

Trends in the Research of Children and Play

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Abstract

The concept of play has long been recognized as a fundamental aspect of child development because it promotes learning and cognitive development, and is useful for social skills and motivation. Thus, it has attracted the attention of researchers in many scientific fields such as maths, physical education, artificial intelligence and rehabilitation. Due to the importance of the relationship between children and play in various fields, it is essential to examine published works on this subject. This study aims to reveal the current status and trends of the research on children and play through the Web of Science database in 2023 by descriptive survey model. 165 articles in the field of "Children and Play" were examined in depth. Content analysis technique and "Children and Play Research Publication Classification Form" developed by the researchers in a semi-structured manner were used for evaluating the data. The studies were classified under the themes of "Digital Games, Physical Games, Card Games, Traditional Games, Board Games and Mind Games" with four different types: descriptive study, experimental (applied) study, evaluation study and others. The studies included thirteen different methods and ten different data collection methods were used. It can be concluded that the studies conducted on "Children and Play" in 2023 were generally about digital games, and the relationship between play and health, behaviour, socialization and learning was the main theme.

Keywords:

Play, Content Analysis, Game, Game-Based Learning

Introduction

Educators face the challenge of integrating essential academic standards into developmentally appropriate learning experiences (Taylor & Boyer, 2020). One of the main goals is to improve children's learning behaviour through enjoyable and active participation (Behnamnia et al., 2020). The only element that enables children to learn with pleasure is learning through games (Game-Based Learning (GBL) (Câmara Olim et al., 2024; Dalton & Devitt, 2016; Wang et al., 2023). Children always have a natural tendency to play, so game-based learning creates a way for them to gain knowledge while playing (Tang et al., 2023). They also like to play because they feel that games are fun and exciting, and games force them to solve problems (Dalton & Devitt, 2016).



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The concept of play has long been recognized as a fundamental aspect of child development and has attracted the attention of children in different socio-cultural contexts (Smidt, 2013). Play is a complex phenomenon that promotes learning, cognitive development and social skills, and involves activities spontaneous, intrinsically motivated and pursued for one's own sake (Smidt, 2013). According to Petrovska et al., (2013), game is the meaning of a child's life. It is a refuge from fears, battlefields, successes and failures. Game contributes to children's mental, emotional, social and moral development by meeting their biological and psychological needs. Pellegrini and Smith (2005) emphasize that game allows children to actively explore and make sense of their environment, use objects and symbols to create imaginary worlds where they can experiment, take risks and develop problem-solving skills. It can also be defined as a tool that is pleasing and entertaining, has a positive value for the player, develops spontaneously, and is based on the player's free choice and is voluntary (Altun, 2021). In addition, games are a powerful tool for education because children acquire knowledge, enrich their experiences, and develop skills and habits (Petrovska et al., 2013; Vatamaniuk et al., 2024).

The concept of games has turned to digital games instead of traditional games (especially physical games) in the rapidly developing digital age, and improving young children's learning abilities with information technology has become a goal of childhood education (Wang et al., 2023). It is reported that digital game-based teaching with competition and reward elements is more effective than traditional teaching methods (Kim et al., 2023). It is a fact that the use of digital games has become widespread. However, overexposure to digital games is becoming increasingly concerning, especially in children diagnosed with attention deficit hyperactivity disorder (Blasco-Fontecilla et al., 2023). The fact that game addiction has serious negative effects on the lives of children and adolescents (Kaya & Pazarıkcı, 2023) shows that children's games should be emphasized more. Nowadays, game is quite diversified compared to the traditional game concept. These games are applied in many areas from mathematics (Tang et al., 2023) to physical education (Nery et al., 2023), from artificial intelligence (Wagan et al., 2023) to video games (Blasco-Fontecilla et al., 2023), from virtual reality (Li et al., 2023) to rehabilitation purposes (Ren et al., 2023), and even language learning (Meriläinen & Piispanen, 2022). The games used in these areas vary in content from numerical data to visual content, from puzzles to physical activity games, and from social skills to personality traits.

It is observed in the literature review that the subject of "Children and Play" is a focus of great interest. This field is of great importance in terms of understanding

the importance of game that contributes to children's development and developing effective strategies that will enrich children's educational processes (Dalton & Devitt, 2016; Wang et al., 2023). Research shows that children learn more effectively through play and that game-based learning increases their motivation and interest (Kim et al., 2023; Wang et al., 2023). The concept of "Children and Play" is not limited to educational environments. Game is a part of children's lives (Tang et al., 2023) and exists in various social and cultural contexts. For example, game provides interactive family time and opportunities for children to express themselves (Allen et al., 2023), develop social skills, and establish closer relationships (Cerezo et al., 2023). In addition, game offers the opportunity to interact with other components of society and develop solidarity and cooperation skills (Chaarani et al., 2022). It enables the child to develop in a healthy social way by making essential contributions to becoming a participating individual (Altun, 2021). Therefore, it is worth examining the concept of game in every field and investigating integrated applications. US officials report that game-based learning with the help of artificial intelligence-supported augmented intelligence techniques in schools to improve children's neurological development, intellectual perception and special learning abilities, and it is recommended to be integrated into curricula (Wagan et al., 2023). Kim et al., (2023) suggested the use of digital game-based training to improve children's language skills. The use of games for rehabilitation purposes is also recommended in the literature (Ferron et al., 2023).

