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# IO6: White Paper

JSP0 (JEUX SÉRIEUX ET PRATIQUES D'ORIENTATION)

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## Executive Summary

The ongoing development and proliferation of serious games poses a unique opportunity for games designers to appeal to teachers and careers guidance professionals to enhance educational and guidance programmes across Europe. Serious games offer an alternative to traditional teaching and careers guidance, which can improve the engagement of hard-to-reach young people, who are at risk of social and economic exclusion. This white paper details three different stages of research undergone by the JSPO project consortium and proposes three policy recommendations to improve accessibility and adapt design of serious games to best appeal to young people, teachers and careers guidance professionals.



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## Definitions & Abbreviations

- **Serious games:** Different from entertaining games, serious games are designed for an educational rather than an entertaining purpose<sup>1</sup>. Serious games are games which aim at achieving educational, training, and informational goals<sup>2</sup>.
- **Social Exclusion:**
- **Economic Exclusion:**
- **NEETs:** Young people Not in Education, Employment or Training
- **VET:** Vocational Education and Training
- **IAG:** Information, Advice and Guidance (sometimes CEIAG: Careers and Education, Information Advice and Guidance)

## Overview of Partners



**Onisep** (National Office for Information on Teachings and Professions) is a state operator reporting to the Ministry of National Education and Youth and the Ministry of Higher Education, Research, and Innovation. A public publisher, Onisep produces and disseminates all information on training and professions. It also offers services to students, parents, and educational teams. Onisep is based in France.



**The University of Florence (UNIFI)**, Italy is one of the most important Italian public universities and has a strong international vocation. It fosters cooperation with academic and research institutions all over the world and welcomes foreign teaching staff, researchers, and students to promote cultural and scientific internationalization. To this end, through its Departments and Schools, the University promotes the hospitality of highly qualified guests from all over the world. Moreover, it traditionally devotes particular attention to the development of collaborative relationships with foreign universities and to the process of internationalization, which has become a strategic and dominant aspect of the life of the university in research, teaching, the organization of study programmes, mobility of teachers, researchers, and students.



**AEVA** is a non-profit association that enjoys the prerogatives of public utility legal persons, dedicated to education and valuing the Region of Aveiro in Portugal. Their headquarters are in Aveiro and the organisation holds influence in all eleven municipalities that make up the Intermunicipal Community of the Region of Aveiro. AEVA is the only Portuguese entity with competences in education, training, development, and enhancement of communities that holds international certification.

The work is developed mainly in the Aveiro Region, having a national and international impact.

<sup>1</sup> Nazry, N., Nazrina, M., and Romano, D.M. (2017). Mood and learning in navigation-based serious games. *Computers in Human Behavior*, vol. 73, p. 596–604.

<sup>2</sup> Clark, A. (1987). *Serious Games*. New York: University Press of America Inc., 1987.



**FASE.net**, is a training consultancy in Spain that since 1994 has stood out for quality and innovation. It is a centre for professional, occupational, and continuous training, which teaches courses in face-to-face, distance, remote and mixed modes. Likewise, it stands out in the area of editing and development of new solutions for learning and teaching: tele-training platform and virtual learning environments tested with positive results, in various national and international training plans and constantly updated, of according to market demands.



**The Opportunity Centre** (part of the Aspire-igen Group) is a social enterprise based in Bradford, UK. It is the largest careers and training organisation in the Yorkshire region, an area with a population of over 5 million. The Group supports social inclusion and regeneration by providing a range of guidance and training services. This includes delivering vocational training programmes for NEET young people to prepare them for entry into the labour market. They are a recognised centre of excellence for professional development and provide training for careers and guidance professionals.



## Introduction

The JSPO project (Jeux Sérieux et Pratiques d'Orientation) aims to support optimum use of serious games by encouraging the use of effective game-based devices, notably targeting those at risk of social and economic exclusion. The JSPO project focuses on the possibilities of using serious games in career guidance practice.

The use of serious games presents pedagogical advantages to young people, particularly those at risk of social and economic exclusion. Serious games can positively impact learner engagement, motivation, and performance by promoting comfort and a positive mood throughout gameplay, which increases interest and engagement, and improves academic performance<sup>3</sup>. Serious games have been praised as an alternative method to mainstream learning, for their ability to cater to individual needs and to provide opportunities for immersive learning promoting retention of information.

These recommendations will delve further into the potential developments to be made within serious games in careers guidance and education. The research undertaken has aimed to find features of successful serious games, the methods professionals employ to engage young people, and how effective they are. Interviews with the developers of serious games also contribute a different perspective – finding the balance between effectiveness and feasibility within the game development field. The consequent policy recommendations put forward constructive suggestions for designers and practitioners with the aim of promoting the development and use of serious games which are accessible to young people.

This whitepaper aims to promote interactions between education and guidance professionals, learners, and game developers, to facilitate engaging and inclusive approaches to both academic and vocational guidance.

In the current Covid-19 pandemic, one feature of serious games is particularly relevant – the accessibility for remote education means that while face-to-face school isn't possible. With e-learning becoming more widespread, tools and methods need to be developed to maintain the value of education and guidance delivered to learners. These also need to be accessible and engaging for young people at risk of social and economic exclusion, as these groups are particularly at risk and hard-to-reach when working remotely, as seen during the pandemic<sup>4</sup>.

To keep engaging with these hard-to-reach young people, training and guidance staff require higher quality, more accessible and interactive learning resources. The key features of serious games recommended within the context of remote and e-learning are that they involve learners in taking important decisions, promote communication, and develop initiative and self-regulation skills<sup>5</sup>. However, where young people or professionals don't have the required digital skills or access away from learning or guidance facilities, promotion of serious games may not be appropriate or effective in engagement. Lack of digital access and skills presents a significant barrier to the ongoing promotion and increased use of serious games, so solutions should be considered which can

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<sup>3</sup> Zhonggen, Y. (2019). A Meta-Analysis of Use of Serious Games in Education over a Decade. *International Journal of Computer Games Technology*, [online] vol. 2019. Available at: <https://doi.org/10.1155/2019/4797032>.

