



# **Video Games Teaching Real-Life Skills**

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## Abstract

The motivation for this review came from the current immense popularity of video games and gaming culture, which is growing as the world becomes more technologically advanced. The selected research method for this study is a narrative literature review of existing literature on the topic of video games and their impact on personal skills and education over the past fifteen years.

This research established that video games could positively influence cognitive, social, and motivational skills, and have a significant role in educational settings. The potential negative impacts consist of reduced attention span, risk of addiction, and promotion of antisocial behavior such as introversion. This review contributes to the existing literature by providing a balanced perspective between the potential positive and negative effects of video games on personal skills while carrying some noteworthy limitations: the reliance on existing studies with varying methodologies, potential for a flawed selection of studies and the conciseness of this study.

Future studies should aim to address the gaps identified, particularly with long-term studies that track the impact of video games on personal skills over extended periods of time. It would also be beneficial to explore more deeply the relationship between video game content and specific cognitive and social outcomes. Research methods for this topic ought to become more advanced because it is difficult to control all the relevant variables when analyzing the impact of video games on personal skills and education, due to how even the subtlest variables can have substantive impact.

### *Keywords*

Video games, real-life skills, cognitive skills, social skills, motivational skills, learning

### *Supervisor*

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## Foreword

The inspiration for researching this topic came to me from my different personal experiences. As someone who plays video games actively, I am curious about the impact they have on myself and others in ways that are not immediately obvious. A specific example that comes to mind are online games where other players have an impact on my performance and the result of the game.

I can choose to exercise strong mental discipline and not let factors outside of my control, such as other players, affect my mood and wellbeing. Another choice is to seek ways to shift blame to others and have things outside of my control affect my mental state and areas beyond the game. I observe that in real life there are people who are often positively unaffected by things outside of their control and people who are often negatively affected by things they have no control over. I hypothesize that games can be a training ground for molding one's mental fortitude.

I also develop games myself as a hobby, which gives me another perspective to learn new things from. As a developer I am curious about the different options I have for integrating educational content into my games. I also get to learn about different ways the content in my games could affect players at the same time, educational or not.

Finally, I saw the impact educational games have in primary school on a practical level. When I was in primary school, video games did not have a role in the classroom. The summer two years ago I was working at a primary school and Minecraft: Education Edition had a firm grip on the pupils there. Pupils would take electronic tablets to class by default and any substantial downtime they had during class, they would be instructed to play Minecraft until the downtime was over.

Pupils were learning engineering, science, history and mathematics through Minecraft while having fun playing with their friends. I thought clearly this would be the way forward in early education, but making sure there is a good ebb and flow between doing what is fun and doing what is important in class is crucial for not making too big of a leap and ensuring games have a positive impact on pupils.

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# 1. Introduction

Esposito (2005) defines video games as interactive games that can be played using an audiovisual device, often featuring story narratives. They also explain that video games are now a part of our culture. Video games have evolved significantly since their inception in the early 1960s, transitioning from simple pixelated arcade games to highly immersive experiences with detailed stories and stunning visuals, rivaling those of other media such as blockbuster movies. Video games are more popular than ever due to this meteoric rise in quality and resource allocation.

A large majority of young people today actively engage in playing video games (Granic et al., 2014). Video games attract a diverse audience spanning different ages, genders and cultural backgrounds. According to (Sun et al., 2023) video games are considered one of the most motivating and enjoyable activities available. The ability of video games to provide players with concrete and immediate feedback to specific efforts makes them a particularly compelling choice of activity (Granic et al., 2014).

The integration of video games in daily routines extends beyond simple recreation. Increasingly, video games are also becoming a part of classroom education especially at the primary level (Sun et al., 2023). Educators are constantly looking for new ways to engage their students in learning. Concepts such as gamification and game-based learning can be used to enhance student learning (Jääskä and Aaltonen, 2022) and aligning the video game content with curriculum goals is crucial for learning in subjects such as mathematics, science and history.

Video games also have a profound cultural impact. Video games influence other media such as films, television and literature. Video game conventions and competitions attract millions of participants and spectators, allowing players to socialize over the competitive and communal aspects of video games.

