

Parental attitudes towards video games at school

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Abstract

Despite research that has highlighted the positive outcomes of the use of video games on learning, their integration into school contexts still remains scarce. One of the principal dimensions related to the intention to use and the real use of these technologies at school is video games acceptance. So far, investigations have focused primarily on students' and teachers' opinions and only a few studies have considered the role of parents. The aim of the present study is to investigate the role of the dimensions of the technology acceptance model on parental preference (254 Italian parents) for the adoption of video games in primary or secondary schools. Results from the online survey revealed that 71% of the variance of parental preference for video games is explained by their perceived usefulness, perceived ease of use, learning opportunities and parental game expertise. Implications and future directions are discussed.

Introduction

Video games at school

In the last few decades, video games have become increasingly prevalent in children's lives. Results from a recent qualitative exploratory study across seven countries (Chaudron, European Commission, Joint Research Centre, & Institute for the Protection and the Security of the Citizen, 2015) showed that children are all immersed in media-rich homes and are frequently allowed to use different technologies - such as consoles, computers, tablets and smartphones - to play video games from an early age. This situation was confirmed in Italy in a study of adolescents under 16 years old, demonstrating the presence of video games in their lives (Patriarca, Di Giuseppe, Albano, Marinelli, & Angelillo, 2009).

So far, a huge branch of research has focused its attention on identifying the general positive and negative effects of video games. On one side, different studies have underlined the potential negative effects of video games on youth, for example in terms of aggression, social isolation, and video game addiction (C. A. Anderson & Dill, 2000; Hauge & Gentile, 2003; Milani et al., 2017; Triberti et al., 2018; Van Rooij, Schoenmakers, Vermulst, Van Den Eijnden, & Van De Mheen, 2011), although several researchers suggested the importance of investigating the role of different psycho-social risk factors (Milani et al., 2017; Triberti et al., 2018). On the other side, a wide range of studies have highlighted positive outcomes in terms of individual cognitive skills (A. Anderson & Bavelier, 2011; Bediou et al., 2018; Boot, Kramer, Simons, Fabiani, & Gratton, 2008), emotion regulation (Scholten, Malmberg, Lobel, Engels, & Granic, 2016; Schoneveld et al., 2016; Tunney, Cooney, Coyle, & O'Reilly, 2017; Villani et al., 2018) and social skills (Cole & Griffiths, 2007; Griffiths, 2003; Yee, 2006).

Nevertheless, beyond these extra-learning enhancements, other studies have proven that video games have a huge potential in terms of learning opportunities. Because of the appealing nature of video games for children and adolescents, numerous studies have investigated the use and integration of video games into education (Alshanbari, 2013; Annetta, 2008; Gee, 2003; Heins, 2017; Squire, 2008). Video games have indeed been shown to offer a strong motivational boost, characterizing themselves as a form of technology that highly promotes entertainment, enjoyment and flow, producing deeper engagement and higher persistence in learning activities (Argenton, Triberti, Serino, Muzio, & Riva, 2014; Cowley, Charles, Black, & Hickey, 2008; Klasen, Weber, Kircher, Mathiak, & Mathiak, 2012; Sherry, 2004). It follows that the use of technologies and video games at school has a powerful ability

to merge engagement/fun with learning (Bellotti, Kapralos, Lee, Moreno-Ger, & Berta, 2013), promoting student's motivation and turning education into a perceived leisure activity. Indeed it has already been assessed that video games are able to promote a student's positive attitude toward learning and school (Annetta, 2008; Durkin & Barber, 2002), as well as their motivation to learn (Clark, Tanner-Smith, & Killingsworth, 2016; Jabbar & Felicia, 2015; Wounters, Van Nimwegen, Van Oostendorp, & Van der Spek, 2013). For this reason, many educators are willing to find the most advantageous way to use technology to stimulate and enhance learning (Bransford, Brown, & Cocking, 2000), with a particular focus on the potential of video games (Turkay, Hoffman, Kinzer, Chantes, & Vicari, 2014).