As mentioned before, it can be observed that the studies carried out in the field of "Children and Play" are concentrated on digital games. Educators and researchers say that the Digital-GBL concept and digital games should be examined in the best possible way and integrated into many fields (Blasco-Fontecilla et al., 2023; Kim et al., 2023). Another variable where games are used in education (e.g., physical education lessons) and other fields (e.g., rehabilitation) is physical activity (Nery et al., 2023). Physical activity and game are powerful tools that provide early childhood students with an environment where they can engage in physical activity while having fun. Considering that 80% of children are not physically active enough (WHO, 2022), physical activity through games helps children develop motor skills in a motivated way, increase their mobility and acquire healthy living habits (Mercado Baez et al., 2024a). Therefore, physical activity and play are seen as powerful tools that offer children fun and educational experience. Traditional game is another field of play that supports students' learning, being physically active or socializing (Junaedah et al., 2020). Maintaining and supporting traditional games can help children strengthen their attachment to cultural heritage and the past. These games also prevent children from over-dependence on technology and

allow them to interact in natural environments and develop their social skills (UNESCO, 2019). Card and mind games contribute to children's cognitive, social and personality skills, and they are among the most frequently encountered types of games in research conducted in the field of games. These games help children develop thinking skills, strengthen problem-solving abilities, and support creative thinking skills (Rosyati et al., 2020; Scalise et al., 2020).

As can be understood, it is seen that the studies on the concepts of "Children and Play" have been carried out in many areas and have strong effects. Synthesizing knowledge in the field of "Children and Play" and guiding future studies is an important issue. In addition, it is essential that the studies on the concepts of "Children and Play" are constantly updated and researched in different areas. However, despite the universal recognition of the importance of play, the underlying mechanisms and specific benefits of play experiences remain topics of ongoing research in psychology, education, and early childhood studies. Therefore, this study aims to examine the research conducted on the concept of "Children and Play" in 2023 and indexed in Social Sciences Citation Index (SSCI -Web of Science) from a critical perspective, and to explore its various aspects, theoretical frameworks and effects on children's development and well-being.

Method

Research Model

Descriptive survey model was used for this research. Descriptive research tries to describe events, objects, entities, institutions, groups and various areas. In this way, it is possible to understand and group them, and the relationships between them are determined (Kaptan, 1998). 325 research articles on the Web of Science in 2023, identified in searches made with the keywords "Children and Play", were examined in detail within the scope of this research. In the first stage of the screening, 325 articles were scanned, but 160 of these articles were excluded because they were not based on research processes (studies on adolescents, studies in which sample situations were not clearly stated, and studies based on literature, etc.). The 165 articles were selected among those that could contain important information about children and play.

Data Collection Tools and Process

The abundance of studies in the literature may bring about some problems. In addition to the results overlapping with each other, they may also produce contradictory results. It becomes difficult for researchers to access all the studies on a subject, and there are uncertainties in understanding the findings or matching them with the content (Göktaş et al., 2012). Content or meta-analysis results based on

studies conducted on the subject under investigation provide significant convenience to researchers. An important emphasis is placed on content analysis studies, which have recently attracted the attention of many researchers in educational sciences (Çalık, Ünal, Coştu, & Karataş, 2008; Gökçek et al., 2013; Göktaş et al., 2012; Kılıç-Çakmak et al., 2013), to show the general picture. In addition, Çalık and Sözbilir (2014) stated that those who research any subject can use their time better and will not have to deal with workloads such as review and analysis. It was tried to reveal the trends of the articles published in Web of Science in 2023 on the subject of "Children and Play" and the suggestions to be presented for new studies based on this, by making content analysis.