The rise of video games has also sparked debates about their impact on behavior and development. Concerns about the potential negative effects, such as introversion, addiction and desensitization to violent and harmful content have been echoed in the existing research and media, which is why in this study the potential negative aspects are highlighted alongside positive ones.

## 1.1 Background and motivation

This immense and currently growing popularity of video games and gaming brings forth the motivation for this study. A better understanding is required regarding the impact of digital environments, especially those present in video games. This research reviews the narratives of studies from the past fifteen years on the topic of video games as a contributor to children and young adults learning in areas of cognitive skills, social skills and motivational skills, as well as exploring the impact of video games designed for academic education, and the motivation and fun associated with playing them. Potential negative aspects of video games are also highlighted in this study, for a fair and balanced analysis.

Previous research has suggested both that video games can, and often do, play a strong positive role in areas mentioned here previously, but they also pose a risk of potential harm if not utilized properly.

The main challenge of this research lies in balancing between the potential negative and positive effects of video games on personal skills and education while evaluating the overall outcome of the reviewed studies to form an accurate and comprehensive view of the answers to the research questions. This study also explores the topic as much as possible within the limits of the chosen research method and study selection.

## 1.2 Research questions and method

This study aims to investigate the potential positive effects of video games on cognitive skills, social skills, motivational skill and education while highlighting potential negative effects. This research objective forms two different research questions:

1. What personal skills can playing video games teach?
2. What positive effects can playing video games have?

The method of research for answering these questions is a narrative literature review (Kangasniemi et al., 2013). More is detailed regarding how the method was conducted in the second chapter.

## 1.3 Structure of the thesis

Chapter 2 details the method of research used for this study. Chapter 3 introduces the main concepts under review. Chapter 4 presents the existing work while adhering to the main concepts. Chapter 5 presents and discusses the findings of the research and answers the research questions. Chapter 6 concludes the study, summarizing this research and giving direction for future research.

## 2. Research methods

The method of research best suited for these research questions was decided to be a narrative literature review (Kangasniemi et al., 2013). The study selection criteria were established to include studies with a primary focus on the impact of video games on personal skills and a secondary focus on the value of educational games and the impact of video games on motivation.

The selected studies were to have been conducted either quantitatively or qualitatively and the form of research was either a literature review or a randomized controlled trial. Finally, studies were to have been published only in the last fifteen years between 2008 and 2023, for the sake of relevance to modern times and due to the substantial lack of multiplayer games before 2008 compared to today.

The search was conducted on the web search engine Google Scholar with search terms: "video games", "problem-solving skills", "real / real-life skills" and "education". Expressions used for finding the selected studies were "video games" AND "real skills", "video games" AND "problem-solving skills" and "video games" AND "education" AND "league of legends". The publication date was narrowed to the last fifteen years according to the criteria mentioned earlier.

Eligible studies were initially selected based on the title and abstract, and later read through to spot any discrepancies in respect to the study selection criteria. Data from the studies were analyzed narratively as points of interest, which are presented in this work in order of: impact of video games, cognitive benefits of gaming, social benefits of gaming, motivational benefits of gaming and games in education.

It was important to approach the research purely from the perspective of the research questions, instead of looking for studies to validate the idea of video games assuredly having a positive impact on personal skills and education. Although it was one of the common outcomes of each study, this work also critically highlights the potential negative aspects of video games on personal skills and education.

### 3. Main concepts

This chapter will shed light on the points of interest under analysis in this review, providing a comprehensive overview of the core ideas underpinning this research. Each subchapter is dedicated to a specific concept, elaborating on its potential components and discussing its significance in the context of this research.

The main concepts in this chapter provide a structured framework for analyzing the potential positive and negative impact of video games, going over the popularity of video games, cognitive and social effects of video games, and the effect of video games on motivation and education.

Video games have evolved from simple entertainment to complex digital environments that have the potential to significantly affect all the categories mentioned previously. Firstly, the popularity and cultural impact of video games are examined. This section delves into the current sentiment around video games and why this concept is crucial to analyze.

The second section outlines the different components of cognitive abilities potentially affected by video games, and why they are crucial to examine. Video games have often been credited with enhancing cognitive abilities. This study investigates that claim while highlighting potential negative outcomes.

