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The Role of Video Games in Childhood Education

This Research project submitted in partial fulfilment of the requirements for the degree of bachelors in English Language at College of Basic Education, Salahaddin University-Erbil

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2023-2024

Word Count:5421

Dedication

This research is dedicated to our parents, our rock and guiding stars. Without their supports and sacrifices, this research would not have been possible. Their encouragement and belief in us have been our motivation. This work is a small way of saying ‘thank you’ for all you have done. We love you and appreciate you more than words can express.

Acknowledgments

We would like to extend our heartfelt gratitude to our supervisor, Dr. Rezhna Ibrahim, for her invaluable guidance throughout writing our research. Her unwavering support, wealth of knowledge, and dedication to our academic growth have been instrumental in the completion of this research project. We appreciate the time and effort she has invested in our development, and her influence will continue to inspire our academic pursuits. This research is a reflection of her dedication as an outstanding supervisor.

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Section One

Introduction

In today's world, lots of students love playing video games. Even though students mostly think they are just for fun, these games can actually be really good for teaching. They provide an exciting way to help students learning things. In the changing world of education, video games are more than just something to play—they are great tools in teaching. As technology became a bigger part of our lives, using them help students learn successfully since technology and innovations become part of our lives.

This research aims to investigate the role of video games in childhood education. Specifically, review the literature on the educational benefits of video games and identifying different types of educational video games. It also aims to find out how it affects students' conduct and learning.

Video games, within the context of childhood education, refer to interactive digital applications intentionally designed to facilitate learning and educational experiences for learners (Apperley, 2012; Gee, 2007). These games integrate educational content, aiming to engage young learners in diverse subjects such as language learning, mathematics, science, and so on. According to Crawford (2012), a video game is “a game played by electronically manipulating images produced by a computer program” (p. 4).

This research is divided into four sections, each serving a specific purpose. The introduction initiates the study, providing its context and objectives. Next, deals with theoretical background of the study. In section three, personal experiences and reflections are explored. Lastly, the fourth section concludes the study by summarizing key findings and citing the references used in the research.

Section Two

Theoretical Background

Section two, the theoretical background, included how video games contribute to childhood education. This section introduces readers to definitions of basic terms, impacts and importance of these games.

2.1 Definition of The Basic Terms

2.1.1 Video Game

Video games used in education are fun and interactive digital tools that cleverly combine entertainment with learning materials, designed to captivate young learners and improve their comprehension across different subjects. These games aim to captivate learners's interest while fostering learning and comprehension in an engaging manner. “Video games provide learners with opportunities to explore new worlds, solve problems, and make choices, all while developing essential skills such as problem solving, critical thinking, creativity” (Prensky, 2001, p.2).

2.1.2 Education

Education in the context of video games involves the process of learning and teaching, consuming these games as tools to give assistance to students understand and grow their knowledge in different subjects. “The use of video games in early childhood education has the potential to significantly improve learners’ learning outcomes and prepare them for success at school.” (Steinkuehler, 2008, p. 134)

2.1.3 Childhood Education

Childhood education, within the scope of video games in education, refers to the learning and teaching methods specifically designed for learners, using these games as tools to help them learn and develop various skills during their early years. Early childhood education is considered as the official term for teaching young students. More specifically, it refers to formal and informal educational programs that guide the growth and development of learners throughout their preschool years (birth to age five).

2.2 Historical Perspectives of Video Games in Education

Video games started out just for fun, but teachers noticed they could help with learning as technology improved. In the 1970s and 1980s, games like "Oregon Trail" became popular in schools, proving that tech could be used for education. Some papers suggest teachers should understand these games for better student learning (Hitch & Duncan, 2005). Games are used for entertainment but they help us learn, experience new things, and connect with others (Snaffer, Squier, and Gee, 2005).

While game-based learning has grown in the past decade, it is not new. Educational games have been part of K-12 since the 1980s, introducing math, history, and problem-solving concepts. These early games laid a foundation for today's educational games, showing that learning can be fun. Though graphics weren't great, these games engaged students with technology and inspired later educational games. The best educational games can teach and show that education can be enjoyable, fostering a love of learning.

The history of video games goes back to 1948 when the first electronic device for entertainment was designed (Kent, 2010). Over the next decade, the development of video games accompanies computer development. The first commercial success of video games goes back to 1972 when the arcade game Pong, a table tennis simulation, emerged, followed by the development of arcade games such as pinball. Like other arcade games, Pong was located in public places, cafes, restaurants, and playrooms, and its popularity has stimulated a tendency for video games in homes. An ongoing study published in the medical journal JAMA Network Open says that learners who play video games daily show improved cognitive skills in comparison with students who don't play at all.