So far, the use of digital games in schools has been proposed for a variety of subjects, ranging from science to math, geography and history (Ellison & Evans, 2016; Kebritchi, Hirumi, & Bai, 2010; Sáez-López, Miller, Vázquez-Cano, & Domínguez-Garrido, 2015; Tüzün, Yılmaz-Soylu, Karakuş, İnal, & Kızılkaya, 2009; Watson, Mong, & Harris, 2011). Kebritchi and colleagues (Kebritchi et al., 2010), for example, analyzed the use of *DimensionM*, a set of digital math games, and showed a significant improvement on class achievement and greater motivation in students who used the game in their classrooms. Watson and colleagues (Watson et al., 2011) obtained similar results observing the effect of using *Making History* to teach about World War II. Their data, coming from qualitative data, showed that the use of this video game enhanced student's engagement and promoted active learning. These results confirmed previous data showing positive results in terms of students' achievements and motivation toward subjects such as mathematics, genetics, computer science and geography as a consequence of the use of a digital game-based teaching method (Annetta, Minogue, Holmes, & Cheng, 2009; Lopez-Morteo & López, 2007; Papastergiou, 2009; Rosas et al., 2003).

Video game acceptance at school

Despite evidence that video games can facilitate learning related activities, to properly introduce them as a learning tool at school, it is first necessary to consider the acceptance and the attitude toward the use of video games at school by different actors, such as students, teachers and parents. Previous models describing the acceptance of new technologies suggested that this factor is closely linked to the intention to use and the real use of a technology. One of the most frequently used models in this field is the technology acceptance model, or TAM (Davis, 1989), which considers that the actual use of a technology depends on two main factors: its perceived ease of use and its perceived usefulness. The

first dimension concerns how effortless the user considers a technology to be, that is, can it be used without effort or without any specific technical skills. The second dimension refers to the user's belief that the technology under consideration will enhance his/her performance. But this is not the whole story. Other models have been developed to overcome the simplistic two-factor TAM and to introduce social, contextual and moderator factors that also play a key role in affecting one's perception and acceptance of a technology (Compeau & Higgins, 1995; Moore & Benbasat, 1991; Taylor & Todd, 1995; Thompson, Higgins, & Howell, 1991; Vallerand, Fortier, & Guay, 1997). In particular it has been suggested that three moderator variables influence the intention to use: age, gender and experience of use (Morris & Venkatesh, 2000; Venkatesh, Morris, Davis, & Davis, 2003; Wang, Wu, & Wang, 2009).

The TAM and its factors – perceived ease of use and perceived usefulness - have already been used in the video game literature to investigate different actors' acceptance of video games as learning tools (Bourgonjon et al., 2013; Bourgonjon, Valcke, Soetaert, de Wever, & Schellens, 2011; Bourgonjon, Valcke, Soetaert, & Schellens, 2010; Cheng, Lou, Kuo, & Shih, 2013; Ibrahim, Yusoff, Khalil, & Jaafar, 2011; Proctor & Marks, 2013; Tao, Cheng, & Sun, 2009; Yusoff, Crowder, & Gilbert, 2010). Together with the moderator variables mentioned above (age, gender, experience) the TAM factors are important in our framework as they might help us understand the aspects and the mechanisms underlying the acceptance of video games at schools.

The first pool of actors considered while investigating the role of acceptance of videogames were the recipients of video game-based learning: students. New generations are growing up in a society where information and communication technologies (ICT) are key media in daily activities, leading them to approach the real world differently. For this reason, it is important to consider them and their perspective if we want to transform education into education 2.0. Numerous studies have tried to explain students' acceptance of video games at school by basing their assumptions on the TAM and investigating the role of other variables that possibly influence students' opinions (Bourgonjon et al., 2010; Cheng et al., 2013; Ibrahim et al., 2011; Tao et al., 2009; Yusoff et al., 2010). In particular, Bourgonjon and colleagues (Bourgonjon et al., 2010) tested 858 secondary school students and found that, according to the TAM, the preference for using video games at school was directly affected by students' perception of video games' usefulness and ease of use. In addition to the two TAM factors, they found two other key predictors: learning opportunities presented by video games, and students' personal experience with video games outside school. In addition, they also highlighted gender effects, with male students having

a more positive attitude toward gaming than females, but this factor appeared to be mediated by ease of use and experience. This latter finding confirmed previous research showing that boys and girls hold different attitudes towards video games (Bonanno & Kommers, 2008).

