop a course comprising of 6 teaching notes for the game cases on Strategic Management,
- To pilot teaching notes with 50 trainers (10 per country),
- To develop 6 game cases,
- To pilot game cases with 250 entrepreneurs (each trainer with 5 in each country),
- To develop the textbook and an article on using ICT in teaching process,
- Disseminate results of the project in order to assure wide exploitation.

The WINGS project will create an online course with teaching notes and serious game cases comprising Learning Environment which has the objectives of developing the entrepreneurship and internationalization skills in the real life situations. Finally, the objective is to educate/teach the player about the various issues associated with internationalization that concern real life situations.

The innovative and new-sophisticated approach of the project learning through Learning Environment with virtual serious game cases, will enhance the abilities of players/learners about internationalizing their business working corroboratively to find and share information, and raising their knowledge in specific areas like financial issues, marketing plan, and business plan, among others, in the global world market. Through the WINGS project, partnership wants to influence the internationalization desires and competencies in Europe and play a role in the future successful business stories.

It is expected that minimum 550 representatives of target groups will take direct part in the project activities, about 2500 representatives of target groups and stakeholders will participate in chosen activities but will be directly reached and about 30 000 will be informed about the project via electronic channels.

About the report

The study on the state-of-the-art of the internationalization for start-ups and entrepreneurs and its weight on education has been done during the preparation of this project. In this phase we'll define the competence framework gathering thorough information through desk and field research activities as follows:

1. Characterization of start-ups and entrepreneur education in the countries of the partnership and its advantages;
2. Pedagogical aspects of instilling a spirit of entrepreneurship via the utilization of open educational approaches and modern teaching practices focused on start-ups and entrepreneurs;
3. Technical specification/features (instructional design) related to the design of the classes and projects;
4. Best practices of entrepreneurship and innovative educational approaches already in use and quality framework indicators;
5. Training needs of entrepreneurs / necessary steps for successful implementation of open educational approaches in their daily practices.

In the first months of the Project, the partnership conducted a desktop and field research, involving more than 30 entrepreneurship experts who took part in focus groups, as well as about 300 VET teachers and trainers across the partner countries.

The field research concerns competence analysis & confirmation of strategic management Virtual Games (VG) topics. Trainers & educators have been evaluated on the level of VG competencies and ICT-usage.

The analysis includes:

1. Assessment of the effective competences on internationalization as well as ICT-capabilities.
2. Definition of the types of Internationalization for Start-ups needs and problems to be approached and solved.
3. Definition of the economic sectors in which the start-ups operate, to be approached.

O1 will serve as the master study for all the other project activities, but specifically for the development of an internationalization course curriculum, for the identification of a quality framework, for designing tailored roadmaps for the adoption of internationalization education and for orientation during the content-creation phase.