2.3 Types of Video Games

2.3.1 Action Games

Educational action games blend exciting gameplay with learning elements. (*e.g., Super Mario*). They involve fast-paced challenges that require quick thinking, reflexes, and decision-making while integrating educational content. Good drill and practice games use the “action” genre of video games to engage learners (Bowman 1982; Malone 1980). For instance, In English language classes, an action game might prompt students to solve language-related challenges or complete tasks that involve grammar or vocabulary to advance to higher levels, making learning more engaging and interactive. Lacasa, Martinez, and Mendez (2008) introduced Laura Croft, “Tomb Raider” into an English-Language Arts classroom to help students develop their understanding of narrative writing. “Tomb Raider” is an action-adventure game, where students play as a woman, who attempts to defeat villains (Lacasa et al., 2008, p. 86).

2.3.2 Simulation Games

Educational simulation games create virtual environments that simulate real-world scenarios. They offer experiences where students can experiment, make decisions, and learn from the consequences within a controlled digital setting. Simulations attempt to model a system in a manner that is consistent with reality (Heinich, et al. 1996). Simulations model physical systems or social systems through another symbol system, such as a computer interface. These games can simulate various situations, like managing a city, running a business, or dealing with environmental issues. For example, in simulations like SimCity or Civilization, learners can observe social systems’ behavior over years or centuries. Similarly, in a Virtual Solar System course, students created models of the Solar System where they could observe the solar system in motion, examining rotations, revolutions, and eclipses (Barnett, Barab, & Hay in review).

2.3.3 Puzzle and Strategy Games

These games are designed to challenge student’s thinking. They present various problems or scenarios that require planning, critical thinking, and clever strategies to solve. These games encourage players to analyze situations, think ahead, and come up with creative solutions to progress. According to Aguilera and Mendiz (2003), each kind of game is associated with different skills and abilities for example, a strategy game is useful to stimulate or assist

students` internal motivation, which is important to engage learners in any task to improve their skills and in turn, their-capabilities, Moreover, a puzzle game helps students improve their logical thinking. Solving puzzles through video games help learners think about proposing strategies and organizing elements in anticipation of objectives which also improves logical thinking.

For Example, using computer games favors the development of complex thinking skills related to problem solving (Keller, 1992), strategic planning (Jenkins, 2002, Keller, 1992, Mandinach, 1987, McFarlane et al., 2002) and self-regulated learning (Rieber, 1996, Zimmerman, 1990).

2.4 Importance of Video Games

2.4.1 Social Skills

Video games can facilitate the development of social skills by enabling learners to engage in cooperative or competitive gameplay, fostering teamwork, communication, and collaboration. As Olson and Kutner (2008) point out multiplayer gaming encourages players to solve problems and communicate effectively, enhancing their social competency.

Moreover, multiplayer games often require players to strategize and work together towards a common goal. This collaboration in virtual environments provides students with a platform to understand the importance of teamwork and effective communication. When learners play together, they learn how to share, support one another, and build friendships, while enjoying the gaming experience.

Additionally, video games with chat features or online communities offer spaces where learners interact, make friends, and learn to navigate social situations. These digital platforms serve as social hubs where students from diverse backgrounds come together, fostering inclusivity and helping them develop social skills in a safe and monitored environment.

In addition, these games can encourage empathy and understanding among learners by interacting with characters and situations within games.

2.4.2 Interaction

The interactive nature of video games promotes active learning and cognitive development. According to James Paul Gee, video games provide a unique platform for players to make choices, experience consequences, and learn through experimentation, all within a safe virtual environment (2005).

This active engagement fosters critical thinking and problem-solving skills. Through these interactive experiences, learners get to dive into various scenarios, make decisions, and witness the outcomes of their choices. According to Olson (2010), learners find that video games are attractive and can help in developing learners' cognition. Lieberman et al. (2009) states that excellent design games provide rich, fun, and interactive experiences that enhance learners' cognitive development, social interaction and healthy behavior.

This not only makes learning enjoyable but also cultivates important skills such as allowing students to experiment and experience different situations within the game, video games become valuable tools for enhancing critical thinking abilities. Moreover, this approach encourages learners to think strategically and find solutions to challenges presented in the game.

