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Exploring the Place and Space of Games: How Do 7- to 12-Year-Old Children Describe Their Experiences of Searching in Game Space?

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ABSTRACT

This study aims to investigate children's lived experience of tourism in the space of computer games as a background that influences the development of 7- to 12-year-old children. The research method was based on a qualitative and descriptive phenomenological research design. This research aimed to describe and deeply understand children's lived experiences of digital game tourism. Accordingly, 37 participants were selected from the community of 7- to 12-year-old children to access children rich in information in this field, from the participants who had the most information about computer games and were able to express their experience completely and clearly. Themes extracted from interviews with 13 students who were 12-year-olds included freedom and empowerment, educational value, emotional and psychological impact, attention to game aesthetics, realism and immersion, preference for challenge, contrast between virtual and real life, and impact on real-life skills. For 12 students who were 9-year-olds, themes extracted from interviews included excitement and combat, adventure and exploration, challenges and traps, discovery and use of weapons, interactive and dynamic environments, special abilities and equipment, achievement and power, historical and cultural elements, victory and power, preferences for play environments, and beautiful and clean environments—various ways children engage with video games emotionally and socially. For 7-year-olds, themes extracted from interviews included learning through play, exploration, visual and auditory appeal, quick solutions and cheat codes, emotional engagement and environment, cultural insight, interactive and rewarding experiences, and social interaction. The findings suggest that games can impact children's emotional and social development, from boosting self-esteem to increasing social interactions. The most important finding was that it wasn't just the game itself that fostered growth and learning, but also the tourism within the game environment that played a significant role in children's development. Therefore, by combining elements such as dynamic environments, special abilities, and culturally resonant content, game designers can create immersive and engaging experiences that meet the developmental priorities and needs of young players.

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Introduction

A growing body of research highlights the dual impact of computer games on children's development, with both positive and negative effects in cognitive, emotional, and social domains. While computer games have been shown to enhance cognitive abilities such as problem-solving, planning, and executive function, they can also pose challenges for emotion regulation, especially when gameplay is excessive or unsupervised (Granic et al., 2014; Przybylski & Weinstein, 2019). For example, cognitive games have been found to improve executive function in children with neuropsychological learning disorders, particularly in areas such as organization, behavior regulation, and emotional control (Netaji et al., 2015). Recent studies have further emphasized the critical role of play in childhood development. Research by Isenberg and Quisenberry, as reviewed in Jensen et al. (2020), emphasizes the importance of play in strengthening the neural connections essential for learning. An active brain builds strong neural pathways during play, while an inactive brain cannot make these vital connections. Play therefore serves as a tool for neural development and a means of practicing skills necessary for later life. Through simulated scenarios, play can prepare children to navigate real-world situations with greater confidence and competence, ultimately enhancing their sense of self-efficacy when successfully completing game-based challenges (Yogman et al., 2018).

The primary focus of this research is to better understand children's and adolescents' interests and preferences when it comes to video game exploration. Examining whether children enjoy exploring game environments or engaging in battles and challenges more, as well as understanding the positive and negative impacts of these experiences on their lives, can provide valuable insight into their developmental needs and desires. A 2022 study by Charani et al. found that children who regularly play video games show improved cognitive skills, including improved concentration and working memory, compared to non-players (Charani et al., 2022). Games like Minecraft have been shown to offer multiple benefits, including developing problem-solving, strategic thinking, flexibility, and social skills (Johnson, 2024). Furthermore, active games that involve physical movement not only promote physical health, but also contribute to mental well-being by reducing stress and anxiety (Liu et al., 2019). Adventure games, such as The Legend of Zelda series, increase children's ability to learn and remember different strategies to progress in the game, while games like Assassin's Creed improve spatial perception and memory. Similarly, simulation games such as SimCity teach children management skills and environmental awareness. While much of this evidence comes from empirical and quantitative studies, there is increasing value in qualitative research, particularly through interviews with children, to capture their authentic experiences and perspectives. This study adopts such an approach with the aim of exploring children's real-world experiences when engaging with play spaces.

However, it is less acknowledged that the atmosphere of games, the environment in which gameplay takes place, can play an important role in fostering curiosity and facilitating learning. Just as playing games has been shown to enhance cognitive abilities, exploring game spaces may also serve as a powerful medium for education and skill development. For example, video game tourism allows children and adolescents to immerse themselves in visually stunning, exciting, and often fantastical worlds. This form of virtual tourism enables players to explore game environments, discover new locations, and engage with unique attractions, thereby capturing their attention and sparking their interest. Although it may initially appear that video game tourism serves as a substitute for real-world travel, especially for children and adolescents who face limitations in physically visiting such places, it may offer more than a simple alternative to traditional tourism (Hamari & Sjöblom, 2017).

