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From *game* to *videogame*: the didactic design between real and virtual game in an inclusive and simplexity way

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Abstract: the present paper analyzes the role of game in inclusive educational design, comparing the perceptions of future special needs teachers concerning real and virtual games as educational tools. Traditionally considered a means of learning, game promotes students' emotional and social development and their ability to solve problems, as highlighted in the National Guidelines for the Curriculum (MIUR, 2012). In recent years, the growing relevance of virtual game, mediated by digital devices, has opened up new opportunities for interaction and distance learning. The research, specifically, involved 178 students from the University of Salerno, who completed a semi-structured questionnaire in march 2024, selecting real and virtual games useful for pupils with Special Educational Needs and motivating their choices. The analysis of the data, conducted through a thematic approach (Braun & Clarke, 2012) and with the help of MAXQDA, aims to highlight similarities and differences between the games proposed, identifying the characteristics and motivations behind the choices made, silhouetted in the theoretical matrix of simplexity, a possible paradigm through which to promote effective and meaningful inclusive education.

Keywords: videogame; edugame; inclusion; simplexity; didactic design

1. Introduction

The game has always been a mode of action not only linked to the merely playful sphere, but interconnected to learning (Gee, 2008); it is configured as a useful device for the training and growth of learners both from an emotional, socio-relational point of view, and useful for the acquisition of specific skills. It is no coincidence that the National Guidelines for the Curriculum of Kindergarten and First Cycle of Education (MIUR 2012) highlight the importance of game as an activity that encourages learning aimed at a knowledge of the world open to complexities, promoting an integrated vision of the different disciplines through the production of new overall frameworks. Game, in this scenario, favors and facilitates the ability to solve problems, to evaluate the consequences of one's actions, to act flexibly in contexts in perpetual transfor-

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mation: "Acquiring skills means playing, moving, manipulating, snooping, asking, learning to reflect on experience through exploration" (Ibid., p.16). On the other hand, it is often the means and purpose of building relationships, emotional experiences, meaningful experiences, information, and skills acquisition (Cowert & Oldmeadow, 2012). Therefore, "the didactic action must appropriately recall, explore, problematize" (MIUR, 2012, p.26) the set of contents and opportunities useful for learning, which the game can mediate or generate. In recent years, however, the so-called real game, i.e. played in precise physical contexts and which requires the presence of the learner on site, has found a new frontier of application, namely that of the virtual, generally mediated by the presence of devices such as mobile phones, tablets or computers, and which allow learners not only to be able to participate in remote sessions, but interacting with one's peers through the support of chats and immediate messaging tools (Abrams, 2011).

These operational trajectories respond to three rules proposed in simplexity (Berthoz, 2011; Sibilio, 2013; Sibilio, 2023), or of deviation, which requires the teacher to choose unusual lines of work that allow, in any case, the achievement of the set goal (video games have precisely the characteristic of being able to teach in an alternative but still effective way); cooperation and redundancy, which presupposes the integrated use of several communication channels in various ways, however harmonizable (video games have several interconnected communication channels); the rule of meaning, which places on the teacher the need to give meaning (Ausubel, 2004) to his or her action, therefore to attribute the same value to the activities that are proposed (video games can also be used to convey cultural, educational values, as well as useful for promoting the development of specific skills). Despite this, often the choice of a game to be proposed to operate on the educational level (edugame), in the context of didactic design, is not always easy and requires a precise selection ability on the part of the teacher (Aiello et al., 2016). The research question, therefore, from which the contribution moves is: is there a correspondence between the characteristics that future teachers would propose for real and virtual games in the context of inclusive educational design activities?

The aim of the work is to investigate the perception of future support teachers about the importance of game, as a tool for the design of effective educational interventions, in its declination of real and virtual. The sample used for the research proposal consists of 178 students attending educational support activities for pupils with disabilities for primary school, in training in the A.Y. 2023/2024 at the University of Salerno.

The research activity was conducted in march 2024. Participants were asked to fill in a semi-structured questionnaire prepared using the Google Forms software, in which they had the opportunity to indicate a real and virtual game useful for them for the design of activities aimed at students with Special Educational Needs, motivating the answer.

The completion of the questionnaire will be followed by the analysis of the data, in which the perception that they have of the chosen games will be detected, highlighting any similarities and differences between those proposed real and virtual. The analysis will be carried out according to the thematic analysis approach (Braun & Clarke, 2012) and with the help of MAXQDA software. The typical characteristics of the proposed games will be identified and the related motivations will be analyzed through a classification by thematic codes and sub-codes, subsequently identifying the

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possible relationships between the characteristics/sub-codes identified for real games and those for virtual games. From this it will be possible to outline possible operational proposals in order to design activities that respond to the rule of deviation, cooperation and redundancy, as well as meaning, according to a line of action that is for each and every one, from an inclusive perspective.

