



**LPMNAGE
PROJECT**

WP2- Compilation of game-based learning initiatives in professional environments



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1. Introduction to the final report

The present report has been developed in the framework of **LPMnage Project** (Ref. 527796-LLP-1-2012-1-ES-LEONARDO-LMP) - Work Package 2 “*Analysis of use of game based learning initiatives*”.

The objectives of the report are:

- To analyse the pedagogical potentials of serious and social games applied to competences development.
- To identify the variables which influence the successful implementation of game-based learning initiatives.
- To detect good practices of serious and social games applied to competences development within an EU (or international) context.
- To identify key success factors which can be used as inspiration for the development of the LPMnage social game.

The accomplishment of these objectives will help, on one hand, to have a good overview about the development of the sector of serious and social games from a EU point of view and, on the other hand, to get a valuable insight in the sector which will help to develop the LPMnage social game in the best possible way.

2. Methodological approach to elaborate the report

For the elaboration of this report every project partner has previously made a national report about the use of game-based learning initiatives in their respective countries. This report uses the findings of the national reports to extract the main conclusions which will help to achieve the objectives described above.

The national reports made by the project partners have been included as annexes to this report.

3. Pedagogical potential of the use of social and serious games for competences development. Are there also weaknesses?

The use of social and serious games for the development of professional competences is not very extended in Europe, as the national reports have shown. Actually, the application of game based learning to the professional field is not old. It can be situated in the 70s – 80s and, in any case, in most of the occasions it should not be called “games” but “simulators” because normally they consisted of a simulation of a real task that the “player” needed to replicate in a virtual context to train how to do it but there were no game elements such as an score system or a succession of challenges that needed to be overcome to get a final objective.

Since that period, learning has evolved towards more participative systems and the learner adopts now a more active role in training. This, accompanied by the development of new technologies and the democratization of its use has created the perfect scenario for social and serious games to gain momentum and in the last 10 years there has been a high growth in this sector.

The development of the sector is due to the high pedagogical potential of social and serious games. The utilization of games in front of other pedagogical methodologies has many advantages:

- Games have a great **motivating effect**. Very often, training is dropped because there is a lack of motivation but well-designed games achieve to engage the player so he/she will complete the training because he/she wants to achieve the final objective of the game. Motivation takes place because games have an uncertain outcome which will depend on the performance of the player so there is a component of uncertainty which triggers player’s curiosity. Besides, the player gets instant feedback for his/her response.

The player takes an active role in the learning process and *“while enjoying the game they don’t realise they are learning”*¹. This makes learning fun, easier to follow and makes the learner to be more concentrated in the training. The secret to engage the player is that games combine contents offered in a new format, the player learns by actively participating and the game uses technics of gamification which *“tap into basic human instincts and drivers and use them to encourage common behaviours”*².

- Games enable the user to experiment in situations **free of risk**, i.e. the player can make bad decisions which can have bad consequences but, as it is a game, there are not real

¹ Annex 6. British national report, p.43.

² Annex 5. British national report, p.16.

damages. This is very helpful for activities or sectors where training in a real context is not possible due to the magnitude a mistake could bring on (for example, in medicine).

- **Knowledge gained by playing gets deeper into the player's mind** because *“games fix knowledge through different channels and by different means, not only theory but also practice”³*, and active participation.
- **Games help to train competences which would be difficult or even impossible to train with any other methodology** because the player can *“work at the attitude level, not just content learning”⁴*. Moreover, *“games allow assessing the level of development of those competences with objectivity”⁵*. This is particularly true when talking about competences such as effective communication, intercultural communication, leadership and many other social skills which, with a theoretical or not participative approach, cannot be effectively trained. Allowing interaction, even if it is just done in a virtual way, these competences are much more efficiently trained. The potential of social games in this sense is, of course, greater because they are based on interactions among different players. Participants can have interactions with each other and use the power of the group to solve the task or problem or face to each other to prove their competences and skills.
- Games which can be used out of a class context also allow greater **flexibility**, as they can be used at any time and the player can learn to her/his own speed. This is very important when talking about games addressed to professionals, who normally need high flexibility so training can be adapted to their working hours.
- Serious and social games always teach to **“learn how to learn”** and when they are available using digital media, they also train **ICT skills**. In addition, another advantage of social games in particular is that they help to train **teamwork** and make aware the player that working in synergy helps to develop new ideas. As stated in one of our national reports, *“the real power of social games is their virality and that as much derives from the intrinsic satisfaction a player experiences in the games as from the incentive to outdo a friend or colleague”⁶*.
- In the particular case of social games, they have the added value of the **social interaction** produced among the players, which helps to improve social skills and also contributes to create a sense of community, bringing people together in an inclusive environment, either looking for a common goal or competing to get a better position⁷.