Thirdly, the social effects of video games are explored. Multiplayer video games are a particularly new phenomenon. Before online multiplayer existed, local cooperative (co-op) functionality where multiple players could control different elements on one audiovisual device was commonplace. This section delves into the components of social video game play and why they are important for this research.

Finally, the impact of video games on motivation and use in educational contexts is explained. Video games feature difficult challenges and robust feedback, encouraging players to continue playing and completing increasingly difficult challenges. Educational games have the potential to make learning more engaging by motivating players more effectively compared to traditional methods and traditional methods can have game elements integrated into them. The impact of video games in motivational skills and education goes hand in hand, due to the same elements being utilized in different ways to increase learner motivation.

#### 3.1 Video game popularity and impact

Assessing the popularity and impact of video games on the people that play them is crucial for assessing how valuable research is in this domain. Video games have become a significant part of modern entertainment (Granic et al., 2014), with wide educational use in the near horizon (Bourgonjon et al., 2010). The more ingrained video games are in a person's daily life, the more time is spent thinking about them outside of gameplay and the more impact they have on a person's life.

In 2013 former U.S President Barack Obama requested Congress to allocate \$10 million for research on the effects of violent media, especially video games, following the tragic



Sandy Hook Elementary School shooting in December 2012. This event highlights a pressing concern: mass killings are often associated with young people who play a lot of violent video games (Granic et al., 2014). While this association drives a lot of current debate surrounding video games, it is important to dive deep into this issue and consider both potential negative and positive effects.

The focus of this research is on the potential positive effects of video games while highlighting negative one's video games can also have. This review analyzes the ways in which video games are enjoyed and the role they play in people's lives. If it is believed that technology can isolate us from each other as humans, understanding the impact of video games becomes more crucial and requires a nuanced look at both the psychological and sociological effects.

### 3.2 Cognitive effects

This research splinters cognitive abilities into categories of problem-solving skills, attention, memory, and spatial awareness. Video games often feature puzzles or impasses (Blumberg et al., 2008), that stimulate the players problem-solving skills when encountered and solved. These cognitive tasks require players to think critically, plan strategies and often adapt to new information on the fly.

Video games can belong to the puzzle game genre, where solving complex puzzles and playing strategically is core to the gameplay, allowing players to effectively become better at those transferable cognitive skills. Fast paced games such as first-person shooters require fast reflexes and high levels of attention, which surprisingly can lead to even more cognitive improvement (Granic et al., 2014).

The focus of this study is to review the empirical research and assess how big of an impact video games have in the previously listed categories, or if they have an impact at all. Also, whether cognitive benefits obtained from gaming translate into real-life skills or not is another focus of this study. The potential improvement in cognitive abilities is compared to the potential negative effects, such as lowered attention span, to gain a fair and balanced perspective on the potential cognitive impacts of video games.

### 3.3 Social effects

The social effects are analyzed from the perspective of multiplayer and cooperative (co-op) games, which have become increasingly popular in the last fifteen years due to technological advancements. Aspects such as teamwork, communication, empathy, and overall social awareness are all essential parts of this concept.

Multiplayer video games often emulate real-life social settings, which require players to work together towards common goals, negotiate and sometimes even compete against each other. Players must utilize good communication skills for conveying strategies and consider other people's roles and differences in their social conduct.

Video games can promote both social and anti-social behavior (Bellotti et al., 2009). Video games with violent or aggressive content can desensitize players to negative interactions in real life, and video games that allow players to sabotage others can foster spite and negative thoughts in all participants.

This research aims to provide a balanced view, recognizing that while some games and gaming habits can encourage antisocial behavior, others have the potential to foster social bonds and hone social skills. In some cases, even act as the first step to socializing for people in unique situations.

### 3.4 Motivational effects

Motivation in gaming can arise from setting and achieving meaningful goals, persevering through tough challenges and being immersed in the gameplay (Granic et al., 2014). Video games often provide clear goals with immediate feedback, which can be highly motivating for players to experience as they provide the player with a sense of accomplishment upon completion.

This feeling can encourage individuals to set and achieve personal or professional goals in real life. Video games also typically cater to the players skill level which makes achieving goals more fulfilling and failure more instructive, turning it into a more positive experience that can apply in real-life as well.

