

# ARE VIDEOGAMES A WASTE OF TIME? - THE PEDAGOGICAL VALUE OF VIDEOGAMES: A MULTI-STAKEHOLDER APPROACH

Carla Sousa, Sara Henriques, Conceição Costa

*CIC.Digital – CICANT Pole – Lusófona University (PORTUGAL)*

## Abstract

Video games can play a significant role in the learning process, being their cognitive potential extensively documented. Nevertheless, their integration in formal educational depends not only on the audiences/learners' acceptance but on the main stakeholders' attitudes towards the pedagogical value of games. The present study adopts a quantitative approach to analyse parents, teachers and students attitudes towards videogames in the learning process.

An online based survey was conducted aiming to explore the attitudes of the main stakeholders, explicitly regarding four different dimensions: video games as a recreational device, video games as a pedagogical tool, video games creation in general and video games creation as a pedagogical tool.

The multiple stakeholder sample approached ( $N=106$ ) considered videogames as a possible and feasible pedagogical tool, enabling the promotion of a range of skills and literacies. The recreational potential of video games was the dimension with less positive attitudes, mainly related with higher attributions in items like "Videogames are a waste of time". Students were the group with the most frequent positive attitudes in all dimensions. A significant and positive correlation ( $r = .74, p < .01$ ) between the amount of time using digital media, in a common day, and attitudes towards videogames was also found.

In a broad-spectrum, this paper highlights an interesting debate on the attitudes of parents, students and teachers on the use of videogames for learning, mainly in formal schooling contexts. Results from this paper can work as a guide for future research studies and interventions in game-based learning approaches.

Keywords: Video Games, Learning, Game-based Learning, Education.

## 1 INTRODUCTION

The present study is framed in a broader media literacy action-research project called GamiLearning, based on the premise that the promotion of technical and socio-cultural skills in the digital security area, encourages a sustainable way to self-management of digital identities, through the creation of conditions for the construction of digital games in the classroom context.

The main goals of this project are schematized below, and are related with the development of the critical and participatory dimensions of media literacy in young people from 9 to 12 years, through collaborative learning experiences with digital games.

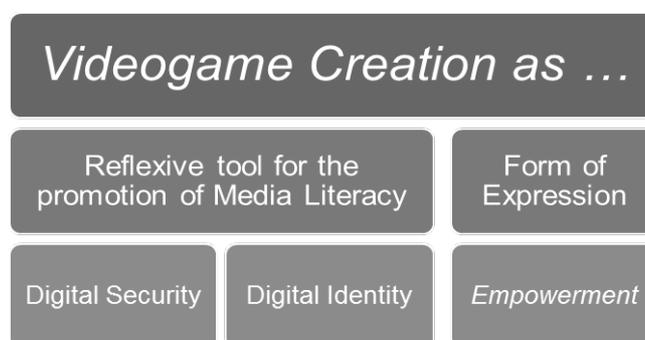


Figure 1. GamiLearning project action-research goals

Research has been supporting the inclusion of video game (analysis and production) in educational curricula [1], under several perspectives and pedagogical models, and using different types of games, either commercial, educational or others [2].

However, the videogames creation as a pedagogical strategy seems to be the least research-focused area. According to recent data, between 2010 and 2016, considering a sample of 52 studies in the area of game-based learning, only two prioritized this approach [3].

Even if research supports the adoption of video games as a pedagogical resource, its implementation in the school environment will always depend on the attitudes regarding its educational potential of all the involved stakeholders. Thereby, and responding to the need to implement the project described above, the present study aims to explore the main attitudes, motivations, perceptions and barriers to the adoption of digital games as a pedagogical tool, mainly in formal educational contexts. It is also intended to explore the possible associations between the contact time/use of digital media and the degree of these attitudes, in the different groups.

## 2 METHODOLOGY

### 2.1 Sample

The sample of this study was composed of 106 participants, 56 males (52.8%) and 50 females (47.2%), aged between 18 and 65 years old ( $M = 33.81$ ). The majority of the subjects attended or had completed a higher education degree (83%), followed by secondary education (12.3%), the third cycle of basic education (3.8%) and the second cycle of basic education (0.9%).

As a multistakeholder approach, the sample consisted of elements from three distinct groups of the formal educational process: Parents/Educators (13.2%), Teachers/Trainers (35.8%) and Youth/Students (50, 9%).

Regarding the use of digital media, and related with daily time spent, participants reported that they spent an average 62.36 minutes ( $SD = 77.7$ ) using social networks; 55.42 minutes ( $SD = 109.45$ ) to chat online, in online chats or chat apps; 18.29 minutes ( $SD = 50.99$ ) playing online; 11.46 minutes ( $SD = 39.42$ ) playing games on social networks; and 11.89 minutes ( $SD = 38.86$ ) playing games on a console.

