

Digital games and children in Italy in 2024

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Abstract: This study focuses on the world of digital games, analyzing the Italian market compared to the European and international markets, as well as consumer habits. The aim of the research is to provide a snapshot of digital game usage among children aged 6-14. The research used Istat data regarding the frequency of connections, the devices used to connect, and the types of activities, as well as data from two other studies specifically related to digital games. The research results indicate that children primarily use smartphones and tablets to connect and prefer mobile gaming over console and PC gaming. Finally, the study highlights that the use of digital games in teaching in Italian schools, despite the support of the institutions, is showing slow growth. .

Keywords: Digital games; children; school; Italy.



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1. Introduction

Plays an important role in the development of children and can be defined as a simple, fun and unconstrained activity. In keeping with its educational function, play may involve a suspension of everyday reality and a detachment from the logic and dynamics of adult life (Huizinga, 1938).

At the same time, it allows an early departure from the daily routine, problems and thoughts of adults and to experience those moments of lightness characteristic of carefree children, enhancing the role that play can acquire within a social structure. It has a number of characteristics that make it vital within this ecosystem, including:

- takes place according to rules;- is voluntary;
- happens outside everyday life;
- is aware of its unreality;
- takes place in well-defined time-spaces;
- is an end in itself;
- one is completely immersed in it.

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Also from Roger Caillois's (1958) point of view, play is a free, uncertain and regulated activity, not imposed from outside but chosen spontaneously by the child according to his own interests. Indeed, during play, the individual alienates himself from reality and catapults himself into an imaginary space-time chosen by him. Finally, it highlights the 'fictitious status' of play, through which the child recreates reality in an imaginative and different way.

In particular, Huizinga and Caillois (1958) see play as a cultural element that changes and develops according to place and time.

In the course of studies on the importance of play in educational contexts, various definitions and conceptions of play have followed one another, but most agree with the idea that games can be understood as deliberate learning experiences organised in advance by the teacher/educator in order to achieve certain formative and didactic objectives. In this sense, the scholar McGonigal (2012) identifies four fundamental elements capable of structuring the game in a broad sense, including the objective, the set of rules, the feedback returned and the voluntary participation of the subject.

According to Squire (2011), gaming has acquired such an awareness that it has also become an important educational tool due to the intrinsic gamification component that it carries within the educational sphere. Game-based educational learning is a much debated and rooted issue in these contexts as its centrality is largely linked to the motivation for using these educational methodologies, i.e. the ability to increase the involvement of the subjects so as to make it much more fun, challenging and enjoyable. Furthermore, Kirriemuir and McFarlane (2004) observe that games designed and implemented for didactic and educational purposes are often designed in a very superficial and aleatory manner so as to insist on a better management of the time and resources dedicated to these edutainment activities.

The latest research has highlighted the centrality of the educational potential of these tools, including videogames and the large system of immersive technologies. These innovations can offer the user new immersive learning experiences that are as real as possible. Videogames are also part of this large and vast immersive sector, moving users into virtual worlds, thus favouring learning. We can therefore conclude by saying that play constitutes an effective educational activity independent of restrictive constraints, helping the child to develop a set of skills in a completely natural way. Returning to the vital function of play, we can affirm how such mechanisms can allow young individuals to enjoy moments of freedom and carefreeness, eluding the activities of everyday life. Indeed, the core properties of play could help children acquire new skills (e.g. creativity, collaboration) through experience and direct contact. The gap between conventional and new games is different. The introduction of technology in games has led to the development of new forms of entertainment, but it has also posed a challenge to the established norms of physical and interactive play.

The gap between traditional and innovative games represents both a challenge and an opportunity. On the one hand, the increasing prevalence of digital games raises concerns about the loss of the ludic tradition, signalling a possible decline in direct social interactions. For instance, Turkle (2011) warns that technology could mitigate human relationships, making interactions superficial. On the other hand, the convergence of tradition and innovation has opened up space for a reinterpretation of classic games. Various designers have begun to integrate digital elements into board

games, creating hybrids that combine physicality with technology (Tristan et al., 2018). These new forms of play can stimulate interest in traditional practices, attracting new generations and rediscovering the importance of play as a means of socialisation.