The "Publication Classification Form" used by Göktaş et al. (2012) and developed by Sözbilir, Kutu and Yaşar (2012) was revised and used for the results obtained by content analysis. This same form was also used by Kılıç-Çakmak et al. (2013) and Selçuk et al. (2014). The "Children and Play Research Publication Classification Form", developed by the researchers in a semi-structured manner, consists of seven categories: the title of the article, the type of the article, the subject of the article, the method of the article, the data collection tools used in the article, and the suggestions featured in the articles. These dimensions were structured based on data determined during the examination of the articles. As a result, four different subcategories related to the type of the article, five different categories related to the subject of the article, thirteen different categories in the method of the article, and ten different subcategories in the category of data collection tools used in the article were determined. Ten randomly selected articles from 325 articles on the subject of Children and Play determined in the first stage were classified together. In these classifications, the researchers' working method was confirmed by reaching a consensus on the codes and explanations formed in the themes determined as digital games, physical games, traditional games, mind games and card games. Then, the researchers randomly selected five articles and classified them independently. These articles were discussed, and disagreements were resolved to increase reliability.

Data Analysis

The content analysis technique was used in this study to evaluate the data. Randomly selected articles published in Web of Science with the subject "Children and Play" in 2023 were classified and analysed under five basic categories. The purpose of content analysis is to reach concepts and relationships that can explain the data. The data summarized and interpreted in the descriptive analysis are subjected to a deeper process in content analysis, and concepts and themes that cannot be noticed with the descriptive approach

can be discovered as a result of this analysis. The basic process of content analysis is to bring together similar data within the framework of concepts and themes and organize and interpret them in a way that the reader can understand (Yıldırım and Şimşek, 2006). Falkingham and Reeves (1998) also stated that content analysis is a new method used to evaluate publication masses. In the process of analysing and interpreting the classified articles on the subject of Children and Play, attention was paid to the stages of naming, category development, ensuring validity and reliability, calculating frequencies and interpretation. During the naming and category development phase of the content analysis, each of articles was carefully examined and classified under categories such as discipline, subject, method, data collection tools, sample and data analysis methods. Care was taken to analyse the evaluated articles based on the consensus of the researchers to ensure validity and reliability. Finally, the frequency and percentages of repetition of the analysed articles based on the determined categories were calculated, and an attempt was made to interpret them based on this information. The articles were analysed in terms of the article's discipline area, subject, method, data collection tools, sample and data analysis methods. During these processes, the researchers made a general evaluation of the article. Firstly, data was entered for the general information and the title of the article. Then, the subject and method of the article were determined, and the type of data collection tool used in the article and the methods used when analysing the data were determined. In the articles examined, especially when determining the subject of the article, attention was paid to the adaptation process matching the literature and new studies for the trends of the research on "Children and Play", which is the main point of the study, and in this process, the subjects of the 165 studies were examined in five different categories. After the matching coding processes based on categories, attention was paid to the consensus of the researchers in the articles.

Findings

The studies examined in this study were classified under the themes of "Digital Games, Physical Games, Card Games, Traditional Games, Board Games and Mind Games". The theme with the most studies was gathered under the theme of "Digital Game" and was analysed under a total of seventy main codes under the sub-themes of "Game and Learning, Play and Socialization, Play and Behaviour and Play and Health". In the study, the dimension with the least themes and codes was the "Card Games". Since coding was not done at a level that could be divided into subcategories under this theme, analyses were made without dividing it into subthemes. A study containing six codes on the theme of "Card Games"

was analysed. Analyses for each theme, including sub-themes, are given below.

Table 1.
Themes and sub-themes

Theme	Sub-theme	f	%
Digital Game	Game-Based Learning	89	36.18
	Play and Behaviour	63	26.61
	Play and Health	51	20.73
	Play and Attention	43	17.48
Physical Game	Game-Based Learning	5	19.23
	Play and Socialization	15	57.23
	Play and Motor Movement	6	23.08
Traditional Game	Mathematics	1	12.5
	Academic Success	1	12.5
	Physical Education	1	12.5
	Pleasure	1	12.5
	Cognitive Development	1	12.5
	Entertainment	1	12.5
	Strategy	1	12.5
	Parents	1	12.5
Mind Game	Mathematics	2	15.38
	Cognitive Thinking	2	15.38
	Competition	1	7.69
	Cooperation	1	7.69
	Pleasure	1	7.69
	Anxiety	1	7.69
	Academic Success	1	7.69
	Social Cognition	1	7.69
	Strategy	1	7.69
	Mental Health	1	7.69
	Memory	1	7.69
Card Game	Socio-Economic Awareness	1	16.67
	Decision Making	1	16.67
	Sustainability	1	16.67
	Eco-friendly	1	16.67
	Physical Activity	1	16.67
	Transportation to School	1	16.67

The main category in which most studies were thematized based on common codes was the "Digital Game", as seen in Table 1. The study, which included seventy codes under this theme, was analysed by dividing it into four sub-themes. Most studies were included in the "Game-based Learning" sub-theme. After the "Digital Games" theme, the theme with the most coding was the "Physical Game" theme, followed by the "Mind Games" and "Card Games" themes, respectively.