The TAM and its extensions have also been used to investigate the second fundamental group of actors involved in this technological evolution: teachers. It is logical to suppose that the actual use of a new method in class, such as using video games as a teaching medium, strictly depends on the perception that the teacher has of that method, and it would be unproductive to apply it if the teacher considered it useless or with possible negative effects. As teachers control the teaching process, their negative perspective of the value of video games as a learning tool would be one of the biggest barriers to the use of such technology and its integration in school programs. In the past years various studies have attempted to identify the factors supporting or discouraging the use of digital games in classroom (Baek, 2008; Becker & Jacobsen, 2005; Bourgonjon et al., 2013; Can & Cagiltay, 2006; Huizenga, ten Dam, Voogt, & Admiraal, 2017; Proctor & Marks, 2013; Schrader, Zheng, & Young, 2006), showing that the adoption and effectiveness of video games for education are closely related to teachers' opinions. In 2013, Proctor and Marks (2013) published the results from 259 interviews of primary and secondary school teachers, based on the TAM, in which they investigated their perceptions, use and access to computer-based games. Despite a little difference between grade levels, they concluded that the two main factors predicting the use of video games at school were the teacher's access to computer games and perception of their usefulness. In line with this study, Bourgonjon and colleagues (Bourgonjon et al., 2013) surveyed 505 teachers from secondary schools and reported that the main factor explaining the behavioral intention to use video games in class was closely related to how useful the teachers perceived them to be.

As for students, other factors have been found to influence video game preference. In a 2015 study, Muscarà and Messina (Muscarà & Messina, 2015) showed that teachers' age negatively influenced their perception of benefits and improvements coming from the use of technologies in class. They further highlighted that teachers' gender affected the frequency of use of technologies in class: male teachers reported using them more frequently than female teachers did. It would thus be necessary to implement educational programs that take these predispositions into account in order to achieve a better use of technologies in the classroom (Yuen & Ma, 2002). Last but not least, another important moderator is the experience of use, as it seems that expertise directly influences the perceived utility (Taylor & Todd,

1995). These findings have been confirmed by subsequent studies, showing that teachers' perceptions of video games at school are closely affected by their gender and experience (Watson & Yang, 2016).

So far, investigations have focused primarily on students' (Bourgonjon et al., 2010) and teachers' opinions (Baek, 2008; Bourgonjon et al., 2013; Ketelhut & Schifter, 2011; Kirriemuir & McFarlane, 2003; Schrader et al., 2006). Only a few studies have considered a third key actor who plays an important role in the educational process: the parent (Bourgonjon et al., 2011; Finke, Hickerson, & McLaughlin, 2015; Jin & Schmidt-Crawford, 2017). Parents are the most important bridge between their children and school, especially during primary and secondary school. Their opinions strongly influence those of their children, and their role as mediators between home and school is determinant in shaping their children's points of view on teaching methods and educational processes. Indeed, parents are commonly concerned about the potential negative effects of using video games and often apply very restrictive rules for video gaming, influencing both children's and teachers' perception of their use in a school context (Nikken & Jansz, 2006; Scharrer & Leone, 2008; Williamson, 2009). However, as the use of video games in the educational context is increasing, it is now important also to consider parental acceptance as a fundamental factor for the advancement of such a teaching method. In 2011, Bourgonjon and colleagues (Bourgonjon et al., 2011) presented the results coming from a survey that investigated the opinions of 858 parents of secondary school children about video games and their use in classrooms. Specifically, they developed and validated a model explaining that 59% of parents' preference for the use of video games at school can be explained by the interrelation between perceived learning opportunities (the degree to which parents believe that video games can offer a concrete opportunity for learning), subjective norm (the degree to which a person is influenced by what they think other people think they should or shouldn't do), perceived negative effects of video gaming, previous experience with video games, personal innovativeness (the degree to which a person is willing to try out any new information technology) and gender.

Present research

So far, few studies have investigated parents' attitude toward video games at school and have mainly involved parents of high-school adolescents or have focused on specific applications of video games. Considering that video games are increasingly available to and used by younger children, it is important to investigate parents' attitude in other school groups.

Specifically, the present study aims to:

- investigate potential differences in parental attitude and preference for video games at school related to their gender, age and gaming experience. Specifically, we hypothesized a greater preference in fathers, older parents and video gamers than in mothers, younger parents and non-gamers;
- investigate the role of parents' attitude (perception of ease of use, usefulness, and learning opportunities) and expertise in video gaming in predicting acceptance of video games at school.