The safe environment of a video game allows students to take risks, make mistakes, and learn from them without real-life consequences. This freedom to explore and experiment builds confidence and resilience, nurturing a mindset that embraces challenges as opportunities to learn.

2.4.3 Creative Work

Many video games encourage creativity and innovation through gameplay. Games like Minecraft, for instance, empower learners to express their creativity by building unique structures and environments.

Professor Yasmin B. Kafai, a researcher in the field of learning sciences, advocates for the potential of video games to stimulate creativity, stating that certain games offer a platform for imaginative expression and problem-solving.

Moreover, video games inspire a sense of ownership and pride in learners for their creations. Whether it is designing intricate buildings or crafting fantastical landscapes, these games provide a space where learner's imaginations flourish, fostering a sense of accomplishment and boosting their confidence in their creative abilities. Scanlon et al. (2005) states that video games can engage and motivate learners in ways that classes and teachers cannot. Hayes and Silberman (2007) support this view, pointing out that when students are not motivated by traditional methods of teaching. Video games can motivate them because they enjoy and are familiar with them.

Moreover, some games encourage students to be more creative. They might design their characters or build their virtual worlds, sparking their imagination and creativity. This creativity can spill over into other parts of their lives too. But it is not just about skills; games can also teach students about teamwork and cooperation. Alexander, Eaton, and Egan (2010) later confirmed Gee's belief that video games (through specific learning principals) engage students to enhance their learning experience.

Furthermore, the collaborative aspect of some video games further enhances creativity. When learners build together in games like Minecraft, they engage in shared creativity, exchanging ideas, and combining efforts to bring grand ideas to life. Li, Wang & Liu (2020) opine that video games increase the creative thinking ability of students.

2.5 Video Games as Learning Environment

In learners' education, video games are seen as fun tools that can help students learn in different ways. Gee (2003) claims that video games make students think and decide things while they play that helps them learn. Video games are not solely for entertainment; they are increasingly integral to how students learn. These interactive games serve as engaging classrooms where students not only enjoy themselves but also acquire skills without even realizing it. For instance, for an English class, you could have students create narratives or dialogues inspired by characters and situations from a game. This encourages creativity and language production.

Through video games, they explore complex concepts in enjoyable ways, enhancing their understanding without feeling like they are studying. That's the magic of these games—they make learning feel like an exciting journey rather than something boring. Students get better at understanding tricky stuff while they are having fun.

Video games are like secret teachers—they help students grow their brains while having the best time! Moreover, these games create a space where learners can learn without feeling the pressure of traditional studying. It is like going on an adventure or solving mysteries with friends.

Additionally, in these games, when students do something well, they get rewards. These rewards make learning feel awesome, like getting a gold star for doing something great. It makes students want to learn even more and keeps them excited about exploring and discovering new things in the game.

2.6 Impact of Video Games on Child Development

Video games can have a big effect on how students grow and learn. They are not just something to pass the time; they can actually shape a child's development in many ways. Through engagement, learners often need to focus and pay attention to progress in different levels, thus improving their concentration skills. This engagement in video games not only entertains but also helps students enhance their ability to concentrate on tasks at hand.

When learners play together, they learn how to work with others, share, and support each other. It is like learning to be a good team player while having a blast. Many students' lives are influenced by video games and digital media. Video games have been around for more than decades. However, research on the effects of video games gained interest only a few years ago (Gee, 2008). Some schools are capitalizing on the popularity of video games by incorporating instructional video games into their classrooms and even developing an entire curriculum centered on the design and play of video games.

Despite their growing popularity and use in education, few studies have been conducted on the impact of video games on learners' brains. According to the researchers, video games and educational apps benefit learners' brain development. On the other hand, violence and entertainment.

Additionally, playing video games can also help students become better problem-solvers. When they encounter tricky situations in games, they have to think of smart ways to solve them. This practice can make their brains better at finding solutions not just in the game, but also when they face challenges in real life. But there's still a whole lot we need to learn about how games impact learners' brains and learning.

2.7 Video Games and Special Education

Video games are becoming more and more helpful in special education. They are awesome because they offer a fun and adaptable way of learning for students with different needs. According to Tlili et al. (2021), video games can help improve thinking skills, social skills, and sensory abilities for learners with disabilities. These games can adjust to how each person learns, which is super cool!

