

Information dossier on researched topics and indicators to assess educational possibility of the videogames

Summary

The dossier responds to the following objectives of the e-Confidence project (Work package number 2, Task 2.1 Definition of main topics and performance indicators):

- Gather evidences on the improvement in social skills of children and teenagers caused by the use of videogames, considering previous studies.
- Define the individual behaviour variables that can be improved with the use of the videogames designed on the project.

Concept of serious game

In section one, the concept of serious game is addressed. Serious game is a concept with numerous definitions. In a broad sense the term refers to the idea of using games (specifically designed ones as well as entertainment games) for purposes beyond pure entertainment (Backlund, & Hendrix, 2013). **Serious game provides an instructional tool to make the learning process more enjoyable, easier to memorize and effective.** It combines pedagogy goals and game play to increase the participant interest and engagement compared to traditional methods (Abdelali, Mateu, Imma, & Fatiha, 2016).

Educational effect of videogames

In section two and three, both psychological and educational effects of the video games have been studied, in general and considering the specific research topic of the project (bullying and safe use of the Internet).

School bullying and peer victimization are major social problems affecting children and adolescents in all parts of the world. The serious consequences of these acts have generated considerable amount of attention from the media and the public, as well as educators, school officials, researchers, practitioners, and lawmaker in recent years.

At the same time, recent years have seen a spectacular increase in Internet use, particularly among the youngest individuals. This widespread use has offered numerous advantages, but also certain drawbacks. Due to their natural adoption of Information and Communication Technologies (ICTs) and less cautious, more trusting behaviour, children and adolescents are more vulnerable to certain risks. In this document, **a systematic review of the literature** has been carried out with the following objective: **look for evidence in literature about the effects of video games related to their impact on learning outcomes and the acquisition of digital competence in 12-16-year-old students.** Considering this objective, different research questions were raised in relation to different issues: research design, study quality, characteristics of the educational practice, impact and outcomes, special needs/attention to diversity, promoters of research and limitations of the research in the field.

The use of video games to teach specific educational skills and knowledge is an intended positive consequence of educational video games and they **can serve as excellent instructors because, unlike traditional teaching methods, computer-based instruction reinforces the student often, emphasizes distributed practice** (because children continue to play games on many separate occasions), **offers clear objectives, and requires that the learner be actively involved.**



Guidelines for game design

In section four, guidelines for intervention and video game design are presented. From a psychological perspective, basic processes of operant conditioning related to behaviour change by manipulating consequences and antecedents of the behaviour are described, as well as is explained how those processes function in computer games. ABA (Applied Behaviour Analysis), also frequently referred to as behaviour modification, is the application of principles of behaviourism, primarily principles of operant conditioning, in order to modify behaviour(s) as part of an educational or treatment process. ABA interventions are evidence-based, individualized interventions in which the behaviour of each participant is observed, measured, and analysed, and treatment is driven by evidence of whether there was progress in behaviour or not, and what conditions caused this improvement (Linehan, Kirman, & Roche, 2015).

From a pedagogical point of view, a serious game can be described as a game with a purpose; it seeks to promote problem resolution in fabricated scenarios that simulate real life. Although they can be fun, this is not the purpose for which they are created. There is a general search for a social change, the development of skills, emotional health, etc. (Wouters, van Nimwegen, van Oostendorp & van der Spek, 2013). There is not a general agreement for the classification and description of the elements of the game (Dicheva et al., 2015). However, we can identify the most commonly used categories: mechanics, dynamics, components, aesthetics, and emotions (Wiklund & Wakerius, 2016). **Within the design process of a videogame, the following elements must be considered : aims and goals, rules, narrative, freedom of choice, freedom to make mistakes, rewards, feedback, visible status, cooperation and competence, time restriction, progress, surprise, types of players, stages through which the player goes and assessment of learning.** All these elements will be taken into account to propose a pedagogical model of design serious games.

Games' components and features

In section five, we identify **the games components and features to design the games for our project, taking into account ATMSG and ABA models**, as well as the recent pedagogical theories on the subject.

Games content and goals

Finally, in section six, contents and goals of the games are defined and then, **we propose situations and interactions that could be integrated in serious games, for bullying and safe use of the Internet.** These proposals will be useful to concrete the next design of the video games.