Table 2 shows the studies conducted in the field of "Children and Play", research on the sub-theme of "Game-based Learning" under the theme of "Digital Games". According to the table, it is noticed that the subject of "social skills" has the highest frequency, and "reading-writing" and "mathematics" skills are among the most intensively studied subjects in the context of digital game-based learning. On the other hand, it can be said that the fields of "learning transfer", "artificial intelligence" and "multiple perception" have lower frequencies.

Table 2.*Game-based learning sub-dimension and codes of digital game theme*

Theme	Sub-dimensions	Codes	f	%
Digital Game	Game-based Learning	Social Skill	15	17.05
		Reading-Writing	10	11.36
		Mathematics	9	10.23
		Cognitive Ability	8	9.09
		Motor Skill	8	9.09
		Emotional Skill	7	7.95
		Academic Performance	7	7.95
		Language Learning	6	6.82
		Creativity	6	6.82
		Speaking Skills	6	6.82
		Learning Transfer	3	3.41
		Artificial Intelligence	2	2.27
		Multiple Perception	1	1.14

Table 3.*Play and behaviour sub-dimension and codes of digital game theme*

Theme	Sub-dimensions	Codes	f	%
Digital Game	Play and Behaviour	Parents	15	12.82
		Aggression	7	8.97
		Morality	5	6.41
		Abuse	3	3.85
		Murder	3	3.85
		Dilemma	3	3.85
		Cooperation	2	2.56
		Pro-social	2	2.56
		internalization	2	2.56
		exclusion	1	1.28
		Social Norm	1	1.28
		Child Marriage	1	1.28
		Culture	1	1.28
		Social Fragility	1	1.28
		Sharing Behaviour	1	1.28
		Social Anxiety	1	1.28
		Gambling	1	1.28
		Racism	1	1.28
		Empathy	1	1.28
		Self-sufficiency	1	1.28
		Social Relationship	1	1.28
		Sadness	1	1.28
		Anger	1	1.28
		Disdain	1	1.28
		Competition	1	1.28
		Attitude	1	1.28
		Self Esteem	1	1.28
		Generosity	1	1.28
		Decision Making	1	1.28
		Behavioural Response	1	1.28
Empathy	1	1.28		
Narcissism	1	1.28		
Externalization	1	1.28		
Self-Regulation	1	1.28		

The most studied topic of the "Play and Behaviour" sub-theme under the "Digital Game" theme is "parents" (see Table 3). "Aggression" and "morality" are the other most studied topics.

Table 4.
Play and health sub-dimension and codes of digital game theme

Theme	Sub-dimensions	Codes	f	%
Digital game	Play and Health	Rehabilitation	10	19.61
		Mental Health	8	15.69
		Physical activity	7	13.73
		Covid-19	5	9.80
		Stress	4	7.84
		Well-being	4	7.84
		Hyperactivity	3	5.88
		Anxiety	3	5.88
		Depression	2	3.92
		Obesity	2	3.92
		Agility	1	1.96
		Balance	1	1.96
		Chronic Disorder	1	1.96
		Obsessive Compulsive	1	1.96
		Cardiovascular Health	1	1.96
Phobia Treatment	1	1.96		
Insomnia	1	1.96		
Negative Emotions	1	1.96		

Another dimension under the "Digital Game" theme is the "Play and Health" sub-theme (see Table 4). While the most studied subject under this theme is "rehabilitation", "mental health" and "physical activity" subjects are also among the most studied subjects.

Table 5.
Play and attention sub-dimension and codes of digital game theme

Theme	Sub-dimensions	Codes	f	%
Digital Game	Play and Attention	Digital Addiction	23	53.49
		Attention deficit	7	16.28
		Gaming Disorder	7	16.28
		Screen Time	5	11.63
		Reaction time	1	2.33

Table 5 shows the codes and frequencies of the "Play and Attention" sub-theme of the "Digital Game" theme. According to the table, it can be seen that there are many studies conducted in the field of "digital addiction". The codes "attention deficit" and "gaming disorder" are repeated at the same level in the studies. The "Reaction time" code is the least frequent area of this sub-theme.

Table 6.
Game-based learning sub-dimension and codes of physical play theme

Theme	Sub-dimensions	Codes	f	%
Physical game	Game-based Learning	Cognitive Ability	2	40
		Emotional Skill	1	20
		Sports Teaching	1	20
		Learning Ability	1	20

Another main theme that emerges when the studies are examined is "Physical Game". Table 6 shows the codes of the "Game-based Learning" sub-theme. The topic of "cognitive skill" has the highest frequency. On the other hand, "emotional skills", "sports teaching" and "learning skills" were repeated at the same level.

