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A systematic literature review of playful learning in primary education: teachers' pedagogical activities

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ABSTRACT

The study conducts a Systematic Literature Review of empirical research spanning from 2014 to 2023, examining teachers' pedagogical activities and their role in playful learning within primary education, with a focus on the use of pedagogical methods. Twenty-one relevant papers were selected using a four-phase PRISMA framework. The analysis reveals four distinct phases of pedagogical activities: planning, orientation, playing, and elaboration. Teachers play an important role, being responsible for planning activities, facilitating and supervising students' learning, sparking their intellectual curiosity, and assessing their progress. Furthermore, the study highlights that the teacher can also become a co-player. The findings are discussed, contributing greatly to the understanding of playful learning processes in primary education and helping teachers develop effective playful learning pedagogical activities, thereby fostering a playful learning environment.

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Playful learning; pedagogical activities; teachers' role; systematic literature review

Introduction

Playful learning comprises mind-on, hands-on, and body-on activities, which can be either a technology-enriched game or play process, or a game or play without technological affordances. It is characterised by joyful, meaningful, iterative, socially interactive, and actively engaging experiences, focused on fostering cognitive, social, emotional, creative, and physical skills. It can be regarded as an important pedagogical approach to support academic outcomes, and new literacies. Playful learning has found a place in schools, and playful pedagogy can be highly effective (Kangas, 2010; Jay and Knaus 2018; Parker, Thomsen, and Berry 2022).

The integration of playful learning pedagogy into educational practice can often be perceived as challenging by teachers. Various factors contribute to this, including a common misconception that play is trivial, which has discouraged many primary school teachers from adopting it as a pedagogical approach (Jay and Knaus 2018). For example, there is a belief that learning through play is more appropriate for preschool settings and incompatible with primary education. Even though playful learning is widely acknowledged as a valuable pedagogical practice within schools, primary classrooms frequently lack both the opportunities to incorporate play-based learning activities and the necessary resources to support such play (Jay and Knaus 2018; Parker, Thomsen, and Berry 2022).

There are several available Systematic Literature Reviews (SRL) on playful learning. For instance, Buldu (2023) reviewed and summarised international studies conducted between 2012 and 2022 on early childhood teachers' views on playful learning. Sousa et al. (2023) conducted an SLR aimed at

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systematizing the pedagogical role of playful games, their effectiveness, and the promoted learning outcomes. Kangas (2010) proposed a pedagogical model of creative and playful learning, suggesting that teaching activities should include pedagogical framing, organisation, implementation, facilitation, and assessment. Furthermore, Kangas et al. (2017) discussed the pedagogical foundations of the teacher's role and playful activities through a systematic literature review, aiming to understand how pedagogy, particularly the teacher's pedagogical activities, are described in empirical studies.

Playful learning pedagogy is a developing field that requires deeper exploration. Johnstone (2022) identified that the successful implementation of playful learning pedagogy within primary classrooms includes recognising and understanding the value of playful learning pedagogy for all students, as well as ensuring that teachers feel supported and are given the freedom to experiment. It is noted that playful pedagogy in the primary classroom includes opportunities for dramatic play and play-based strategies (Jay and Knaus 2018). Many playful pedagogical approaches described in the research literature can broadly be defined as types of playful learning, which include digital game-based learning, traditional games, role play, etc. (Whitton 2018). Parker, Thomsen, and Berry (2022) suggested that the pedagogy of learning through play is also referred to as play-based learning, playful learning, and purposeful play. This study will not attempt to distinguish between these terms. Instead, this study defines playful pedagogy as a series of playful characteristics that can be integrated into instructional design to enhance the learning and collaboration experience (Tang and Vezzani 2017).

This study aims to understand how pedagogy and teachers' roles are described in playful learning activities in primary education using the methodology of an SLR over the past 10 years (2014–2023). A method for educators to understand how to integrate play into school settings needs to be developed (Mardell, Lynneth Solis, and Bray 2019). Kangas et al. (2017) recommend that it is essential to describe teachers' activities more precisely because teachers are always responsible for delivering high-quality pedagogy, particularly in understanding how and why to integrate games into teaching and the curriculum framework. In this context, the planning, orientation, playing, and elaboration phases of teachers' playful activities are important. The research questions are:

What are the teachers' pedagogical activities in the playful learning process in primary school?

What is the teacher's role during the playful learning process?