However, the motivational effects of video games are not always positive. Players can become addicted to fast-paced challenges, immediate feedback and immersive challenges which may be scarce in real life. This can lead to playing video games in excess, where players prioritize their game achievements and performance over those in their school or professional life, because they find the game achievements to be more challenging or fulfilling.

This research aims to investigate whether motivation is contained within singular video game experiences or can be carried over into real-life applications. It is also important to review whether there is a difference in the amount of motivation people have towards tasks in video games versus tasks in real-life, and if becoming addicted to the motivation from games can bleed negatively into their school or professional life.

### 3.5 Games in education

The final concept under review is the utilization of video games in educational contexts. Sun et al. (2023) define game-based learning as an innovative learning approach that uses computer games or software applications with educational value in ways such as: learning support, teaching enhancement and evaluation of learners. Motivational effects of video games go hand in hand with educational ones. Jääskä and Aaltonen (2022) talk about gamification as a means of implementing game elements in education as motivators.

The educational potential of video games is defined by their ability to make learning more engaging, either in opposition to traditional classroom teaching or paired alongside with it. Video games can contain educational content outright, which can help reinforce learning objectives in a fun and memorable way. Video games can also require the players to utilize their already attained skills in practical scenarios.

Educational games ought to be effective in imparting academic skills and for that, both gameplay and educational elements need to be in good balance. Video games with a lot of entertainment and less education might have players purely focus on the entertainment and miss on the education, while video games with too much education might lose the

potential of higher engagement and make learning as cumbersome as other applications (Sun et al., 2023). Educators need to be careful and ensure that when utilizing video games in education, the games are proven to be effective and easy to implement.

By examining these main concepts, this research aims to provide a comprehensive understanding of the potential impact video games have on personal skills and educational outcomes. Each concept is equally important for understanding the broad implications of video games in current society.

## 4. Previous research

This chapter will extensively detail the narratives brought forward in each of the selected studies in a structured manner, while adhering to the main concepts laid out in the previous chapter.

By examining a wide range of studies, this chapter provides a comprehensive understanding of the current academic landscape regarding the impact of video games on personal skills and educational outcomes and sets the groundwork for cross comparison between the studies and discussion of the findings.

The individual perspectives and identified patterns in this chapter will form the understanding of potential positive and negative effects of video games on personal skills and education, upon which subsequent analysis can be done to answer the research questions.

This chapter will also highlight the historical evolution of research on this topic, revealing patterns and trends in all the sections, regarding how much video games have risen in popularity and evolved over time and how society has reacted and adapted to these changes.

### 4.1 Impact of video games

Video games are considered one of the most motivating and enjoyable recreational activities amount young people (Sun et al., 2023). Sun et al. (2023) also state that the increased popularity of video games has led to a growing interest in finding new ways to combine games with educational curricula. According to a study by the NPD Group in 2011, 91% of children between the ages of 2 and 17 played video games, and a nationally representative U.S study found that up to 99% of teenage boys and 94% of girls played video games. Esposito (2005) explains that video games have now become a part of our culture.

In addition, video games in the U.S brought in more than \$25 billion in gross revenue in 2010, more than doubling that of Hollywood box office sales of the same year in the U.S and Canada (Granic et al., 2014). Papastergiou (2009) states that playing computer and video games is a very popular free-time activity among children and teenagers, and that those games have a substantial role in the culture among young people. They also note that motivation intrinsic to young people when they play computer games, has the potential to be combined with educational content and objectives to form what is known as “digital game-based learning”.

A study conducted by the Entertainment Software Association (ESA) in 2004 found that roughly 50% of all U.S Americans played video games, pushing the gross revenue of entertainment software sales over \$7 billion in 2003. In addition, a 2004 survey of over six hundred 8<sup>th</sup> and 9<sup>th</sup>-grade students averaged nine hours of weekly overall gameplay, with boys averaging thirteen hours and girls five hours (Buckley & Anderson, 2012). Adachi and Willoughby (2017) shared findings that according to a 2008 study, 97% of U.S boys and girls played video games, along with many young people, especially boys, playing them daily.