The gaming divide between traditional and innovative games is a complex and multidimensional issue that reflects the evolution of society. While traditional games offer rich experiences of social interaction and cultural meanings, innovative games present unique opportunities for immersion and interaction. Finding a balance between these two play dimensions will be crucial for the future of gaming, allowing traditions to be valued while exploring new frontiers

The advent of digital technologies has revolutionised many aspects of our daily lives, including the way we learn. Among the many innovations that have emerged in the educational environment, digital educational games have shown a substantial impact as they are highly stimulating tools for their users and capable of enhancing learning processes, but on the other hand can also speed up and make teaching processes efficient.

Digital educational games can be considered software applications designed to teach specific concepts through the interactivity that video games are able to deliver. Such methodologies are designed and structured on the basis of a mix of interaction, dynamism and learning that are functional to arouse the students' interest and engage them in ways that are almost alternative to what conventional methods return.

According to Prensky (2001), these games can be adjusted or adapted to the most appropriate learning rate and level of difficulty for each of its users. This flexibility, which is hardly present in traditional methods, makes learning more effective and targeted, as it is conceived and designed for the individual and his or her individual needs.

Customization comes to the rescue as it is particularly useful in heterogeneous educational contexts where students have heterogeneous skills and knowledge. Moreover, this adaptation saves time for the teacher, as well as being obviously more effective and productive.

However, despite their objective potential benefits, digital educational games are not without criticism and limitations. Some researchers have highlighted problems such as addictiveness, distraction and social inequalities regarding access to technological infrastructure. Furthermore, there are concerns about possible cognitive overload caused by the high number of stimuli in digital games and the reduction of social interactions among peers. Already many studies in classical pedagogy recognised the added value and power of play in experiential learning. It has to be said that such advanced technologies only gained great social awareness and recognition with the advent of the Internet and the technological advances implemented and consolidated in the new millennium. Digital educational games exploit interactive interfaces, advanced graphics and sophisticated game mechanics to create engaging and customised learning environments that adapt to different learning modes tailored to the students.

In recent decades, interest in digital educational games has grown enormously in both academia and educational practice. Many studies have examined and confirmed how effective such methodologies actually are in improving and making school performance, motivation and skill acquisition productive. To understand more

about this, we can consider the theses put forward by Gee (2003) and Prensky (2001), who emphasised how digital games can facilitate active learning and problem-solving in comprehension. In order to solve such problems, such games offer immediate feedback and allow students to experiment with complex concepts in a safe and controlled environment.

These considerations are therefore aimed at examining the advantages and disadvantages of digital educational games in depth, seeking to develop a series of evaluations, based on empirical and theoretical evidence, so that a balanced and informative view of the use of these tools in modern education can be returned.

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Gamification, i.e. the use of game elements in learning that relies on playful leverage, could be an effective option to make the educational experience much more engaging and motivating for students (Darina Dicheva et. al, 2015). Through the use of rankings, rewards and objectives, students are much more motivated to reach their goals and develop new skills.

In spite of their evident social deployment, virtual and augmented reality technologies are currently not yet widely used in higher education. According to Heverton (2016), interactive environments involving the integration of the five sensory spheres (sight, touch, hearing, smell and taste) could improve subjects' perception in the learning process. Indeed, virtual reality technology offers the possibility of interfacing with a digital environment that exploits different visualization systems to provide a unique and distinctive experience. All this could offer teachers new methodologies and teaching aids to be applied effectively in their disciplines. It must be said, however, how virtual reality pushes students to learn and acquire new skills that will be useful in the comprehension process.

Indeed, virtual reality is a shareable space where students can interface with environments and objects provided by a computer. Virtual and augmented reality in education have, over time, become the subject of discussion for many re-

searchers. Indeed, much research debates the relevance and real impact of such technologies and whether they can change the educational process in education over time. Virtual reality has been applied in various scientific fields and disciplines, including experimental psychology, neurosurgery, engineering, and so on. Among the particular advantages, according to Freeman et al. (2016), this technology rediscovers greater control of individual stimuli and provides a broader set of responses. Research and studies on this subject have pointed out a number of notable differences and impacts between virtual and augmented reality. Compared to the former, augmented reality facilitates and enhances the cognitive and mnestic process in comparison to the virtual environment (Pelargos et al., 2017). Concurring with what was stated before, Diegmann et al. (2015) also believe that augmented reality improves and speeds up the learning and memory process of students of a content compared to non-augmented reality technologies. Moreover, in addition to these benefits, it facilitates students' learning in an interactive space, thereby increasing the processes of social interaction between individuals. Given its educational value, augmented reality (AR) is an efficient tool that can reduce the time for training in the use and understanding of a task. For these goals to be achieved, it may be important to evaluate and propose the right learning methodologies and processes. The effectiveness of emerging technologies is such even in contexts with a low level of formality (e.g. in family settings). According to Jamaladdin et al. (2017), by the time a learner is confronted with an interactive learning environment, he/she has both high listening skills and mnestic abilities of part of the information he/she enjoys (around 80 percent). Augmented reality applications predominantly exploit mobile devices, which on the other hand implies a clear limitation regarding the physical confrontation with augmented space (Radu, 2014). As is the case with the emerging technologies mentioned above, artificial intelligence has also been extensively dealt with within school contexts. Artificial intelligence first came into being in the form of computers and other embedded technologies; it then went through a new evolutionary phase that made it a set of intelligent educational systems present online. This technology has enabled teachers to revise and evaluate assignments more productively, thus making their teaching activities more qualitative. Over the past few years, more artificial intelligence systems have been present in teaching-educational contexts.