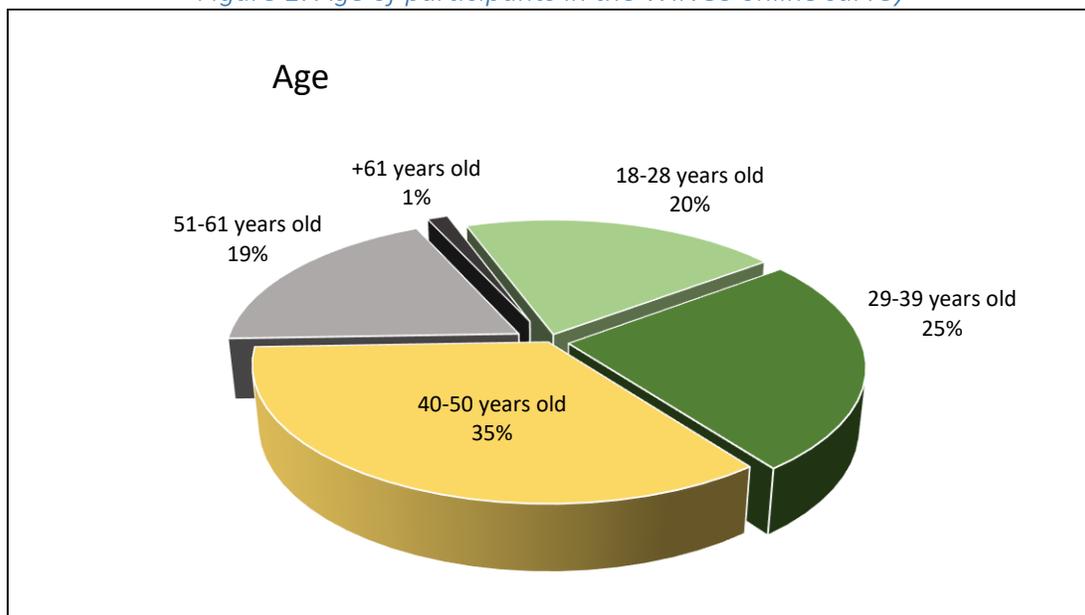
SUMMARY OF RESULTS

1. Online survey on virtual gaming and ICT competencies of teachers and trainers

In the period March – April 2019 the WINGS partnership conducted an online research in the 6 partner countries – Bulgaria, Cyprus, Czech Republic, Poland, Portugal and Spain. The survey aimed, in a preliminary phase, to evaluate and analyse the trainers and educators' competences on the level of Virtual Gaming and ICT-usage, as well as their opinion regarding the advantages and disadvantages of the use of these resources in learning and teaching processes.

300 teachers and trainers took part in the survey, out of whom 171 (57%) female and 129 (43%) male participants. 45% of all respondents are below 40, 35% are 40-50 years old, and 20% are 50+. (Figure 1)

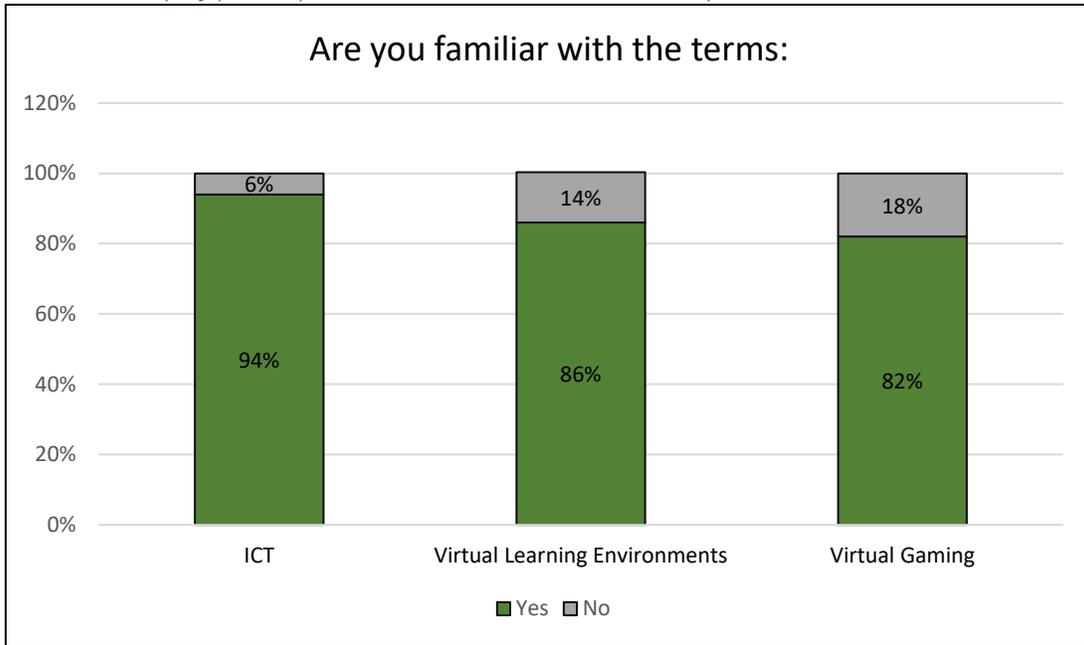
Figure 1: Age of participants in the WINGS online survey



52% of the participants in the survey possess more than 11 years of teaching or training experience. 35% have between 1 and 10 years of teaching practice and 11% - less than a year.

Most of the participants are aware of the terms related to computer technologies in the classroom: 94% are aware of the acronym "ICT", 86% - of the expression «Virtual Learning Environments» and 82% are familiar with the term «Virtual Gaming». (Figure 2)

Figure 2: Familiarity of participants in the WINGS online survey with main ICT terms