Therefore, it's possible to verify that the elements of the sample had spent an average of 31.6 minutes ( $SD = 40.32$ ) using digital media, and an average 16.88 minutes ( $SD = 34,28$ ) playing video games.

In Table 1, it is also possible to analyze the average time spent with digital media and video games, considering the different stakeholders of the sample, with the youth/students being the group that spend the most time, in both tasks.

**Table 1.** Daily time spent on digital media and video games, by stakeholder type

Stakeholder	Time spent Digital Media ( <i>m</i> )	Time spent Video Games( <i>m</i> )
Parents/Educators	$M = 13,44; SD = 8,43$	$M = 2,98; SD = 4,37$
Teachers/Trainers	$M = 12,43; SD = 12,55$	$M = 5,82; SD = 9,96$
Youth/Students	$M = 49,28; SD = 49,44$	$M = 28,44; SD = 44,70$

### 2.2 Survey

The online based survey was disseminated via SAPO Campus, a social network that aims to bring together all the educational actors, allowing all the sharing and multimedia functionalities (like blogs, videos, photos, states, files and badges), mainly for pedagogical goals.

The research protocol was composed by two distinct parts. The first one aiming to achieve the sample's demographic data, namely, age, gender, schooling level, district of residence and the stakeholder type where each subject is inserted. This part was also composed by five daily digital media usage assessment items, aiming to quantify the amount of time spent daily with digital media, mainly emphasizing video games. The questions regarding video games considered different platforms and gaming types (online multiplayer, social network online multiplayer and console

games), also given some examples, based on Most Played PC games statistics [4] and Most played games on Steam [5].

The second part of the research protocol was developed to assess the attitudes of all the stakeholders regarding the role of video games in the educational process, highlighting four attitudinal dimensions: attitudes regarding the recreational use of videogames (Dimension 1); attitudes regarding video game creation (Dimension 2); attitudes regarding video games as a pedagogical tool (Dimension 3); and attitudes regarding video game creation as a pedagogical tool (Dimension 4). The conceptual schema underlying the survey construction is schematized in Figure 2.

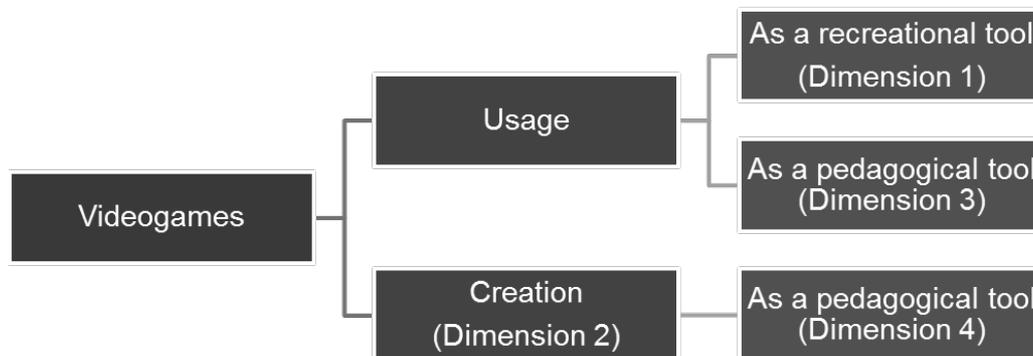


Figure 2. Survey's conceptual schema

To assess each dimension, a total 16 items were constructed, five for Dimension 4, four for Dimensions 1 and 3, and three for Dimension 2. The number of items were balanced considering the study main emphasis, and the items from all dimensions were mixed, and presented to the subjects as illustrated in Table 2.

Table 2. Survey items, order and dimensions.

Item no.	Attitudinal Dimension	Item text
1	1	I usually play video games.
2	1	Playing video games is a very relevant part of my daily life.
3	1	I think video games are a "waste of time"
4	3	I think that video games creation is too complex.
5	2	I can acquire knowledge through video games.
6	2	I think school should use video games more to teach students.
7	1	I believe that children should be encouraged to play video games.
8	3	I feel like I could tell a story through a video game.
9	2	I do not see what video games can do for someone's education.
10	3	I would like to know how to create my own video games.
11	4	Creating video games can promote my ability to communicate.
12	3	I believe that the video games creation can be used to share ideas.
13	4	By creating my own video games I can learn more than just technical skills.
14	4	I do not think creating a video game can be a form of learning.
15	4	Creating video games can promote my ability to solve problems.
16	4	When creating videogames I can acquire knowledge useful in other areas.

Items were answered using a five point Likert scale, where one corresponds to "Totally disagree" and five corresponds to "Totally agree". Most of the items underlying concepts were aligned with the measured construct, only items 3, 4, 9 and 14 were inverted and reverse scored.

Data was analyzed using IBM SPSS Statistics, version 22.