³ Annex 2. Hungarian national report, p.25.

⁴ Annex 3. Swiss national report, p.32.

⁵ Annex 1. Spain national report, p.31.

⁶ Annex 7. American national report, p.35.

⁷ Annex 4. Greek national report, p. 29.

The pedagogical potential of games is, indeed very high, **especially to train soft skills and transferrable competences** that's why games are a good complement for other training methodologies more oriented to the acquisition of knowledge or as a way to develop particular skills or competences applied in a certain field. For example, in the professional field, games are mainly used in *"sectors and professions where communication and dealing with other people is highly important"*⁸ for their **special usefulness to train interpersonal and social skills**. Also in the health sector games have been quite used because of their possibilities of training in a free risk context.

Regarding the **pedagogical approaches used in social and serious games, they can be divided in simulators and graphic adventures**⁹. The first ones are faithful representations of a real context but in a virtual environment and are mainly suitable to train specific tasks because the player learns by repeating them and *"learn from their mistakes"*¹⁰. The second ones consist of solving different situations where the player has to use specific competences to overcome them, that's why they are more appropriate to train transferable competences such as intercultural communication, leadership, conflict resolution or organization. Therefore, the best pedagogical approach will depend on which is the objective of the training, and sometimes the best option will be a combination of both.

It is clear that social and serious games have a lot of strong points which make them worthy to include as part of the training systems to develop professional competences. However, it is also necessary to bear in mind that the use of games also have weak points which need to be considered to try to minimize them:

- Sometimes the player is **not able to recognize which skills or competences she/he is training, the message of the game has to be clear**¹¹. In this sense, it is very important that the game gives proper feedback to the player when finishing an activity, or getting a good/bad score to make him/her realize what he/she is training and what he/she has learnt. To keep motivation up, it is very important that this feedback is always provided in positive terms, avoiding highlighting the negative aspects of the player's performance¹².
- **Games cannot cover all**. Actually this statement has been much debated during our research and there are many different opinions in this regard. However, in general trainers, game developers and IPM professionals think that games are more effective when used as a complement of a wider training, because *"not all contents*

⁸ Annex 2. Hungarian national report, p.28.

⁹ Annex 1. Spanish national report, p.XX

¹⁰ Annex 7. American national report, p.11

¹¹ Annex 4. Greek national report, p.30.

¹² Annex 4. Greek national report, p.30.

and goals can be covered with a game”¹³, “games can be an effective part of a training mix in a learning programme but not alone”¹⁴ and “games based tools are normally just one part of the learning solution and needs to be delivered as part of an overall strategy”¹⁵.

4. Assessment of the use of games with learning purposes in the partner’s countries. Barriers and good practices

Despite of the pedagogical potential of games, there are still some barriers which hinder their use for training. Most of them are related to **prejudices against their usefulness** and this is a general thought found in all the partner’s countries (except by the US, where games are more accepted). For example, in Hungary *“people tend not to take games too serious, usually they seem to be more a recreational activity than a proper form of education”¹⁶*, in Switzerland there is also a *“general low acceptance of game based learning”¹⁷*.