In this study, "exploratory learning" refers to a process in which learners actively engage with their environment, seek out new information, experiment, and learn from the results of

their actions. This approach emphasizes curiosity-driven behavior and aligns with constructivist educational theories, where learners construct their understanding through direct experiences (Huang & Wu, 2014). In the context of this research, the learning environment is the play space itself. Children's exploratory experiences in computer games have been examined from different perspectives. For example, the tension between reality and imagination, a common conflict in games, can have both positive and negative effects on children. This tension stems from the creative techniques used by game developers to create immersive experiences that allow players to achieve things that would be impossible in a mobile or virtual world (Loudon et al., 2022).

Despite the growing body of research on the effects of video games, much of the existing literature has focused on superficial concerns, such as violence and cultural harms, often ignoring the deeper educational and developmental potential of gaming. While many experts argue that video games can foster positive outcomes such as character development, talent development, creativity, focus, increased IQ, and cultural understanding, these benefits are often overshadowed by negative perceptions (Granik et al., 2014). Challenges such as inadequate education about gaming, misrepresentation of game genres, and limited digital literacy among users have contributed to a lack of understanding about the purposes and potential of video games. As a result, harmful effects, such as addiction, reduced emotional sensitivity, antisocial behavior, aggression, and health issues such as depression, insomnia, and decreased academic performance, are often emphasized over the positive aspects (Przybylski & Weinstein, 2019). This study seeks to address this gap by examining children's nuanced experiences when engaging with play spaces, and sheds light on the educational opportunities and potential challenges associated with play.

While computer games are increasingly recognized as powerful educational tools, research on how children aged 7 to 12 years interact with these environments has often overlooked the depth of their exploratory behaviors (digital exploration) and intrinsic curiosity that drives engagement with narratives and game worlds. Existing studies have focused more on measurable learning outcomes than on the child's holistic experience, including the emotional and cognitive processes that arise from exploring these digital landscapes. This oversight can lead to a disconnect between game design and its potential to naturally sustain children's learning and curiosity. This study aims to explore children's lived experiences while engaging in exploratory learning, and considers games as rich, narrative-driven spaces that foster cognitive development through curiosity-driven exploration. By focusing on the nuanced experiences of young gamers, this research aims to shed light on how games can better serve as educational and developmental tools that resonate with and stimulate the young learner's mind.

Method

This study used a qualitative and descriptive phenomenological research design to explore children's experiences of exploratory learning in play spaces. The study aimed to compare experiences across age groups, including 12 seven-year-old children, 12 nine-year-old children, and 13 twelve-year-old boys from a school in Tehran. Participants were purposively selected based on inclusion criteria: playing more than two hours of competitive and action-oriented computer games daily, voluntary and informed consent of the child and their parents, no history of behavioral or emotional problems as assessed by teachers, and not living in a single-parent family.

Data were collected through semi-structured, in-depth interviews conducted individually in a quiet, empty classroom. Each interview lasted 10–20 minutes and continued until data saturation was reached. Ethical standards, including obtaining informed consent, ensuring confidentiality, and creating an open and trusting environment, were strictly adhered to.

Participants were asked to describe their experiences before, during, and after playing computer games, focusing on the pleasures and challenges they encountered. Sample questions included:
What do you enjoy most about playing video games?
What makes a game environment interesting or exciting to you?
Have you ever discovered something in a game that was particularly interesting? Can you describe it?
How do you feel when exploring a new area in a game?
Have you learned something new about a place, culture, or period from a game? If so, could you explain?
Do you prefer games that allow for exploration or challenging, fast-paced games? Why?
Interviews were recorded with prior consent from parents and teachers, transcribed verbatim, and checked for accuracy. The researcher maintained long-term interaction with participants to establish rapport and ensure rich and accurate data collection. To enhance the validity of the findings, triangulation was achieved by combining observation notes and interview data, and three external experts were invited to review and validate the coding process. Data analysis followed a thematic analysis approach. Initially, all responses were reviewed multiple times to identify key patterns and nuances. Open coding was used to label specific parts of the data and then group similar codes into possible themes. For example, codes related to learning and discovery were grouped under the heading of "educational value." Themes were refined and repeatedly defined to ensure that they accurately represented the data. Direct quotes and summarized content were used to support the final thematic narrative. The analysis process acknowledged the interpretive role of the researcher, but an effort was made to remain objective and data-driven.

Results

The children who participated in this study were all boys, 73% had parents with a college or university degree, 20% were the only child in the family, and all of the remaining children had a sibling. The range of gameplay time for these participants was between 15 and 47 hours per week.