Method

Procedure

Participants were recruited through posters on school bulletin boards (with the permission of primary and lower secondary schools' administrators), public advertisements on social media, and through banners and tickets distributed during sports events. Inclusion criteria were: to be an Italian native speaker and to be the parent of primary or lower secondary school children.

The parents recruited were asked to complete an online survey aimed at investigating their attitude towards video games as learning tools. Parents were provided with a link and a QR code linked to the online survey. All participants signed an informed consent before completing the survey. The estimated time to complete the online survey was twenty minutes.

The study was approved by the Local Ethics Committee of the Psychology Department of the Università Cattolica of Sacro Cuore of Milan (Italy).

Measure

The survey was structured in three sections:

1. **Socio-demographic data.** The first section collected parent's and children's socio-demographic data (age, gender, education, residency, school level, etc.).

2. **Parents' and children's familiarity with new technologies, internet and video games.** Specifically, it included three sub-sections:

a. *Parents' PC self-efficacy level:* for this factor, we used an adapted version of a questionnaire previously used to determine a student's ability to perform a computer task. The questionnaire was composed of 3 items (e.g. "In general I am good at computers") presented on a 5-point Likert scale

ranging from “*strongly disagree*” to “*strongly agree*”(Vekiri & Chronaki, 2008). Questions were translated into Italian by the authors. The reliability alpha coefficient was 0.92.

b. Internet use: exploring how parents use the internet, their frequency of use and their general attitude towards the internet. To measure all these variables, we used the Attitude Towards Internet Scale (ATIS) (Morse, Gullekson, Morris, & Popovich, 2011), translated into Italian by the authors. This questionnaire is composed of 17 items presented on a 1 to 7 Likert response scale (ranging from “*strongly disagree*” to “*strongly agree*”). For this study, we considered only the ATIS global score. The ATIS demonstrates appropriate psychometric qualities; it was suitable to be used with parents and had a reliability alpha coefficient of 0.84.

c. Video games consumption: investigating the video games experience of parents and children, in terms of hours of video gaming a week.

3. Parental attitude towards video games at school. In the context of video game-based learning, we took inspiration from Bourgonjon and colleagues’ study (2010), adapting for parents their model that tested student’s acceptance of video games at school. We identified and investigated the following variables that could possibly explain parents’ acceptance of video games as a learning tool:

a. Perceived usefulness, which measured parents’ belief that using video games enhances their children’s school performance (e.g. “Using video games in the classroom would improve your son’s school performance”). This variable consisted of 4 items presented on a 5-point Likert scale ranging from “*strongly disagree*” to “*strongly agree*” with a reliability alpha coefficient of 0.95.

b. Perceived ease of use, which measured parents’ belief that video games are free of effort for their children (e.g. “Your son would like to know how to handle video games in class”). This variable consisted of 3 items presented on a 5-point Likert scale, ranging from “*strongly disagree*” to “*strongly agree*”. The reliability alpha coefficient is 0.85.

c. Learning opportunities, defined in Bourgonjon’s model (2010) as “the degree to which a person believes that using video games in the classroom offers [him or her] opportunities for learning”. In our study this measured how useful parents consider video games to promote the learning process, investigating their opinions about which abilities can be developed in learners by video games, such as critical thinking, control of the learning process, experimentation and interaction (e.g. “Video games offer opportunities to take control over the learning process”), with a reliability alpha coefficient of 0.62.

d. Preference for video games, considered by Bougonjon and colleagues (2010) as a measure of parents' acceptance of video games as a learning tool at school (e.g. "If I had to vote, I would vote for the use of video games in the classroom"), with a reliability alpha coefficient of 0.96.

Results

Participants

254 Italian parents from different regions of Italy voluntarily agreed to complete the online survey. The sample was composed of 166 mothers (65.4%) and 88 fathers (34.6%), with ages ranging from 20 to 50 years old, generally well educated. Fewer than half of them (40.6%) declared themselves to be video gamers. In [Table 1](#) are presented additional parent socio-demographic information related to age, educational background and video game expertise.