Table 7.
Play and socialization sub-dimension and codes of physical game theme

Theme	Sub-dimensions	Codes	f	%
Physical game	Play and Socialization	Social Harmony	4	25
		Competition	2	12.5
		Exclusion	1	6.25
		Self-sufficiency	1	6.25
		Coalescence	1	6.25
		Prejudice	1	6.25
		Social Anxiety	1	6.25
		Entertainment	1	6.25
		Cooperation	1	6.25
		Depression	1	6.25
		Life quality	1	6.25

Another sub-dimension of the "Physical Game" theme is the "Play and Socialization" sub-theme (see Table 7). The code with the highest frequency in this theme is "social harmony", while the code "Competition" is another code with the highest frequency.

Table 8.
Play and motor movement sub-dimension and codes of physical game theme

Theme	Sub-dimensions	Codes	f	%
Physical game	Play and Motor Movement	Movement	4	66.67
		Coordination	1	16.67
		Motor Skills	1	16.67

The code with the highest frequency is "movement" among the codes formed in the "Play and Motor Movement" sub-theme of the "Physical Game" theme. The "coordination" and "motor skill" codes are repeated at the same level.

One of the themes that emerged in the research is the "Traditional Game" theme (see Table 9). Since the studies under this theme are not studied enough to be divided into subcategories, the analyses are carried out without dividing them into subthemes. Accordingly, eight codes are formed under this theme, and these codes are studied at the same level.

Table 9.*Traditional game theme and its codes*

Theme	Codes	f	%
Traditional Game	Mathematics	1	12.5
	Academic Success	1	12.5
	Physical education	1	12.5
	Pleasure	1	12.5
	Cognitive Development	1	12.5
	Entertainment	1	12.5
	Strategy	1	12.5
	Parents	1	12.5

Table 10.*Mind game theme and its codes*

Theme	Codes	f	%
Mind Game	Mathematics	2	15.38
	Cognitive Thinking	2	15.38
	Competition	1	7.69
	Cooperation	1	7.69
	Pleasure	1	7.69
	Anxiety	1	7.69
	Academic Success	1	7.69
	Social Cognition	1	7.69
	Strategy	1	7.69
	Mental Health	1	7.69
	Memory	1	7.69

One of the themes that emerged in the research is the "Mind Game" theme (see Table 10). When the studies are examined, it is observed that the studies are not repeated enough to be divided into sub-themes. "Mathematics" and "cognitive thinking" codes are the subjects with the highest frequency.

Table 11.*Card games and its codes*

Theme	Codes	f	%
Card Game	Socio-Economic Awareness	1	16.67
	Decision Making	1	16.67
	Sustainability	1	16.67
	Eco-friendly	1	16.67
	Physical Activity	1	16.67
	Transportation to School	1	16.67

The theme of "Card Games" is another theme that emerged in the research (see Table 11). Since the studies examined under this theme were not repeated enough, sub-themes did not emerge. A total of six codes were formed, and these codes were repeated at the same level.

Table 12.*Types of articles examined*

Type of article	f	%
Descriptive Study	77	47.83
Experimental (Applied) Study	68	42.24
Evaluation Study	14	8.7
Other	2	1.24
Total	165	100

The types of articles scanned are shown in Table 12. The most research was carried out as "Descriptive Study" and "Experimental (Applied) Study". The least number of studies were carried out in the "Other" study type.

Table 13.*The method of articles examined*

Method	f	%
Full experimental	37	22.42
Semi-experimental	32	19.39
Correlational	31	18.79
Descriptive	18	10.91
Scanning	13	7.88
Comparative	10	6.06
Literature Compilation	6	3.64
Phenomenon Science	4	2.42
Triangulation (quantitative+qualitative)	4	2.42
Case study	3	1.82
Exploratory	3	1.82
Meta Analysis	3	1.82
Systematic Analysis	1	0.61
Total	165	100

The results regarding the method used in the examined studies are given in Table 13. Accordingly, studies conducted using the "Full Experimental", "Semi-Experimental" and "Correlational" methods are quite close to each other and are seen as the most used methods. The least used one is the "Systematic Analysis" method.

Table 14.*Data collection tools of articles examined*

Data Collection Tools	f	%
(Personality Tests) Likert	70	42.68
Other	39	23.78
(Achievement Tests) Other	20	12.20
(Interview) Semi-structured	16	9.76
(Interview) Structured	7	4.27
(Achievement Tests) Multiple choice	7	4.27
(Interview) Unstructured	2	1.22
(Personality Tests) Multiple choice	2	1.22
(Observation) Participatory	1	0.61
(Achievement Tests) Open Ended	1	0.61
Total	165	100

The data collection tools used in the studies examined are given in Table 14. Accordingly, it can be said that the most used data collection tools are "(Personality Tests) Likert" scales. On the other hand, the least used ones are "(Observation) Participatory" and "(Achievement Tests) Open-Ended".