Key themes for 12-year-old children

From interviews with 13 students who were 12-year-old boys about exploration in the game space, themes that emerged included freedom and empowerment, educational value, emotional and psychological impact, attention to game aesthetics, realism and immersion, priority for challenge, contrast between virtual and real life, and impact on real-life skills.

Freedom and empowerment

Respondents enjoyed the unrestricted nature of video games and expressed a sense of freedom and power that transcended the constraints of real life. They felt empowered to do whatever they wanted to do immediately.

"Not being limited by time and place. That's my greatest joy in video games. "I just have to decide, I just have to press the buttons on my controller, and at the same time I can kick, punch, shoot, and at the same time I can get in a car, get on a plane, go somewhere else. I can see, touch, and experience everything I want at the same time. Then I can choose any avatar and character I want. For example, if I want to be a hunter, I will have all the hunting equipment at my disposal."

Educational Value

Respondents mentioned learning about real-world geography and history through games, such as the flora of California or the geography of Madagascar. This shows that video games act as an educational tool for them, sparking interest in topics they previously ignored. This learning is derived solely from the story and atmosphere of the game, and not from the actual process of playing.

"I got to know the island of Madagascar, ma'am. I really think the game I play has made me very interested in history and geography because before I had no interest in learning about cities and countries, but now that I know, I really enjoy it. Yes, I got to know this island. It is in Africa. It is the largest island. Then it has a volcano, of course it is extinguished. Then it has all kinds of plants and animals. Then a lot of people go there for fun. Then there is a beautiful park on this island called: Maswala Park. This park is orange and red. It is very interesting. Then this park is famous for its diverse birds. It is very beautiful. It is really spectacular."

Emotional and psychological impact

The responses show that the game evokes a range of emotions, from excitement and pride in discovery to anxiety and fear in war-based scenarios. They feel a certain satisfaction when successfully navigating and discovering new places.

"Madam, if it's a war game, then the feeling of fear and anxiety is greater, but if you know that it's not a war, it's not a fight, you feel very good, suddenly you feel proud of yourself, you say, "You're welcome, son, what did you do?" For example, when I myself find a location, I explore it, I get so excited that there's no limit. Now think about whether you like my location, nothing else. The feeling of success, satisfaction, excitement, pride, success. It's a sweet feeling. In general, I think exploration is sweet."

Attention to game aesthetics

Accurate descriptions of environments show that visual beauty is an important factor in respondents' enjoyment of games.

"I have just discovered a place. It's in the mountains of California. Write Vinewood or Mount Haan on the map. It will bring you there. The mountains are so beautiful. It's so beautiful that there's no limit. In these mountains, there are so many wildflowers that I just got to know this flower. Madam, discovering a spectacular and masterpiece location is very enjoyable and relaxing for me.

Realism and immersion

The aesthetics and realism of game environments play an important role in the interaction of respondents. They appreciate realistic graphics, natural elements, and music that enhance the gaming experience. The inclusion of familiar cultural elements, such as Iranian music, adds to the sense of immersion.

"The locations I discovered were really beautiful and I think the reason is because they were close to reality. Their size, color, volume, dimensions, and overall graphics are fantastic! It is very important that the game music is in harmony with the game and pleasant. I myself play a game. When I get into the car, it is interesting that Iranian music is playing, even though the game is American, that is, made in America, but Iranian music is playing or I get into a taxi, the radio is playing in Persian. Well, this is what attracted the gamer a lot. The first time I was shocked, I turned up the music and saw that it was really Iranian. Game music can have a great impact on attraction.

Priority for Challenge

While exploration is valued, respondents also prefer games that involve challenges and fast-paced action, indicating a desire for a balance between exploration and game mechanics.

"Well, in fast-paced and challenging games there is exploration. Then I really like exploration. You just have to be careful because you might be in danger. But Ms. Rai, I like speed games because they are exciting. I said from the beginning that I like competitive games more. I enjoy them. Because I feel strong, I have a lot of strength, I can give me power, it gives me confidence, I feel satisfied, I am proud of myself. These feelings are not few, they are very enjoyable. That is why my vote and decision and choice is speed games."

Contrast between virtual and real-life

Respondents often compare their gaming experiences with real life and use virtual achievements and environments to compensate for perceived limitations in the real world.

"Well, in online games you can make friends from different cities, then form a group, set goals to defeat the enemy, but what about in the real world? How can you make friends from different cities? Plan with them to win, succeed."

Impact on real-life skills

Respondents believe that gaming has improved their real-life skills such as attention to detail, language skills, and social interactions.

"My social connection with people has increased a lot because I am always talking to them, we create scenarios, we find goals, we plan to win. Overall, my attention has increased a lot, my enthusiasm has increased, it has improved my management and leadership because even at school I am the team leader, I see how different I have become and I have become better."