<sup>4</sup>Office for National Statistics, (2021). *Young people not in education, employment or training (NEET)*. UK Government. Available at: <https://www.ons.gov.uk/employmentandlabourmarket/peoplenotinwork/unemployment/datasets/youngpeoplenotineducationemploymentortrainingneettable1>.

<sup>5</sup> Gachkova, M. and Somova, E. (2016). "Game-based Approach in E-Learning".



overcome or confront these. The research conducted within this whitepaper attempts to bridge the gap between effectiveness and accessibility to this end.

## Methodology

### Workshops

Held in each partner country, working with target groups of NEETs, and professionals. Testing out games and collecting feedback from the groups. Collected similar data types to IO5 survey, qualitative information.

Workshops were held in partner countries which involved a demonstration of the Games2Guide platform and a selection of serious games.

Different partner countries hosted a variety of stakeholders and as a result, collected a wide range of feedback on the use of both the Games2Guide library and the serious games. Due to Covid-19 restrictions and limitations on face-to-face contact, workshops were held either in reduced numbers face-to-face, or online, with some events being accessible in both formats. For example, the workshops held in Spain by FASE were held simultaneously as a physical meeting, and online – this increased the reach and impact over the three sessions.

While all workshops had the brief of testing out the platform and serious games and then collecting feedback, partner organisations chose to implement this in different ways. While some opted for a more informal, feedback discussion after the demonstrations, others devised questionnaires to collect qualitative information which could then be used for further analysis.

For example, the workshop hosted in Italy by UNIFI involved a varied cohort of students, teachers, and guidance professionals. Participants tested out one game chosen by UNIFI: GEM Guidance and Entrepreneurship Mind-sets through Games<sup>6</sup>. Questionnaires were devised and distributed to all participants following the testing period, with questions tailored to each of the three groups: students, teachers, and professionals. The questions involved short and long-form questions which aimed to gather a range of data in response to the demonstrations. A sample of workshop questionnaires can be found in Annex 1.

Participants' responses to the open-ended questions of the questionnaire were analysed using a conventional content analysis<sup>7</sup>. With this qualitative research method, the text data content is identified through a systematic classification process, which includes coding procedures and careful theme recognition. Responses offered by participants were organized in categories. Researchers using conventional content analysis derived codes and categories directly on the base of text data because they used neither preconceived categories nor a theory-based coding system. This analysis was accomplished by two independently trained expert reviewers. With the more short-form questions, frequencies and percentages were calculated.

The workshops allowed partner organisations to collect contextual feedback on serious games, which supplement the subsequent survey and games developers' interviews. While the survey did collect a range of strong feedback, the workshops provided an additional perspective from those who had experience of the same game within the same environment. This meant that the feedback

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<sup>6</sup> GEM game. (2021). <http://www.gemgame.eu>

<sup>7</sup> Hsieh, H-F. and Shannon, S.E. (2005). Three Approaches to Qualitative Content Analysis. *Qualitative Health Research*, 15(9), pp. 1277-1288. doi:10.1177/1049732305276687.



was more specific to the features and experience of the actual games, rather than external factors which might hinder the use of serious games – such as funding, facilities, or digital access. The accessibility to feedback forms and questionnaires online gave participants the opportunity to write longer, more detailed responses in their own time, while the in-person discussions created an environment for immediate, possibly more emotional, or honest, responses.

### Google Forms Survey

To understand the perspective of professionals in education and guidance with regards to the status of serious games, a qualitative survey was built and sent out amongst contacts of all partner organisations. The survey was sent out to a wide variety of careers guides, teachers, and other staff who may engage young people with serious games.

The questions focused on the current use, experience, and perceptions of serious games, and centred on the engagement of young people with serious games. The qualitative questions ranged from basic: ‘how often do you use serious games with young people?’; to more advanced and detailed: ‘Do you use different strategies to engage different / diverse groups of young people with serious games? If so, what are they?’. Particularly relevant to the development of policy recommendations, the survey asked the respondents what features of serious games they thought were effective and not effective, and what would improve their own and young people’s experience.

The surveys were compiled on Google Forms and sent out via email, on social media and other online or digital communication platforms. Each partner country collected around 15-30 responses each which created a strong base of different perspectives, backgrounds, and contexts with which to develop a set of interview questions to further focus the outcome of research.

The survey was designed to collect research for both this policy recommendations, and the previously produced best practice e-book. As a result, not all the questions asked were relevant for this document. The analysis of the survey results includes only relevant questions to the purpose of this document.

### Games Developers Interviews

The interviews were done informally, either by video or phone call, or through email correspondence. All partner organisations were involved in interviews, which allowed a fuller idea of the capabilities of games developers across Europe to design effective serious games for education and careers guidance. Issues of accessibility related to the target audience of hard-to-reach young people also differ throughout the countries, as shown within survey responses. The Europe-wide interviews delivered more precise and valuable insight into accessibility through serious games within the specific country. The games developers often better understand the geographical context within their own countries and can offer their own specific experiences in creating games for that target audience.

The preliminary analysis of the survey responses helped to develop a set of interview questions to further understand whether the features suggested in the survey were feasible with regards to game development. These questions were, again, qualitative and generally formed as a ‘response’ to the survey responses. Games developers were initially asked about their own organisation’s production and their experience in creating serious games for education and guidance. Questions such as ‘what factors have influenced the development of your recent products?’ also give an idea of the current trends or influences within the game industry, to further focus the consequent policy



recommendations. The interview also includes questions around accessibility: ‘How can we make games more accessible for young people?’ gives the respondents an opportunity to provide their own experiences and expertise in promoting inclusivity and accessibility – specifically relevant to our target audience of young people at risk of social and economic exclusion. Finally, three key findings from the survey responses were taken and posed as potential features to test for feasibility within games design and development. For example, one question asked about finding the balance between a game being pedagogically valuable and at the same time, exciting and fun enough to keep the player engaged.

The responses from these interviews gave the research another viewpoint from which to draw conclusions and generate feasible policy recommendations. As a result, the recommendations could be proposed through the lens of both what is needed by professionals, and what can be produced by games developers.



## Key Findings

### Workshop Findings

All workshops involved a period for games testing and a period of feedback. Across the partner countries, the feedback was delivered either through formal questionnaires, or through informal discussions following the activities.