Parent participants were asked to fill out the questionnaire about one of their children. Specifically, the children they selected were male (54.7%) and female (43.7%), attending primary school (aged 6 to 10 years old, 64.6%), or lower secondary school (aged 11 to 14 years old, 33.4%) with a school achievement level mostly ranging from good to excellent (86% good or higher; 11.6% satisfactory; 1.6% sufficient; 0.8% insufficient). Almost all children were video gamers. Additional socio-demographics for children are reported in [Table 2](#).

Parents attitude towards video games at school

Scores for PC self efficacy and internet attitude showed that parents felt quite comfortable with new technologies ([Table 3](#)).

Concerning parents' attitude and their preference for video games at school ([Table 4](#)), participants appeared quite convinced that their children would know how to use video games in the school context (ease of use); however, data revealed parental perplexity about the usefulness of these tools and even more about the possibilities they could offer in terms of learning opportunities.

As evidenced by the literature, attitude towards a new technology is influenced by personal characteristics, such as gender, age or previous experience (Morris & Venkatesh, 2000; Venkatesh et al., 2003; Wang et al., 2009). Thus, by performing a one-way ANOVA analysis, we compared attitude and preference for video games between: fathers and mothers; older and younger parents; video

gamers and non-gamers (see [Table 5](#); Please note that not all participants answered all questions and therefore, sample sizes differ).

Results showed partial significant differences related to parents' gender and age. Specifically, fathers showed a significantly higher score than mothers in preference for video games at school ($F_{1,211} = 6.470$, $p < 0.05$), but no significant differences were found related to usefulness, ease of use and learning opportunities.

Concerning age, data showed a significantly higher perception of ease of use by older parents (>41-year-old, $n = 163$) than by younger ones ($F_{1,211} = 7.285$, $p < 0.05$), but no other significant differences were found related to usefulness, learning opportunities and preference for video games at school.

Significant differences in both attitude and preference emerged in relation to parents' expertise in video games. Parents who reported playing video games had significantly higher scores on all variables (ease of use, usefulness, learning opportunities and preference for video game at school) than non-gamers did.

Predictor of preference for video games

To investigate the role of parents' perceptions of usefulness, ease of use and learning opportunities, and their video gaming expertise (independent variables) in predicting parental preference for video games (dependent variable), a linear regression analysis was performed.

The model was statistically significant and all variables were significant predictors of preference. Specifically, data confirmed the importance of perceived usefulness as the most significant predictor of preference, in line with findings for the TAM (see [Table 6](#)).

Discussion

We have seen from the literature that video games can be a useful tool for learning, but their introduction into schools is far from ubiquitous. Indeed, the fact that a certain technology is available is not enough to encourage its actual employment within an educational environment. A sine qua non for the adoption of a new technology, such as a video game, in a school context is a positive attitude of students, teachers and parents towards its use during school activities (Papaioannou & Charalambous, 2011; Sanford & Madill, 2007; Selwyn, 1999; Walsh, 2005).

For this reason, many studies have focused their attention on the analyses of factors that might influence these actors' opinions. Until now, researchers have focused primarily on teachers' and students' opinions, as they are considered to be the main actors involved in the technology acceptance process at school. On the one hand, teachers can promote the adoption of a new technology by introducing it during educational activities; on the other hand, the adoption can be effective only if students, the "end users", are ready to accept it.

Nevertheless, parents, as well as teachers and students, play an important role in the acceptance process, as their attitude towards new teaching methods directly influences both children and schools. Their support is fundamental for the success of innovation at school, especially for younger children (Becker, 2007; Charsky & Mims, 2008; Wagner, 2006; Williamson, 2009; Włodarczyk, 2012), and their opinion profoundly affects the implementation and success of new practices in the classroom (Dodd, 1998; Haney, Lumpe, & Czerniak, 2003; Konzal, 1997). For example, schools are reluctant to introduce video games in the curriculum because they fear a negative parental reaction to this change (Bourgonjon et al., 2011; Takeuchi & Vaala, 2014). That being said, little has been done so far to investigate parents' attitude towards the use of new technologies at school (Bourgonjon et al., 2011; Turkay et al., 2014).

