



Classificazione Decimale Dewey:

371.397 (23.) ALTRI METODI DIDATTICI. GIOCO E SIMULAZIONE

ANTINEA AMBRETTI

DIGITAL GAMES

NEW GAMING FRONTIERS

Preface by

DAVIDE DI PALMA





ISBN
979-12-218-1375-3

PRIMA EDIZIONE
ROMA 24 OTTOBRE 2024

*A Gennaro, mio padre,
dall'alto come un drone... destinazione "Futura"*

INDICE

9	<i>Preface by</i> DAVID DI PALMA
II	<i>Introduction</i>
15	Chapter I Evolution of the digital game 1.1. History and development of digital gaming, 15 – 1.2. Emerging technologies and impact on digital gaming, 18 – 1.3. Role of play in training and learning, 21
27	Chapter II Critical analysis of digital educational games 2.1. Advantages and disadvantages of digital games in education, 29 – 2.2. Evaluating the quality of digital educational games, 32 – 2.3. Play gap: traditional children's games vs. innovative games, 36
43	Chapter III Practical implications and future developments 3.1. Implications for curricular design and teaching, 43 – 3.2. Recommendations for future research, 45 – 3.3. Perspectives on the evolution of digital educational games, 47

51	Chapter iv Theoretical reflections on virtual identity 4.1. Theoretical foundations, 51 – 4.2. Concepts of virtual and real identity, 50 – 4.3. Role of avatars in the representation of identity, 56 – 4.4. Psychological theories on identity and self-representation, 59
63	Chapter v Impact of avatars on identity and personal development 5.1. Avatar and perception of identity, 63 – 5.2. Interactions of individuals with avatars 2, 65 – 5.3. Effects on self-perception and identity construction, 66 – 5.4. Implications for training and personal development, 67 – 5.5. Role of avatars in education and training, 69 – 5.6. Potential therapeutic uses of avatars, 70 – 5.7. Impact of immersive technologies on society, 72
75	Chapter vi Ethics and risk management in the use of avatars 6.1. Ethical considerations in the use of avatars, 75 – 6.2. Risk Management, 77 – 6.3. Protection of participants and ethical guidelines, 79 – 6.3.1. Recommendations for ethical practice in the use of avatars, 81 – Conclusions, 84
85	<i>Conclusions</i>
87	<i>References</i>

PREFACE

The work of Antinea Ambretti is offered as a succession of questions, without the pretension to give answers, but to open possible educational scenarios and ideas for reflection trying to help the reader to the didactic formulation of possible paths.

Both real and virtual play is synonymous with identity at several levels: social, personal, territorial.

Finding a teaching place for each form of play is the next challenge for society, and especially for schools. To accept the current inclinations of children to digital play and positively orient their inclusion in the school curriculum could be an opportunity to reflect on both from the perspective of empirical research, as well as in the implementation.

Hence, questions which are difficult to answer unambiguously. The selection and selection of potential paths that can be taken in a real and virtual way is possible and appropriate. Avatar and play between real and virtual solicit educators and non-theme on Identity and emotivity bringing the reader to a reflection on the various facets of the Self between real and virtual that touches the apex in the ludic expressions of teaching.

Thus, a “physiognomy” of the gaming activities is outlined, lightened from the purely recreational aspects aimed at mere fun and enriched with new meanings related to the possible relationships between

body, play, movement and cognitive development, relational affective-Emotional and social in childhood.

The description and use of these cultural and scientific constructs are the background and frame to the text of Antinea Ambretti, offering a didactic-pedagogical reading of the game, mainly digital in nature, which prompts an interesting reflection on real and virtual identity.

In rediscovering games, we propose playful experiences in the school that metaphorically and literally reproduce the space of the courtyard: a space in which to relate the games of the In rediscovering games, we propose ludic experiences in the school that reproduce metaphorically, and literally, the space of the courtyard: a space in which to relate the games of the past with the most current teaching methodologies, Recreating interactive and dynamic environments and play situations, not simply reproductive and executive, but proactive and creative.