Following the games testing, the students were asked questions both in questionnaires and in discussion, such as ‘what did you like the most about this game?’ The students liked that they were given the opportunity for self-awareness, and self-identification in the game. The opportunities presented by the game for assessment of strengths, skills, and interests in work were a highlight, with one student saying: ‘The game helped me to better understand my potential and my weaknesses.’ The respondents also liked the amount of informational content within the game, and the range of jobs they could learn about in detail.

Rather than entertainment, most responses to student feedback questionnaires were based around the game’s ability to teach in an alternative way, rather than providing entertainment. Ease of use was also one of the most-seen responses, highlighting the simplicity and accessibility as positive aspects of the game.

During the workshops, it became clear that the games with the most positive feedback were role-play style games, based in parallel or digital worlds. This is especially true in the careers guidance field. In one workshop, all participants agreed that informational and educational games worked better when mirrored to reality. When the game guides the players through a world close to reality, feedback showed that participants could see themselves more in the jobs they are learning about, which impacts them more than seeing written information on a summary sheet.

A game called ‘PLAYHOST’<sup>8</sup> was well-liked and said to be useful. The game is based around simulation of real-life work in the Catering and Hospitality sector, and gives insight into the skills, strengths, and day-to-day activities required within different departments in the sector. One observation was that the game was quite long, and after a while, younger participants got ‘bored’ and used the Games2Guide platform to find other games ‘which were quicker and offered quick answers or rewards.’ This was a pattern throughout workshops: while participants found the simulation games interesting and informative, some players found them too long, and too challenging.

Despite this, participants found the role-playing games helpful and interesting: some feedback said, ‘I didn’t expect a game, even a serious game, to be able to have such an impact on me and the way I see work.’ When asked what they would add to PLAYHOST, some participants said they wouldn’t add anything – that it was comprehensive and covered all areas of the sector which they wanted information on.

When asked if they would add or change anything about the game they tested, student questionnaire respondents largely chose to add content: adding more occupations, or alternative answers or choices during gameplay. These would improve the game, as mentioned in the questionnaire, by allowing players ‘to better interpret the potential of people and their weaknesses,’ and provide a ‘more accurate analysis.’

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<sup>8</sup> JSPO, (2021). *PLAYHOST – JSPO*. [online]. Available at: <https://www.games2guide.eu/?serious-games=playhost&lang=en> [Accessed 02/08/2021].



The answers also included modifications to increase interactivity of the game. The students wanted to add more opportunity to be immersed in the game, rather than the high level of informational content. Another response suggested the ability to play with more than one player – a ‘multiplayer’ style would increase interactions between participants, perhaps boosting discussion and group input.

Teachers and professionals who participated in the workshop were asked questions which focused on their use of serious games as a tool in lessons, though the theme of questions were similar to that of the students’. When asked what makes serious games useful, respondents gave similar sentiments to that of the students. Participants liked how the games encourage self-reflection and self-assessment of strengths and weaknesses, creating more self-aware students. They also enjoyed the ease of use for the games, with simplicity and accessibility again being highlighted. Throughout the questionnaire, answers highlighted the positives of role-play or simulation-style games, which create an immersive experience and allow students to ‘put certain skills into practice without concrete risks.’

Again, participants were asked about content or elements that they would like to see more of in serious games. Respondents suggested aspects of self-development, and content which could help to motivate students. One participant’s response focused on emotions, which could be incorporated into gameplay regarding different situations within work. Other responses wanted further focus on strengths and skills, as well as the opportunity for students to register their interest in certain roles.

During the workshops, a lot of the questions asked were focused on the mechanics of the game. Players wanted to know more about how to work the games, and the sector in general. While the games came with instructions, some needed more information and guidance on playing the games.

Overall, responses from the workshops highlighted the usefulness of self-assessment within a serious game. Both students and professionals liked the aspect of self-reflection that the game allowed. Ease of use, and ease of access were both seen to be important factors in the use of serious games. Simulation games which immerse players in the world of work, within a low-risk environment have proven to be successful in exploring career paths and skill development.

## Summary

The workshops provided a range of different perspectives and different kinds of feedback. The responses to both formal questionnaires, and experiences from the workshops themselves support the proliferation of serious games within careers guidance and education. The following key points should be highlighted:

- **Role-play or simulation-style games are especially successful in a careers guidance context.** Being able to experience jobs and career paths in a low-risk environment gives insight to you people which written textual information cannot.
- **Ease-of-use and simplicity of the game structure** make the serious games more attractive for use by individual young people, and for teachers and professionals. The clearer the instructions for the serious games, the more likely they will be used.
- **A self-assessment of skills, strengths and interests is a useful and engaging feature** to include in serious games. Where players are given independence and the opportunity to self-reflect, the games become a valuable tool for careers guidance professionals and teachers.



- **Longer games need to be carefully designed to maintain motivation in the player.** Feedback has shown that long games where tasks are too challenging or require ‘too much work’ to earn the reward are unattractive and tend to be replaced with more immediate or easier games.
- **A high level of informational content can be engaging** for players, even if the game is less traditionally entertaining. Players have responded well to more informational or education games when they are in a simulation or role-play style.

## Survey Findings

What elements of serious games make them useful – what do they provide that traditional means do not?

The prevalent theme that respondents answered with is that of the ‘fun’ and ‘exciting’ nature of serious games. The answers included ideas of confidence-building through a comfortable environment. Teachers and professionals with experience of serious games found that they were a good way to increase participation from learners who were otherwise more shy or didn’t contribute as much to group activities. They also found that the games played into the learner’s competitive natures, and increased motivation to participate in the topic in this way.

Overall, respondents agreed that young people were comfortable with computers and technology, and as a result, felt more comfortable engaging in topics with which traditional means may not have been as successful. Serious games offered an alternative method of engagement with an interactivity which increases learner’s participation in what they might see as ‘boring’ or ‘too serious’ topics. The diversification of educational tools allowed them to maintain the attention of learners with variation in sessions and different ways of presenting topics.

One particular response to this question highlights the emotional aspect of gaming and the impact that this has on learners’ motivation and engagement. The respondent said: ‘[serious games create] an investment in activity on the part of young people’ and went on to mention how this increased engagement would positively impact information memorisation and retention.

