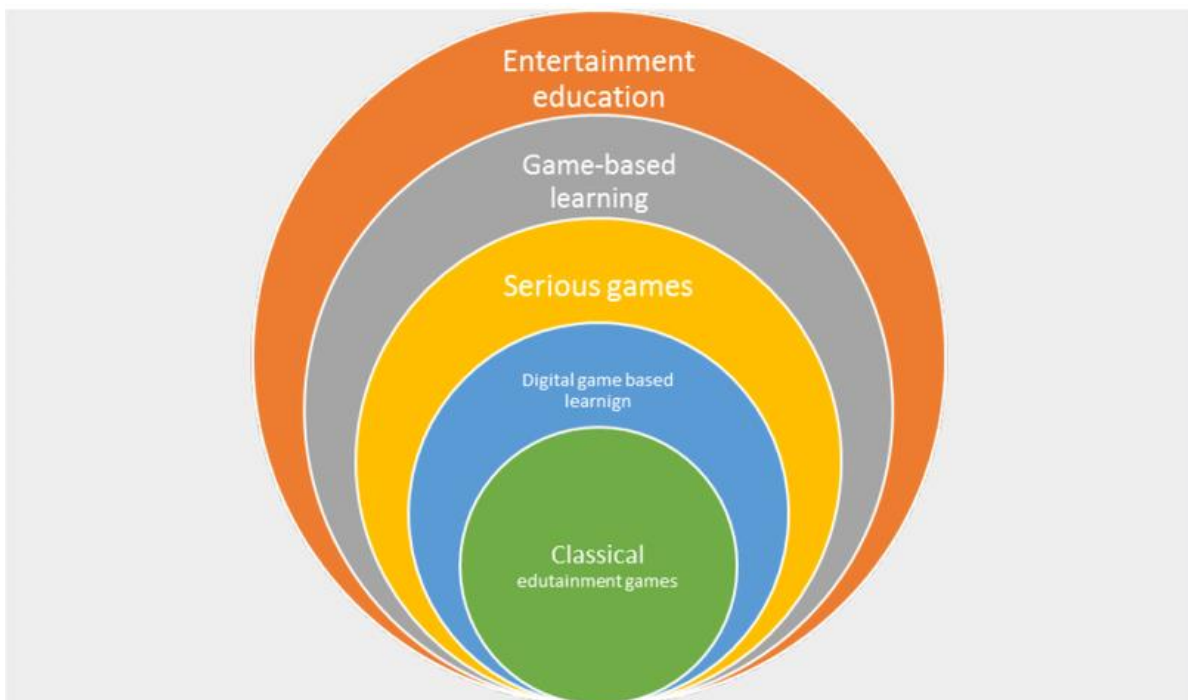# The right serious game to teach digital literacy

Author: E. Aktas
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Lecturer: Frans Blauw

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1. introduction

In an ever-advancing world, technology becomes more important. Our understanding of it grows and so should our way of teaching this knowledge. How can we make this complex system more understandable and approachable for younger audiences?
How can we make younger audiences more digitally literate. Serious gaming has the potential to fill in this gap.
Serious games do not have entertainment as their core design philosophy, but education.
A clear definition of serious gaming is stated as follows: "Any game whose primary purpose is other than simple entertainment"(YAMOUL Soumi (2022), Chen & Michael (2005)) [1]. Serious games come in several types though.
To figure out what type of serious game might help us the most with teaching digital literacy, we must first know the attitude and interest students have towards serious gaming. Are younger audiences willing to play games they might not like? Or might not enjoy playing games for the purposes of education?
Are concepts of digital literacy too difficult to teach, even through games?

Main Question:
What type of serious game will be most effective in teaching digital literacy?

Sub-questions:

1. Where do the types of serious games differ from each other?
2. How does the type of serious game affect education?
3. What does digital literacy mean to children ages 10 – 12 years old?
   // What attitude do children ages 10 – 12 years old have against serious gaming.