Such technology offers a marked improvement in the student learning process, so much so that, nowadays, such innovative discoveries improve the teaching of routine tasks to students, including spelling and pronunciation skills (MJ Timms, 2016)s.

2. Video- games and education

Over the last few years, video games have undergone a profound change, undergoing a constant evolution that goes beyond the mere recreational dimension so that they could take on different roles and characteristics. Nowadays, they cannot be considered merely a means of entertainment, but have acquired such relevance that they are also considered valuable educational tools, a channel of sociality that is also rooted in the economic sphere. The concrete repercussions and possible future directions of this constantly changing phenomenon are broad and multidimensional, with important consequences in various fields, from pedagogy to economics, from mental health to art.

Digital gaming today influences multiple aspects of our society in new and exploratory ways, with potential yet to be unveiled to improve various areas of everyday life and individual and collective development.

According to recent studies, including Papastergiou's study (2009), video games have the potential to improve both content acquisition, problem solving and critical thinking.

Video games are playing an increasingly important role in supporting people's psychological well-being. In fact, in some cases they can act as an actual therapy, helping to deal with particular and usual situations such as anxiety and depression. Video games therefore play an increasing role in supporting people's psychological well-being.

The use of games such as 'Journey' and 'Celeste' has been shown to offer experiences that foster meditation and self-reflection (Russoniello et al., 2009). In addition, online gaming platforms act as social networks by breaking down geographical barriers and fostering connection between individuals who share the same needs and interests, a relevant aspect that should not be underestimated especially in times of social isolation such as the Covid-19 pandemic (Kowert & Oldmeadow, 2021).

Games foster the acquisition of transversal skills such as problem solving, teamwork, communication and critical thinking (Annetta et al., 2009). In educational institutions, they can be used to supplement and develop those interpersonal skills that are increasingly in demand in the labour market. In the future, scholars may bring forward new and valuable considerations on the creation and evolution of games specifically designed for certain skills, such as public speaking and leadership.

Another important area for future research and development is the promotion and development of increasingly inclusive and diverse video games. The growing awareness of issues of representation and inclusion in the world of gaming has prompted scholars to pursue new considerations towards the creation of game content that more broadly reflects the variety of human experiences. Authors such as Kücklich (2005) emphasise the importance and necessity of designing gaming experiences that not only entertain but also address relevant social and cultural issues.

Game-based learning has the potential to facilitate access to education due to the possibility of using advanced and different devices and the presence of features designed for learners with disabilities (Eickhoff et al., 2021). Looking forward, therefore, accessibility will play an increasingly central role in the development of good, concrete games in education.

In conclusion, the practical implications and future prospects of digital video-games are a rapidly evolving and growing area of relevance. From training to education, but also from mental health to economics, video games are transforming the way individuals learn, interact and live. In this sense, to come to the present day, it is expected that the integration of new immersive and advanced technologies such as virtual reality, augmented reality and artificial intelligence in general, will ensure the development of a more inclusive to help shape the industry and how games are enjoyed in the years to come.

3. Istat data analysis on the spread of digital games

A further frontier is gamification, i.e. the integration of typical game elements in non-game contexts. As pointed out by Deterding et al. (2011), gamification can in-

crease student motivation and engagement. Future research should therefore investigate the effectiveness of gamification in educational practices, proposing variables such as immediate receptive feedback, rewards and storytelling, in order to understand the effects of these approaches on students' academic performance and learning motivation. There is a need to explore how gamification can support learning in formal contexts. Another key recommendation is the importance of inclusive design in educational games. Many authors have emphasised the need to consider the diversity of learners and its implications for design. It is therefore necessary to develop games that consider a wide range of abilities, learning styles and cultural backgrounds. Future research could investigate how the games can be tailored to best serve students with special educational needs.