During the interviews with experts in serious and social games, we found out that especially in the professional field it is difficult to introduce games as part of their training actions. One of the reasons is that there is a **lack of knowledge about how to use games**, what games can offer or which kind of games can be useful to train professional competences among the responsible of Human Resources and/or training in organizations. Actually, many times trainers are more reluctant to use games than learners. In this regard, games are more used in big companies as part of their training systems that in small or medium companies, because big companies have better access to innovation in training processes and also because many times serious and social games have a high cost which cannot be assumed by small companies.

What is, however, remarkable is that this also depends on the term used. For example, if using the word “simulator” normally companies accept it without problems but if using the word “game”, even with the adjective “serious”, the attitude changes completely because of the connotations of the words as something funny and therefore not instructive.

The level of acceptance of games used to train also depends on the age of the person in front. Younger generations are more familiarised with the use of games with pedagogical purposes, especially those developed using communication technologies, and they are more likely to accept them to train professional competences.

¹³ Annex 3. Swiss national report, p. 31

¹⁴ Annex 3. Swiss national report, p.34

¹⁵ Annex 5. British national report, p.46

¹⁶ Annex 2. Hungarian national report, p.7

¹⁷ Annex 3. Swiss national report, p.5

In order to implement the use of games in a more regular basis, it is needed a re-education of the perception of its usefulness among the responsible of training, especially in companies, which is not an easy task and requires a lot of communication between game developers and these professionals.

Other barriers also mentioned in the different national reports have been the **cost of development** of social and serious games, which are not affordable by all kinds of organizations, and the **low cooperation between the responsible of training and the gaming industry**, whose consequence is that many games are developed without taking into consideration the real needs of training of professionals or without taking into consideration which is the most adequate pedagogical approach to train certain competences in a certain sector. In the same way, trainers miss the potential that games can offer to train professional competences. For example, it was not possible to find examples of games oriented to train the professional competences used in IPM in any of the partner's countries. However, it was shown that with the higher level of participation in international projects, it is needed a higher professionalization of the IPM and there is a need of professionals with these particular skills.

Lastly, another important barrier is the **recognition of the competences developed while playing a game**. In most of the cases, when the player uses a serious or a social game he/she is gaining valuable knowledge, skills or competences, he/she is actually learning but it is rare the case where she/he gets a certificate which proves that. Serious and social games developers are starting to take this into consideration and for example in Spain we have found cases of games that are starting to be certificated, which is not easy at all because games need to accomplish certain criteria such as a minimum of hours of training, the competences trained need to be perfectly identified, there must be an assessment of the knowledge or competences gained, and so on.

These barriers are the reason why games are not highly implemented in training. Technological barriers were also mentioned¹⁸ in the case of games in a digital format. However, we do not think this will be an issue in the case of IPM because professionals working in this field normally have a high level of ICT literacy.

As it could be checked during the surveys carried out in the different partner's countries, although most of the HR managers and trainers consulted knew about the existence of social and serious games, most of them never or hardly ever use them during their training and the main reason highlighted in almost all the countries was the **lack of games which really answer the training needs of professionals**.

So, how can these barriers be brought down? As stated above it is not easy because it mainly requires a change of mentality of the responsible of training, especially in the

¹⁸ Annex 3. Swiss national report, p.8.

professional field. Nevertheless, the current environment is very propitious. As we could check during our research, during the last years the sector of serious games has experienced a great development and they are now more frequently applied in the professional field, especially in some sectors, so “breaking the ice” is not as difficult as it used to be a couple of years ago. The role of universities or business schools and events such as conferences and festivals specialized in games (like the Fun and Serious Games Festival which takes place each year in Bilbao, Spain, since 2011) with special sections for games applied to training, are contributing to spread the word. The LPMnage project should make use of channels like these to disseminate the pedagogical potential of social and serious games, highlighting their capacity to motivate and to adapt to the necessities of the professionals in IPM.