Playful learning

Numerous studies have identified a closely coupled relationship between play and learning. Zosh et al. (2018) regarded play as a spectrum that retains the essence of play, where children experience joy and have agency in their play contexts, while also recognising that play may take many different forms and serve many different functions. Play is seen as an important process that can aid learning in a variety of ways. It is one of the natural strengths of childhood through which children acquire and practice critical language, cognitive, and socio-cognitive abilities (Rice 2009; Borsos 2018; Ilgaz et al. 2018; Kangas et al. 2022).

Playful learning refers to various learning activities that are based on play, playfulness, or gameplay, emphasising a playful mindset (Kangas, 2010; Heljakka 2024). Johnston, Wildy, and Shand (2023) argued that playful learning occurs when students develop new skills and knowledge while simultaneously experiencing the feeling and attitude of playfulness. This state of play is characterised as creative, exploratory, hands-on, fun, and learner-centered.

In formal school settings, influential school networks are embedding play and playfulness into their curricular frameworks (Mardell, Lynneth Solis, and Bray 2019). Learning through play serves as a tool to challenge the traditional model of education, enabling children to construct knowledge in an interactive and participatory manner (Suzana, de Oliveira, and de Oliveira 2017). Playful learning is an inclusive approach that provides all students with opportunities to actively direct and engage in their learning through play and exploration. The teacher's scaffolding plays a crucial role in supporting students' playful learning process (Ollonen and Kangas 2024), helping to structure

students' processes of inquiry, curiosity, and reflection (Johnstone 2022). Therefore, a study on teachers' pedagogical activities is essential.

Playful learning pedagogy

Pedagogy is a discipline that deals with the theory, methods, and practices of teaching (Kobylak and Kalyn 2017). Play, as a pedagogical approach, has proven to be a sound method that demonstrates diversity in learning and meets the curriculum's learning outcomes (Kangas, 2010; Kobylak and Kalyn 2017). Playful learning involves teaching curricular objectives through pedagogy that embraces active, engaged, meaningful, and interactive learning (Ilgaz et al. 2018).

The playful learning pedagogy is also recognised as a playful learning approach or structure. Zosh et al. (2018) proposed playful direct instruction as a format that incorporates subtle playful elements to captivate children's attention. Pyle and Danniels (2017) echoed this, describing playful learning as a teaching approach that blends child-directed play with adult guidance and scaffolded learning objectives, fulfilling its inherent purpose: to facilitate learning through play. Playful learning approaches can serve as an effective teaching and learning mode, rooted in constructivist and socio-culturally oriented learning theories, which posit that individuals shape their worldviews based on personal experiences and interpretations (Rice 2009), and that learning is always socially shared and contextual (Kangas, 2010). Walsh et al. (2011) collaborated with teachers to devise a novel pedagogical concept known as 'playful structure,' aimed at initiating and sustaining a playful atmosphere throughout the child's entire learning journey. This is achieved by adopting an outgoing, energetic, and active presentation style, maintaining a lighthearted tone, and allowing for spontaneity. This approach acknowledges play as a valuable learning mode in itself while also encouraging the integration of playfulness into every activity. Parker and Thomsen (2019) illustrated how learning through play is an integrated approach that shares similarities with eight other approaches – active learning, cooperative and collaborative learning, experiential learning, guided discovery learning, inquiry-based learning, problem-based learning, project-based learning, and Montessori education. They provide evidence of how these approaches combine child-directed, teacher-guided, and teacher-directed learning, aligning with the hallmarks of playful learning experiences: meaningfulness, social interaction, active engagement, iteration, and joy.

There are clear pedagogical aims for playful learning: developing pedagogy that encourages playful learning for students could improve their academic results and effectively support their development (Nolan and Paatsch 2018; Johnston, Wildy, and Shand 2023). For example, learning through play in science, when carefully planned and effectively used as a pedagogical tool, can enhance the teaching and learning process, enabling children to develop their knowledge and understanding of the world (Suzana, de Oliveira, and de Oliveira 2017). Whitton (2018) emphasises that pedagogy and learning techniques encouraging play – encompassing Role Play, Making, Performance, Problem Solving, and Quests – exhibit three key features highlighting the pedagogical rationale for using playful approaches to learning: a constructive perspective on failure, promoting engaging immersion, and cultivating intrinsic motivation for learning. The playful learning journey incorporates diverse activities, such as incorporating playful elements, gamification strategies, and digital tools in a playful context (Kangas 2010). Playful learning with artificial intelligence (AI) and AI-based digital tools represents a new way to approach playful learning and the creative use of technologies (Kangas and Heljakka 2024), influencing pedagogy and educational practices. Colby notes that the majority of research on playful pedagogy revolves around teacher-led case studies, highlighting the pedagogical potential in both digital games and non-digital games, such as card and board games.