Have you had any difficulty using serious games or resistance from young people? Why do you think this may be?

There was a range of different answers to this question, with both internal and external issues being cited as issues related to serious games. Digital access and skills – or lack thereof – seem to be the biggest barrier to the use of serious games. Particularly in remote learning or guidance sessions, low bandwidth, difficulties with connection, and access to digital devices are a very strong difficulty which prevents serious games being used to their full potential by teachers, professionals, and young people alike. This might be more infrastructural than within the realm of serious games design, but it could be possible to produce an easy-to-access game, perhaps on different platforms to increase accessibility for those who experience such difficulties.

While young people might feel more comfortable with technology and digital games, responses to this question point out that it is often the lack of experience or knowledge on the part of the teachers which poses a challenge. Teachers and professionals can also be apprehensive to the use of serious games if they do not think they are relevant enough to the topic, if they take too long to complete, or if the content doesn’t fit into the prescribed curriculum. From a career guidance



perspective, guidance sessions are usually less than an hour, in some cases as short as 25 minutes, and the professionals find the games they have used time consuming and not content-focused enough to include within sessions.

*“Games without good ergonomics, or poor aesthetics do not make the young person want to use the game”*

Some professionals have experienced reluctance from the young people, particularly if the activity is posited as a game, but is ‘too informative and boring’. Some games are off-putting to young people if they are too ‘childish’, or if the graphics and artwork are poor quality or outdated. On the other hand, some professionals found that if the game isn’t well-structured with its educational content, students only retain the entertaining side of it, without engaging with the educational aspect.

Overall, the responses to this question highlight the need for balance. First, the balance between educational value and entertainment value – providing informational content as well as encouraging participation from apprehensive young people. Then, a balance between easy digital access and high-quality gameplay experience, keeping in mind the aspect of ‘retro’ visual quality which is seen as undesirable by young people. Finally, a balance is needed between ease of instruction by professionals and having a challenging enough gameplay to engage young people – thus offering an attractive alternative teaching and guidance tool to professionals, while still offering an exciting tool for young people with more experience of gaming.

#### How and why are they effective?

Respondents to this question focused on the development of soft skills in their answers to this question. Professionals said that serious games and the methods used in them to engage young people promote creativity, quick-thinking and ‘outside the box’ thinking. The serious games can be fast-paced and challenging and offer an alternative way of teaching to the mainstream methods. This can appeal to different kinds of learners and can be adapted to suit all.

For example, one respondent liked how serious games are suitable for students lacking social skills. Where learners are shy, and perhaps do not participate in group discussions or activities due to poor communication or social skills, games serve a purpose in engaging the learner in digital ‘conversation’. Where this discussion is less natural and participant-led, it helps to develop the learner’s comfort with the topic and presenting their own input. Respondents similarly said that serious games were effective in engaging hard-to-reach young people who struggle with mainstream education.

*“Sometimes the serious gaming allows you to answer or interact more honestly. In some cases, young people in a traditional IAG session may interact based on what they think you as a practitioner wants to hear, or what they think they should say.”*

From a careers guidance professional’s perspective, allowing learners to use serious games as tools for self-reflection might elicit more honest responses than a face-to-face discussion. It fills a gap where there isn’t the required level of trust or rapport between a guidance professional and a young person – particularly prevalent in those hard-to-reach or at-risk of social or economic exclusion. When using a digital tool, trust isn’t needed, which might put some young people more at ease and comfortable with being honest.



Finally, some respondents praised serious games for their flexibility. In traditional teaching or guidance sessions, activities are often group-led and follow one specific pace or structure. With serious games, players can set their own level and pace, and follow the content in the way best suited to them.

Does the use of serious games increase the retention of young people of guidance/ education programmes?

While this question speaks to the value of serious games for institutions or guidance organisations, respondents mentioned one particularly significant feature which many concurred would increase the quality of experience for practitioners, increasing implementation of serious games into programmes, consequently increasing retention of young people on to the programmes.

The respondents stressed that serious games had to be easy to follow. A complicated implementation and training process was the biggest challenge for serious games to be integrated into guidance and education programmes. Teachers and guidance professionals require multiple introductory and training sessions before delivering the serious game within sessions, with one respondent suggesting guidebooks or instruction manuals for practitioners.

All responses following this theme recommended an easy-to-use structure, and informational resources outside of the digital game to supplement the information provided. This, in one response, would take the form of a follow-up worksheet after the game, to transition the information from digital game format to more traditional physical factsheets which could then be integrated into further sessions.

This sentiment was continued in responses to question 9, asking for suggestions for additional elements to serious games. The respondents suggested demonstrations and guidance documents as part of the serious game 'package'.

What additional content / elements would you like to see in future serious games?

*"It is essential that access is smooth and easy, the slightest problem or even too long a wait in front of a stationary screen leads to the abandonment of the game. If the game provides real help, then the students are more patient."*

There were several different suggestions provided in the responses to this question. One particularly relevant one was to increase accessibility to serious games. These included the possibility of different formats for games. For example, downloadable software which didn't require internet access; app formats which could be played remotely on smaller devices which young people may have better access to than desktop computers; and online apps which didn't require login from the same device to continue sessions. This leads to another suggestion that games should be available for multiple devices: computers, tablets and phones, making access easier for cohorts of learners instructed following the same topic structure. Learners can all access the game through one form or another.

Another similar point made was that in the wake of remote or hybrid learning styles due to covid-19 restrictions, if a teacher or practitioner sets gameplay as a task, the chances that the whole class would have at least one of a few options for devices would make the games more accessible as a functional aspect of teaching, rather than an add-on to mainstream session structures.



Some respondents suggested content to be included in serious games. These include content on social issues such as inclusion, peer pressure or confidence building. While these can be taught using traditional methods, respondents see value in these topics being included within role-playing or simulation games, as a way for young people to learn through immersive gameplay. Another respondent suggested the addition of basic maths and English skills development being incorporated into games which have wider VET content – such as those focused on construction or mechanics.