DAVID DI PALMA

*Associate Professor of Special Education and Pedagogy
University of Campania "Luigi Vanvitelli"*

INTRODUCTION

Within the current and modern educational sphere, developments concerning digital games have given rise to new stimuli with regard to the mental and cultural development of children. This research paper aims to analyse the influence and impacts of digital games in children's educational learning and teaching, taking into account the opportunities and implications that this development brings. Modern society and dynamic technological advances have revolutionised the ways in which children interact with each other. Digital games have taken pride of place in children's play and educational experience, offering new interactive opportunities and interpersonal exchanges for the cognitive and psychophysical development of the individual. This research paper aims to proceed through a close contact in the application of digital games in the educational field, carefully evaluating, if any, the potential benefits that new digital methods and practices offer compared to those employed more recently in the school or home environment. Using an analytical approach, the main theoretical elements of digital games will be investigated in order to verify the effectiveness of these tools and possibly enhance the cognitive development of children. This paper will be divided into three chapters, each of which has a number of sub-chapters. The first chapter opens with a theoretical and historical framework of the phenomenon under discussion, the digital game. Although it is a very recent topic, it is important to know its origins,

traits and developments. Then current and emerging technologies supporting digital gaming will be investigated, including video games and other technological and interactive activities to find out what the social, cultural and educational impacts are. It is also important to uncover potential trends that will develop and radicalise in the near future in the field of educational and immersive games. The second chapter will address different aspects of digital educational games and explore the advantages and disadvantages they offer. By highlighting these aspects, it is possible to understand the role that digital games will play with respect to the individual and collective needs of the subjects, but at the same time it is useful to assess the possible presence of challenges and concerns that may condition and increase the overwhelming dependence on technological devices. This part will delve into the comparison between traditional play activities and digital educational activities by scrutinising how digital games can increase and stimulate children's creativity and manual and cognitive skills, without forgetting the legitimate value and usefulness of traditional games. Therefore, it is important to assess whether there can be a possible integration between the two existing modalities.

Chapter 3 addresses practical aspects and future perspectives concerning the implementation of digital educational games, providing useful recommendations for different stakeholders, optimising digital educational games inherent in the school environment, and offering advice on how to interact in interpersonal contacts. Digital tools can be useful for school learning to develop children's logical thinking, to create customised educational content and to draw attention to curricular activities, taking advantage of technology, which is highly appreciated nowadays especially by young children. The research could propose some useful suggestions and practices for the work of educators and parents, so that they can improve the formative and educational potential of digital games and enhance an attractive and inclusive learning environment. In the ever-evolving digital age, human identity has progressively extended beyond the boundaries of physical reality, finding space and meaning in the virtual environment, and this has led to increasing interest in understanding the role of avatars — digital representations of individuals — and the psychological implications

of their creation and interaction examine the interaction between avatars and individual identity, focusing on their impact, perception and personal development. From an educational and therapeutic perspective, we will examine the effects of avatars on self-perception, identity construction and personal development, as well as their potential role in education and training, and the therapeutic uses of avatar technologies for the responsible management of virtual identities.

CHAPTER I

EVOLUTION OF THE DIGITAL GAME

1.1. History and development of digital gaming

At the end of the 20th century, a number of studies were born and developed that aimed to examine gaming in educational and training contexts. This growing interest in gaming is largely due to the role that games have acquired in social dynamics. As purely universal phenomena, games establish a constant relationship with individuals and their cognitive and social development on a daily basis (Romina Nesti, 2017). The digital revolution represents a very recent historical epoch, which has probably spread since the 1990s and can ride on the evolutionary paradigms belonging mostly to the Internet. It can be considered an almost global phenomenon, so much so that during the 2000s, thanks to the technological development of the most important technologies and devices, many countries optimised the adoption and integration of these innovations into their economies and social strata. In recent years, the widespread use of digital technologies and mobile devices is said to have significantly changed people's daily lives and the way they interact and communicate with others. This new modernisation towards new technological systems has caused an ever-increasing evolution and change in society as a whole, intervening in a systematic and

organised way in people's lifestyles and modes of communication, and representing a major social and cultural change for all communities. Such implications would be true since ancient times when historical epochs were categorised and structured from the dominant innovations and discoveries of those periods.

Thus, the digital revolution has radically transformed the way children play, experience and live. Children belonging to the new generations start interacting with the world around them by looking at a screen, be it a TV, PC or tablet. However, the advent of digital technologies has opened up a new world, characterised entirely by the integration of new digital devices, consoles and much more interactive and engaging play experiences into traditional everyday practices.