Main themes for 9-year-olds

From interviews with 12 9-year-old boys about exploration in the game space, the themes that were extracted included the main themes of excitement and struggle, adventure and exploration, challenges and traps, weapon discovery and use, interactive and dynamic environments, special abilities and equipment, achievement and power, historical and cultural elements, victory and power, preferences for the game environment, and beautiful and clean environments.

Excitement and struggle

Respondents were exposed to the adrenaline and excitement of struggle and action in games. They enjoy strategic gameplay that involves attacking and defeating enemies, which adds an exciting element to their gaming experience.

"Ma'am, are you telling the truth? Let's fight, let's attack, let's loot, it's so much fun, it's exciting. If it's not like that, it's not fun, but if it's a war, it's stressful, it's fun. Then you shout in the game. It's exciting. "

Adventure and Exploration

They are eager to explore new places, even in a virtual setting, such as the detailed landscapes of New York City in games. This type of exploration allows them to experience the grandeur and excitement without leaving home and increase their knowledge of the world in a fun way.

"I was introduced to New York City in a game. Wow, how beautiful and big is this city? Someone just said that this is one of the largest cities in Korea. But unfortunately, this beautiful city was attacked by monsters. Its parks are very beautiful. When my friend said that it was attacked, I remembered its beautiful buildings. It is a very beautiful city. "

Challenges and Traps

The presence of constant challenges and traps in games keeps the respondents engaged and focused and provides an exciting experience that is valuable to them.

"Wow, having a trap from top to bottom, left to right, every corner is a challenge. Wow, this game is very interesting to me. It is exciting. Hey, be careful. Hey, there is a challenge in front of me. Wow, great. "

Discovering and using weapons

Discovering and using different types of weapons in games is exciting for them. It adds a layer of complexity and fun to the gameplay, especially when these elements allow them to experiment with different strategies and outcomes.

"I bought a bunch of guns and rifles in an assault game with my coins, then one of the guns was really cool. Look, with a gun, when you shoot, a bullet is fired, but with this gun, when I fired, suddenly a small bullet was fired. Wow, I was so excited. It was awesome. I had never seen that gun before. I took a picture of the gun and showed it to my dad and he said it was called a shotgun. In short, I discovered the shotgun, which I didn't know at all."

Interactive and dynamic environments

Respondents mentioned games with environments rich in interactive elements, such as traps and challenges that keep them alert and engaged.

"In the overall environment, there should be a map. Spectacular and cool maps. Then when we have a competition, for example, there should be fruit and food that is a bonus, and whoever

eats it first will have more life and more strength, so that the environment is exciting and every moment is a challenge."

Special abilities and equipment

Discovering unique abilities or equipment in games, such as characters with special vision or powerful weapons, greatly enhances their gaming experience. These features contribute to a sense of superiority and excitement.

"One of my new and exciting discoveries was that some of the characters have really, really weird eyes, meaning they can scan enemies through walls. So if I can catch a character like that one day, wow, weird lady, I feel superior and powerful."

Achievement and Power

Winning and feeling powerful are very important to their enjoyment. They get a lot of satisfaction from overcoming challenges and proving their power in the game world.

"The feeling of power. The feeling of accomplishment. The excitement. The joy of victory because I can. I can do it. I am strong. I am a winner."

Historical and Cultural Elements

They find games that incorporate historical and cultural contexts appealing, such as games set in the Sassanid era or exploring ancient cities like Bukhara. These elements provide depth that enriches the gaming experience.

"Yes, ma'am, I remember playing a war game that was during the Sassanid era, and our Persian race was one of the most powerful. Then there were even a lot of elephants, all of which were war elephants for our race. Then there was a war in Bukhara, where the king of Bukhara was Khosrow Anushirvan, who was like the famous king of Sassanids. In short, we fought and we won."

Victory and Power

Winning battles in games and feeling powerful is important to this respondent. These experiences help with feelings of success and self-esteem, and increase the enjoyment and satisfaction of the game.

"When we won the Bukhara war, I was very happy. I felt satisfied. I felt like a hero. My self-confidence also increased because I went and proudly told all my friends that I had won. "

Game Environment Preferences

Unlike some gamers who prefer aesthetic environments, these respondents enjoy darker, more challenging settings that align with action and combat, indicating a preference for more intense and gritty backgrounds.

"I don't think it matters, you know why, ladies? Girls say it's important to have pink and hearts, but I don't think it matters, boys love dark and dangerous and warlike environments."

Beautiful and Clean Environments

Clean and aesthetically pleasing environments in games make a big difference to their experience. They prefer environments that are neat and well-designed, which helps them feel more energized and ready to engage.