2. The design dimension of real and virtual games

In recent years, educational design, both at the macro and micro level, has undergone a significant evolution thanks to the integration of digital technologies, in particular virtual games. These means are particularly effective in facilitating active learning Biggs (1996), offering immersive and interactive experiences that stimulate pupils' participation and strengthen their understanding of disciplinary content. The use of virtual games in education represents a natural evolution of classical pedagogical theories, providing an innovative way to apply their fundamental rules. In terms of macro-design, the integration of games into the teaching curriculum requires careful planning: the objectives must be consistent with the skills that the games aim to develop. Bloom's taxonomy (1956) is a useful guide to designing learning paths integrated into games. For example, simulation games such as Minecraft: Education Edition or SimCityEDU can develop high-level skills, such as solving complex problems (application level), analyzing social or ecological contexts (analysis level), and creating new solutions or models (synthesis level). and evaluation). In this context, it is essential that there is an alignment between objectives, activities and assessment, as suggested by Biggs (1996), to effectively support instructional design. For example, in a game like Labster, which simulates scientific experiments, the objectives may relate to understanding scientific processes and the ability to conduct virtual experiments. The teacher should be able to design activities that encourage students to explore complex scientific concepts through game and evaluate performance not only based on the results obtained, but also on the ability to critically reflect on the experience (Biggs, 1982).

According to David Merrill's (2002) theory of the First Principles of Instruction, virtual games represent an ideal way to implement its five principles: activation, demonstration, application, integration, and problem-solving. Games like Portal 2 or Kerbal Space Program engage students in situations that require the immediate application of theoretical concepts to real or simulated problems. For example, in Kerbal Space Program, students can learn physics and engineering concepts through the construction and launch of virtual rockets, a process that mirrors the laws of real mechanics. This approach reflects the importance of experiential learning, which is essential for deep learning (Merrill, 2002). David Kolb's (2014) model of experiential learning integrates seamlessly with the use of virtual games, as these tools allow students to actively participate in meaningful experiences, reflect on the results, conceptualize what they have learned, and experiment with new solutions. An example is the game Civilization, where students manage a civilization, making economic, political, and military decisions, developing strategic thinking skills, and understanding historical, economic, and social dynamics. Exploration-based games, such as The Legend of Zelda, also offer opportunities for active learning. Students can explore historical or geographical environments, formulating hypotheses and independently discovering the dynamics underlying historical or scientific contexts. This approach follows the principle of learning by discovery by Jerome Bruner (1960), where stu-

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dents actively acquire new knowledge by exploring, formulating questions, and testing hypotheses. Richard Mayer, with his theory of multimedia learning (2001), emphasizes the importance of structuring information in digital environments such as virtual games, to optimize the cognitive load of students. Well-designed educational games use balanced combinations of images, text, and audio to facilitate processing and understanding of information, as is the case in Duolingo, where images and sounds are used to support language learning.

Recent studies support the effectiveness of virtual games in education. James Paul Gee (2007) has shown how video games facilitate the development of complex cognitive skills, such as strategic thinking and problem-solving. The games, with their interactive dynamics, offer a practical and experimental learning environment, in line with classical pedagogical models.

While virtual games offer great educational potential, their implementation presents challenges. A first example concerns cognitive load. Mayer (2002) highlights how an excess of visual and auditory stimuli can overload students' cognitive abilities, compromising learning. Games with overly complex interfaces or excessively long tutorials risk distracting students, reducing educational effectiveness. Another challenge is accessibility. Many games require advanced technological resources, such as powerful computers or stable internet connections, which can create disparities between students with different economic means, increasing the digital divide. Gee (2007) recognizes that unequal access to technology can widen educational differences, penalizing those from disadvantaged backgrounds. Reducing these disparities requires targeted strategies, such as enhancing school technology infrastructure or optimizing games for less performing devices.