Parker, Thomsen, and Berry (2022) concur that the efficacy of playful learning is underpinned by crucial enabling factors, such as facilitation and design. Framing challenges in playful ways, like using problems or quests, is also pivotal in bolstering motivation (Whitton 2018). Effective implementation of playful pedagogic activities entails planning for desired learning outcomes, nurturing the holistic

development of the child, enhancing academic performance, cognitive and physical skills, participation, and knowledge creation abilities, while also motivating and augmenting student engagement (Kennedy 2006; Rice 2009; Andreopoulou and Moustakas 2019; Parker, Thomsen, and Berry 2022). Silva, Cunha-Saraiva, and Silvestre (2023) lend further credence to the implementation of playful pedagogy within schools, emphasising the roles and responsibilities of both children and teachers, directly enriching the learning process.

An appropriate and situated playful learning pedagogy is crucial for the effective implementation of playful learning. The successful implementation of playful pedagogical learning requires the teacher to identify and define clear learning objectives, prepare a setting that allows for playful exploration of the learning material, assess children to determine the amount and type of support they need, and provide subtle yet impactful guidance in engaging learning environments (Ilgaz et al. 2018). Kangas et al. (2017) emphasise that the teacher's pedagogical activities are evident in various learning processes: in planning, orientation, during the play-based activities, and after the play sessions. Pedagogical activities relate to planning the learning, participating in the play session, and integrating playful learning into teaching after the play session.

Teachers' role

Playful pedagogy concerns teachers' play practices and their perceptions about their roles in children's play and learning, most of which are structured, teacher-led, and learner-oriented, with play approaches supported by various materials, such as flashcards, pictures, multimedia, and other themed props (Mao, Doan, and Handford 2022). Parker, Thomsen, and Berry (2022) argued that effective playful pedagogy combines facilitation types regarding the teacher's role, the techniques or methods they use, and the knowledge they possess, such as discussions about prior knowledge of the topic at the outset, scaffolding, and posing open-ended questions. In classroom settings, it often requires teachers' guidance and motivational scaffolding strategies (Ollonen and Kangas 2024). Specifically, Johnstone (2022) emphasised that playful learning is inclusive, empowering students to direct and engage in their learning through play and exploration, supported by teachers' intentional teaching and scaffolding of the processes of inquiry, curiosity, and reflection. Teachers must negotiate the balance between existing curriculum requirements and the integration of playful pedagogy within more traditional approaches (Nolan and Paatsch 2018). In this context, teachers play a crucial role in selecting suitable materials, providing guidance, and stimulating thinking through questions.

In a school context, the teacher's role and the extent to which the teacher influences the play are decisive for how the play is experienced by the students and what is learned (Bjerknes, Skalstad, and Räpple-Freudenreich 2023). Kangas et al. (2017) found that, depending on the learning goals and context, the teacher's role varies from leader to facilitator and from organiser and planner of pedagogical activities to guide and tutor during gameplay sessions. Teachers play active roles in playful learning, ranging from guides, supervisors, and teammates to onlookers (Mao, Doan, and Handford 2022). Kangas et al. (2017) summed up the pedagogical activities through which the teacher creates a pedagogical framework for playful learning, leads the students to the topic, tutors the learning processes, and organises opportunities for reflecting on the playing process and the content knowledge learned during and after the play. Table 1 summarises the teacher's pedagogical activities.

Methodology

Systematic literature review (SLR)

Systematic Literature Review (SLR) are applicable and useful for a very specific kind of literature review – a meta-study that identifies and summarises evidence from earlier research (Boell and Cecez-Kecmanovic 2015). Nightingale (2009) claimed that SLR has been developed to minimise the effects of selection, publication, and data extraction bias. A systematic review aims to identify

Table 1. Teacher's pedagogical activities in 4-stage (Adapted from Kangas et al., 2017).