To extend the knowledge on this topic, our study aimed at investigating parents' attitudes and preferences towards the use of video games as learning tools at school. Results showed that the 253 parents who answered the online survey were familiar with the new technologies: they felt quite competent and comfortable with the use of the internet and PCs. Almost half of the participants were video gamers: primarily fathers (55.7% versus 32.5% of mothers), but it is interesting to note that the percentage of mothers who play video games is growing, in line with the Entertainment Software Association Report ESA (2017).

In general, participants showed a moderate openness towards the use of video games at school, even if they did not seem to fully understand their usefulness. In particular, while they were quite convinced that their children would not have problems using video games even in a school context, they were not so confident about their value in terms of school results and expressed even more marked doubts when considering learning opportunities. Parental hesitations are likely caused by their limited contextual experiences of video games at school, as shown in the study by Ibrahim and colleagues about students' acceptance (Ibrahim et al., 2018).

The first objective of our analysis was to investigate whether differences existed in parents' attitudes towards the introduction of video games at school based on their gender, age and video game experience. Results showed that fathers favoured the adoption of video games at school more than mothers did. This result is in line with other studies showing that men are more interested in this type of entertainment than women and less prone to apply active and restrictive mediation (Nikken, Jansz, & Schouwstra, 2007). Mothers, on the other hand, were found significantly more involved in active and restrictive mediation regarding videogame play and more worried about the detrimental effects of games on their children (Nikken et al., 2007); we can assume that this concern is reflected in a less positive attitude toward video games at school.

Age is associated with differences only on perceived easiness of use: older parents (more than 40 years old) were more likely than younger parents to believe that video games were easier for their children to use at school. According to Shin, the child's age determined the parents' degree of video game play mediation (Shin & Huh, 2011); we can assume that older parents have older children who are more independent and more experienced in using new media. Perhaps this makes them more confident in their children's ability to use videogames, even for school purposes.

Finally, expertise in video games is associated with a more positive attitude and a stronger preference than not having expertise. Video gamers showed a stronger preference for the introduction of these tools in the school: they considered video games more useful, easier to use and offering more opportunities for learning. Probably, the expertise is associated with a better knowledge of the potentialities of video games when used for more than merely entertainment purposes. Thus, the use of this medium allows parents to understand the usefulness of its application in the school environment. Thanks to their expertise, gamers are more optimistic about these tools and less worried about possible negative effects than non-gamers are (Nikken et al., 2007). This lack of concern probably generates a more favourable attitude towards the adoption of this technology at school.

Our second objective was to verify whether the variables investigated (perceived usefulness, ease of use, learning opportunities and gaming experience) could predict video game preference. We tested the interrelation between perceived ease of use, perceived usefulness, learning opportunities and parental game expertise. The results showed that the all the variables explained 71% of the variance of parental preference for video games. In studies using the TAM, data confirmed that parents are inclined to favour video games at school mainly if they are persuaded of their usefulness, i.e., if they believe that

these media can really help their children to succeed at school. The second predictor is ease of use: if parents are convinced that a video games are easy to use for their children, they are more likely to accept them. Finally, the video game experience and the belief that video games can provide new ways of learning are the other two elements that predict the preference for video games. These results reflect those obtained by Bourgonjon and colleagues with secondary school students (Bourgonjon et al., 2010): perceived usefulness, ease of use, understanding the learning opportunities provided by video games, and experience of use foster a positive attitude towards video games in the classroom.

Limitations

Before concluding, it is important to note some limitations of the study. First, this study focused on a small sample of Italian parents who were well educated and able to use new technologies, so findings should be interpreted with some caution in terms of generalizability. Second, a cross-sectional approach was adopted, which does not permit analysis of any causal inference. Nevertheless, regression analysis contributed significantly in understanding the contribution of attitude dimensions in parental acceptance of video games at school.

Conclusion

This study aimed to investigate parents' attitude toward video games as learning tools and to identify the main predictors of preference for video games. With a survey completed by 254 parents who had at least one child in primary or secondary school (age 6-14), it was found that parental expertise with video games, more than gender or age, is associated with a positive attitude and preference for video games in the classroom. Nevertheless, to guarantee a positive attitude of all parents, both video gamers and non-video gamers, it is essential to enhance parents' knowledge about the concrete affordances offered by video games (Chuang, Chen, Shen, & Tsai, 2017). To reach this goal, teachers and school staff can introduce initiatives aimed to increase parental engagement and understanding of the value that video games can offer at school: informative events and direct communication of school activities can contribute to a shared culture of accepting video games as educational tools (Williamson, 2009).