Student motivation is another challenge. The games are known for their motivating potential, thanks to challenging and reward mechanics. However, as highlighted by Deci and Ryan (1985), three basic needs must be met for sustainable motivation: competence, autonomy and relationship. If games do not adhere to these rules, they risk shifting students' focus from understanding the content to simply achieving success in the game. In addition, the pedagogical integration of games into curricula is not always straightforward. Biggs (1996) emphasizes the importance of constructive alignment between objectives, teaching activities and evaluation. However, many teachers struggle to connect the content of a game to traditional educational goals. Shaffer (2006) suggests that games need to be part of a larger teaching strategy, in which students not only game, but reflect and discuss the dynamics of the game, linking them to disciplinary content. Therefore, assessing the skills acquired through virtual games can be complex. The skills developed, such as problem solving and critical thinking, do not always coincide with traditional evaluation parameters. Boud and Falchikov (2007) propose an authentic assessment that reflects the skills actually used during game, such as adaptation and the ability to solve real problems. Finally, the use of virtual games raises ethical issues, such as managing student privacy and data. It is essential that the data collected when you interact with the games is handled in accordance with privacy regulations.

As a result, integrating virtual games into teaching offers extraordinary opportunities for engaging and innovative learning, but requires careful reflection. Challenges related to cognitive load, accessibility, motivation, evaluation, and ethics must be addressed with awareness to ensure that these tools can be used effectively. Only through a balanced and critical approach will it be possible to fully exploit the edu-

cational potential of virtual games, keeping the well-being and development of students at the center. An attempt at adaptation can be provided by the application of the properties and rules of simplexity of Alain Berthoz (2011), useful for understanding how the decision making with respect to the playful mediator to be used must clearly respect the peculiarities of the learners, their cognitive styles, making use of precise operating patterns, as well as specific rules of use, able to orient the selection and make it functional to the cognitive styles of the pupils.

3. Real and virtual games: simplexity perspectives

The link between real and virtual game has sparked increasing scientific interest in recent decades, as digital technologies have transformed gaming experiences in profound and complex ways (Sibilio et al., 2023). The evolution from physical games to video games and virtual reality has, in fact, introduced new dynamics of interaction, involvement and perception of reality. Several studies have explored this relation, to understand how virtual game interacts with real game and how digital experiences affect individuals' social, cognitive and motor skills, as well as their overall well-being.

One of the pioneering study in this field was Johan Huizinga who, in his work "Homo Ludens" (1938), analyzes game as a universal cultural phenomenon, which manifests itself in all societies and constitutes one of the foundations of civilization itself. According to Huizinga, game is a form of free action, separate from ordinary life and regulated by particular rules, which allows individuals to express themselves and create a sense of adhesion. Although Huizinga refers mainly to real and physical games, his concept of the magic circle, i.e. a separate space where everyday rules are temporarily suspended, also finds its application in the context of virtual game, where users enter a parallel universe, regulated by their own rules and in which it is possible to assume alternative identities (Apperley, 2006).

The transition from real games to video games and, more recently, to virtual reality, has prompted several scholars to reflect on the impact of these technologies on cognitive processes and social dynamics of users. According to Caillois (1961), the game includes elements of competition, alea (luck), mimicry and vertigo, which can also be found in digital experiences, but enriched by narrative components and advanced graphics. For example, in role-playing video games, players not only compete or face challenges, but immerse themselves in complex virtual worlds, developing empathic bonds with their characters and learning the narrative management of the game itself. According to Gee (2007), the potential of video games lies in its ability to problematize reality: through challenges and simulated situations, players can explore real dynamics in a safe space, acquiring skills that are transferable to the real world, such as problem-solving and critical thinking

Another interesting aspect concerns the psychological impact of virtual gaming. While virtual games offer new possibilities for learning and socializing, they can also lead to isolation and addiction. Allowing Griffiths (2010), excessive involvement in virtual game activities can impair the ability to distinguish between reality and fantasy, leading to states of social alienation, especially in young people. However, the context and type of game are key elements: not all virtual games have negative effects. More recent studies (Granic et al., 2014; Reynaldo et al., 2021) suggest that video games can also promote cognitive and social skills, such as the ability to make quick decisions (Kittel et al., 2020), spatial memory (Jonson et al., 2021), and peer cooperation (Garcia et al., 2022).

The introduction of virtual reality has further intensified the link between real and virtual gaming, leading to immersive experiences that increasingly blur the boundaries between the two worlds. In virtual environments, users can move and interact in a simulated three-dimensional space, which faithfully mimics the physical laws and social dynamics of the real world (Slater & Sanchez-Vives, 2016; Nicola, 2020). This simulation leads to immersive experiences that activate psychological mechanisms similar to those of real game, such as risk perception or awareness of one's body in space. Virtual reality, in this sense, is not only for fun, but also for therapeutic and rehabilitative applications, offering patients a safe environment to simulate and practice daily activities (Rizzo et al., 2004; Emmelkamp & Meyerbröker, 2021).