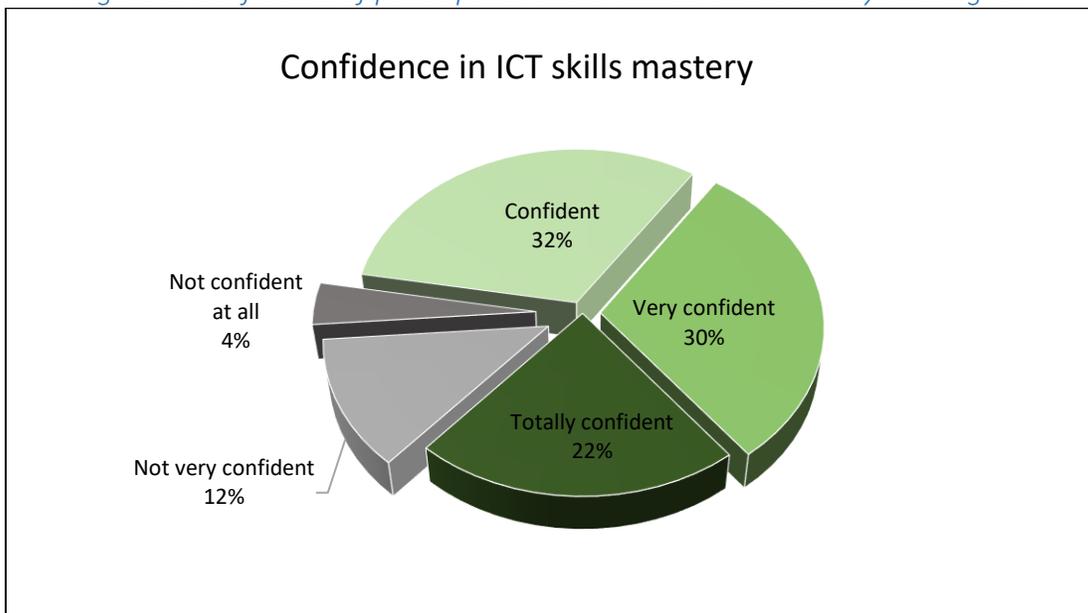


45% of the respondents use ICT resources in their classes most days of the week, 19% - once a week, 18% - once a month, 12% - once or couple of times a year and 5% - never.

The most frequently used devices are desktop computers (73%) or laptops, tablets or other internet-connected devices (59%). 40% of the teachers also use computer laboratories and 32% work with interactive white boards.

Most of the respondents feel confident in their ICT mastery, and 16% lack confidence. (Figure 3)

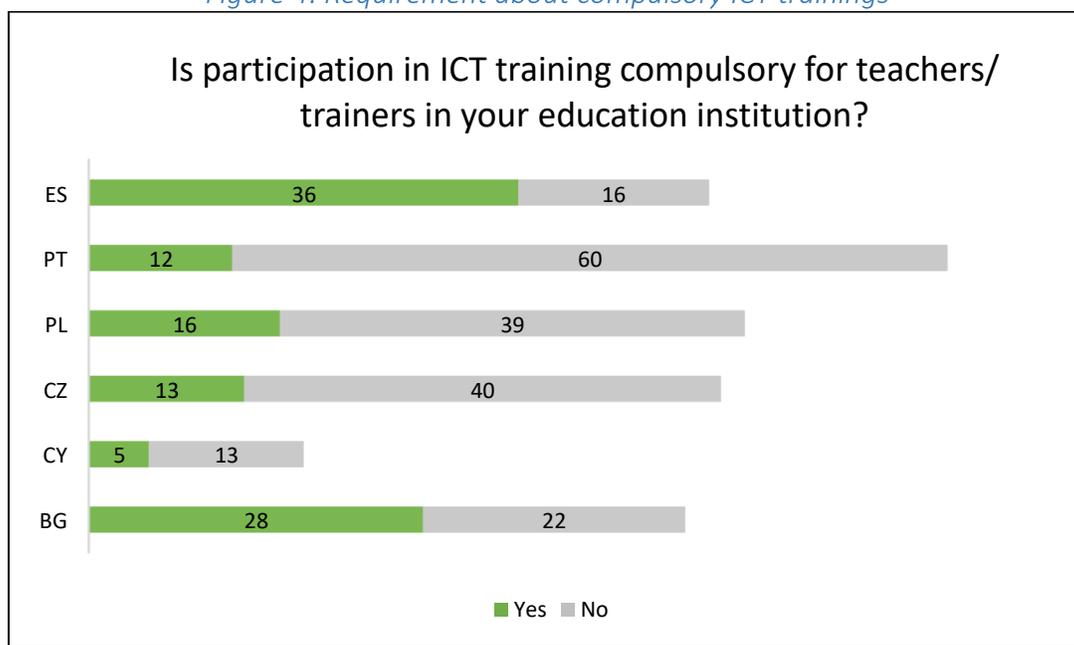
Figure 3: Confidence of participants in the WINGS online survey in using ICT



37% assess their mastery of managing ICT as good, 33% as moderate and 12% as experts, while 18% admit they are beginners or non-users. 62% feel confident or very confident, 22% feel totally confident in employing technological resources in front of the students/ trainees, while 16% admit they are not confident in their digital skills.