As data analysis technologies improve, games that release knowledge and skills are able to detect and at the same time release learning information in real time (Hattie & Donoghue, 2016). Future research should therefore look at how this data can be used to change learning experiences and return immediate and effective feedback tailored to the individual learner. Furthermore, harnessing and employing new immersive technologies to adapt learning pathways is a high potential pathway that still needs more exploration and related research.

The emergence of such technologies as augmented reality (AR) and virtual reality (VR) offers new opportunities for educational game design. As indicated by Merchant et al. (2014), these technologies can enhance immersion and engagement by facilitating hands-on learning experiences and simulations in controlled environments. Future research should explore how such technologies can be effectively deployed in educational contexts and their impact on student performance and interest.

In conclusion, the indications provided suggest that research on the use of digital games in education is still at an early stage but has great potential to be developed. It is essential to continue investigating these new possibilities in order to ensure that games can be used in an effective and inclusive way, thus supporting the learning of students of all ages and backgrounds.

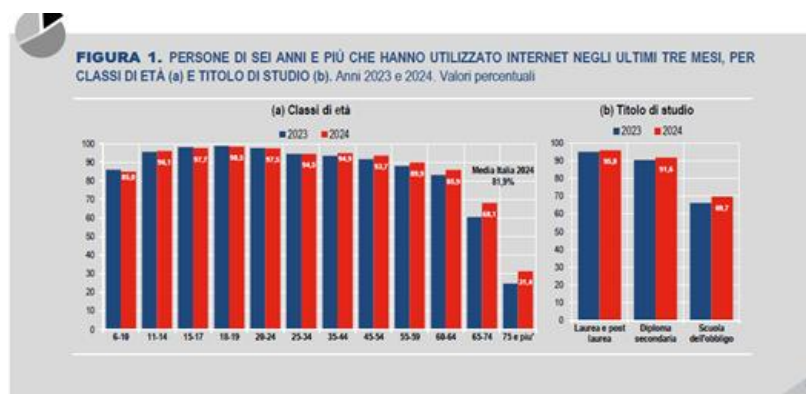
Italy in 2024 can generally be seen as a connected country, but not at all levels. Regardless of the differences that we will analyze later, according to the Istat Citizens and ICT Report 2024, the spread of digital technologies continues to grow: the proportion of people aged 6 and over who have used the Internet in the last 3 months is 81.9%, with a significant +2.4% compared to 2023. Within this overall growth, it is important to underline that the gap between those who have access and skills and those who do not remains significant across various aspects, particularly geographical, cultural, and generational. Geographically, the northern regions show higher rates of digital connectivity and skills compared to the South and the inland areas. In 2024, the internet penetration rate is 86.2% (+2.5 percentage points compared to the previous year). The territorial analysis highlights a persistent disadvantage in the South regarding internet access, with 4.8 percentage points less than the Center-North. The regions with the highest percentage of connected households are Veneto and Friuli Venezia Giulia (89.3% for both) and Trentino-Alto Adige (89.1%). The regions with the lowest percentages are Sicily (82.3%), Molise (80.8%), and Basilicata (79.7%), as shown in the table below.



Regarding the type of activities that users carry out on the internet, between 2023 and 2024 online shopping is increasing: the share of people who made online purchases has risen by 2.2 percentage points. The most purchased goods via e-commerce are clothing (23.2%) and household items (13.7%).

The Istat data provide, as usual, a snapshot of the country's situation. The 2024 picture regarding internet access also shows significant differences from a cultural standpoint: 98% of families with at least one university graduate are connected, while the percentage drops to 65% in those where the highest level of education is middle school. In addition to these, generational differences also emerge.

In households consisting exclusively of elderly people (conventionally individuals aged 65 and over), there is a lower spread of the Internet: only six out of ten (60.6%) have Internet access at home. In contrast, access is almost universal in households with at least one minor (99.1%) and reaches 94.5% in households without minors but with members who are not exclusively elderly. The numbers in the following table, which summarize what has been discussed, also confirm here a general increase in internet connection and usage, but a substantial difference between young and elderly people, with minors acting as a real driving force in the family regarding internet use, and between those with a high level of education and those with only a middle school diploma. Hence, the overall picture of Italy is one of overall growth in internet use, but with the differences just highlighted.