In addition, augmented reality is useful to promote an interesting fusion between real and virtual game, as it requires players to interact with the physical environment using digital devices, through a so-called mixed experience (Vasilevski & Birt, 2020), which raises questions about the future of gaming experiences and the effects they can have on the perception of space and sociality. It is no coincidence that Laato et al. (2020), highlight how augmented reality games can stimulate socialization and physical activity, as gamers are incentivized to explore the real environment to achieve virtual goals. As a result, the connection between real and virtual game is complex and multifaceted, and requires an interdisciplinary approach to be fully understood precisely because of the protean nature of the same, and for which the virtual is not a mere imitation of the real game, but a form of vicarious experience (Berthoz, 2015; Sibilio, 2017), having the potential to profoundly influence our perception of reality and our behavior. When used consciously and moderately, virtual game technologies can offer new opportunities for learning and personal development. However, it is essential to continue to monitor and study these phenomena to better understand the long-term effects and to promote healthy and balanced play practices.

Precisely on the basis of these suggestions, it is possible to trace interesting points of connection with the theory of simplexity, proposed by the neurophysiologist Alain Berthoz (2011) who, verifying the modus through which living beings adapt to the surrounding environment, highlights how the use of intrinsic characteristics in systems (properties) and rules through which these characteristics (rules) can be applied, allows us to decipher, face and overcome the many complexities inherent in human nature. Transposed into the didactic field (Sibilio, 2014; 2015; 2017), the simplexity highlights the multiple ways in which the teacher can intervene in order to propose activities by adapting them to the specificities of his or her learners and following non-linear, creative trajectories (Sibilio & Zollo, 2016). If we want to highlight possible trajectories of application of properties and rules of simplexity in the context of the link between real and virtual game, it is possible to see this association. In the context of real and virtual game, simplexity properties help define the effectiveness and quality of the gaming experience in a distinctive way, allowing players to acquire skills and live immersive experiences through patterns inherent in the games themselves. The separation of functions and modularity implies that, in real games, this property translates into the distinction of mediation channels in the performance of team games or board games, where each user can resort to a different channel depending on the type of game with which he interfaces. You can opt for a first form of game that focuses exclusively on verbal mediation and then move on to a game in which space is given to the iconic channel, and so on. In virtual games, modularity

allows systems to divide the game experience into sections (e.g., levels, quests, or character roles) that operate semi-autonomously, allowing for updates or expansions without compromising the entire structure of the game through the use of a specific channel related to each section (Salen & Zimmerman, 2004). Examples can be found in Dixit, Codenames, The Sims, Fortnite. Speed, on the other hand, manifests itself in the velocity of reaction and execution of the rules, as in the case of sports games or board games with rapid turns. In virtual games, in particular, it is linked to the sudden response of the interface and the fluidity of the animations, which are essential for maintaining immersiveness and not interrupting the player's experiential flow (Kirriemuir & McFarlane, 2004). Examples can be given by Jungle Speed or Call of Duty. Reliability, on the other hand, lies in the consistency of the rules and their impartial application, which is essential for justice in the game. In virtual games, reliability refers to system stability, lack of bugs, and server security, which ensure a seamless and seamless gaming experience (McGonigal, 2011). Reliability allows, in addition, that the teacher through the choice of the playful mediator is able to consistently achieve the objectives set didactically generalization allows you to transfer skills acquired during the game to other contexts. In real games, it manifests itself through learning motor, social, or cognitive skills that can be applied outside of the game. In virtual gaming, generalization occurs through simulations and narratives that facilitate the transfer of learned knowledge and strategies, such as problem-solving and resource management (Prensky, 2001). The teacher has the opportunity to look for similar characteristics in the games themselves and verify how they allow the development of similar skills, so as to propose them in sequence. Flexibility and adaptation to change, in real games, implies how gamers often have to adapt to unexpected strategies or game variations introduced by opponents. In virtual games, adaptation is made possible by artificial intelligence and game algorithms that react to the player's decisions, changing the difficulty level and personalizing the experience (Lombard & Ditton, 1997). Memory, on the other hand, involves the ability of players to remember rules, strategies and movements of opponents. In virtual game, memory is supported by systems that track the player's progress, saving central information to progress in the game. This allows participants to stop and resume play without losing progress, facilitating a progressive learning experience (Gee & Hayes, 2010). Examples can be given by all those games that aim to enhance logical and strategic skills, such as chess, checkers, bridge, poker, which can be performed both physically and virtually.