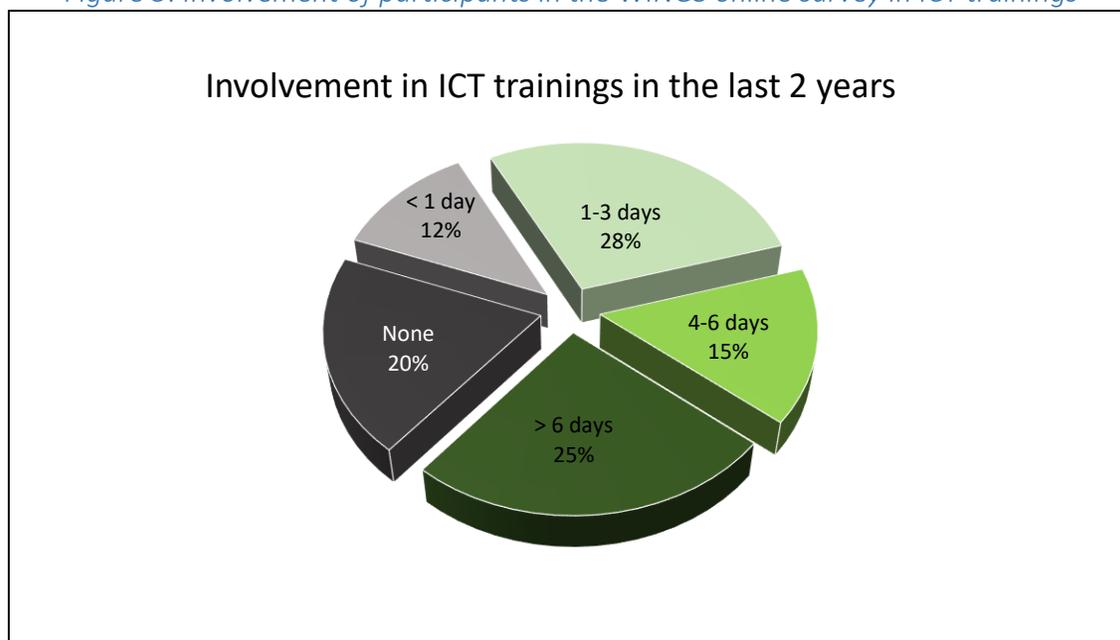
There are no strict requirements about ICT training of teaching staff in the participants' schools. 63% of the teachers and trainers say they are not obliged to pass an ICT training. Spain and Bulgaria are the two countries with the biggest share of participants reporting that ICT training for teachers is compulsory in their education institution. (Figure 4)

Figure 4: Requirement about compulsory ICT trainings



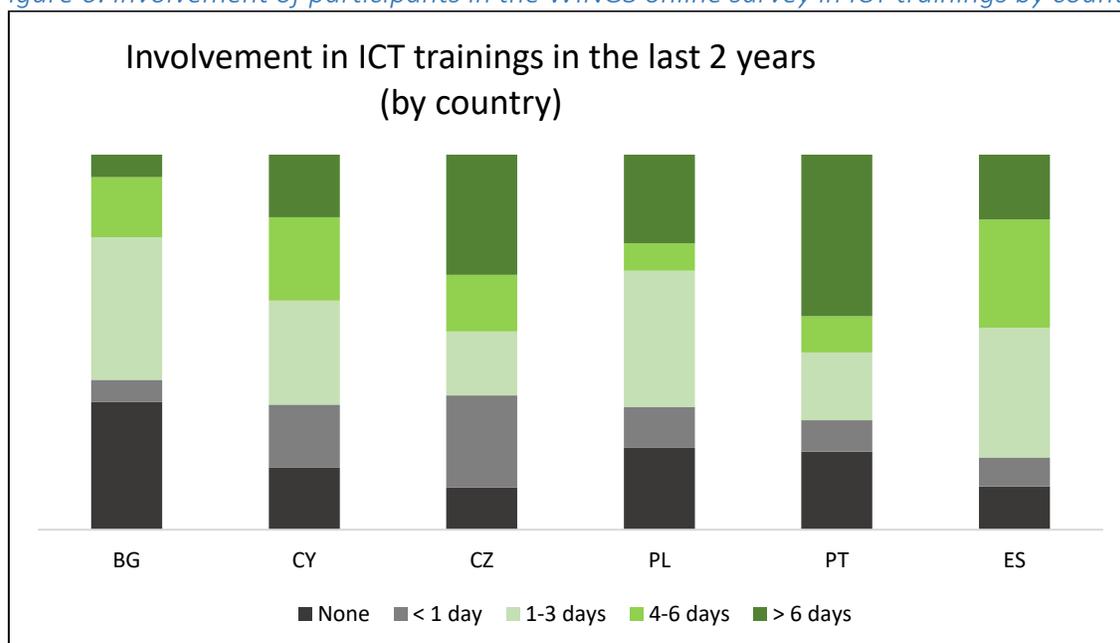
30% of the teachers have participated in no ICT training at all or in one that was shorter than a day during the past 2 years. 28% of all respondents have taken part in trainings lasting 1-3 days, 15% have been involved in 4-6 days trainings and another 25% have spent more than 6 days in ICT trainings. (Figure 5)