Discussion

165 articles were examined in depth in this study, and it was observed that the studies were grouped under five different main themes (see Table 1). These themes are Digital Games, Physical Games, Traditional Games, Mind Games and Card Games. Furthermore, the studies are classified under four different types: descriptive study, experimental (applied) study, evaluation study and others (see Table 12). The research includes thirteen different methods (see Table 13), and ten different data collection methods were used (see Table 14). These results enable us to describe the framework of research in the field of "Children and Play".

It is observed that most of the studies are on the Digital Game theme. Four sub-themes were created from the data obtained: Game-based Learning, Play and Behaviour, Play and Health, and Play and Attention. The Game-based Learning sub-theme is the most concentrated theme. Technology becoming a part of our daily lives causes children to be introduced to digital games from an early age (Fang et al., 2021; Şenol et al., 2023; Tang et al., 2023). Children's addiction to digital games has also increased with the COVID-19 pandemic (Şenol et al., 2023). These situations explain why many researchers in the field of "Children and Play" deal with digital games. In this context, the concept of digital games can easily be described as the area in which the most intense studies in the field of games are carried out, as a result of the studies examined (Blasco-Fontecilla et al., 2023; Kim et al., 2023; Şenol et al., 2023; Wang et al., 2023).

The Game-based Learning sub-theme has directed researchers to reveal the relationship between digital games and learning. When the Game-based learning sub-theme is examined, the areas where most studies are done are social skills (Cerezo et al., 2023; Lee & Hsu, 2023; Mills et al., 2023) and reading-writing skills (Benton et al., 2023; Li et al., 2023; Tang et al., 2023). These studies focus on children with Attention Deficit and Hyperactivity Disorder (ADHD) (Cerezo et al., 2023), social skill development of children with autism (Lee & Hsu, 2023), and positive social behaviour skills (García-Gil et al., 2023). Researchers suggest that since today's world is the new digital world, we need to look for a new solution in the field of education that will promote children's learning autonomy, reduce the teaching burden of parents, and also connect it to school education (Tang et al., 2023). According to reports (Pew Research Center, 2021; Şenol et al., 2023; The Economist, 2021), there was a decline in children's learning processes during the Covid-19 period, and children whose parents had lower education lost their learning opportunities by at least 50%. Therefore, in similar situations, educators suggest that new teaching materials should be prepared for children. This may have enabled the concept of digital games

to focus on the learning and teaching process, that is, GBL.

The Game and Behaviour sub-theme is another sub-theme of Digital Game. How digital games affect children's behaviour has been the subject of many studies. Children's behaviours such as racism (Yang, 2023), aggression (Bonan et al., 2023), morality and dilemma (Grunberg, 2023) were examined through digital games. At this point, parent code is the most repeated. There are studies on how children's behaviour, while playing digital games, is affected by various parental factors as well as family influence and role. The dilemmas that children experience while playing games and what moral behaviour they will show in these dilemmas (e.g., murder, harassment, police-terrorist) are frequently encountered in studies (Luck, 2023; Ulbricht, 2023). The dictator game (Bonan et al., 2023), one of the most commonly played games when measuring social relations and behaviours, has been used in many studies. Finally, the impact of video games containing violence and aggression on children's aggressive behaviour in real life is also considered an important issue by researchers. Studies conducted by Chen et al. (2023) provide clues to understand the effects of such games on children's behaviour.

Another sub-theme under Digital Game is the Play and Health sub-theme. There are studies on the relationship between digital games and health under this sub-theme. Although physical games came to mind when the concept of games was mentioned in the past, today the concept of games has evolved into digital. This situation creates some health problems for children. When the literature is examined, in the play and health sub-theme, rehabilitation of people with digital gaming disorder (Almeida et al., 2023; Szász-Janocha et al., 2023), digital game effects on mental health (García-Gil et al., 2023; Raju et al., 2023) and its effect on physical activity (Johansen et al., 2023; Kilic & Yaman, 2023) are among the most recurring topics. When the situation of children regarding digital game addiction is examined, it is observed that it creates negative effects in terms of social behaviour and mental health. It is stated that game addiction is at a higher level, especially among boys (García-Gil et al., 2023). Another factor is that playing digital games causes children not to do enough physical activity (Männikkö et al., 2015; Mutlu et al., 2023). Children's spending too much time in front of digital screens not only causes them to remain physically inactive but also causes some postural health problems (Mutlu et al., 2023). However, various sports games (e.g., football, tennis, martial arts) and other activities (e.g., recreational dancing) simulated with VR (Virtual Reality) encourage physical activity and improve physical performance (Almeida et al., 2023; Lu et al., 2023; Moller et al., 2023).