In relation to rules, it is useful to highlight how inhibition and the rule of rejection, which implies the ability to select certain actions to inhibit others according to the current teaching situation, are essential in strategic games such as chess, where the ability not to perform an impulsive move and to reject risky strategies is necessary for success. Players must devise long-term strategies and anticipate opponents' reactions (Chase & Simon, 1973; Simon, 1978). In a virtual environment, such as StarCraft II, inhibition manifests itself in the need to avoid non-strategic investments, highlighting the importance of planning in a highly competitive and fast-paced game environment (Gertner & Ruzgys, 2009). Specialization and selection (Umwelt), which involves how certain functions come into game when placed in certain contexts based on specific learner peculiarities, game a significant role in role-playing games such as Dungeons & Dragons, where players choose skills and classes that define their playstyle. These choices not only influence their behavior in the game, but also reflect their personal

preferences (Deterding et al., 2011). In a virtual setting, titles like World of Warcraft allow gamers to specialize in roles that foster cooperation between party members, facilitating complex strategies and rich social interactions. Probabilistic anticipation, on the other hand, involves the ability to predict how it is also possible to verify the outcomes of what will be accomplished and at the same time predict what the other participants will do (Blaszczynski & Nower, 2002). In games like Rainbow Six Siege, for example, anticipation translates into the need to predict enemy actions, requiring users to adapt quickly based on opponents' choices (Wagner et al., 2014). The detour, on the other hand, involves following new and not yet tested trajectories, in order to achieve certain objectives and outcomes. It manifests itself in games like Twilight Struggle, where players must adapt their strategies in response to unpredictable events, showing flexibility and creativity (Drew, 2013). Similarly, play-actors can deviate from the main quests to freely explore the world, an approach that enriches the gaming experience and invites exploration (Mackay, 2013). Cooperation and redundancy is, on the other hand, the rule that regulates how from the unification of actions, even in an original way, it is possible in any case to achieve certain training objectives. It is a rule that can be seen in team games, as in football, where synergy between members is essential for achieving the common goal. Redundancy allows for greater flexibility and adaptation to game dynamics (Fransen et al., 2014). In virtual games, titles like Overwatch require strategic cooperation, as the characters' unique abilities must integrate to maximize team effectiveness (López et al., 2020). Finally, the rule of meaning, which is configured as a common thread capable of interconnecting all other properties and rules, finds a place in interactions and narration (Rogers, 2014). In games such as Journey, by way of example, the absence of verbal dialogue and the use of visual cues enrich the interaction, allowing players to construct emotional meanings through shared experiences (Thompson, 2014). These rules not only structure the game mechanics, but profoundly influence the player experience, creating complex and engaging gaming environments.

4. Description of the search experience

The study aims to investigate the perception of future support teachers about the importance of game, as a tool for the design of effective educational interventions, in its declination of real and virtual.

4.1 Sample and procedure

The research was conducted during the Specialization course for educational support activities for pupils with disabilities (VIII cycle) held at the University of Salerno in the A.Y. 2022/2023. The procedure involved the administration of a questionnaire during one of the laboratory activities. Therefore, the sampling was carried out for convenience, involving the trainees enrolled in the training course for specialization in support activities in primary school. The completion of the questionnaire was voluntary and anonymous. The sample consists of 173 students (N = 173).

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4.2 Tool and data collection

For data collection, they were asked to fill in a semi-structured questionnaire, created with the tool available on the Google Forms application. The module consists of two sections: in the first, the questions aim to collect contextual data (age, professional experience in the educational field as a curricular and support teacher); in the second we tried to investigate the level of knowledge of the game as a useful activity for teaching purposes. To this end, in the first two items it has been requested to provide a personal definition of real game and virtual game ("write a brief definition of real game"; "*write a brief definition of virtual game*"). In the next two it was asked to provide examples concerning the use of game, real and virtual, as a strategy of educational intervention ("*Thinking about a possible inclusive educational design, what real game would you consider useful to apply for teaching that is for everyone and for everyone?*"; "*Thinking about a possible inclusive educational design, what virtual game would you consider useful to apply for teaching that is for everyone and for everyone?*"). Finally, it was requested to justify the answer for each of the examples proposed ("*Reasons for the previous answer*").

4.3 Data analysis

The data were analyzed following a descriptive statistical approach. With the help of the MAXQDA software, through the detection of the frequencies detectable from the corpus of the text, a socio-demographic profile of the participants was represented.