They've shown they can help improve thinking skills like paying attention, remembering things, and solving problems. For students who need extra help with learning, this is really important! They are like a safe place to learn how to work together and talk to others. Some games even help them who might have trouble with their senses, like hearing or seeing things. The sights and sounds in games can be just right for them. Making learning into a game makes it fun and exciting. It helps them to feel good about learning new stuff.

As technology gets better, using games in special education helps not only them in learning but also makes sure everyone feels included and happy. Combining video games with special education is a big deal because it helps lots of different learners. These games focus on specific things to learn, like improving thinking, coordination, and getting along with others.

Game makers are also working hard to make sure these games are for everyone. They are adding things to games so that even students with disabilities can play them. Incorporating features like virtual reality and augmented reality enhances the personalization and enjoyment of learning within these games. However, it's crucial for game developers to consider not only the entertainment value of the game but also its effectiveness in facilitating learning.

Understanding how different students play, making lessons fit each person, teaching things in a way that's easy, giving helpful feedback, and making sure it is not too hard or boring are really important to make games that help everyone learn in a fun way. Technology is changing education, and video games are a big part of it. They are making learning fun, engaging, and a bit like an adventure.

2.8 Advantages and Disadvantages of Video Games

2.8.1 Advantages of Video Games in Learning

In classrooms, using video games for learning has many good things. Instead of just reading books or listening to teachers talk, games let us learn while having a blast. They make learning more exciting and interesting, like going on an adventure while studying.

Another advantage, they can help students understand tricky things in a simple way. They make hard subjects, like math or English, easier to understand by turning them into fun challenges. For example, in an English game, they might solve puzzles to learn about sentences or explore stories to improve their language skills. Games make learning feel like playing, and that's awesome. According to Sanford and Madill (2007), video games offer powerful learning for students. Students can play in teams which leads to effective learning (Trespacios et al., 2011).

Games also help us work with our friends. They encourage teamwork and problem-solving because sometimes we need our classmates' help to move forward in the game. This way, we learn how to cooperate and solve problems together. According to Lieberman et al. (2009), well-designed video games provide rich, interactive experiences that lead to enhance learning and experience. Furthermore, games can help us remember things better. When we play a game and face challenges, they have to think hard to solve them. This makes our brains work more, helping us remember what they've learned for a longer time.

Games can also personalize learning, meaning they can adapt to each student's needs, making sure everyone learns at their own pace. Hayes and Silberman (2007) state that video games can attract learners and provide benefits, namely collaboration, experimentation, individualization and adaptability.

In this way, they can make friends with learners of the same age with whom they share common interests. Also, through these games, learners learn how to negotiate, cooperate and think with others. According to a 2016 study conducted by Professor Andrew Przybylski at Columbia University's Millman School of Public Health, video games improved the intellectual performance of 6- to 11-year-old learners in school and reduced their communication problems with their peers. Lastly, Video games can improve your child's mood.

2.8.2 Disadvantages of Video Games in Learning

Despite of the advantages of video games in English classes but also it has some disadvantages. One of the big issues is that games can be so interesting that students might forget about the lesson. Instead of focusing on what they're supposed to learn, they might get lost in the game. This distraction can make it hard for teachers to make sure everyone learns what they need to. According to a study conducted by Grohol (2010) presented that video games take away time allotted for academic development.

Another problem, students do not have the same things at home. Some students might not have the devices needed to play these games, or they might not be used to playing games at all. This can make things unfair, with some students getting more out of the game-learning experience than others. It's important that everyone has an equal chance to learn and enjoy these activities.

Also, spending a lot of time looking at screens can be bad for their health. It might cause problems like eye strain, headaches, and make us sit still for too long. Too much screen time can affect how healthy they are. Finding a balance between using games for learning and doing other activities that keep us moving is really important.

Moreover, games can be too addictive. Students might want to play the game all the time and not focus on their studies. It's important to make sure that students don't get too caught up in the game and forget about their schoolwork. According to Flanagan (2014), studies have provided that video gaming can be addicting due to its similarity to all other addicting factors.

Furthermore, not all students learn in the same way. Some might understand lessons better through games, while others might find it hard to learn from them. This means that using games for learning might not work for everyone.

Lastly, even though these problems exist, teachers can work on finding ways to balance the fun of games with making sure everyone learns what they need. It's about making sure everyone gets a fair chance to learn, stay healthy, and enjoy the learning process using games.

Additionally, it outlined both advantages and disadvantages of incorporating video games into learning. The subsequent segments align with the practical encounters and reflective insights gained in this study.