The structure of serious games was also mentioned in this question – particularly a suggestion for more tailored gameplay. While some games offer different levels so learners can follow through at their own pace, respondents desired further tailoring to the learner's skills, strengths, or interests. One response suggested a profile-based gameplay, where based on the profile set up for the player, the experience was different and focused more on the needs of that player. The key words 'evolution' and 'choice' were used in this theme of answers.

Many of the respondents suggested that having a tangible reward at the end of the session would make the game more appealing as part of a guidance or education programme. Follow-up worksheets and summary sheets were suggested, as well as the ability to 'build' something throughout gameplay, which the player is rewarded with at the end of gameplay. This reward would have applications for wider use, and relevance to further sessions. For example, one respondent suggested a CV builder being incorporated within a serious game. At the end of the session, the player would be able to download a CV which they compiled through the game, which they could then take to careers guidance sessions or use to apply for jobs. Digitally based games are praised for their flexibility and access for remote learning. However, many responses indicate that an important feature is the real-world application and the ability to 'slot' the game into the usual structure of lessons or sessions, rather than structuring the sessions around the game.

### Summary

The following were the most highlighted points by the respondents throughout the questionnaire responses.

- **Access to the game through different devices**, as well as different formats of the game is a key feature which would encourage the incorporation of serious games into more education and guidance programmes. Different formats will suit different levels of digital access and infrastructure, meaning that large classes or cohorts can all access the same information.
- **Aesthetics and functions of the game need to be modern and smooth**. Any slow-moving, poor quality, or outdated visual styles tend to lead to less engagement with young people – as they find the game 'boring', not modern enough, or otherwise off-putting.
- Immersive or simulation games should be **tailored to the player's needs** as much as possible – a profile-based game structure could be used to dictate the structure or storyline of the game if this is possible at the development stage. The closer a game can cater to an individual player's requirements, the higher the relevant educational value. This would be particularly useful in VET or careers guidance applications.
- Games should offer the opportunity of having a **tangible reward**. Information summary sheets and supplementary worksheets could be developed as part of a game's 'package'. Players could 'build' something throughout the game which could then be downloaded and have wider use, either in further sessions, or externally.



- Serious games should have **clear and easy-to-understand instructions**, and possibly be accompanied with training or guidebooks for practitioners. The easier it is for teachers and professionals to explain and operate the game, the more attractive the game will be as an educational tool.

### Games Developer Interview Findings

The interview questions posed to the games developers covered a number of topics: accessibility, technical capacity, and the feasibility of some of the suggestions generated by previous research.

Developers were initially asked what factors most impact their designs, and how closely games can be tailored to specific needs. Responses showed project or user needs mostly influence the development of serious games – they can be tailored to specifications to include the content desired. The more detail that is given when commissioning a serious game, the closer to the brief the developers can make it. The pandemic has also influenced some designers, with new challenges and circumstances becoming more prevalent such as lack of digital access.

When asked how serious games could develop in the future, one respondent suggested the integration of psychological or emotional factors to mirror reality more closely. Incorporating psychological research and sensors into serious games can provide material for both psychological and skill assessment, tailored to each specific application. The skills assessment aspect which was well-liked by both young people and professionals could be given more detail and accuracy if psychological assessment is added.

Motivation has been found to be a key factor in the success of serious games. Games designers recognise the importance in finding a balance between educational value and being able to motivate young people to engage with the game. For example, games which require more technological skill may be a deterrent to those without the skills, so additional factors need to be incorporated to continue to motivate the players. One developer discussed the need for serious games to be challenging enough for the player feel a sense of accomplishment in their own gameplay skills and knowledge. They argue that the most important engaging factor in a game is gratification. Furthermore, the serious games need to be designed in a way that the final reward reflects on both gameplay skills as well as knowledge. Where games only reward knowledge, players can become disengaged – especially if they do not have the knowledge required. This plays into the ability to motivate young people.

One of the interviewees felt particularly strongly about maintaining the idea of the game as having primarily education value. With some designers choosing to highlight the entertainment value, this designer emphasised that the main objective should always be education. By not imitating ‘trendy’ software and stressing that the game is simply a method used in learning, they argued that young people would appreciate the clarity of aims when being introduced to the game.

One games developer has experienced difficulties in integrating user feedback during pilots. Barriers arise when user feedback is only provided during piloting - once the game has been created. To tackle this, user experiences and feedback could be given throughout the development process, when adaptations and modifications can be made more easily and effectively. Another developer agreed that more opportunities to test the game throughout the development process would improve the result. The developer said, ‘only by observing the player, can you understand if the goal is reached, or if the game needs to be edited.’ Rather than only gathering written or spoken



feedback, this developer also suggests observation of the players, as players' responses may not include the most significant information required to best adjust the game.

Funding issues have also been cited as a challenge in designing serious games. Where ideas and models are created for games, the main limitation is the budget for its development. Designers have found it difficult to incorporate all the specified features to a high standard when funding does not allow for the staff, time, or technology required to produce it at that level. Despite the possibilities to use advanced technology such as artificial intelligence, a lack of funding can impede development. This leads to designers having to omit features which could make games more accessible and engaging.

The games developers were asked about how to achieve a balance between educational value in a serious game, and an entertainment aspect which maintains player engagement. One developer echoed the responses in both workshop and survey research and agreed that ease of use was a key factor. Respondents also highlighted the importance of the gameplay structure and content in keeping young people engaged with exciting serious games. One developer listed a few of the key features: 'a well-written scenario, rewards, and high-quality mechanisms.'

Some of the developers stressed the need for brevity in the game design. By designing games which can be played in a short period of time (one developer suggested as short as five minutes), and immersing the player in the game quickly, the player can still benefit from the game's education value without expecting a longer-term commitment and engagement. In combination with the short storylines, developers advised that the games must have a clear objective set out from the beginning, and one designer suggested maintaining clarity by only covering one topic per level of the game.

When asked about how to keep serious games from looking 'outdated', and maintaining a modern aesthetic and smooth mechanics, the developers responded in similar ways. Answers focused on continuous development and updating of knowledge. One respondent said, 'game developers should continuously be educated and informed on new technologies, in order to be able to incorporate new technologies into their works.' The developers mentioned that new state-of-the-art platforms can be incorporated into the development of serious games to maintain a high level of graphics and mechanics. One development platform which could be used was mentioned: 'GPUs'.