The last sub-theme under the digital game theme is Play and Attention. Digital game addiction under this sub-theme constitutes the most studied code (Alexandridis et al., 2023; Kim et al., 2023; Yang et al., 2023). Attention deficit (Barkin et al., 2023; Cerezo et al., 2023) and Gaming Disorder (GD) (Blasco-Fontecilla et al., 2023; Roza et al., 2023) are also codes that occur under this theme. Overuse of video games is becoming increasingly concerning, especially in children diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) (Blasco-Fontecilla et al., 2023). Psychiatric conditions such as ADHD, as well as positive and negative parenting styles, have also been associated with play disorders in children and adolescents (Chung et al., 2023). This shows that game addiction is affected not only by the child himself but also by the people around him. Furthermore, research shows that gaming intensity is a determinant of problematic gaming (Alexandridis et al., 2023; van der Neut et al., 2023). In other words, game addiction in children also leads to game disorder. Therefore, there is an increasing need for scientific studies and treatment methods regarding digital game addiction. It should not be forgotten that research in this field is an essential issue for public health and can play a critical role in the development of effective intervention methods.

Another theme that researchers study most in the field of "Children and Play" is the theme of physical games. In recent years, researchers have stated that physical activity participation has decreased with the intensive use of technological tools such as mobile phones, computers and tablets (Mei et al., 2023; Xiao et al., 2022). Since play is inherently a funny activity, it can be said to have a catalytic effect in increasing physical activity participation (Denford et al., 2020; Nikolajsen et al., 2021). When physical activity and games are combined, they increase physical activity motivation (Williams & Ayres, 2020). Physical games are used to increase children's physical activity levels and obtain various benefits as a result of participation. When the literature on children and the field of play is examined, it is seen that physical activity games are classified as learning activities, socialization and motor movement themes (Tables 6, 7, 8). The theme of game-based learning focuses on the cognitive development and studying the memory of children with autism spectrum disorder (ASD) (Zhang et al., 2023), the cognitive functions and anxiety levels of children with developmental disabilities (Nekar et al., 2023), the emotional skills and coordination skills of children with ASD (Huili et al., 2023), and sports teaching in physical education and sports classes (Diekhoff & Greve, 2023). In the theme of play and socialization, children's quality of life (Cavusoglu et al., 2023), social adaptation (Karaali & Ozcan, 2023), reducing anxiety (Nekar et al., 2023) and behavioural response to exclusion (Quadrelli et al., 2023) are discussed. In the

theme of play and motor movement, studies have been carried out on increasing children's physical activity level (Mercado Baez et al., 2024b) and motor coordination training (Iorga et al., 2023). Orhan (2019) stated that the development of children's thinking and perception performance is related to movement. In previous studies, researchers have emphasized the potential of physical games to facilitate learning processes (Tomlinson & Masuhara, 2009; Tomporowski et al., 2015). In addition, games allow the development of motor skills (Rice et al., 2025) and also increase emotional skills and social interaction (Karaali & Ozcan, 2023). Because of these effects, games have been used in intervention programs for disadvantaged and developing children to socialize and adapt to society (Tomporowski et al., 2015). Literature in the field of children and play supports the themes of game-based learning, play and socialization, and play and motor movement that emerged in our study results.

In studies in the field of children and play, traditional game has been considered the other theme (Table 9). According to the literature, the effects of traditional games on the enjoyment of physical education lessons, academic success, cognitive development, and motor skills are discussed (Eather et al., 2024; Hawani et al., 2023; Kamaruddin et al., 2023). For example, children's cardiovascular and respiratory systems, physical self-efficacy and academic achievement have improved in traditional games with a focused program (Eather et al., 2024). Another study focusing on early language development and cognitive development found that traditional games promote language development and stimulate cognitive development in children during childhood (Rahngang et al., 2023). Traditional games provide a fun, educational and cultural learning opportunity. It also develops children's values such as friendship, responsibility and cooperation (Zainuddin et al., 2020). However, it is stated in the literature that interest in traditional games is gradually decreasing (Hawani et al., 2023). Our study results also support this conclusion. Factors such as the lack of playgrounds and the fact that children find technological tools more attractive have an impact on the interest in traditional games (Putra & Hasanah, 2018). It can be said that these reasons are effective in researchers' preference to use digital games rather than traditional games in intervention practices.