The personal data represents a sample composed as follows: age ≤25 years (0.58%); age 26≥30 (16.18%); age 31≥40 (7.51%); age 41≥50 (62.43%); age 51≥ (13.29%). A high percentage of 41≥50 students said they had mainly carried out jobs other than teaching during their professional life (88.89%). Finally, trainees aged 31≥40 (5.56%) and 51≥ (5.56%) mainly carried out other professions. Trainees aged 51≥ (13.27%) worked as teachers (curricular or support) exclusively in primary school; 41≥50 (53.10%); 31≥40 (9.73%); 26≥30 (23.01%); ≤25 (0.88%). A high percentage of trainees aged 41≥50 declared that their only job was teaching exclusively at kindergarten (80%). The figure for trainees aged 51≥ and 26≥30 is much lower (10% both). Many trainees, in addition to having served as teachers in kindergarten and primary school, have worked in other school orders and grades: aged 41≥50 and 51≥ (33%).

In the second section, the items are presented as open-ended questions. They are intended to stimulate participants to reflect on their knowledge and perceptions regarding the game in its real and virtual configuration. The approach used for the analysis of open-ended answers follows the method of thematic analysis (Braun & Clarke, 2006) as a tool that allows the researcher to isolate groups of meanings to construct a readable picture of the participants' perception of the proposed themes starting from the reflective framework of Braun & Clarke (2006). No dictionary or preset code book was used to define the codes. On the contrary, it was decided to proceed with a semantic and inductive analysis in order to manipulate the data by minimizing the number of inferences that the researcher produces on the encoded text, by virtue of already known theories or knowledge, trying to reduce possible interference or distortions of meaning due to bias, prejudices, moods and other arbitrary elements and subjective factors, in order to preserve the participants' perspective on the proposed theme as closely as possible (Braun & Clarke, 2006).

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Therefore, for coding, the framework used tends to follow the processing of the data during its analysis, in line with a constructivist approach (Pagano, 2020). The thematic analysis of the contents was carried out following a recursive/reflective approach. Therefore, the work on the data was carried out in several phases in which, after an initial familiarization with the contents, an initial coding was carried out to identify the themes. Subsequently, a phase of revision of the data and reorganization of the codes was opened in view of the issues that emerged in the previous phase. The query, research, graphical representation and different data considerations were carried out using MAXQDA, a software used for qualitative and quantitative analysis (De Gregorio & Lattanzi, 2014). A first grouping of data was carried out by uploading the Excel document extracted from Google Forms.

After having detected the socio-demographic characteristics of the sample, contained in the first section of the questionnaire, we proceeded with the coding work relating to the content of the answers provided by the participants to the questions included in the second section of the module.

The work of familiarization with the data (Braun & Clarke, 2006) was carried out through a repeated reading of the individual answers, in order to detect possible themes from which to proceed with a first coding. We have grouped the documents according to the items in the second section of the questionnaire. Then, with the dedicated tool in MAXQDA, we generated a word cloud related to each group of documents related to the individual items, applying an exclusion list for the removal of words already contained in the question, as well as others (such as prepositions, adverbs, articles) already contained in the default list in the software.
In addition, a frequency of three has been defined as the threshold for inclusion in the final graph. Therefore, each word contained in the cloud appears in the analyzed documents related to each item at least three times. This operation was carried out in order to obtain data on the frequency of words that could be compared with the list of topics hypothesized after reading the individual answers several times. In the case of real game, the tool showed that in the answer to the question ("write a brief definition of real game") there is a frequent reference to the dimension of game as an activity in which participants interact in a shared physical space in which an interaction is expected. The activity of game is assigned to a greater extent a playful purpose, often linked to the manipulation of concrete, analogue objects. In the representation of trainees, the actual game is often defined as a group activity in which participants sometimes define the rules while playing. Real game is also defined as a practice that involves the body of children. There are definitions that refer to the fact that "you get dirty", "you sweat". In the case of virtual games, the tool highlights that in the answer to the question ("write a brief definition of virtual game") there is a frequent reference to the dimension of game as a predominantly playful activity linked to the use of electronic devices such as (computers, consoles, tablets); browsing the Internet (in the case of games available on dedicated platforms). It is often emphasized that virtual game is an activity far from reality, with which children do not have the opportunity to develop meaningful and authentic relationships. Virtual gaming is seen as an activity that takes place "at a distance" and therefore does not stimulate affective, relational, emotional involvement in the players (see for example from the segments). However, the interaction aspects are emphasized (give an example from the segments). In some cases, the absence of "physical contact" between participants is emphasized.