Due to the fact that serious and social games are not widespread to train professional competences, it was not an easy task to find good examples of them in the partner’s countries, especially in Greece and Hungary. There were quite a lot of examples of games used in the academic field but when talking about training of professional competences, they are much less applied. Anyway, we also noticed that there is a tendency to do so in the last years and most of the examples found do not have more than 7 or 8 years. Nevertheless, in this regard it is also worthy to mention that among the serious games identified there are just a few cases of social games. So even when the use of serious games has been growing quickly in the last years, the use of social games to develop professional competences is not growing the same and most of the social games available are not aimed to training.

In the research about which kinds of games to develop professional competences are used in the partner’s countries¹⁹, the main findings lead us to establish the following general characteristics:

- The **type of game used is normally a simulator**, so the pedagogical approach is based on a reproduction of a real life situation where the user learns by repetition. As it has been said above, this approach is adequate to train specific tasks but it is not the best one to train competences so it can be stated that most of the games developed in the partner’s countries are aimed to train specific skills of a specific sector or job position, more than transferable competences.
- Most of the good practices in game based learning initiatives detected in the partner’s countries are **addressed to students or entrepreneurs**, but normally to people without a high professional experience. This is the general situation in all of the EU countries taking part in the project, however, in the USA the trend is different and it is more frequent to find games addressed to professional managers with wide experience in their field of work. These last games are normally oriented to train very specific competences or tasks. For example, whereas the cases found among the EU countries are aimed to train communication in general, for example, the ones in the

¹⁹ See annexes 1-7, “collection of good practices” sections.

USA are more concrete and cases to train interactions with clients during a meeting were found.

- Regarding their transferability, most of the serious games identified in the good practices are **not easily transferable across sectors** because they are aimed to train very specific tasks or knowledge through simulations of a very concrete job position or field. However, they do are **easily transferable across companies/organizations** in the sense that many games can be used by different organizations **from the same sector** or professional field.
- The majority of games are aimed **to be played alone**, without any interaction with other players. The use of social games is not very common to develop professional competences, which is quite contradictory especially in the case of games aimed to train social skills. In fact, we found that many games aimed to train communication skills for example, are designed to be played alone and the user just receives a virtual feedback. This is very limited if the objective is to improve effective communication and it misses the opportunities that a social game could offer in this regard.

As it can be seen, despite the high growth of the last years the sector of serious and, especially social games, is still in a very immature stage in the partner's countries (with differences between USA – European countries and also among the EU countries) attending to the kind of games which are more widespread, which are not making use of the potential, for example, of the social networks.

5. Success factors to take into consideration for the development of the LPMnage game.

Despite the barriers identified in the previous section about the use of serious and social games to train professional competences and although, as stated before, the sector is still immature and just started to grow in the last 7 or 8 years, it has been possible to identify a couple of successful cases in each partner country and after that analysis and after talking with experts in the development of serious and social games and experts who use them with training purposes, we have been able to identify the key success factors to be bore in mind for the development of the LPMnage social game. Those key success factors can be gathered in four main concepts: personalization, gamification, pedagogical approach and social interaction.

- **Personalization.** The game has to be adapted to the target group. This means that:
 - The **environment** of the game needs to be **realistic**.

- It has to be **coherent with the characteristics of the target group**. Obviously, it is not the same to develop a game for secondary school students than for professionals of IPM and all the aspects of the game have to take this into consideration: the design of the characters, the pedagogical approach, and the feedback provided, etc.

To guarantee that the game really matches the needs of the target group, most of the experts consulted have advised to **“involve the final user of the game since the very beginning of its development”**²⁰. In this sense, it is important that the trainers and the players/professionals who will potentially use the game are involved in its design since the beginning and they test the different prototype versions before the final one is ready, *“the earlier that you can get the actual end audience involved in the design, the better. If user testing comes too late in the process, you will find yourself with a boring or ineffective (or both) game”*²¹.