Other developers suggested that concentrating on cartoons or anime-style graphics, keeping them in 2D format can provide a timeless quality to the design, and that 3D styles are the reason for many 'outdated' aesthetics. Further to this end, 3D visual styles in the game design require more resources for developers and require stronger connections and more high-tech devices to play which prevent access for some young people. The 'UNITY tool' has been recommended for this by some interviewees as the tool is 'flexible, scalable, and powerful'.

Where one game can't be constantly updated and edited to reflect modern aesthetics, one developer suggests considering a modular design for the game. In this way, a new game can be produced from the core of the old one, with developers being able to 'switch the old assets with new and modern ones.' This could be a longer-term solution for 'outdated' aesthetics in serious games – where games are not updated but recreated to reflect new requirements. This could work particularly well for developers if previous games are especially popular or effective.

In response to the feedback given in previous research, developers were asked how closely serious games can be tailored to each specific player's needs. This was suggested through profile-based gameplay, or the addition of levels to games. The responses to this question were positive, with developers suggesting employing AI-powered methods or using performance/level-based



assessment to dictate the structure or storyline of the game. While AI technology is at a higher cost than level-based assessment, both options can produce similar tailored outcomes. Overall interviewees agreed with this aspect being integrated within games, arguing that it could allow players to learn from their mistakes and be an 'actor in [their] own learning'.

One developer gave a simple suggestion to support players who find the games too challenging: 'count the game-overs and ask if you want to lower the difficulty'. Where players repeat questions, or challenges during the game because they are too difficult, the game can give a small – optional – suggestion, which can maintain engagement and avoid the player quitting. This is a small adjustment which can be made to better tailor the gameplay to the needs of the individual, as they play it. An addition such as this to a level-based serious game will not need additional funding and can be easily done during development.

However, some responses discuss the difficulties with tailoring games to individual players – arguing that level-based models would be the most appropriate. While it is possible to further customise specific game experiences towards characteristics or targets, development of these models would be more difficult when targeting larger or more diverse groups of young people. The different scenarios would all have to be devised, so it is difficult to predict and personalise gameplay to a large cohort with a range of circumstances and experiences.

Having a focus on tailoring gameplay can also limit the educational value of the game. Where resources and developer time is more focused on producing different pathways for gameplay, it can mean that less emphasis is placed on progression, where the range of educational content is more horizontal (spread across diverse choices and pathways), than vertical (focusing on moving upwards through levels of ability).

The final question related to the suggestion that serious games could have a tangible reward at the end of gameplay. The intention would be to show the player that they are contributing to something with external applications – either within careers sessions, additional lessons, or the wider world of work. While a tangible reward could be added, the challenge is to maintain balance between this and the entertainment aspect of the game. Games developers thought that this was a feasible task, and the key to maintaining that balance was to provide the player with motivation towards the final reward, as well as motivation towards playing the game itself. Again, motivation has been mentioned here as a key factor in the application of serious games in engaging hard-to-reach young people.

Other developers responded that this tangible reward would be attractive to teachers and professionals looking to incorporate games into their programmes, but not as effective in engaging young people. They pointed out that more classic videogame features should be used to motivate players, linking them to traditional recreational games to create the initial interest. This could be done by targeting the competitiveness of young people, as well as their likely experience in previous games. They suggested incorporating 'scoreboards, trophies, progress bars, leader boards, and badges' as rewards and markers of achievement.

In response to the final question, one developer presented an interesting idea for the outline of serious games, which could provide tailoring, as well as a potential solution to the 'anti-social' aspect of games which could be a barrier to their use in serious contexts. The proposed structure could also promote confidence building, teamwork, and competition. The developer suggested: '... a series of missions... adapted to each level of ability that the players would divide up, for example to collectively optimize the time needed to complete the event.' The learner cohort would be split into groups to play, where they each work to their own abilities and share the different levels or components to complete the game.



## Summary

The interviews provided some clarity to the conclusions arising from the workshops and survey findings. The following are key factors which will inform the policy recommendations.

- **Incorporating a psychological assessment** in serious games for careers guidance could increase accuracy and improve tailoring to the individual player, to achieve an overall more relevant skills and strengths assessment.
- **Ease-of-use is an important factor in accessibility** in serious games for hard-to-reach young people. Developing an interesting scenario and context for the game, as well as making sure mechanisms and structure are as strong as possible also keep young people more engaged.
- **Game Developers should be kept up to date with new technologies** which make it easier to maintain a modern and appealing aesthetic. State-of-the-art development platforms can produce these outcomes to a high standard.
- **Artificial intelligence or using performance or level-based assessments can support close tailoring to individual players.** Some methods may be more cost-effective than others, but a personalised approach can be implemented, making the gameplay more relevant and thus more engaging and effective.
- **Offering a tangible reward at the end of gameplay is feasible** and helps to integrate serious games into careers guidance or education programmes. If the game continues to be motivational and encourages participation, the game can still be entertaining as well as informative and productive. Rewarding both gameplay skills and knowledge can help to motivate hard-to-reach young people.



## Policy Recommendations

Many of the conclusions and key points highlighted across the three stages of research are helpful to use as guidelines or suggestions for the use or design of serious games. However, some of these points are specific to a type of serious game, and therefore can't be carried through into more general policy recommendations for the use of serious games in education and careers guidance. For example, the games used during workshop research were role-playing or simulation-style games. These clearly had a positive impact on the professionals and young people alike and the findings in that section show that those type of games do work well within a careers guidance context in particular. While these game types are not explicitly recommended, their use are included as suggestions for increasing the impact or working towards the implementation of a specific recommendation.

Nevertheless, these policy recommendations do not pertain to only one type or format, in order to prevent limiting the breadth of serious games for which these recommendations can apply. The following recommendations attempt to pinpoint the most important factors and proposals for practice which can apply to a large range of different styles of serious games.

### Recommendation 1: Maintain the entertainment-educational balance

One of the standout sentiments throughout the research process was that achieving the balance between designing entertaining games which engage young people, while still incorporating enough educational content that they are valuable and attractive to teachers and professionals.