Figure 5: Involvement of participants in the WINGS online survey in ICT trainings



The biggest share of those that have not taken part in any kind of ICT development activities are in Bulgaria, Poland and Spain, where nearly half of the surveyed teachers have experienced no or very limited ICT training recently (Figure 6). On the opposite end are Portugal and Czech Republic, with the largest number of participants being involved in ICT trainings longer than 6 days. (Figure 6)

Figure 6: Involvement of participants in the WINGS online survey in ICT trainings by country



72% of teachers and trainers who took part in the survey have been involved in introductory course on internet use and general applications and 66% have improved their ICT skills through self-development. In Bulgaria, Czech Republic and Poland more than 80% rely on self-development.

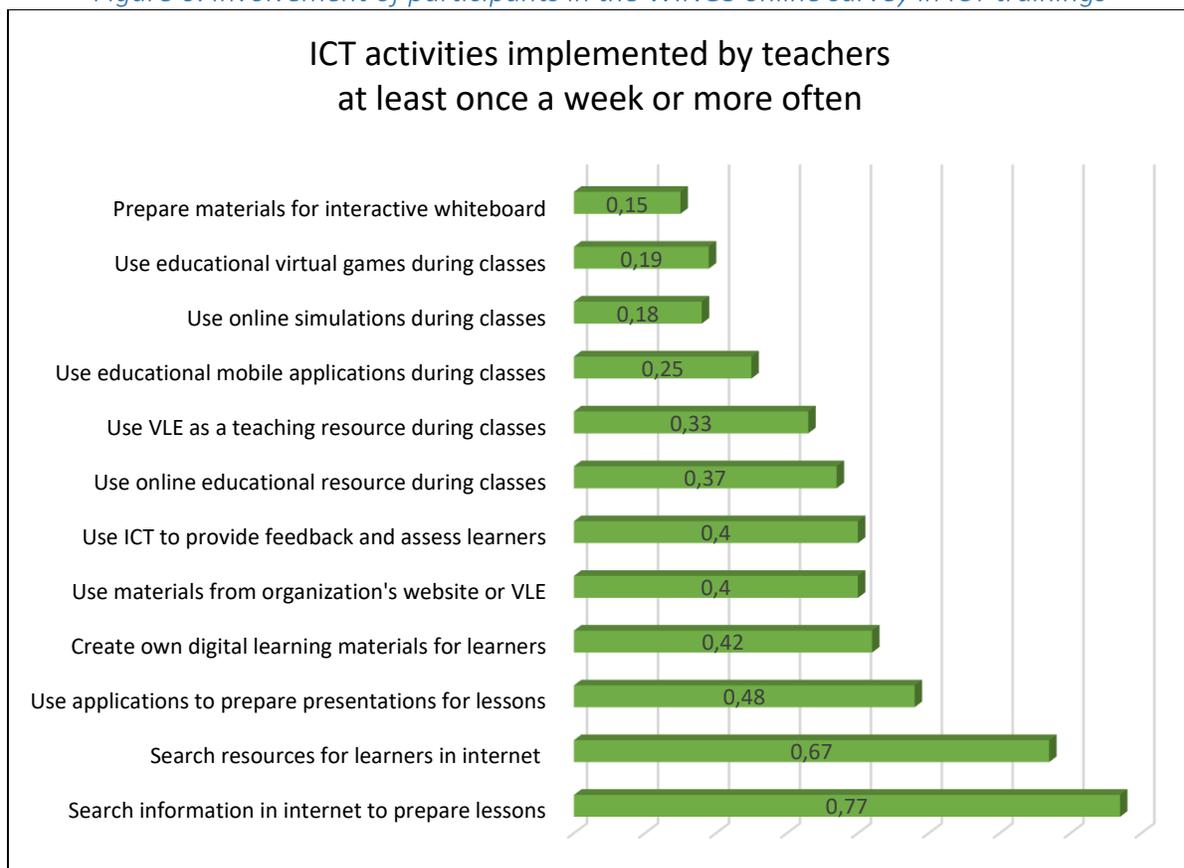
54% have taken part in equipment-specific training (interactive whiteboard, laptop, etc.), in courses on the pedagogical use of ICT, and in online communities (e.g. mailing lists, twitter, blogs) for professional discussions with other teachers.