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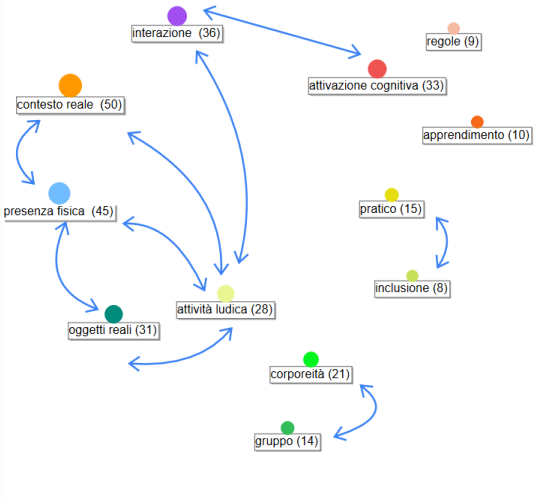
4.4 Data discussion

Codes are images of that information contained in documents that allow the researcher to analyze the text in a meaningful way (Boyatzis, 1998). For the definition of the themes, we used the code mapping tool in the MAXQDA software. Through this tool, we measured the intersection between codes for each of the groups of documents related to the definitions of real and virtual game proposed by the trainees. The intersection represents the frequency with which different codes appear in the same segment Each arrow in Fig. 1 represents a frequency of at least three code intersections for each segment. The tool returned the following results: starting from our first coding, the intersection shows how in the answers the idea of playful activity is strongly anchored to the real context, to interaction, to the use of games as analog objects. The importance of interaction as an opportunity for cognitive activation for the enhancement of skills and the development of competences is emphasized. It is also highlighted that the aspects related to corporeality in real games are often linked to the practice of group activities. The practical aspects of the real game are often related to those that are believed to favor the inclusion of all participants in the game. In the case of virtual gaming, the intersection tool gave us a scenario characterized by a strong reference to devices capable of connecting to the Internet. The use of devices is often linked to the fact that it is essential to be connected in order to participate in the game. The aspect concerning access to the network is often defined starting from the fact that interactions, environments and characters simulate reality but do not transform it or do not learn to do so. Most of the students consider virtual game an activity that has a predominantly recreational purpose. In general, the students' definitions of virtual game seem to reveal the image of an object that puts children in contact with an unreal space in which activities take place that are unlikely to have any consequence in reality. Some students emphasize the fact that virtual games are useful for achieving not only recreational but also educational purposes. In fact, some responses highlight the fact that the virtual medium improves accessibility to materials, lessons, assignments, and therefore allows teachers to work further on personalizing them with regard to students. Therefore, in some cases the fact that virtual gaming can be an additional tool for the creation of an inclusive school environment is also underlined. Although there are positive expectations that technology can improve the quality of educational activities, the idea persists in some trainees that the use of the device can capture the child in a relationship of dependence, in some cases increasing his loneliness and discouraging outdoor activities with other children.

Figure 1. *Intersection of Real Game Codes*



For the identification of the codes, it was decided to take into consideration the answers to the questions relating to the definition of real and virtual game. As shown