4. Digital games

As far as digital games are concerned, Istat data mainly focus on internet usage, youth participation, and sectors related to digitalization, but do not provide specific information on digital games in a single report. Before delving into the analysis of data provided by the report "Video Games in Italy in 2024. Market, Consumers, Industry" presented by IIDEA, the association representing the digital game industry in Italy, and the "All About Video Games 2024" report by Video Games Europe, the following brief chronology highlights how the Italian market is evolving, with a few years of delay compared to the international market, but essentially in line with the European one.

International Market

- **Origins:** The first digital games date back to the 1950s and 1960s, but the real market emerged in the 1970s, with the arrival of home consoles (like the Atari 2600 in 1977) and arcade games
- **Global Expansion:** In the 1980s and 1990s, the market became international with companies like Nintendo, Sega, and later Sony and Microsoft.
- **Digital Distribution:** From 2000 onwards, with the advent of the Internet, digital distribution began (Steam in 2003, Xbox Live, PlayStation Network), which revolutionized the market

European Market

- **1980s:** Europe began to develop its own digital game market with computers like the Commodore 64 and the Amiga.
- **1990s:** Growth with the arrival of Japanese and American consoles
- **2000s:** Consolidation of the digital market, with a strong presence of indie developers and platforms like GOG.com (founded in Poland in 2008)
- **Today:** Europe is one of the main global markets, with countries like Germany, France, the United Kingdom, and Italy contributing significantly.

The report *Video Games in Italy in 2024. Market, Consumers, Industry*, presented by IIDEA, the association representing the video game industry in Italy, during an event held as part of the National Made in Italy Day at the Ministry of Culture, highlights the positive trend of recent years: in 2024, the turnover of the video game sector grew by 3%, reaching nearly 2.4 billion euros.

The data from Video Games Europe's *All About Video Games 2024* report reveal a difference between the Italian market and the European market: while many Italian enthusiasts continue to collect physical editions of their favorite titles, the European

video game industry underwent a decisive transformation in 2024 (physical copies dropped to 10% of the European market in 2024, halving compared to 20% four years ago, while digital dominates with 90% of revenues). The real surprise emerges from the analysis of gaming platforms, where a figure comes up that could astonish many: mobile gaming accounts for 44% of total revenue, far surpassing consoles (38%) and PCs (15%). This phenomenon reflects a trend already observed in other global markets, where smartphones and tablets have become the primary access platforms to the world of digital games. The 2024 represents a year of transition towards an increasingly digital and mobile-centric gaming world. In Italy, however, there is still some resistance, probably due to the strong culture of collecting that is still present, but even here the trend, although at a slower pace, follows the direction of the European market.

On the consumer front, according to the aforementioned IIDEA report, in 2024 Italian video game enthusiasts increased by about 8%, reaching 14 million people, equal to 33% of the Italian population aged 6 to 64, with an average age of around 31 years. The audience of Italian gamers remains mostly adult, with a higher incidence in the 15-24 and 45-64 age groups. During 2024, 9.6 million Italians spend at least an hour per week on digital games, 2.4 million play less frequently, and 2.1 million play at least once a year. Mobile devices, such as smartphones and tablets, remain the main choice for gaming enthusiasts (10.4 million, +12% compared to 2023), followed by consoles (6.2 million, +11.5%) and PCs (4.8 million, +5%).

5. Digital games and children (6-14 years old)

Istat has conducted surveys showing an increase in ICT specialists, the adoption of digital technologies, internet dependence among teenagers, and the use of digital games by children and adolescents. Our focus has been on the latter category, namely children aged 6-14, who attend primary and middle schools. According to Istat data (see the 3 tables below), 85 out of 100 children aged 6 to 10 use the Internet. The percentage rises to almost 97 out of 100 in the age group between 11 and 14 years. The data on frequency are very interesting: in the age group 6-10, about 46% of children go online every day, 33% once or more per week, while a significant 13% do not use the internet; in the age group 11-14, the percentage of those who use the internet every day rises to 82%, only 13% use the internet once or more per week, while 3 children out of 100 never go online. Regarding the types of activities carried out on the Internet, 68% of children aged 6-10 and almost 77% of those aged 11-14 mainly play; the percentage of 6-10 year-olds who participate in social networks drops to 12%, while it remains significant in the 11-14 age group (57%). Again, regarding the type of activity, an important difference between the two age groups is related to sending emails, reading newspapers, and expressing political opinions: the percentages are obviously very low among the younger children, while they remain encouraging and give hope, in terms of participation in social life, for the 11-14 age group. A fact that emerges from this Istat research and deserves consideration is that concerning PC use: 54% of children aged 6-10 and as many as 22% of those aged 11-14 never use a computer. These are definitely high percentages and suggest that there are many children between 6 and 14 years old who connect and play using a mobile phone.