44% have been involved in trainings provided by school staff and in subject-specific training on learning applications tutorials, simulations, etc.).

40% have participated in advanced courses on internet use (creating websites, home pages, video conferencing, etc.), in advanced courses on applications (advanced Word-processing, complex relational databases, Virtual Learning Environments, etc.) and in other professional development opportunities related to ICT. 35% of the survey participants have been trained in using multimedia. Portugal, Spain and Poland are the countries with biggest share of participants in advanced courses.

The survey participants mostly rely on internet-based resources for preparing lessons and training materials. (Figure 6)

Figure 6: Involvement of participants in the WINGS online survey in ICT trainings



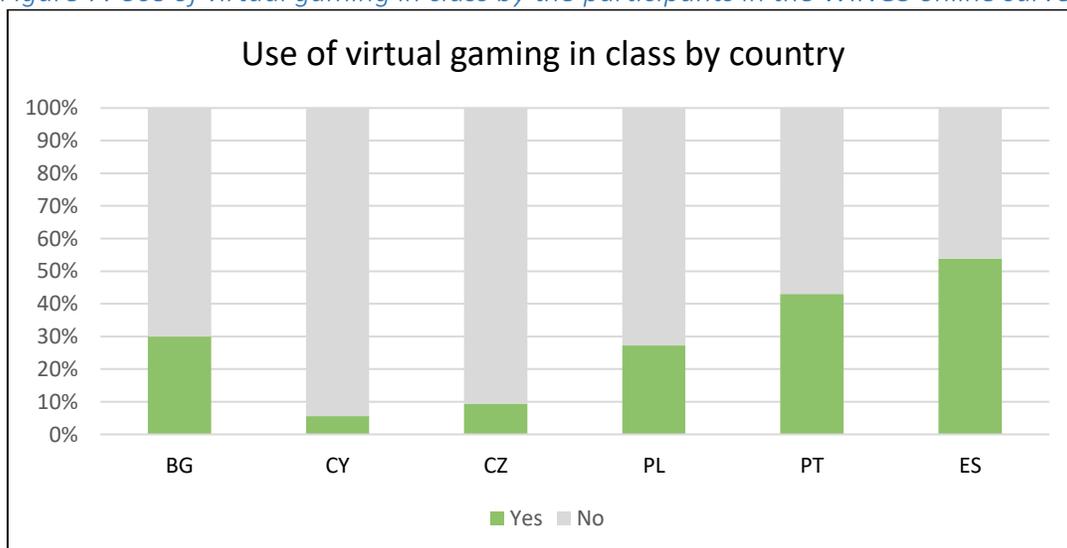
More than 3/4 of respondents (77%) use internet to browse for information and prepare lessons at least once a week or more often. 48% regularly use applications to prepare lessons or presentations and 42% create their own digital learning materials for students and trainees. 40% use materials from their school's platform or other learning environment, and use ICT for feedback and assessment. 33% use online educational platforms or learning environments as a teaching resource during classes. 25% of the respondents use mobile applications, 18% apply online simulations and virtual gaming and 15% use interactive whiteboards.

The large majority of the respondents agree completely or to a great extent about the benefits of ICT at school, especially that:

- ICT make lessons more practical (81%),
- 77% believe ICT improves students/trainees' motivation and 73% say students/trainees retrieve information more easily;
- According to 76%, digital technologies are essential to prepare students/trainees to live and work in the 21st century and 68% are convinced that they also enhance learners' transversal skills;
- 68% think that it facilitates collaboration and group work and improves class climate;
- According to 64% of the respondents ICT improves concentration and autonomy of students (they can repeat exercises if needed, explore in more detail topics that they are interested in, etc.).
- 62% are of the opinion that ICT also help students work harder, understand and remember more easily what they learn.
- 60% agree that computer technologies improve trainees' critical thinking and problem solving skills.