Learning processes	Pedagogical aim	Teacher's role	Pedagogical activities
Planning	Creating a pedagogical frame for playful learning	A pedagogical designer	Pre-interaction phase in teaching, Questions about the learning goals and the organisation, Creation of links between the playful learning environment and the content knowledge within the curriculum. Building meaningful, holistic, and playful learning processes.
Orientation	Sharing the goals and creating an initial knowledge base	A leader /motivator	Familiarizing students with the content and the playful tools and methods. Starts the playful learning process with an introduction and provides the information needed for play or gameplay. Reflection on and familiarisation with the subject matter and expected learning outcomes.
Playing	Tutoring and scaffolding	A tutor/facilitator /organiser	Supporting and scaffolding students' learning. Guiding students' interactions and organising play activities. Responding to students' questions and asking follow-up questions.
Elaboration	Reflecting and evaluating activities	A reflector	Reflecting on the learning outcomes with students. Evaluating and connecting the learning experiences and outcomes with the curriculum and learning goals.

all research addressing a specific question so that they provide a balanced and unbiased summary of the literature. By reviewing relevant literature, it aims to understand the breadth and depth of the existing body of work and identify gaps for further exploration (Xiao and Watson 2019).

There are several steps in SLR, including screening for inclusion, quality and eligibility assessment, and iterations (Xiao and Watson 2019). It is suggested to prepare a transparent, complete, and accurate account of why the review was done, what was done, and what was found to ensure a valuable systematic review (Page et al. 2021). The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement has been applied in the present research. It is applicable to reports of systematic reviews evaluating educational interventions (Page et al. 2021).

Search procedure and inclusion criteria

Playful learning has been seen as concepts such as play-based learning and learning through play (Buldu 2023; Parker, Thomsen, and Berry 2022). The playful learning pedagogy can also be referred to as a playful learning approach or structure (Pyle and Danniels 2017; Walsh et al., 2011). A systematic review of literature on playful learning in primary education was conducted using the search terms: ('playful learning' OR 'learning by play' OR 'learning through play' OR 'play-based learning') AND ('pedagogy' OR 'techniques' OR 'structure') AND ('primary' OR 'elementary').

Selection bias in systematic reviews can arise when the inclusion and exclusion criteria for the review are not clearly established (Nightingale 2009). This study follows the PRISMA guidelines (Page et al. 2021), which include screening and eligibility processes based on inclusion criteria, considering the research's aims. This procedure was split into four phases: (1) identification, (2) screening, (3) eligibility, and (4) inclusion, as shown in Figure 1.

The first phase involved conducting a systematic search of the electronic databases. Studies were selected if they met the following inclusion criteria:

a. include empirical evidence relating to playful learning in primary education
b. have a publication date between 2014 and 2023,
c. be a journal article
d. be peer-reviewed
e. be written in English.

This search process generated 2498 results. Subsequently, the second phase involved screening the titles and abstracts of the shortlisted studies. Studies discussing playful learning in special