above, already from the first coding, some aspects emerge on which the trainees converge with respect to the differences between the two activities. In fact, many consider the former as an activity anchored to practicality, everyday life, physical presence understood as the possibility of contact and interaction between the body dimension of the participants. Real game is generally represented as an activity that promotes imagination, fantasy and creativity that arises from a confrontation with physical limits, real contexts. In the second case, the game is represented as a scenario in which every interaction is simulated: in the first case, the centrality of the person was emphasized; in the second the use of the term "character" is more frequent, very often understood as the objectification of the person and his subjectivity in the figure of his own virtual alter ego. On the other hand, the possibilities of customization of the virtual game are reported as an aspect that improves accessibility and promotes everyone's participation. Therefore, although in many cases the advantages of an immersive experience (cit) are emphasized, the virtual dimension of the game is usually represented in the perspective of an activity that more frequently distances children. However, it is emphasized that in virtual gaming you enjoy possibilities and stimuli that you would not have in everyday experience or that not everyone would have to the same extent. From this point of view, the trainees regularly highlight a significant gap between the real and virtual contexts. What does this difference consist of? Starting from a rereading of the segments in which reference is made to this aspect, a clear answer does not seem to emerge. However, since the question seems relevant to us, we will try to propose a possible explanation that collects and puts in order the different opinions. Generally, the experience characterized by physical limits, which takes place between participants who interact in a physical space, that is, in a context in which the possibility of game must be established in concert between the participants who must confront not only the limits of the game but also those of the context and their own. Maintaining his exposure to a high level of contingency, each player will be called, together with the others, to work on his skills in view of the acquisition of new skills. On the contrary, in the virtual context the scenarios are already set up, predetermined, set, the limits of the game end up almost coinciding with the limits of the device and software. In this sense, in the perception of the students, the virtual game can certainly promote the acquisition of skills, thanks to an environment that, due to its "standardized" characteristics, in which the same solutions are accessible and practicable by everyone in the same way, allows the same action to be repeated in the same conditions several times until the prize is reached or access to a higher level of difficulty. However, for the same reasons, virtual gaming will tend to favor skills to a lesser extent, if by skills we mean the set of skills that allow the agent to successfully use his skills in little-known or completely unknown contexts and situations. A second significant divergence is expressed in the representation that the trainees promote with respect to the objects of the game. Here we will propose two definitions of playful object in its real/virtual declination that seems to emerge in the representation of the students. The first concerns an idea of a real ludic object as a "plural" object. In fact, in the definitions of the trainees, there is a tendency to highlight the fact that the objects of the real game encourage, require and promote the encounter between the participants. Objects such as "ball", "board game" are often mentioned, all objects that concern games in which several people are expected to be involved. Ultimately, all examples of real game are represented as objects that would make no sense to use in a situation of solitude. On the contrary, the object of the

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virtual game is represented as a device that, while not hindering the possibilities of meeting between the participants, becomes all the more effective the more it is linked to its characteristic of being able to be used by the player in a situation of solitude. The activity of virtual gaming has greater advantages and is more significant the more the individual player can conduct it as an individual. Therefore, following the representation of the trainees, an image of a virtual device emerges as an "individual" object. Starting from these first considerations, a very heterogeneous scenario was hypothesized with respect to the reasons why real games should be preferred to virtual ones and vice versa, in the context of the design of any applications in the educational field. However, we found that for the purpose of promoting inclusive educational interventions, trainees express a mostly similar confidence in the possibilities of both activities. As an approach to teaching, game is generally considered as a tool that fosters the acquisition of skills and competences through interaction, cooperation and participation. It should be noted that both real and virtual game can suggest inclusive teaching intervention strategies to teachers. The theme of inclusion is generally linked to the characteristics of games that allow, require and promote participation and teamwork. In the opinions of the students, those games that are attributed a playful purpose are especially inclusive. In addition, the skills and competences promoted by real game are more frequently linked to the dimensions of interaction, relationship and socialization, while for virtual game reference is more often made to the cognitive, neuropsychological and learning dimensions.
It should be noted that the definitions and motivations of future support teachers are always oriented towards what the pupil does or learns through game. More precisely, in the answers examined, there are no considerations regarding the game in its dual declination of real/virtual analyzed from the point of view of one's own didactic action, that is, from the point of view of the teacher.

5. Conclusions

The study conducted showed how the choice between real and virtual games by future support teachers is influenced by different perceptions and motivations, which reflect the intrinsic characteristics of each type of game. The results clearly show that real game is considered an activity more anchored in practicality and body size, facilitating direct interaction and socialization between participants. Game objects, such as balls or board games, are seen as tools that promote group involvement and require active cooperation, thus contributing to the acquisition of relational skills.

Instead, virtual game is perceived as an opportunity for individualization and personalization, with pre-established scenarios that allow players to practice their skills repetitively and in a controlled context. However, this approach can limit the ability to transfer learned skills to new or little-known situations, as virtual experiences tend to be more standardized and less tied to real interactions.

Despite these perceived differences, the trainees express a relatively similar confidence in the educational potential of both types of games for the design of inclusive educational interventions. The key lies in the ability to recognize and enhance the specificities of each game context. Both can promote the acquisition of skills and competences, but with different approaches and purposes: real game favors social interaction and cooperation, while virtual game focuses more on cognitive and individual learning aspects.

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It is clear that the training of future teachers must be oriented towards integrating these different aspects, promoting a conscious and strategic use of games in the educational process. It is essential to develop skills that allow teachers to design inclusive educational activities, using both real and virtual games in a complementary way. This requires a thorough reflection on how each type of game can contribute to the improvement of learning for all students, taking into account their needs and experiences.

Finally, it is necessary to encourage a continuous debate on the ways in which game is used in teaching, so that educational choices are informed and oriented towards the well-being and integral development of each student, in his or her uniqueness and diversity.

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