"My environment should be beautiful and clean so that the game is more enjoyable. Ma'am, I'm really sensitive about cleanliness. If my environment is clean and nice, I'll have more energy to study, do my work, and so on. That's why I like my environment to be beautiful and full of exploration and discovery areas in the game."

Main themes for 7-year-old children

From interviews with 12 7-year-old boys about exploration in the play space, the themes that were extracted included the main themes including learning through play, exploration, visual and auditory appeal, instant solutions and cheat codes, emotional and environmental engagement, cultural insight, interactive and rewarding experiences, social and community engagement

Learning through play

Participants emphasized the desire to learn new things through play, especially from games that contain educational content such as stories or scenarios that they can explain to others, such as teachers and family, and reinforce their learning, they find attractive.

"My dear teacher, I like playing to learn new things, to learn a good story. When I play, I will explain to you later, to explain to my mom, to encourage me, to give me a prize."

Exploration

Like the first participant, this child also shows a strong interest in exploring new environments and places through games, expressing curiosity about places beyond their immediate surroundings and even thinking about future visits or living arrangements based on these explorations.

"Yes, very much so because I like to learn about new places. I don't just like to know this city I live in. I like to know more places. Maybe it's nicer there, right, ma'am? When I grow up, I'll go and live there."

Visual and auditory appeal

Participants are significantly influenced by the aesthetic and auditory aspects of games. They prefer vibrant and colorful environments and enjoy good background music, indicating a sensitivity to the sensory quality of games that enhances their gaming experience.

"Madam, I like the game environment to be beautiful, and colorful. Ma'am, it was a game that was all black and gray. Wow, I didn't like it because of the color. Then it should have a nice song, not because the song is ugly and you have to go and turn off the song settings."

Quick fixes and cheat codes

Discovering cheat codes or quick wins in games excites these participants and gives them a sense of power and mastery over the challenges of the game. It also introduces a practical component to the game, where they learn shortcuts and strategies to improve their game performance.

" Madam, because I go to English class and I know the alphabet, my cousin gave me a bunch of codes. For example, when your car breaks down if you type this car code, your car will suddenly be fixed, or if you get hit, if you type this health code to avoid going to the hospital, you will be healthy. Suddenly, I was so happy when I discovered these codes. I can't believe it. Everything is so easy and fast."

Emotional Interaction and Environment

Games that create a pleasant and engaging atmosphere are preferred. Participants enjoy scenarios that involve real interactions, such as driving a bus through a beautiful landscape, which not only increases their enjoyment but also provides a simulated experience of travel and exploration.

"Madam, there is a game called Bus Driving where you have to pick up a bunch of passengers and then drive through beautiful roads to get to where the passengers want to go. The game is very beautiful. Madam, the roads are very beautiful. Whenever I picked up a passenger and wanted to drop him off, I felt like I was going on a trip because the streets and roads are really beautiful."

Cultural Insight

Learning about different cultural greetings and behaviors from games enriches their understanding of the world and showcases the game as a tool for cultural education.

"My cousin plays from morning till night. I was sitting in front of her once. She was picking her team for a fight. When they were ready, they all started rubbing their noses and foreheads. I thought they were fighting. I asked my cousin why they were fighting. He said, "No, people here rub their noses and foreheads when they want to say hello. It was very interesting to me. I always remember that my cousin and I used to laugh when we said hello and then did this."

Interactive and rewarding experiences

Participants appreciate games that reward their progress with in-game currency and enable them to make in-game purchases. This indicates a preference for games that reward investment and effort.

“Madam, there is a game called Bus Driving. You have to pick up a lot of passengers, then drive through beautiful roads. You get to the place where the passengers want to go. There you drop everyone off. Of course, some get off on the way. But in general, for every passenger you deliver safely, you get a coin. When you have more coins, you can buy a higher-model bus or change its color. I like to buy a red bus, so I try to pick up a lot of passengers and drive carefully to deliver them safely so that I can get more coins.”

Social and community interaction

Participants enjoy sharing their game experiences with their families and show that the game acts as a bridge for family interaction and social bonding.

“Madam, my kind teacher, I like the game to learn new things, to learn a good story. When I play, I explain it to you and then to my mom so that you can encourage me and give me a prize.”

In qualitative research, adults are usually interviewed, but this study showed that if children are asked about topics, they are knowledgeable about, they answer questions with care, interest, and detail, and interviews can reveal part of their psychological world even with younger children. These findings were part of a larger study that also included 11- and 8-year-old children, but due to the breadth of the findings, it was not possible to report them in the form of an article.