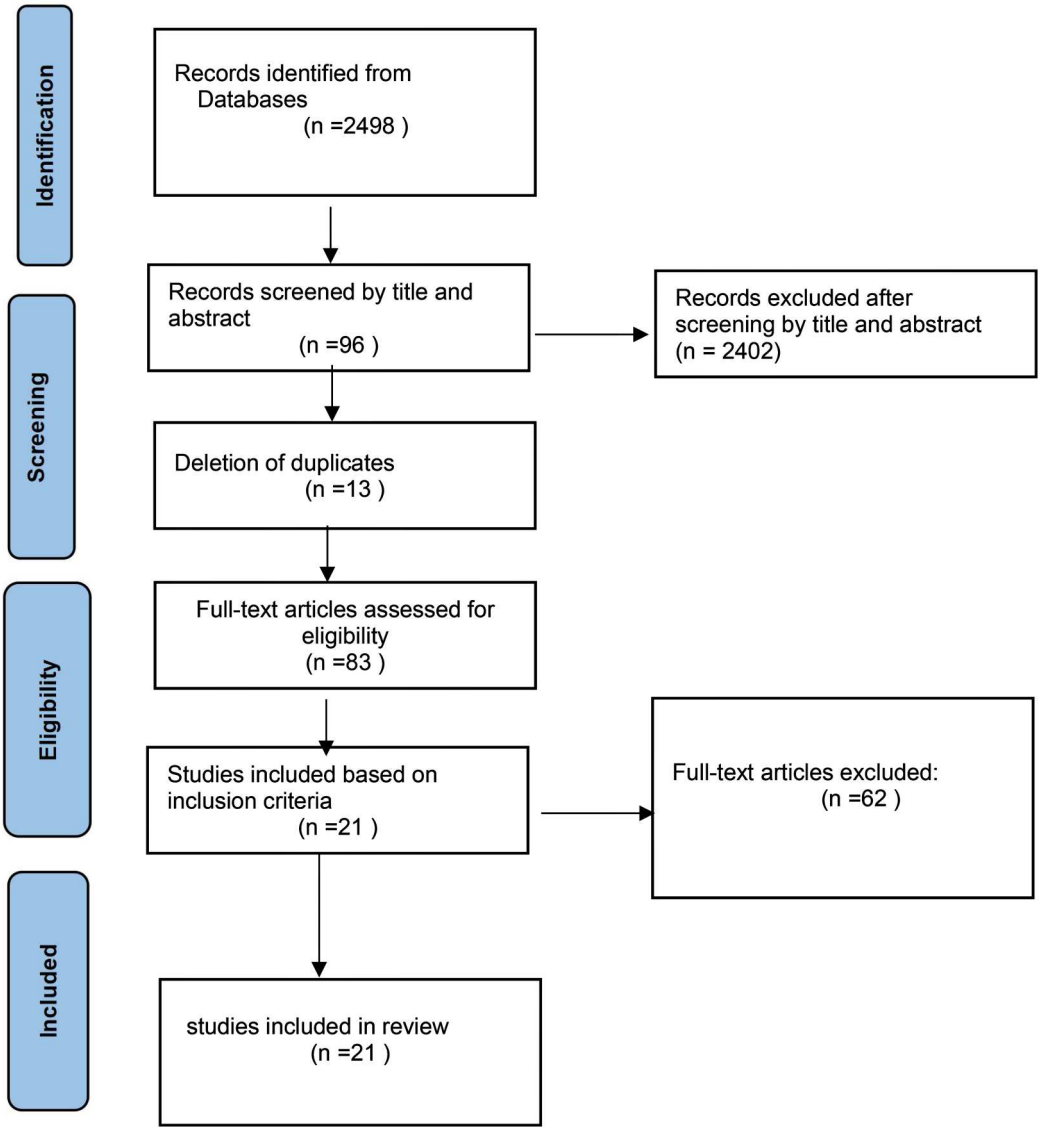

Figure 1. Flowchart illustrating the review selection process.

education and during the epidemic period were excluded, as the focus was on ordinary schooling circumstances. In total, this screening procedure resulted in 96 relevant papers, of which 13 were found to be duplicates while synthetically examining the screening results.

The third phase involved assessing the eligibility of 83 shortlisted full-text articles. This process included reading the papers in detail and selecting those that aligned with the following inclusion criteria:

(a) the study included relevant information about playful learning in formal primary school,
(b) the study included relevant information about teachers' pedagogical activities,
(c) the study included relevant information in relation to the teacher's role.

Upon completing this rigorous selection process, a total of 83 papers were deemed to have met the established criteria and were therefore considered for final extraction. This step was crucial in

ensuring that only the most relevant and informative articles were included in the subsequent analysis. After a thorough review and careful consideration, 21 papers (as listed in Appendix A) were selected for inclusion in the study. These papers were chosen based on their ability to address the primary research questions and provide valuable data for coding and analysis. The selected articles were then subjected to a detailed examination to extract the necessary information and insights, which were subsequently used to inform the research findings and conclusions.

Coding procedure and analysis

Qualitative content analysis was used in the research. As a standard procedure of text analysis within the social sciences, content analysis is defined as a systematic, replicable technique for compressing large amounts of text into fewer content categories based on explicit coding rules (Mayring 2015). What makes content analysis particularly rich and meaningful is its reliance on the coding and categorising of data (Stemler 2001). There are two approaches to coding data: with emergent coding, categories are established following some preliminary examination of the data (Stemler 2001). In this study, the categories were established prior to the analysis, based on emergent coding.

The information was coded in the table according to both basic and pedagogical information. Basic information included the methods, the number and ages of participants, the school subject, and the game used in the experiment. Pedagogical information consisted of pedagogical goals, teachers' roles, and pedagogical activities during the experiment. The teacher's pedagogical activities were identified and defined from the research data based on the descriptions provided in previous research (Kangas et al., 2017).