Workshop and survey research showed that young people enjoy learning information through a game format, but they will not stay engaged for a longer period if the game isn't entertaining enough. Feedback and observations found that if the game was too long, or didn't include enough rewards soon enough in gameplay, they moved on to quicker games where they could more immediately gain that sense of satisfaction. Furthermore, if young people didn't relate to a scenario, they wouldn't be as engaged. Findings suggest that the closer to reality a game's scenario is, the more interested the young people are. A role-play or simulation structure could achieve this which could be particularly valuable in a careers guidance context. When young people can imagine themselves in a potential job role, they have been found to be more engaged and participate more in finding the right pathway for them. When information is presented in this sort of format, serious games can bring to life information or possibilities that the players may not have even considered. Furthermore, there needs to be a balance between being challenging enough, but not too difficult to complete the game. Games that are too easy do not engage the player, and the player does not have to exert any effort to access the educational content, which can make the game seem boring and unappealing. Games that are too challenging become too difficult to get through and access the next steps or levels, which again would make the game unappealing as the player no longer finds it entertaining. Level or profile-based structures could support this balance, if tasks or challenges are more tailored and appropriate for each player, keeping the young person engaged.

On the other hand, teachers and professionals have shown that informational content is an important part of their choice to use serious games as tools during lessons or sessions. Where entertainment and the digital aspect can make serious games appealing to young people, they need to be appropriate to incorporate into education or guidance programmes. Guidelines from



professional bodies or governments could be incorporated during content design, so that teachers and professionals know that the serious game is teaching the information in the same way as them. Game design could also link content to a particular curriculum or lesson structure. If teachers or professionals feel that there is a high pedagogical or education value to the game, they would trust the serious games more as valuable tools to use within their programmes. This could also be supported with a complementary information package which can help teachers and professionals incorporate the serious game into their wider teaching or support.

Games developers also agree that motivating the young person to play the game is the fulcrum to their participation in serious games. This motivation can be more easily done when games have an entertainment value – as well as interesting scenarios, simple structures, and easy-to-use instructions. Offering a tangible reward at the end of gameplay, which the player has built throughout the game, could be one way to show players the informational value, as well as working as a motivator. For example, by inputting information or working through a skills assessment, players could produce a CV, which they could then download and use in future careers guidance sessions, or in the wider world of work.

This tangible reward model could pose issues, if players do not value the reward which they achieve. The developers' suggestion of rewarding both gameplay skills as well as knowledge could increase interest if the tangible, education-based reward isn't as highly valued by the player. This could work towards keeping young people engaged despite potentially challenging educational content. It is still important to include other features mentioned which keep players engaged in the game – simple structure, interesting scenarios and storylines, and easy-to-use mechanics. Making the game entertaining while producing a more serious outcome would maintain the motivation of the players to complete the game.

### Recommendation 2: Incorporate self-assessment and self-reflection features

Research has shown that features which allow players to assess their own strengths and skills are useful for both careers guidance and wider educational purposes. Young people also enjoy being able to explore aspects of themselves and relate them to their progress in education and their futures. Across workshops and survey research, self-assessment features of games had good feedback and none of the respondents had negative feelings or observations to them.

Interviews with games developers brought to light the possibility of combining skills and strengths assessments with a psychological aspect within a serious game. This would add another side of assessment to the game and could form a greater picture or profile of the player, giving more insight and more opportunities to the players for self-reflection and consideration of their own capabilities and potential.

Self-assessment capabilities within games could give players more accurate and relevant information relating to their circumstances, which would appeal more to individual players, as well as teachers and professionals. In this way, the serious games could be used as a benchmarking tool for young people's progress in lessons or careers sessions.

If games are tailored to the individual, either using level-based models or more advanced artificial intelligence software, assessments like these could help to create a more realistic and detailed 'profile' for the player. While the player goes through self-reflection and assessment, more



information can be added to a profile. This could potentially inform gameplay and follow a scenario which is relevant and tailored to the player's needs, capabilities and interests. Questions, tasks or challenges would be more relevant and of higher value – especially in sessions where the professional and young person have a shorter amount of time, or fewer opportunities to work together.

Self-reflection also gives the player an element of control and makes them more involved in the game. Where some games structures may be passive, for example having to simply read storylines or information on the screen, players can interact with the information through considering aspects of themselves and using these ideas to move through gameplay.

The sense of autonomy this would give the young people would move them from simply players who receive the information, to actors with influence in their own education and futures. This could impact the young people on an even larger scale, encouraging self-development through wider education and work.

### Recommendation 3: Improve ease of use

Serious games should ultimately be easy to access and use. This involves access in a few different ways and responds to research findings which show that one barrier to the use of serious games is low digital access and skills. Factors which can impact access to serious games can include:

- The format of the game (an application, desktop software, online application, etc.);
- Whether the game requires a strong internet connection;
- Which device is required to play; and
- How technologically capable players and facilitators – in this case, teachers, and guidance professionals - need to be to play the games.

Many of the suggestions relating to these issues tackle the final point – low technological skill leads to apprehension on the part of the facilitators as well as young people to engage with serious ways. Research shows this, as well as the first three challenges could be tackled in the following ways.

To avoid or mitigate issues relating to a lack of physical access to the game – format, poor internet connection, or not having the correct device – games designers and commissioners can make decisions within the initial development stages. Choosing to release the game on multiple platforms could increase accessibility.

For example, a game which is available as desktop software or on a phone or tablet application could have an 'offline' option, for which strong internet connection is only needed to initially download the game. Online applications mean that players do not have to continuously use the same device, which supports use both in and out of guidance or education facilities. Phone or tablet applications can facilitate remote use when the young person doesn't necessarily have reliable access to a desktop computer at home.

An ideal solution would be to offer the game in a variety of different formats and for use online and offline, on different devices. However, challenges to this would include budget or scope for the game or capacity of the designers to increase the formats. Games developers tend to be constrained by the specifications set by commissioning bodies, so if they request a certain format, then this will



set the boundaries for the game development. Designing and creating games in varying formats also require a high level of work. Rather than simply replicating the same game across all the above options, storylines, functions, and mechanics would have to be different to accommodate the different formats.