Section Three

Experience and Reflection

This section delves into our personal encounters with educational gaming in different academic settings. It discusses the practical experiences we gained through engaging video games in our learning process.

3.1 Experience

This section is about our experience with regard to the role of video games in childhood education. To be honest, before choosing this title and working on it, we had an idea about what the role of video games in childhood education is. Since we are students, we have seen some classes and teachers using video games.

We observed this at universities, not at schools. If we come to our teachers and video games, we would say they didn't use video games at all, and even though we didn't observe any classes using them, our teachers at the university used them differently, and they were quite effective. During our college English classrooms, in the third stage, there were some instances where teachers incorporated video games into our learning. For instance, one game involved identifying differences between two pictures, honing our observation and visual discrimination skills.

Another interactive activity included a spinning wheel with various words. When the wheel stopped, we had to define the chosen word and use it in a sentence. These experiences, though limited, introduced a new way of learning English, making it more hands-on and engaging. They offered a break from traditional teaching methods and encouraged us to actively participate in language learning through gaming elements.

The teachers showed us how games can be used for teaching effectively and to be more engaged, and also video games helped us even to enhance our English language with friends because we realized that if we use video games, it can be a very useful way of learning. So, we mostly were playing puzzle games, a game in which all the letters were mixed and you had to create a new word. This game helped us to learn new vocabularies and recall them when we need. When we were in primary school, we didn't have these type of games, that's why sometimes we were having difficulties understanding because teachers were using traditional

techniques and they did not care about including other novel methods that students liked and making them more engaged in the lesson.

3.2 Reflection

When we decided to choose this title, we did not have enough information about these types of video games and their usage in childhood education. We chose it because, as future teachers and for those who read this study, we have to clarify and understand these techniques in teaching. Before everything, teaching needs good and effective techniques and methods that are consistent and effective for a better education and learning environment.

Moreover, video games are one of the ways that can be played in the classrooms, and it will make the learning process easier and more enjoyable since it's electronic, and nowadays students like devices and different video games, so it will be quite easier for teachers to use them, and if the teachers use them, it will even help the students to play video games at home educationally.

Here, they will know the real value of video games, and even teachers can tell or teach them about how beneficial video games are. Although video games are one of the ways they make the learning environment more efficient and joyful, they will surely enhance students' language skills and their knowledge about video games in education.

And in our college English classes, it's evident that these interactive activities added an enjoyable twist to language learning. While the exposure was sporadic, these games created a more dynamic learning environment compared to traditional lectures or reading materials. They allowed us to actively engage with the language and apply our knowledge in practical scenarios.

Although there were only a few instances of incorporating video games, these experiences highlighted the potential of technology to make language learning more interactive and fun. They sparked curiosity about how technology could further enhance language education, encouraging us to explore more innovative methods for future learning.

Section Four

Conclusion

The role of video games in childhood education has taken us on a journey through the evolving intersection of technology and learning. As we navigate the changing landscape of education in today's world, it's evident that video games, once merely perceived as sources of entertainment, are transforming into indispensable tools for teaching learners. This transformation becomes increasingly intriguing and popular as technology assumes a more prominent role in our daily lives.

We explored how video games and education intersect, finding games that are not just fun but also clever tools for learning. These include challenges and simulations that enhance language skills in an interactive way. For instance, we discovered games that prompt students to solve language-related challenges, enhancing their language skills in an interactive and enjoyable manner. These educational games offer a rich opportunity for learners to learn and develop skills in an entertaining digital environment, seamlessly integrating education into enjoyable experiences for young learners.

On the positive side, video games have been discovered to foster valuable skills such as teamwork, critical thinking, and creativity. In an English language class, for instance, games can be designed to involve solving language-related challenges or creating words in a fun and interactive manner. These games transform learning into an enjoyable journey, where students actively participate and acquire skills seamlessly. Students play together, support each other, and build strong connections. Besides academic skills, these games also help students understand each other better and find joy in learning.

However, there are a few things to be cautious about when it comes to video games. Some students might get so immersed in the games that they forget about their studies, making it challenging for teachers to ensure everyone is learning. Additionally, not all students have access to the necessary devices, creating an uneven learning experience. Spending too much time in front of screens can lead to health issues like eye strain and headaches. Moreover, the addictive nature of games might distract students from focusing on their studies. So, while video games have positive aspects, it's crucial to use them wisely to maintain a balance and ensure fair learning opportunities for everyone.

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