Internet – age details						
Frequency: annual						
Measure: For 100 people with the same characteristics						
Sex: total						
Time: 2024						
Indicator: of people aged 6 and over for Internet use and frequency of use	They use the Internet	They use the internet every day	They use the internet once or more times a week	They use the internet a few times a month	They use the internet a few times a year	They don't use the internet
Age						
6-10 years	85,5	45,7	33,5	4,6	1,7	13,5
11-14 years	96,8	82	13,6	1	0,2	3

Activities carried out on the internet		
Sex: total		
Frequency: annual		
Time	2024	
Age	6-10 years	11-14 years
Indicator		
Looking for information about goods and services	5,4	22,1
Looking for health information	1,6	8,1
Reading newspapers, news, online magazines	4,9	20,1
Send or receive email	6,6	43,3
Participate in social networks (e.g., create a user profile, post messages, or other activities on Facebook, Twitter, etc.)	12,4	57,1
Express opinions on social or political issues through websites	6,6	16,6
Play or download games, pictures, movies, music	68,1	76,6
Take an online course	3,4	9,2
Selling goods or services (e.g., online auctions, eBay)	0	4,3

PC – age details						
Frequency: Annual						
Measure: For 100 people with the same characteristics						
Sex: total						
Time: 2024						
Indicator: of people aged 6 and over for Internet use and frequency of use	They use the pc	They use the pc every day	They use the pc once or more times a week	They use the pc a few times a month	They use the pc a few times a year	They don't use the pc
Age						
6-10 years	44,5	8,4	22,9	8,6	4,6	53,7
11-14 yeras	76,2	28,2	36,3	8,3	3,5	22

6. Discussion and Results Use of Digital Games in Italian Schools

In recent years, the use of digital games in Italian education has seen significant growth. Through Game-Based Learning (GBL), teachers aim to stimulate motivation, collaboration, and the development of cognitive and disciplinary skills among students. Several experimental projects have been implemented, among the most notable

is *Press Start to Learn 2.0*, coordinated by the University of Bologna and IVIPRO, which involved 195 students and 35 teachers in Emilia-Romagna, Tuscany, and Lombardy. Games such as *Florence*, *Papers Please*, and *Italy: Land of Wonders* have been used to develop critical thinking, media literacy, and in interactive storytelling. 79% of teachers stated that they would like to use video games in the future. In Italy, there are official guidelines. *The Games in Schools* manual, created by IIDEA and European Schoolnet, provides practical examples of educational activities with digital games. It includes guidance for inclusive and responsible use, with activities based on Minecraft, storytelling, coding, and multidisciplinary projects. The cognitive and educational benefits for children are evident. Recent studies show that video games can improve working memory, selective attention, and problem-solving skills. Some games are also used in therapeutic settings, such as *EndeavorRx* for treating ADHD. Institutions are increasingly taking a closer look at the topic. The Ministry of Education and Merit has launched training courses for teachers, such as *Teaching with a Video Game and with AI*, which teach the use of block-based video games to convey concepts of physics, ecology, creativity, and collaboration. Gamification in teaching is also beginning to spread: by using game mechanics such as points, levels, and missions, teachers are able to motivate students, reduce school dropout rates, and increase engagement.

7. Conclusions

The data presented opens the door to some reflections. The world of digital games, constantly expanding both in the international and Italian markets, exerts a strong appeal on young people (age group 6-14), as shown by the high percentages of internet access via PC, but especially through tablets and mobile phones, represents a reservoir of enormous potential from an educational point of view. At present, these potentials, despite experimental projects and institutional support, are not fully realized, and there is still much to be done in this area to make the use of digital games in education more widespread. Despite some resistant groups, likely due to age-related factors, younger teachers show openness to training for more frequent use of digital games in teaching. Moreover, the benefits that the use of video games in education could bring are numerous, from increasing students' motivation to reducing school dropout rates, not to mention that using digital games has been shown to improve selective attention and problem-solving skills in students. In short, the world of digital games is one that education has not fully embraced yet, but it represents an extraordinary tool as a key to accessing the world of young people and their learning.

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