### 3 RESULTS

Taking into account the four dimensions considered for this survey, the sample had higher values of agreement regarding the creation of videogames as a pedagogical tool ( $M = 3.95$ ,  $SD = 0.89$ ), the use of video games as a pedagogical tool ( $M = 3.62$ ,  $SD = 0.90$ ) and the creation of videogames in general ( $M = 3.53$ ,  $SD = 0.76$ ), unlike what happened with the recreational use of videogames ( $M = 2.88$ ,  $SD = 1.21$ ).

When considering the multistakeholder perspective, we can mention that youth/students are the group that presents more positive attitudes regarding the recreational use of video games, the creation of video games and the creation of video games as a pedagogical tool, being parents/educators the group that presents more positive attitudes related to the use of videogames as a pedagogical tool, as can be seen in Table 3.

**Table 3.** Attitudinal values for each survey dimension, by stakeholder group

Stakeholder	Dimension 1	Dimension 2	Dimension 3	Dimension 4
Parents/Educators	$M = 2,88$ $SD = 0,97$	$M = 3,50$ $SD = 0,51$	$M = 3,83$ $SD = 0,66$	$M = 4,07$ $SD = 0,59$
Teachers/Trainers	$M = 2,17$ $SD = 1,05$	$M = 3,41$ $SD = 0,85$	$M = 3,32$ $SD = 0,92$	$M = 3,69$ $SD = 1,08$
Youth/Students	$M = 3,38$ $SD = 1,14$	$M = 3,62$ $SD = 0,74$	$M = 3,78$ $SD = 0,89$	$M = 4,1$ $SD = 0,77$

Using the Pearson correlation coefficient, we analyzed the correlations between the dimensions of the questionnaire and the average times spent by the elements of the sample, both in digital media and in video games. The results obtained are expressed in Table 4.

We can observe, and as expected, positive associations between the different dimensions of the survey, with values varying between  $r = .581$  and  $r = .768$ . The time spent in video games presented positive correlations with all the attitudinal dimensions of the questionnaire. The time spent with digital media is positively associated with attitudes towards the recreational use of video games ( $r = .441$ ), attitudes towards the creation of video games ( $r = .232$ ) and attitudes towards the use of video games as a pedagogical tool ( $r = .254$ ). All correlations were statistically significant for  $p < .01$ .

**Table 4.** Intercorrelations between the study variables ( $N=106$ )

	Dimension 2	Dimension 3	Dimension 4	Time spent Digital Media	Time spent Video Games
Dimension 1	.581**	.697**	.590**	.441**	.493**
Dimension 2		.683**	.768**	.232**	.315**
Dimension 3			.685**	.254**	.337**
Dimension 4				.193	.262**
Time spent Digital Media					.736**

\*  $p < .05$ , \*\*  $p < .01$

### 4 CONCLUSIONS

The present study aimed to explore the main attitudes regarding the adoption of video games as a pedagogical tool, mainly emphasizing formal education contexts and curricula. To operationalize the study variables a research protocol was disseminated online, including a survey, framing four different attitudinal dimensions, regarding videogames. The multistakeholder sample answers indicate a higher level of positive attitudes, regarding the adoption of these kind of pedagogical tools, framing the positive implementation of video games in formal schooling contexts. The gathered data was also

consonant with previous study in other countries and contexts, reporting positive perceptions of the pedagogical value of video games as a promoter of a broad range of skills [6][7].

Besides the perceptions of the pedagogical value of video games, some non-presumable data regarding the recreational value of video games was also found, mainly associated with higher attributions in items like "Video games are a waste of time". Thus, it is possible to explore the negative connotation of video games as mere entertainment devices, standing out a cleavage between serious games (perceived as valuable) and commercial games. Further studies should explore not only the potential of specific commercial games in skills acquisition and learning enhancement, which is poorly documented [3], but also the attitudes regarding the pedagogical value of the use of recreational games on daily life, as a promoter of transferable knowledge.

It is also possible to highlight the significant relationships found between the amount of time spent daily using digital media and the level of positive attitudes. Thereby, it is possible to presume a possible need for the implementation of action-research projects working on a multistakeholder basis, focusing interventions not only in students, but also in their parents and teachers. Therefore, allowing a greater familiarization with the several educational possibilities of technology to the ones in charge of implement educational activities.

Summarizing, the gathered data reinforces school community as favorable to the integration of video games in the formal learning context, recognizing the potential of video games usage and creation in the enhancement of multiple literacies, communication, transferable knowledge, problem-solving skills and their utility as a form of self-expression.

#### **4.1 Grounds for future research**

This study frames the possible background conditions to be faces in the implementation of video games in formal schooling contexts and curricula. Thus, it is also bounded to a specific ethnographic environment and actors. Thereby, further research, with larger and more varied samples is required, for assessing each context specificities.

As stated above, this study also frames the need for multistakeholder projects, able to literate educators about digital media and mainly video games educational possibilities and potentialities, conducting to a safe, effective and informed implementation of this kind of strategies, and moving away from previous approaches, closely and almost exclusively linked to the negative aspects of video games.

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