A 2007 ESA survey revealed that 69% of Americans that identified as the head of the household played computer or video games on average around 7 hours per week (Blumberg et al., 2008). Monge and O'Brien (2022) state that in 2013, 1.2 billion people were playing video games globally, with 700 million of those people playing games online, accounting for roughly 10% of the world's population. By 2018 the number of global video game players had risen to 2.5 billion, more than double that from 2013.

## 4.2 Cognitive effects of video games

Granic et al. (2014) state that playing shooter games, or what are often called action games by researchers, promotes a wide range of cognitive skills, more so than puzzle games or role-playing games. They referenced a 2012 review stating that compared to control participants, participants in the "shooter video game condition" exhibit better attention allocation, higher spatial awareness in visual processing and enhanced mental rotation abilities. Bavelier et al. (2011) expanded on action video games, stating that properly controlled training studies improved in addition to just better visual attention and speed of processing, also statistical inference, and the ability to rehabilitate visual skills.

According to research, video games are an engaging learning medium, due to their ability to stimulate cognitive processes such as reading implicit and explicit information, reasoning deductively and inductively, solving problems, and making inferences from statistics and information presented on multiple displays (Bellotti et al., 2009). Adachi and Willoughby (2017) state that playing video games has been associated with enhanced visual-spatial abilities, executive control, memory, and attention control. They add to this by stating that since self-awareness of cognitive strategies is typically more developed in teenagers than children, teenagers are more likely to retain the problem-solving strategies used in strategic video games for other potentially real-life applications.

Adachi and Willoughby (2013) add by stating that while video games have the potential to be effective cognitive training tools, they encourage video game players to stop and thoroughly explore different options and to consider multiple strategies for moving forward in a game instead of advancing as fast as possible. They recognize that there is unclarity between whether players are trained by games in problem-solving skills or if players with great problem-solving skills are pulled towards video games for an adequate challenge. They summarize that playing strategic video games predicted higher self-reported problem-solving skills across the four years of high school. In addition, they found evidence for a positive correlation between strategic video game play and school grades.

Blumberg et al. (2008) state that learning is primarily facilitated via the resolution of impasses encountered during the solving of a problem. Resolving an impasse requires collecting and processing new information. They state that impasse-driven learning is inherent to the structure of most video games, as they are designed to keep the player engaged through increasingly challenging obstacles. These impasses would then serve to jumpstart a player's problem-solving skills in an academic setting in addition to video games.

Jääskä and Aaltonen (2022) share that according to cognitive learning theories, play-like activities foster a state of deep learning, because players feel joy in completing assignments they feel are motivating and interesting. Pusey (2018) acknowledges that

research into digital game-based learning and how it affects the development of student skills is thin, because higher order cognitive skills such as concept acquisition, systematic decision making, and evaluative thinking are very challenging to measure reliably and accurately.

### 4.3 Social effects of video games

According to ESA in 2012, over 70% of gamers play video games with friends, either in a competitive or cooperative setting (Granic et al., 2014). A big shift from games ten to twenty years prior. They state that cooperation, supportive and helping behaviors are effective catalysts for learning social skills from video games. In addition, they found that social skills can manifest in video games in forms of civic engagement, such as the ability to lead like-minded individuals and organize groups. One large scale U.S study from 2008 showed that adolescents who played games with these civic experiences, were more likely engaging in civic and social movements in their daily lives, such as raising money for charity or volunteering (Granic et al., 2014).

Bavelier et al. (2011) state that the potential social benefits of video games are a function of the specific tasks. The more challenging the judgements and the faster they must be made; the more prosocial training will be provided. They also found a causal short-term effect in their studies, where playing prosocial games led to more “helping” behaviors and playing violent games led to more “harming” behaviors. One of these scenarios was children who played more prosocial games early in a school year, would go on to demonstrate more helpful behaviors late in the school year. Buckley and Anderson (2012) agree that exposure to violent games does increase physiological arousal and aggression-related thoughts and feelings in gamers.

Bellotti et al. (2009) suggest that social interactions facilitated by online games can contribute to improving the learner’s engagement, participation, and interest. Learners would feel more satisfaction in learning with other learners. Papastergiou (2009) acknowledges that excessive video game play can lead to social introversion. Video games frequently teach social problem-solving skills, which are comprised of encoding and interpreting environmental cues, setting goals and interpreting reactions to different social behaviors.