68% of respondents don't use virtual gaming in class (Figure 7)

Figure 7: Use of virtual gaming in class by the participants in the WINGS online survey



The biggest share of teachers/ trainers who apply them is in Spain and Portugal (54% and 43% of the respondents in these countries).

More than 63% of participants in the online survey would be interested in applying virtual gaming in the learning processes. In the ideal case:

- More than 82% expect virtual games to increase students' motivation, contribute to educational goals, promote creativity and combine learning and fun;
- 79% expect that digital games would be easy to understand and use; offer opportunities for application in a flexible way; have good didactics, valid content and information and provide quick and relevant feedback; be easy to install and run smoothly with minor errors.
- 70% expect that the virtual games are self-explanatory to students and that they promote the right values.
- Interestingly enough, the low cost does not play the critical role in the choice – the respondents list as last crucial factor (63%).

The biggest concerns regarding the use of virtual gaming at school are the lack of adequate skills of teachers, insufficient computers and internet and lack of technical support:

- Out of date and insufficient number of computers (70%),
- Insufficient Internet bandwidth / speed or internet-connected computers (66%);
- Lack of adequate skills of teachers (67%) and Insufficient pedagogical support /training (65%);
- Too many technical problems (60%) and lack of technical support for teachers (65%);
- Lack of adequate content/ material for teaching (60%), of suitable games (48%) or of resources in national language (48%)

Other impediments are:

- too many students in the classroom (60%) or their inappropriate behaviour (mentioned by 50% of respondents);
- difficulty to integrate virtual gaming in the curriculum, lack of time to fit games in timetable (48%), pressure to prepare students for exams and tests (47%);
- lack of information for teachers/trainers (51%) and lack of pedagogical models on how to use ICT and virtual gaming for learning (46%);
- 40% say virtual gaming is not a priority for the schools or for the teachers, or that their educational value is not clear (37%);
- 32% say most parents are not in favor of using ICT and virtual gaming at school.

More than 80% of the participants are convinced in the educational impact of virtual games or agree that it is worthwhile implementing them in the training process, especially for skill building and motivation.

- supports students with special needs and drop-outs (86%);
- increase motivation for learning (85%) and improves performance in the subject (84%);
- ICT boost skill development - intellectual skills like problem solving (86%); personal skills such as initiative and persistence, social skills such as team work and communication (84%), critical skills and spatial skills/orientation (80%).

2. Desktop and field research across partner countries

- The economic sectors in which start-ups hold the biggest potential and competitive advantage, according to the participants in the focus group are ICT (big data, business intelligence, financial technologies, marketing technology, CRM, programming, e-commerce), manufacturing and social recreation services.
- The level of internationalization varies across SMEs in partner countries, however many of the startups are so-called born globals, which means that they operate across borders and in some cases open an office in more than one country when starting operations.
- Startups apply various strategies for their internationalization, but most of them rely on e-commerce and partnerships with local companies as internationalization strategies. Most startups engage in Business-to-Business (B2B) markets¹ and generate their revenue through working with other businesses.
- Entrepreneurship competencies combine creativity, a sense of initiative, problem-solving, the ability to marshal resources, and financial and technological knowledge (see Table 1). These competencies enable entrepreneurs and entrepreneurial employees to provoke and adapt to change. They can be developed through entrepreneurship education and training that focus on promoting an entrepreneurial mindset and behaviours.² (Figure 8)

Figure 8: Use of virtual gaming in class by the participants in the WINGS online survey

Table 1. The entrepreneurship competencies identified in the EntreComp entrepreneurship competency framework

Ideas and opportunities	Resources	Translation into action
Spotting opportunities	Self-awareness and self-efficacy	Initiative taking
Creativity	Motivation and perseverance	Planning and management
Envisioning	Mobilising resources	Coping with uncertainty, ambiguity and risk
Valuing ideas	Financial and economic literacy	Working with others
Ethical and sustainable thinking	Mobilising others	Learning through experience

Source: European Commission (2016), *EntreComp: The Entrepreneurship Competence Framework*, Publication Office of the European Union.