The analysis process of teachers' pedagogical activities was theory-driven and the process of playful learning was used (see Table 1), and all explicitly described teacher activities were classified into four phases: in planning, orientation, playing and elaboration. Sentences describing the teacher's role were collected from the articles into Excel, then interpreted, classified, and summarised.

All 21 articles described the teachers' activities and roles. For instance, the study conducted by Hooshyar et al. (2021) illustrated the participants and the experimental process, with a description of the teacher's assistive role in providing technical help and basic instructions for the game. Kobylak and Kalyn (2017) used playful activities in science learning. They explored and inquired about what an object, situation, or tool can do, and when they decided, they applied their ideas through play. The classroom teacher was directly immersed in the classroom experiences and documented student learning through play by taking anecdotal notes of classroom activities and observations. Reflection on daily observations was used as an assessment and documentation tool to measure learning.

Results

The basic information of data

Table 2 shows the basic information of the reviewed papers. The subjects include Physical Education (n = 3), Mathematics (n = 3), Science (n = 3), Language Learning (n = 1), Biology (n = 1), Environmental Education (n = 1), and Computational Thinking (n = 1). It is notable that there are some interdisciplinary studies (n = 5) and playful learning programmes (n = 3). The research methods are listed below. Almost all the studies chose qualitative methods, such as case studies (n = 6), experimental studies (n = 5), and action research (n = 1). Additionally, a few articles used a quantitative, survey-based method with a pre-test and post-test design (Ruiz-Bañuls et al. 2021). The pedagogical goals reveal the aims and intentions of playful learning, including knowledge acquisition, motivation improvement, and skills development. The activities used in the reviewed literature include games, designed activities, and more. For example, creative drama was used to improve students' creative performance (Hui et al. 2018). Ritonga et al. (2022) used approaches such as playing jump obstacles, moving the ball, arranging triangular blocks, and compiling puzzles to improve jumping skills.

Table 2. The basic information of data.

Study No.	Student participants/ age	Country	Research design/ method	Subject/course/ program	Pedagogical goals	Pedagogical activity
1	18/ 2nd grade.	Norway	case study	science	social skills in combination with subject knowledge.	Conceptual Playworld
2	48/aged 11	Szerbia	comparative case study	biology	rise knowledge about plants/ be more motivated	'Which plant am I?' game
3	29/aged 10–11	UK	comparative case study	through different curriculum subject	explores the function of legacy digital artefact	Classroom, project-related activities
4	79/aged 11–12	Estonia	experimental study	computational thinking	promote students' computational thinking	an adaptive computer game called AutoThinking
5	1311	Hong Kong, China	empirical studies	Chinese, English and General Studies.	creative performance	creative drama
6	N/A Year 1–2	Australia	qualitative/a case study	play-based learning programmes	explore supports existing and challenge	hands-on, more play-based approach
7	400-500/ senior primary	New Zealand	Inquiry question	play-based learning (PBL)	explore the benefits of PBL	play-based learning (PBL)approach
8	257 aged 7	UK	pragmatic evaluation	Physical Education	physical activity levels and fundamental movement skills	school-based, 'Go2Play Active Play' intervention
9	195/ grade 5–6	Finland	a quasi-experimental design	mathematic	support the development of rational number knowledge	NanoRoboMath,digital learning environment
10	N/A grade 1	Canada	A Classroom Inquiry	science	science learning	science inquiry cycle
11	45/grade 5–6	Canada	Deweyan-inspired action research	mathematic	growth in reasoning occurred within abstract strategy games	Gobblet Gobblers, Othello, Tic Stac Toe, and Go.
12	2095/grade 1–6	UK	quasi-experimental	reading and mathmatics	impact of a play-based curriculum	play, activity-based learning and short, story-based
13	1691/grade 1–4	Palestine	non-randomised parallel group study	mathematic	numeracy skills	Right To Play and examples of play-based activities.
14	49/ aged 5–6	Australia	qualitative approach	Discovery Learning program	social, oral language and literacy skills	Pretend play 'station' experiences
15	45/grade 4	Indonesia	Borg and Gall's research and development	Physical Education	basic movement skills and character values	jump obstacles, moving the ball,triangular blocks, compiling puzzles
16	183/aged 9–12	Spain	quantitative	interdisciplinary sutdy	benefits with interdisciplinary and transmedia narratives	experience points, a level progression system, badges, missions, virtual and physical item rewards
17	113/aged 7–9	Portugal	quasi-experimental study	Mathematics and Portuguese	literacy and numeracy skills and socioemotional competencies	Education in Action – ABALL1
18	75/ grade 5	Spain	Focus groups/ case study	environmental education	sustainable mobility	the Classcraft web-based application/role-playing game
19	54/ aged 4;10–6;2	Australia	quasi-experimental design	language learning	play skills and narrative language ability	play-based curriculum; classroom environment with play areas

(*Continued*)

Table 2. Continued.