Adachi and Willoughby (2017) state that millions of young people play online video games cooperatively with other people from different social groups on the internet, working together towards a common goal. They suggest that cooperating willingly with individuals from other social groups could enhance feelings of closeness, autonomy and dependence on other people. Barr (2018) finds that games in their research were acting as a catalyst for social interaction and collaboration, providing students with a shared interest that turned into social learning.

Online gaming environments are also notorious for their antisocial and offensive behaviors. 70% of gamers between the ages of 18 and 24 reported having been harassed online and 62% of respondents classified online harassment as a big problem (Monge & O’Brien, 2022). Bourgonjon et al. (2010) state that it is impossible to separate student experiences with video games from gender issues, as males typically play video games more often, and they play different types of video games. They address concerns with video games alienating inexperienced and female students, but not to worry as some

studies show that video games can be equally effective and motivating for both male and female students.

#### 4.4 Motivational and academic effects of video games

Bourgonjon et al. (2010) claim that there is a new generation of students fundamentally different from previous generations, mostly due to differences in media consumption patterns. Since the new generation of students never experienced a world without information and communication technology, and grew up with social media and video games, they have gained new ways of thinking, technical skills and different preferences for leaning information. They suggest that video games embody this new way of learning, and that students themselves hold the false belief that video games are irrelevant for learning.

Granic et al. (2014) suggest that motivational styles of perseverance and continuous effortful engagement are key to success for achievement in video games. They propose that video games are a good training ground for acquiring an incremental theory of intelligence, meaning intelligence is something an individual can obtain and enhance, rather than being innate to a person since birth. This would be achieved by video games providing immediate feedback for player-given inputs. Granic et al. (2014) conclude on this concept that video games really can manifest a persistent and optimistic motivational style in a person, which can then be imparted on academic work.

Jääskä and Aaltonen (2022) talk about gamification as a tool to engage students with content, motivate action and influence behavior to enhance learning, using game elements such as badges, points or leaderboards. They state that a positive impact of game-based learning on students' motivation and activation has been observed many times, and that game-based learning can simulate real-life scenarios, where students can apply what they've learned and grow their understanding of a topic.

Bavelier et al. (2011) warn that video games have been developed to a level of positive motivation that can potentially lead to video game addiction in many cases. A powerful incentive in any good game would effectively motivate players into learning more content and improving their skills. Simkova (2014) states the main aim of educational computer games is for them to be motivational and fun to play. Several empirical studies that analyzed the impact of the use of video games within academic fields such as computer science, mathematics, and science, showed positive outcomes in terms of student motivation and learning effectiveness also in relation to curricular objectives (Papastergiou, 2009). They also agree that educational games are most effective when following an "entertainment-first" approach.

Gumulak and Webber (2011) identified according to a 2006 study, that both learners and tutors found benefits in using games educationally, for example for the purpose of increasing learning motivation. Simkova (2014) lists identified video game features for an optimal learning environment as clear objectives, practical applications, monitoring of progress, personalization, infinite patience, sway, time-on-task and a strong focus on objectives. Teaching pedagogies with more social, interactive, learner-centered and learner driven curricula are more effective for learning (Squire, 2011).

Buckley and Anderson (2012) explain that one of the reasons video games can be an excellent teacher, is the fact that the learner gets to participate themselves instead of watching on the sidelines. In addition, they recognize other reasons such as the possibility for repetitive practicing which deeply engages the player and offers a feeling of competence when completing a task. Buditjahjanto et al. (2008) found that using their business game was successful in increasing the players' knowledge and life-skills.

Sun et al., (2023) found that a video game's content and gameplay help students in acquiring new knowledge and developing skills, and games that feature participating in solving problems and challenges provide students with a sense of accomplishment. Barr (2017) states that commercial video games can have a positive effect on adult learners as well, suggesting that video games can also play a positive role in higher education beyond high school.



## 5. Findings and discussion

This chapter discusses the findings based on the perspectives and patterns identified in the previous chapter and answers the research questions stemming from the goal of this study. The primary objective was to analyze both what different skills can be obtained from playing video games and what potential positive effects can arise from video game play.