Studies in the field of children and play were reviewed, and the theme of mind games was created (Table 10). Subjects such as cooperation, cognitive thinking, mathematics education, and mental health were studied under this theme (Au-Yeung et al., 2023; Jiang et al., 2023; Voutsina & Stott, 2023). According to the literature, positive results were observed in the social behaviour, executive functions, and attention control of students who played mind games (Barnes

et al., 2021; Jones & Imm, 2016). A large-scale study conducted by the International Rescue Committee (IRC) and NYU Global Ties for Children (NYU-TIES) indicated that an intervention program that included mind games improved children's learning outcomes (Weiss-Yagoda et al., 2021). In another study, students who played mind games self-reported improvements in their collaborative work, communication, and critical thinking skills (Lawlor, 2015). When previous and current studies on mind games are examined, it can be said that they address topics such as increasing students' cooperation and improving their social behaviour and academic skills.

Another theme that emerged in children and play studies is Card Games (Table 11). Researchers focused on behavioural problems and school failure in early childhood children (Djamnezhad et al., 2023), literacy, mathematics performance and active learning (Conica et al., 2023), physical activity (Lindqvist et al., 2023) and vocabulary (Masters et al., 2023). Conica et al. (2023) state that fun activities offered through card games, but not solely focused on active learning, can contribute to the school performance of children in early childhood. In addition, results obtained from a smaller study group showed that presenting structured games through flashcards to children aged 8-36 months predicted their vocabulary (Kartushina et al., 2022). When current and previous studies are examined, it can be said that card games are used as a tool together with intervention programs in the development of children's educational and social skills.

When the content analysis of the types of articles examined, it is seen that descriptive studies (47.83%) and experimental (applied) studies (42.24%) are predominantly conducted (Table 12). As a result of the systematic review of the experimental studies on serious games and computer games between 2004-2009, it was determined that 54% of the studies were experimental and 33% were descriptive studies (Connolly et al., 2012). In another study in which the systematic review of the studies focusing on digital game participation was made, it was reported that descriptive and experimental studies were frequently used (Boyle et al., 2012). Hainey et al. (2016) conducted a systematic analysis of the studies focusing on computer games at the primary school level between 2000-2014. It was stated that experimental and descriptive studies were used intensively in the study. Those experimental studies were conducted using games as tools regarding learning and behavioural outcomes, including cognitive, social, physical and affective outcomes. According to systematic analyses conducted in the field of games, it is seen that studies focus more on quantitative studies, while qualitative studies are used less. Selçuk et al. (2014) attributed this situation in systematic reviews to the fact that

quantitative studies can reach the study group quickly, and that data can be collected and analysed in a shorter time.

When we examine the studies conducted in the field of children and play in terms of method, it is seen that experimental studies (22.42%) are conducted the most, followed by quasi-experimental (19.39%), correlational (18.79%) and descriptive (10.91%) studies (Table 13). Petri and Gresse von Wangenheim (2017) emphasized that experimental and quasi-experimental studies are used the most in their systematic review of games for computer education. Marker et al. (2018) and Connolly et al. (2012) determined in their systematic review that descriptive and experimental studies are predominantly used. Experimental studies are frequently used in educational studies, especially to measure the results of changes made in the learning process, such as examining the effect of a new teaching method (Dugard & Todman, 1995). When the literature is examined, we can support this statement by stating that experimental studies involving different types of games are widely used to evaluate changes in children's learning processes, motor skills and social behaviours.

When the content analysis of the data collection tools in the studies examined in the field of children and play is made, it is seen that surveys (42.68%), achievement tests (12.20%) and semi-structured interviews (9.76%) are preferred (Table 14). Similarly, researchers (Herodotou, 2018; Marker et al., 2018) emphasized that data is collected using the survey method in descriptive studies. In another content analysis study, it was found that surveys, interviews and achievement tests are the most used data collection tools (Selçuk et al., 2014). When systematic review studies in our study and in different fields are evaluated, it is determined that data is collected using scale and survey methods, especially in descriptive studies. The reason for this situation can be explained as the fact that scale and survey-based studies are more accessible and economical compared to other methods (Baş, 2005).

Recommendations

Based on the findings of this study, it is recommended that future research prioritize a more balanced investigation of all types of play, especially traditional games, card games, and mind games, which were notably underrepresented in the current literature. These types of games have demonstrated potential in enhancing children's cognitive, emotional, and social skills, yet remain underexplored compared to digital games. Additionally, while digital game-based learning has been extensively studied, there is a need for longitudinal studies to understand the long-term impacts of digital game exposure—both positive and negative—on children's mental health, attention, and behavioral patterns.

Researchers are also encouraged to adopt interdisciplinary approaches and employ mixed-method research designs to provide richer and more nuanced insights into the multifaceted nature of children's play. Comparative studies across different cultural and educational contexts may further help identify universal versus context-specific benefits of play. Finally, educators and policymakers should be informed by this growing body of research to integrate appropriate game-based learning strategies into curricula that not only support academic development but also promote children's physical activity, emotional regulation, and social interaction.

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