¹ EU Startup Monitor 2018 - <http://startupmonitor.eu/EU-Startup-Monitor-2018-Report-WEB.pdf>

² EntreComp: The Entrepreneurship Competence Framework - <https://ec.europa.eu/jrc/en/publication/european-commission/scientific-and-technical-research-reports/entrecomp-entrepreneurship-competence-framework>

- A perceived lack of capabilities remains one of the most frequently cited barriers for people to start a business. This is in particular a challenge for the youth (18-30 years old), who have to rely more on education to gain relevant knowledge and skills. Across all OECD countries, more than half of the youth surveyed in the period 2012-16 reported a lack of entrepreneurship knowledge and skills (OECD/European Union, 2018a).³
- In terms of SME internationalization and exporting, the 2007 OECD/APEC study *Removing Barriers to SME Access to International Markets*⁴ identified four main barriers: Shortage of working capital to finance exports; Identifying foreign business opportunities; Limited information to locate/analyze markets; and Inability to contact potential overseas customers. A subsequent OECD (2009) study added the 'lack of managerial time, skills and knowledge' as a fifth important barrier. It is striking to note that most of these barriers are related to a (perceived) lack of competences related to international activities.⁵
- Generally, entrepreneurship training is not sufficiently and adequately provided to ensure that entrepreneurs have all the necessary capacities. Entrepreneurship programs are basically offered for students in economic studies. However, higher education in humanities, sciences, technical studies and arts does not offer opportunities for students to develop entrepreneurship competencies, which need to be mainstream. Traditional teaching practices prevail and are also seen as obstacles in entrepreneurial education, while students would benefit from a practical experience, such as students training companies or entrepreneurship game-based learning. Still, there are examples of innovative approaches in entrepreneurial education including game-based learning, most of them developed under EU projects.
- Entrepreneurship education need to start as early as possible and should include specific cases and hands-on opportunities for learners to build knowledge and skills while dealing with real cases from the practice. Moreover, entrepreneurship training and education needs to be mainstreamed across secondary and tertiary education programs. The game-based approach suggested in the WINGS Project was highly appreciated as promising to add this usually missing practical dimension of the e-learning course.
- Among the key factors for SME successful internationalization⁶, the following can be outlined: the role of the owner-manager, including the international strategy and networking. The main internationalization competences include:

³OECD 2018 Developing Entrepreneurship Competences policy note - file:///E:/PROJECTS/2018_WINGS/IO1/2018-SME-Entrepreneurship%20Competences.pdf

⁴ OECD-APEC (2007), *Removing Barriers to SME Access to International Markets* Paris, Organization for Economic Cooperation and Development (OECD) Publishing.

⁵ OECD (2009): *Top Barriers and Drivers to SME Internationalization*, Report by the OECD Working Party on SMEs and Entrepreneurship, OECD.

⁶ (2011) Achtenhagen, Leona - Internationalization competence of SMEs. Retrieved from https://entreprenorskapsforum.se/wp-content/uploads/2011/12/internationalization-comp_webb.pdf

- Personal international orientation, such as international experience and orientation, cross-cultural competences, identifying international business opportunities;
- Organizational capabilities and resources - international innovativeness and marketing skills
- Market knowledge - information about the international market opportunities and perceptions of the environment
- Institutional knowledge

Based on the desktop and field research, the profile of the “global entrepreneur” or of the successful SMEs on the international markets include the following skills, which repeat across all countries:

- Global mindset – strategic thinking, business planning, leadership, vision and motivation to grow business internationally.
- Intercultural communication - foreign languages, networking, intercultural awareness, knowledge of differences in legislation and regulation in the international market, preferences of customers.
- Risk taking, business acumen, sense of opportunity, not being afraid to fail, self-confidence.
- Change management, adaptability, flexibility, openness to change.
- Creativity and innovation.
- Critical thinking, decision making, problema solving skills.
- Marketing and sales skills, customer orientation.
- Lifelong learning attitude – awareness of one’s learning.
- Business skills – profit orientation, action orientation, financial management, operational thinking, people management skills.

Taking into account all this set of features and core competences that entrepreneurship requires and that our research let us know, a training package addressing all these aspects will be developed. This handbook consists in a set of teaching notes in which, according to the desk and field results above summarised, six topics will be established in order to focus on each of the needs that the entrepreneurial education scenario in the EU currently presents. Teaching notes being fully based on information directly obtained from entrepreneurship-world-related people, allow us to make sure that the needs identified are being covered with the project’s final output and that its usefulness for the target is guaranteed.