- **Gamification.** It is a game so it needs to have the basic principles of a game²²:
 - A clear objective. The player needs to know why he/she is playing, which is the prize to win, in order to stimulate competition (single competition or shared competition).
 - Competition. Either among different players, either among the player and the game itself.
 - Engagement. The game has to be engaging, something that is due to four factors produced in the player: challenge, curiosity, control of the situation and imagination.
 - The game has to be rewarding, so it needs a scoring system. The player needs to receive rewards for a good performance. These rewards can be in the form of points, good evaluations from other users, game status... the player needs to get satisfaction when he/she performs well.
- **Pedagogical approach.** As stated before, the pedagogical approach will depend on WHAT we want to train and to WHOM the training is addressed. For example, in the field of IPM, professionals have mainly developed their competences through experience so the pedagogical approach must be oriented to put the player into different situations of real life so at least he/she will develop the necessary competences to overcome them. Anyway, we can establish some general criteria that any serious game should have in order to guarantee an effective pedagogy.

²⁰ Annex 1. Spanish national report, p.33

²¹ Annex 5. British national report, p.52

²² Annex 4. Greek national report, p.28

- The game has to be **motivating**. In section 3, we said that one of the best points of using serious games to train is their ability to keep the player engaged so he/she will not give up on the training. But this is not an intrinsic characteristic of games, they need to be designed having this objective in mind and to be motivating they need to be **fun, user friendly, break formality** associated to training and **make the learning process short**.
- There must be a **balance between gaming and learning**²³. It is true that the game has to be fun so it will be motivating but it also has to be bore in mind that the purpose of the game is to train and fun elements are just included to engage the user in the training process. So the game needs to be fun to keep the player motivated but at the end of the day the player must have learnt something.
- The **benefits of training have to be clear and the player has to be aware of the skills or competences he/she is acquiring**, which can be solved by providing adequate feedback.
- The focus should be put on a *“few meaningful key learning objectives”*²⁴, in order to avoid dispersion and confuse the player. If we try to train a lot of skills/competences at the same time we could end up with a game that just touch every of them just slightly and the training would not be effective.
- **Social interaction**. It was very difficult to find examples of social games applied to the training of professional competences; most of the examples found were thought to be played alone without including any kind of interaction. But the aim of the LPMnage is to be a SOCIAL game so one of the pillars of its development is to provide context for meaningful interaction among players. This interaction can adopt the form of collaboration or competition.
 - **Collaboration**, can be done through a system where the player needs to ask for advice to other users, ask them to send “items” included in the game to advance in it, etc. Collaboration needs to be emotionally and socially rewarding through a system of recognition of the help given.
 - **Competition**, can be done by confronting the advances of a player in front of other’s, challenge each other to beat their contacts.

Apart from all the advantages that social interaction can have, such as sharing experiences, resources or ideas, which enriches learning, social interaction is also a way of gamification with the final aim of engaging the player to the game.

²³ Annex 1. Spanish national report, p.32

²⁴ Annex 5. British national report, p.57

- **Assessment of the learning acquired**²⁵. The player needs to count with a system to evaluate the knowledge/competences acquired or developed during the game. There is also a need to show to third parties that this training has taken place and has helped to improve the qualifications of the player.

6. Conclusions and remarks

During the elaboration of the national reports in each partner country, we got a good insight into the current state of development of social and serious games and their applicability to the training of professional competences. The tasks carried out then, have been of great help for the project partners because we have been able to contact a lot of experts in the development of serious games, professionals in the field of IPM and trainers (using or not serious and social games in their training activities), who have contributed with their expertise to extract valuable conclusions for the LPMnage project.

We could check that the sector of serious games is still very immature in all the partner's countries but the USA, where it is a bit more developed. However, it is a sector with great potential and has been growing quite fast in the last years because the pedagogical potentials of games have been widely proved and because the technological advances have helped to spread their use in digital format.

Indeed, social and serious games have a big pedagogical potential. Learners acquire deeper knowledge through the use of games and that knowledge "stays" more firmly in learner's minds. Games are especially useful to train soft skills and transferable competences, which are very difficult to train using other pedagogical methodologies, and, above all, games have a strong motivating effect over the player. They are funny and they stimulate basic human drivers such as competition, recognition or self-satisfaction. These elements get to engage the player and it is much more probable that he/she finishes the training. Games also offer the possibility to be accessed at any time and without the necessary presence of the trainer so the learner can learn alone whenever he/she wants. This higher flexibility is very important especially when talking about games addressed to professionals.