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Tables

Table 1. Parent socio-demographic information and video game experience

Demographic information	<i>n</i>	%
Age		
Less than 40	90	35,4
More than 41	163	64,2
Missing	1	.4
Educational Background		
Less than high school diploma	17	6,7
High school diploma	95	37,4
Bachelor's degree	131	51,6
More than degree	7	2,8
Other	4	1,6
Internet Use		
Never	0	0
Few times a month	1	.4
Sometimes a week	7	2,8
Once a day	39	15,4
Several times a day	201	79,1
Missing	6	2,4
Video gamers		
Yes	103	40,6
No	124	48,8
Missing	27	10,6
Video game play (hours/week)		
Less than 1 hour	42	40,8
2-5 hours	38	36,9
More than 5 hours	19	18,4
Missing	4	3,9

Table 2. Children socio-demographic information and video game experience

Demographic information	<i>n</i>	%
Gender		
Male	139	54.7
Female	111	43.7
Missing	4	1.6
School Level		
Primary school	164	64.6
Secondary-Middle School	85	33.4
Missing	5	2
Video gamers		
Yes	209	82.3
No	19	7.5
Missing	26	10.2
Video game play (hours/week)		
Less than 1 hour	61	29.1
2-5 hours	99	47.4
More than 5 hours	48	22.9
Missing	1	.6

Table 3. Parent's PC self-efficacy and Internet Attitude

	M	SD	α
PC self-efficacy ^o	3.6	.965	.91
Total Internet Attitude*	4.7	.844	.83

^o based on Likert Scale (1-5)

* based on Likert Scale (1-7)

Table 4. Parent's video games preference

	M	SD	α
Attitudes toward video games at school ^o			
Perceived Usefulness	2.6	1.02	.95
Perceived Ease of Use	3.3	.974	.85
Learning Opportunities	1.9	1.95	.62
Preferences for video games at school ^o	2.6	1.08	.96

^o based on Likert Scale (1-5)

* based on Likert Scale (1-7)

Table 5. Parent attitude and preference by genre, age and video game use

Gender (Mean and Standard Deviation)

	Gender		F	p
	Father (n. 88)	Mother (n. 166)		
Ease of use	3.29 (1.018)	3.23 (.954)	.207	.650
Usefulness	2.76 (.954)	2.50 (1.047)	2.955	.870
Learning Opp.	2.05 (1.113)	1.89 (1.086)	1.137	.287
Preference	2.87 (1.035)	2.48 (1.086)	6.470	.012*

*p < .05; **p < .01

Age (Mean and Standard Deviation)

	Age		F	p
	<41 (n = 90)	>=41 (n = 163)		
Ease of use	3.02 (.875)	3.39 (1.005)	7.285	.008*
Usefulness	2.52 (.856)	2.63 (1.107)	.605	.438
Learning Opp.	2.01 (1.075)	1.91 (1.108)	.454	.501
Preference	2.55 (1.015)	2.63 (1.123)	.269	.604

*p < .05; **p < .01

Video game use (Mean and Standard Deviation)

	Video gamers		F	p
	Yes (n = 103)	No (n = 124)		
Ease of use	3.46 (1.008)	3.08 (1.006)	6.596	.011*
Usefulness	2.87 (1.152)	2.37 (.948)	10.747	.001**
Learning Opp.	2.30 (1.243)	1.70 (.919)	17.382	.000**
Preference	2.98 (1.245)	2.27 (.907)	21.116	.000**

*p < .05; **p < .01.

Table 6. Coefficients of Linear Regression

Independent	Dependent	Unstandardized coefficients		Standardized coefficients		Sig.
		B	std. Error	B	t	
Perceived Ease of Use	VG Preference	.269	.050	.242	5.384	0.000**
Perceived Usefulness	VG Preference	.587	.050	.552	11.684	0.000**
Learning Opportunities	VG Preference	.146	.045	.150	3.289	0.001**
VG parents' expertise	VG Preference	.125	.043	.114	2.881	0.004**

*p < .05; **p < .01.

Model summary of Linear Regression

Independent	Dependent	R	R ²	Adjusted R ²	Std error of the estimate
Model summary	VG Preference	.845	.715	.709	.585