The chapter begins by examining the various cognitive, social and motivational skills players can develop through gaming. By synthesizing the evidence from previous research, this section highlights how video games can enhance problem solving skills, improve attention and memory capabilities, and heighten spatial awareness. The analysis delves into specific examples and findings to illustrate these effects on different personal skills.

Finally, the positive effects of video games are explored largely in the same categories as mentioned previously. The positive aspects of video games are also explored from an educational perspective. The potential negative effects of playing video games are included to provide a fair contrast against the positive effects, and the limitations and challenges encountered in this study are expanded upon.

### 5.1 Answer to research question 1

This research reviewed various studies from the past fifteen years on the topic of video games and their impact on cognitive and social skills, motivation, and learning academic skills. Studies by Granic et al. (2014) and Bavelier et al. (2011) suggest that certain types of video games, particularly action video games, can enhance cognitive skills such as problem-solving, spatial awareness, and attention allocation. However, this is appropriately contrasted by concerns about the possible negative impacts on a person's attention span when receiving immediate feedback from bite-sized tasks.

This research highlights the dual nature of video games in social development. While studies (e.g., Granic et al., 2014; Barr, 2018) point to video games fostering teamwork, empathy, and communication skills, particularly in multiplayer cooperative (co-op) video game settings, concerns about the potential for antisocial behavior and introversion provide contrast, as noted by Monge & O'Brien (2022) and Papastergiou (2009).

The motivational aspects of video games, as discussed by Granic et al. (2014) and Simkova (2014), manifest in games having the ability to cultivate a persistent, optimistic and motivational style of conduct. However, Bavelier et al. (2011) caution against the addictive potential of video games, which poses a significant risk when players seek constant motivation.

### 5.2 Answer to research question 2

There is a consensus between researchers like Sun et al. (2023), Papastergiou (2009) and Squire (2011), that video games can have substantial positive educational potential. They can make learning more engaging and effective, particularly when they balance

educational content with gameplay, with a slight emphasis on the gameplay or entertainment.

Jääskä and Aaltonen (2022) are of the opinion that game-based learning and gamification are valuable tools for student learning because game elements like points, badges and leaderboards engage students better than without and game-based learning can simulate real-life scenarios where students can apply their knowledge.

While this review largely aligns with the prevailing view that video games have numerous positive benefits, it also highlights the need for a nuanced approach that considers potential negative impacts as well. Largely the impact of a video game, whichever side it lands on, positive or negative, is primarily determined by the content inside the game itself.

### 5.3 Limitations

The limitations of this study are largely comprised of the conciseness of the study and the reliance on existing work with varying methodologies, which could affect the generalizability of the findings. Another concern is the possibility for the study selection to be flawed, either by having used limited search words and phrases, or search methodologies, for example the use of the term “generic skills” was withdrawn and only Google Scholar was used for finding studies.

## 6. Conclusion

The goal of this study was to investigate, through a literature review, the positive effects of video game play on cognitive and social skills, as well as its impact on motivation and use in education. This study also aimed to highlight the potential negative effects that could arise from video game play.

This study has established that video games can positively influence cognitive, social, and motivational skills, and have a significant role in educational settings. The potential negative impacts consist of reduced attention span, risk of addiction, and promotion of antisocial behavior such as introversion. In this research we identified that the video game content determines the potential positive outcomes, specifically in how they are set up to stimulate the player, but how the content affects specific negative outcomes is left less comprehensive. Research methods for this topic ought to become more developed because it is difficult to control all the variables that can impact the positive or negative outcomes of video game play.

This review contributes to the existing literature by providing a balanced perspective on the impact of video games, weighing both potential positive and negative impacts. The noteworthy limitations of this research were the reliance on existing studies, which vary in methodology and scope, potentially affecting the generalizability of the findings. In addition, the study selection has the possibility of being flawed, due to opting out of using certain search terms such as: “generic skills”, and this study is concise in its presentation.

Future studies should aim to address the gaps identified here, particularly with long-term studies that track the impact of video games over extended periods. It would also be beneficial to explore more deeply the relationship between video game content and specific cognitive and social outcomes.

While this work validates the narrative that video games have a significant positive role in various aspects of learning and development in personal skills, it also acknowledges that not all questions have been conclusively answered. Further research is needed to understand the complex relationship between video game play and developmental outcomes in children, adolescents and young adults.

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