// the interest students have towards serious gaming

2. Theoretical framework

A serious game can be defined in multiple ways, here are two:

"Games used for educational purposes. Think of solving problems or learning new skills. Serious games will always aim to educate the player rather than entertain them." (Implementing serious game as a learner motivation tool, 2022) [1]

"An umbrella term that includes a continuum of meanings extending across the ability to use digital devices or software, to being capable of consuming and producing digital content, to meaningfully participating in digital communities (Alexander, Adams Becker and Cummins 2016)." [3]

Finding a type that resonates with the broadest audience is key to finding an effective solution to teaching digital literacy through serious gaming. Different types of games resonate differently with different types of people. It can be argued that certain types of serious games are more likely to foster learning or to support positive affect than others, resulting in differences in attitude and further usage-intention. [2]

In knowing this, we should first start thinking about what types of serious games there are and which ones of them are the most popular.

2.1 Where do the types of serious games differ from each other

According to (*All About Serious Games: Types and Purposes | DDINC*, n.d.) [4], Serious games can be subdivided into two structures:

- Process oriented, where it's about the process and not the end goal. Some example types are:
  - Decision making
  - Discovery
  - Simulation

- Outcome oriented, where it's about the end goal. The expected outcome can be:
  - Education
  - Persuasion
  - Motivation

The learning with serious games that or process oriented, comes through the process of the activity. Serious games that are outcome oriented, focus on mastery of skills. [4]

There are other types than the ones. The most common ones being:

- Quizzes
- Simulation
- Adventure

Quizzes are outcome oriented as they test already acquired knowledge.
Simulation and adventure are both process oriented games, as they focus more on the decision making and discovery. We might want to teach children through process oriented games as they will partake a more active role in what they can do in said given game. Whereas with Quizzes, which are outcome oriented, only focus on the mastery of the acquired knowledge about digital literacy. A possible solution to the concept of the game may be to make a combination of adventure, Where decision making is important, and a quiz at the end testing the knowledge gained through experience.

2.2   How does the types of serious game affect education?

While there is worldwide recognition of the importance for children to be digitally literate
(CoE 2018, UNICEF 2017, UNESCO 2017, among others), there is a lack of global data for
children's digital literacy. [3] Therefore our findings may or may not be representative of real-world
situations and contexts. Nevertheless, The present results clearly point out that future studies must
investigate specific game types rather than serious games in general. [2].

In conclusion, the use of digital games can vary depending on the financial means, time, and technical
knowledge
available to the teacher. Thus, serious games and serious game detour are two interesting approaches to
consider
promoting learning among learners.

2.3   What does digital literacy mean to children ages 10 – 12 years old?

Before we start implementing new teaching methods and subjects to the next generation, we should start thinking about what it means for children to be digitally literate. As Stated in the UNICEF paper about digital literacy for children:

"If children are to participate fully in the digital age, greater efforts will be needed to ensure that they become the content creators and engaged actors that many hope for. It is particularly crucial that efforts to keep them safe from risks do not, however unintentionally, also serve to constrain their opportunities. (Byrne et al. 2016, p. 82)" [3]

Whereafter is stated that the efforts to ensure children are digitally literate is connected to the potential that that generation will hold greater debates on digital rights [3]. Also, them being more digitally literate from younger ages will help enforce their ideologies about the ethics regarding digital environments. Making our digital future not only more human, but also safer.

3 Conclusion

From the research, we can conclude that in teaching children digital literacy through serious gaming, we must be conscious of what type of serious game we choose. As there are two main branches of types of serious games, process- and outcome oriented, there needs to be chosen carefully. Do we only want to expose children to the knowledge of digital literacy and have them tested through experience in their own time. Or do we want to test their knowledge through, for example, a quiz after teaching them about digital literacy through more process oriented games.

The most effective will be a combination of them both as this means that we will be able to test their knowledge in a controlled environment. Having children experiment themselves may have negative consequences for the online wellbeing of the child. But this solution does give the most strain on the school and the education system. As it's expensive in regards to both financial and time factors.

4 References

1. Implementing a serious game as a learner motivation tool (2022)

2. Learning with quizzes, simulations, and adventures: Students'
    attitudes, perceptions and intentions to learn with different types of
    serious games (2015)

3. UNICEF – Digital literacy for Children: exploring definitions and frameworks (2019)

4. *All About Serious Games: Types and Purposes | DDINC*. (n.d.).
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