Discussion and Conclusion

The findings of this study provide valuable insights into how 7- to 12-year-old boys experience and understand exploratory learning in play, particularly through the lens of video games. Themes extracted from the 12-year-old interviews included freedom and empowerment, educational value, emotional and psychological impact, attention to game aesthetics, realism and immersion, preference for challenge, contrast between virtual and real life, and impact on real-life skills. These findings highlight the multifaceted nature of game-based learning and its potential to influence children’s emotional, cognitive, and social development.

The sense of freedom and empowerment reported by participants is consistent with the existing literature on the motivational aspects of video games. Ryan, Rigby, and Przybylski (2006) emphasize that the autonomy offered by video games is a key factor in their appeal, as it allows players to experiment with their identities and actions in a risk-free environment. Boys in this study had a strong appreciation for the open-ended nature of video games, where they could immediately act out their desires and explore a variety of roles. This finding underscores the importance of designing educational games that balance structured learning objectives with opportunities for endless exploration. The educational value of video games, as highlighted by participants, is consistent with research demonstrating the potential of games to foster interest in academic subjects. For example, Squire (2011) found that games such as Civilization can enhance players’ understanding of history and geography by immersing them in interactive, narrative-driven environments. Boys in this study reported gaining knowledge about real-world locations, such as Madagascar, and developing an interest in topics that had previously been uninteresting to them. This suggests that video games can serve as powerful tools for stimulating curiosity and facilitating self-directed learning.

The emotional and psychological impact of gaming, from excitement and pride to anxiety and fear, reflects the all-encompassing nature of video games. McGonigal (2011) argues that games evoke strong emotional responses by providing meaningful challenges and opportunities for mastery. Participants’ descriptions of their emotional experiences during play highlight the dual role of games as both fun and exciting. This emotional engagement can be applied in

educational contexts to create memorable learning experiences that resonate with children on a deeper level.

The participants' emphasis on game aesthetics and realism is consistent with research on the role of visual and auditory elements in enhancing immersion. Jannett et al. (2008) found that realistic graphics and relevant cultural content significantly contribute to players' sense of presence in virtual environments. Boys in this study appreciated the visual beauty of game environments and the inclusion of familiar cultural elements such as Persian music. These findings suggest that combining high-quality visuals with culturally resonant content can enhance the appeal and educational value of games for diverse audiences.

The preference for challenging, fast-paced games reflects participants' desire to balance exploration and action. This finding is consistent with the concept of "flow" (Csikszentmihalyi,1990), in which optimal engagement occurs when challenges are well-matched to players' skill levels. By combining exploratory and competitive elements, game designers can create experiences that cater to a wide range of player preferences and learning styles.

Participants' comparisons between virtual and real-life experiences highlight the compensatory role of video games. Turkel (2011) discusses how virtual environments can provide a sense of achievement and social connection that may not be present in real life. Boys in this study used games to overcome perceived limitations, such as making friends from different cities and working together on common goals. This suggests that games can serve as a platform for developing social skills and fostering a sense of community, especially for children who may face challenges in traditional social settings. Participants' belief that gaming improves their real-life skills, such as attention to detail, language skills, and social interactions, is supported by research on the transfer of skills from virtual environments to the real world. Granik, Lobel, and Engels (2014) found that video games can enhance cognitive abilities such as problem-solving and spatial reasoning, as well as social skills such as teamwork and communication. These findings underscore the potential for games to contribute to holistic development.

The findings of this study provide a detailed understanding of how 9-year-old boys experience and understand exploratory learning in play spaces. Themes extracted from the interviews thrill and struggle, adventure and exploration, challenges and traps, weapon discovery and use, interactive and dynamic environments, special abilities and equipment, achievement and power, historical and cultural elements, victory and power, preferences for play environments, and beautiful and clean environments highlight the diverse ways children engage with video games emotionally and socially. These findings are consistent with and extend existing research on game-based learning and its impact on children's development.

The participants' emphasis on adrenaline and the thrill of combat aligns with research on the motivational aspects of video games. Przybylski, Rigby, and Ryan (2010) argue that the thrill of overcoming challenges and engaging in strategic gameplay is a key driver of player engagement. Boys in this study described combat as a key element of their enjoyment and emphasized the importance of incorporating action-oriented mechanics into educational games to maintain interest and motivation.

Participants' enthusiasm for exploring virtual environments, such as detailed New York City landscapes, reflects the educational potential of video games. Jay (2007) emphasizes that games can serve as "situated learning environments," where players acquire knowledge through exploration and interaction. Boys' descriptions of discovering new places and learning about their features suggest that games can stimulate curiosity and provide a fun and engaging way to learn about the world.