Therefore, the link between the digital revolution and digital games for children could be considered a very important topic by virtue of the fact that it reflects the relevance of the impact of technology on multiple aspects of education and child development. As stated above, modern digital media are able to offer new content and experiences designed also for categories of children, who are ready to take advantage of new modes of consumption never seen before. By virtue of this, digital games designed for a very young audience could offer multiple benefits (Paolo Ferri, 2014), advantages both from an educational and a cognitive point of view. The underlying component of digital games is entertainment. Having said that, interactivity and involvement can be considered as main assets of this new vision that can spur children to develop new logical thinking skills and new physical-motor skills according to different logics than the conventional ones. The new digital platforms in this sense may present new solutions for parents and educators to control and possibly limit playtime as well as a careful selection of the most appropriate content for children for effective child development. A scrupulous attention to the child's exposure to digital games cannot be considered an absolute solution, but it can act and intervene systematically to reduce the concerns and legitimate dangers caused by an excessive exposure of the subject to digital technologies in view so that the use of these innovations can be in line with the objectives set by the educators *ex-ante*. Therefore, it is crucial to take into account the possible risks (Casati, 2013; Spitzer, 2013) associated with the over-consumption of children's digital games

as well as exposure to misplaced and deleterious audiovisual content. At the same time, it is important to exploit a more balanced orientation towards these new modalities so that more positive than negative effects can be guaranteed in a safe and responsible balance. Children are catapulted into the digital world through video games, changing the approach to learning, but also to creating new knowledge. Video games increase and stimulate the pleasure and interest of young children, but this does not constitute an effective way of learning like books and films, which is why they are sometimes much criticised for their undesirable effects and for the impetuous and macho themes they very often deal with (Begoña Gros, 2007). At the same time, according to Squire (2005), video games on the market are unable to offer elements relevant in education, but researchers prefer to focus on the structural characteristics of video games that could foster learning and the social environment in which they are used. Arguably, the role of digital games in learning and education has been questioned extensively by many scholars whereby a potential future use of such innovations could result in a disruption of children's motor-sports activity and constant inactivity (Nikolai Veresov et. al, 2022). On the other hand, although there may be a number of doubts and misgivings about the potentially negative impacts of digital games, most of the literature is in agreement about the positive impact they can have on educational and teaching environments. Moreover, a potentially significant factor, along such a context, could be the imaginary situation as it is considered as an element capable of recalling the distinction between children's play and other activities (Vygotsky, 2016). In this case, in fact, the actions of play develop and in some ways materialise in an imaginary space that totally assumes the substance and core of play. In such a dynamic, the subject perceives something but at the same time acts differently from what is visually perceived, thus creating two different planes. In this sense, when the rules of a game are dependent on the role the subject plays, the game becomes the basis for the cognitive development of children. In this sense, the digital game in the broader sense can amplify these effects especially in cases where different game scenarios with certain rules are included. In conclusion, such discrepancies could lead to a future discussion of the impact of digital play in educational environments. Indeed, if on the one hand it is legitimate to think that digital

games stimulate involvement and enjoyment in younger subjects, on the other hand, doubts could arise as to the actual validity and learning modalities compared to those found in more conventional materials such as books and/or audiovisual content in the strict sense. The analysis of the literature most often seems to reveal a number of criticisms of the potential topics addressed and the resulting negative effects. In this sense, it seems unlikely and highly questionable that digital games alone can be perceived and used as alternative forms to more traditional ones, but with a somewhat balanced and responsible management they could be wisely integrated into the educational process of children.

1.2. Emerging technologies and impact on digital gaming

Thanks to the introduction of new platforms and design models, we have experienced a rapid development of digital technologies in the field of education and training, with video games and interactive simulations in particular gaining increasing relevance in this context. Among the most significant technologies are virtual (VR) and augmented reality (AR), artificial intelligence (AI) and gamification, which present significant opportunities for learning and engaging students in an innovative and interactive way.

Virtual and augmented reality are some of the immersive and overwhelming technologies that allow students to interact with virtual objects and environments in a realistic way, catapulting them into new, increasingly immersive and experiential contexts (Daina Gudionene *et al.*, 2019). Students are thus pushed to explore complex concepts through a hands-on and holistic approach, so as to make it unique and memorable.

On the other hand, artificial intelligence can be seen as an innovation that can improve and personalise individual and autonomous experiential learning of students, adapting it to their needs and abilities, fostering personalised learning and identifying the distinctive qualities of the student, but also aspects of weakness that could be improved (Chen *et al.*, 2020).

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 visualisation 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 researchers. 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 mnemonic 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 Jamalohdin et al. (2017), by the time a learner is confronted with an interactive learning environment, he/she has both high listening skills and mnemonic abilities of part of the information he/she enjoys (around 80 per cent). 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). Considering these new artificial technologies, it is relevant to consider how they have a major impact on the performance of both teachers and students. Artificial intelligence analyses and proposes new programmes and materials with content tailored to each student, in turn helping them to create a personalised learning plan designed for each student. Arguably, the same teaching method applied to all students cannot guarantee equal performance. This is where artificial intelligence comes into play, which could offer and propose to each student the most appropriate teaching method based on his or her strengths and previously acquired teaching skills. It can even offer the possibility of proposing customisable digital