Regarding technological skills, research from all three sources offered possible solutions. When introducing teachers and professionals to serious games to use as tools in lessons or sessions, providing a corresponding information package would allow facilitators to understand the game better. These could also be supported with preliminary training sessions. This would allow those who are less technologically capable, or those with little experience in digital games, to become familiar with the mechanics, objectives, and functions of the game. Therefore, when young people are introduced to the game, they can answer questions and support the cohort's use of the game. While they still may not be able to answer all technological questions, teachers and professionals will feel more comfortable incorporating games into sessions when they have more experience and knowledge of how they should be played. Similarly, a clear set of instructions or 'help points' within gameplay could also support players to fully engage with the game.

Ultimately, the ease of use will be dictated by the structure of the game itself. All the research found that a simple game structure was better than a more complicated one – particularly if there is a high level of informative content. One game developer stressed the importance of constant education and research into new technologies and possibilities within the games industry. This could be extended to trend research, if serious games can take inspiration from other traditional digital games with which young people might be more familiar. Some respondents from a workshop said that while they had little experience in serious games, they had played games such as Minecraft, which does have some developmental aspects. By taking inspiration from already established games, serious games developers could create simple or at least familiar game structures to promote ease of use.

Research shows that the ease of use, in all its forms, is a crucial factor in both encouraging the use of serious games as tools in education or guidance programmes, as well as in engaging young people. Young people at risk of social or economic exclusion experience more accessibility issues as barriers are exacerbated by their circumstances. The above recommendations could work towards bridging this gap and promoting the use of more serious games amongst hard-to-reach individuals.



## Annex 1: Workshop Questionnaire Sample: UNIFI (Italy)

### Student's Questionnaire

1. Surname – Name
2. What did you like most about this game?
3. If you've tried several, specify which one before your comment
4. Have you played this game(s) before?
5. If you had the possibility to modify this game (s), what would you like to add? Specifying which game you are referring to before your comment.
6. Do you know another game that you would like to include in our list? If so, which one? Why?
7. How do you rate this workshop as a whole? (1 star = not good; 5= perfect)
8. Did this workshop allow you to discover useful elements for your guidance (future work, training, etc.)?

### Teacher's and Professional's Questionnaire

1. Name and Surname
2. What serious games are you already using?
3. Do you know another game that you would like to include in our list? If so, which one?
4. What contents/elements would you like to see in future serious games for guidance?
5. How often do you use serious games with young people?
6. What elements of serious games make them useful?
7. What aspects do serious games introduce those traditional methods do not have?
8. How do you introduce serious games into career guidance?
9. Is there anything you would like to add?



## Annex 2: Google Forms Survey

[https://docs.google.com/forms/d/1u3Mn3ig0\\_LB6MRlh7g7vFZJZfuOXu0nucdgz032\\_3\\_1/edit](https://docs.google.com/forms/d/1u3Mn3ig0_LB6MRlh7g7vFZJZfuOXu0nucdgz032_3_1/edit)

### JSP0 survey - use of serious games

This survey has been developed to understand how serious games are used in careers guidance, the elements that make them effective and how you engage young people to use them. A serious game is a game that has an element of learning (making it serious) so refers to games used in education and careers guidance.

This survey will inform the research for the Erasmus+ funded JSP0/Games2Guide project (project number 2018-1-FR01-KA201-048216) to help us develop an eBook of best practices in engaging young people to use serious games and a recommendations report for serious game developers.

For all uses of this data in the eBook and recommendations report you will remain anonymous. We ask for your name and email address so that we can contact you if we would like to feature your practice in the eBook and need more detailed information.

Name \*

Short answer text

Organisation \*

Short answer text

Job Title \*

Short answer text

Email address \*

Short answer text

Q1. How often do you use serious games with young people? \*

Long answer text



Q2. What elements of serious games makes them useful - what do they provide that traditional means do not? \*

Long answer text

Q3. Have you had any difficulty using serious games or resistance from young people? (please provide examples) Why do you think that may be? \*

Long answer text

Q4. How do you introduce serious games into careers guidance/education? \*

Long answer text

Q5. Can you describe the strategies that you use to engage young people in using serious games? (Please answer this in as much detail as possible). \*

Long answer text

Q6. How and why are they effective? \*

Long answer text

Q7. Do you use different strategies to engage different / diverse groups of young people with serious games? If so, what are they? \*

Long answer text



Q8. Does the use of serious games increase retention of young people on guidance/education programmes? \*

Long answer text

⋮

Q9. What additional content / elements would you like to see in future serious games? \*

Long answer text

Q10. Is there anything else you would like to tell us? \*

Long answer text



## Annex 3: Games Developer Interview Questions

1. Which groups are the main target market for the games you develop?
2. To what extent are the products you create specifically tailored?
3. What factors have influenced the development of your recent products?
4. What are the purposes/ functions of the games you usually develop?
  - a. Prompt: Short, medium, long term goals
  - b. Prompt: Elements of education, careers guidance, serious games
5. How often do you produce serious games?
6. How do you see serious games fitting in to careers guidance or education best in the future?
  - a. Prompt: Hybrid working through lockdown
  - b. Prompt: Applications for careers guidance
  - c. Prompt: Applications for wider education
7. How can we make games more accessible for young people?
  - a. Prompt: Low levels of technological access for hard-to-reach young people
  - b. Prompt: Low levels of technological skills in both players and supervisors
8. What are the key difficulties you have experienced in developing serious games?
9. How do you achieve a balance between effectively delivering educational content, and engaging the player with a fun and exciting game?
10. The feedback we received included the idea that young people are more willing to play serious games if the graphics and aesthetics are modern and smooth. What strategies or approaches can be used to maintain this modern look and avoid graphics becoming 'outdated'?
11. One key need we identified was a tailored approach to the games, to cater to different levels of ability. How closely can serious games be tailored to each player's specific needs?
  - a. Prompt: Profile-based gameplay – catering to preferences of player
  - b. Prompt: Different levels based on capability
12. One suggestion was for serious games to work towards building a tangible 'reward' at the end of the game session, for example, building a CV throughout gameplay. How do you think this could be executed in a way which still engages the young person with a 'fun' activity?