The presence of challenges and traps in games was an important factor in attracting participants. This finding supports the concept of "flow" (Csikszentmihalyi, 1990), in which optimal engagement occurs when challenges are well-matched to players' skill levels. The boys'

enjoyment of overcoming obstacles and navigational traps underscores the importance of designing games that balance difficulty and reward to maintain engagement and enhance problem-solving skills. The excitement associated with discovering and using weapons in games highlights the role of novelty and complexity in enhancing gameplay. This is consistent with Malone's (1981) theory of intrinsic motivation, which identifies challenge, curiosity, and fantasy as key elements of engaging learning environments. The boys' descriptions of experimenting with different weapons and strategies suggest that games can provide a safe space for exploration and mastery of new skills.

Participants' appreciation of interactive and dynamic environments highlights the importance of responsive game design. Jannett et al. (2008) found that interactive elements, such as traps and challenges, significantly increased players' sense of immersion and engagement. Boys' enjoyment of games with rich, interactive environments suggests that such features can make learning more engaging and memorable.

The discovery of special abilities and equipment was a source of excitement and empowerment for participants. This finding is consistent with research on the role of rewards in motivating gameplay (Ryan, Rigby, & Przybylski, 2006). Boys' descriptions of feelings of superiority and power when acquiring unique abilities highlight the potential of games to enhance self-esteem and foster a sense of achievement.

Participants' emphasis on winning and feeling powerful underscores the importance of mastery and competence in gaming experiences. Desi and Ryan's (2000) self-determination theory identifies competence as a fundamental psychological need that drives motivation. Boys' satisfaction in overcoming challenges and proving their strength suggests that games can provide a sense of accomplishment that leads to increased self-confidence and self-efficacy.

Participants' interest in games with historical and cultural contexts highlights the potential for games to serve as educational tools. Squire (2011) found that games such as Civilization can enhance players' understanding of history and culture by immersing them in interactive, narrative-driven environments. Boys' descriptions of games set in the Sassanid era and ancient cities such as Bukhara suggest that such content can enrich their learning experiences and foster a deeper understanding of history and culture.

Participants' enjoyment of winning battles and feeling powerful reflects the emotional rewards of the game. McGonigal (2011) argues that games provide a sense of achievement and victory that may not be present in real life. Boys' descriptions of feeling like heroes and sharing their victories with friends suggest that games can enhance social interactions and self-esteem.

Participants' preference for darker, more challenging environments contrasts with aesthetic preferences often associated with younger children. This finding is consistent with research on gender differences in game preferences (Hartman & Klimt, 2006), which suggests that boys are more drawn to action and competitive games. Boys' enjoyment of challenging and challenging settings highlights the importance of designing games based on the preferences of their target audience.

While participants preferred action-oriented environments, they also appreciated clean, aesthetically pleasing settings. This finding suggests that visual design plays an important role in enhancing the gaming experience. (2008) emphasize that high-quality graphics and immersive environments contribute to players' sense of presence and engagement. Boys' appreciation of beautiful environments underscores the importance of balancing aesthetic appeal with gameplay mechanics.

The findings of this study provide a detailed understanding of how 7-year-old boys experience and understand exploratory learning in game spaces. Themes extracted from the interviews—learning through play, exploration, visual and auditory appeal, quick solutions and cheat codes, emotional and environmental engagement, cultural insight, interactive and rewarding experiences, and social interaction—highlight the multifaceted ways in which video games

engage young children cognitively, emotionally, and socially. These findings are consistent with and expand on existing research on game-based learning and its impact on early childhood development.

The participants' emphasis on learning through play aligns with Vygotsky's (1978) social constructivist theory, which argues that play is a critical context for cognitive and social development. Boys in this study described how games with educational content, such as stories and scenarios, allowed them to reinforce their learning by explaining it to others. This suggests that games can serve as effective tools for strengthening communication skills and retaining knowledge, especially when they encourage children to articulate their experiences.

Participants' eagerness to explore new environments through games reflects the natural curiosity of young children. Jay (2007) emphasizes that games can serve as "situated learning environments," where players acquire knowledge through exploration and interaction. Boys' descriptions of discovering new places and imagining future visits highlight the potential for games to broaden children's horizons and instill a sense of wonder about the world.

Participants' sensitivity to the aesthetic and auditory aspects of games underscores the importance of sensory engagement in early childhood. Research by Janet et al. (2008) suggests that high-quality graphics and immersive sound design significantly enhance players' sense of presence and enjoyment. Boys' preference for vibrant, colorful environments and pleasant background music suggests that sensory appeal is a key factor in maintaining their interest and engagement.