However, despite of the pedagogical potential of social and serious games, there is still a negative perception of games as training resources, which still exists among many training responsible.

This hesitation to use games to train professional competences is in part explained, as the results of the questionnaires carried out in the partner's countries have indicated, by the lack of games which really meet the training needs of professionals, but also because there are a lot of prejudices around the use of games, which are perceived as something "just for

²⁵ Annex 4. Greek national report, p. 44

fun” and their pedagogical potential is unknown or not well known by many trainers. This situation is especially noticeable when talking about videogames or games accessible in a digital format.

As we could see during the research to detect good practices in the use of games to train professional competences in the partners’ countries, it was not easy to identify examples of this. Most of the cases were related to the academic world, i.e. games used in an academic context and addressed to students or learners with little professional experience.

To avoid creating a game which does not match the necessities of the final user, it is very important to bear in mind the target group during the whole design process and involve them since the beginning, even assessing the progresses made through the test of prototype versions with a couple of experts from both the field of serious and social games and the field of IPM.

The involvement of these professionals is not only important for the right design of the game but also to make them know by first hand which are the benefits a social game such as the one developed by the LPMnage project can bring to their training needs and how can they use it to accomplish that.

In the LPMnage project we have started to involve the target group during the works done to elaborate this report and also for the report of WP3, where professionals in the field of IPM were interviewed and took part in a survey. This fact has led to define which questions we need to discuss in the next stage of development of the project:

- What do we want to train, transferable competences or specific skills, or both? This will be answered fundamentally by the conclusions of the final report of WP3.
- Which transferable competences or specific skills we want to train? One of the recommendations given by the experts in serious games development was to focus on a couple of key competences/skills to train. According to the results of WP3, we will need to choose which ones we will address with the LPMnage social game.
- How will we train those competences/skills? Depending on what we want to train, we should choose a pedagogical approach or another. For example, the recommendation of one of the experts interviewed was that, if the aim is to train transferable competences, the best pedagogical approach is to use graphic adventures. On the contrary, if the purpose is to train specific skills, it is more advisable to use simulation.
- How will we make the social game “social”? The LPMnage is aimed to be a social game, this means there must be a meaningful interaction among users. The project partners will have to decide how this social interaction will take place, either by cooperation or by competition. It can also be a mix of them.

- How will we keep the player's motivation? One of the strongest points of games used with training purposes is their ability to keep the learner engaged with the training. However, this does not come for granted. The game developers need to find the motivating factors which really drive their target group. In this sense, gamification elements play a key role, defining a good system of rewards or recognition of the achievements of the player.
- Provide adequate feedback. The player needs to be aware that he/she is actually learning and what he/she is learning and what he/she needs to improve. This has to be done by providing clear and accurate feedback. The project partners will need to discuss when and how this will be done. It can be through comments, but it also can be made using a scoring system or by interaction with other players.
- How will the player prove what he/she has learnt? First of all, it is necessary to discuss if we want to make the training developed with the LPMnage social game officially recognised and if that is the case, every partner will need to analyse what does this implies in its national context. However, even if an official recognition of the training is not an objective, it is still interesting that the player can prove that he/she has developed his/her skills or competences and the game has to make that visible.
- Accessibility, compatibility with different OS and devices. It is important to bear in mind that the target group has to be able to access the game disregarding the OS they use (this cannot be a discriminatory issue) and it is important to take into consideration when will the target group be more likely to use the game. For example, in the case of the LPMnage, the game is addressed to professionals who work in an international field, so they will need to travel regularly. Thus it is important that the game will be suitable for tablets or other portable displays because IPM could be kept on accessing the game while they are traveling and have spare time.

These are the main issues we will need to solve before starting with the technical development of the game. This next stage will be of crucial importance because everything that we decide here will define the final result of the LPMnage social game.