The excitement associated with discovering cheat codes and quick solutions reflects participants' desire for mastery and control. This is consistent with Malone's (1981) theory of intrinsic motivation, which identifies challenge and curiosity as key drivers of engagement. Boys' enjoyment of using cheat codes to overcome challenges suggests that games can build a sense of empowerment and encourage problem-solving skills even at an early age.

Participants' preference for games that create a pleasant and engaging atmosphere highlights the emotional impact of play. McGonigal (2011) argues that games evoke strong emotional responses by providing meaningful challenges and opportunities for mastery. Boys' descriptions of driving a bus through beautiful scenery suggest that games can provide simulated experiences that are both enjoyable and emotionally rich.

Participants' interest in learning about different cultural greetings and behaviors through games highlights the potential for games to serve as a tool for cultural education. Squire (2011) found that games like Civilization can enhance players' understanding of history and culture by immersing them in interactive, narrative-driven environments. Boys' descriptions of cultural interactions in games suggest that such content can foster curiosity and an appreciation for diversity.

Participants' appreciation for games that reward progress with in-game currency is consistent with research on the role of rewards in motivating gameplay (Ryan, Rigby, & Przybylski, 2006). Boys' enjoyment of earning coins and in-game purchases suggests that games can provide a sense of achievement and encourage goal setting and perseverance.

Participants' enjoyment of sharing their gaming experiences with family members highlights the social dimension of gaming. Granik, Lobel, & Engels (2014) found that video games can enhance social skills such as teamwork and communication by providing opportunities for shared experiences. Boys' descriptions of explaining game content to their families suggest that games can serve as a bridge for family interaction and bonding.

A comparison of findings across three age groups—7-year-olds, 9-year-olds, and 12-year-olds—reveals both developmental consistency and age-specific differences in how children experience and understand exploratory learning in play. Across all age groups, themes of exploration, challenge, and sensory appeal emerge as central to their play experiences. For example, 7-year-olds express a strong desire to learn through play and explore new

environments, and they often describe a fascination with vibrant visuals and rewarding mechanics. Similarly, 9-year-olds emphasize the thrill of combat and adventure, while 12-year-olds emphasize their freedom and ability to navigate the expansive game world. This suggests that, regardless of age, children are drawn to games that offer opportunities for exploration, mastery, and sensory engagement. However, the complexity and depth of their engagement changes with age. Younger children (ages 7) focus more on immediate rewards, such as in-game coins or cheat codes, and simpler interactions, such as driving a bus through beautiful landscapes. In contrast, older children (ages 9 and 12) show a greater appreciation for strategic challenges, historical and cultural context, and the emotional and psychological impact of games, reflecting their cognitive and emotional development.

Another key difference is in the social and emotional dimensions of gaming. While 7-year-olds enjoy sharing their gaming experiences with family members and see gaming as a means of social bonding, 9- and 12-year-olds demonstrate a more nuanced understanding of social interactions in gaming. For example, 9-year-olds describe the excitement of competing with friends and forming teams to achieve goals, while 12-year-olds reflect on the contrast between virtual and real-world social interactions, using gaming to compensate for perceived limitations in their offline lives. In addition, older age groups (9 and 12 years old) demonstrate greater awareness of the educational and cultural value of gaming, such as learning about geography, history, or cultural practices, while 7-year-olds focus more on the immediate pleasure of discovery and sensory appeal. These differences illustrate how as children grow older, play experiences become more complex and multifaceted, reflecting their cognitive abilities, social awareness, and emotional maturity. Overall, the findings underscore the importance of designing games with the developmental needs and priorities of different age groups in mind, ensuring that games remain engaging, educational, and socially enriching throughout childhood.

The contrast between virtual and real-life experiences, as well as the compensatory role of games, suggests that video games can serve as valuable tools for addressing social and emotional challenges. By harnessing the educational and motivational aspects of games, educators and game designers can create innovative learning environments that inspire curiosity, creativity, and collaboration.

Future research should examine the experiences of more diverse samples, including girls and children from different cultural and socioeconomic backgrounds, to gain a comprehensive understanding of the impact of game-based learning. Additionally, longitudinal studies can examine the long-term effects of play on academic achievement, social development, and emotional well-being. By continuing to explore the intersection of play, education, and storytelling, we can open up new opportunities to engage and empower the next generation of learners.

Declarations

Author Contributions

All authors contributed actively to the conception, design, and execution of the research.

Data Availability Statement

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

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Ethical considerations

This study was conducted in full compliance with ethical guidelines and principles. All participants provided informed consent, and their confidentiality and anonymity were strictly maintained. The research protocol was reviewed and approved by the relevant ethical committee, ensuring adherence to ethical standards throughout the study.

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Conflict of interest

The authors declare that there are no conflicts of interest regarding the publication of this research.

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