Study No.	Student participants/ age	Country	Research design/ method	Subject/course/ program	Pedagogical goals	Pedagogical activity
20	N/A/grade 1–5	Brazil	qualitative approach/ case study	science	scientific concepts.	drawing and painting activities, action songs, jokes, games, pictures and concrete materials
21	54/aged 9–10	Greece	qualitative and quantitative	Physical Education	learning the tennis backhand skill	Play and Stay

Teachers' pedagogical activities

This study analyzed pedagogical activities based on previous research (Kangas et al., 2017; Parker, Thomsen, and Berry 2022) from the perspective of the 4-stage learning process (Table 3). The findings of the present literature review indicate that teachers' activities in different phases are observed in empirical research, which provides evidence of how the pedagogical process is structured, also offering examples of empirical practices.

Findings indicate that all 21 articles describe the planning of teachers' pedagogical activities. For instance, the teachers designed the structure to develop expertise in specific mathematics topics and to allow students to learn with different peers (Zetou et al. 2014). In the study by McGuinness et al. (2014), key objectives, prior knowledge, necessary equipment, discussion points, activity instructions, as well as ideas for assessment, variation, extension, adaptation, and inclusion are outlined for each activity. The teachers designed the structure to develop expertise in specific mathematics topics and to allow students to learn with different peers (McFeetors and Palfy 2018). In this stage, there is significant discussion, planning, and designing of pedagogical activities to create links between the game or play activities and the content knowledge within the curriculum.

Teachers' activities in the orientation stage were described in 19 articles. During the orientation stage, the teacher acts as a leader and motivator. For instance, the students participated in 60–75 minutes of learning sessions to learn about sequences, loops, and conditional concepts, as well as algorithmic thinking, pattern recognition, debugging, and simulation skills (Hui et al. 2018).

Table 3. Descriptions of pedagogical activities.

Study number	Planning	Orientation	Playing	Elaboration
1	√		√	√
2	√	√	√	√
3	√	√	√	√
4	√	√	√	√
5	√	√	√	√
6	√		√	√
7	√	√	√	√
8	√	√	√	√
9	√	√	√	
10	√	√	√	
11	√	√	√	√
12	√	√	√	√
13	√	√	√	√
14	√	√	√	√
15	√	√	√	√
16	√	√	√	
17	√	√	√	√
18	√	√	√	
19	√	√	√	√
20	√	√	√	√
21	√	√	√	
Frequency	21	19	21	16

Additionally, each activity begins with a discussion to access the students' prior knowledge, while teachers are encouraged to adapt the games and playful activities to meet the needs of the children and their own teaching requirements (McGuinness et al. 2014). In this stage, the teacher tries to bridge the gap between the learning subject and playful activities.

All 21 articles described the play stage. During the play stage, the teacher's roles are as a facilitator and organiser, primarily to support and scaffold students in their learning during play or gameplay. For example, the teacher may take an active role as a co-player (Nolan and Paatsch 2018), provide technical help and basic instructions for the game (Hui et al. 2018), or identify students' strengths and assist in improving their learning through scaffolding, direction, and explicit teaching (McFeetors and Palfy 2018).

Sixteen out of twenty-one articles describe the reflection and evaluation of pedagogical activities. The teacher acts as a facilitator of reflection, helping students rethink learning processes after the play by having them write essays or hold joint discussions. For instance, the teaching team took an examination of the pedagogy used and the principles after the pedagogical activities (Sipone et al. 2019). Reflection on daily observations allowed teachers to identify specific areas where direct instruction was necessary, with assessment and documentation used as tools to measure learning (Johnstone et al. 2017). Additionally, pre – and post-testing were used to assess the effects (McFeetors and Palfy 2018; Hui et al. 2018).

Teachers' role

In 21 articles, the teacher's role was interpreted as pedagogically active. Kangas et al. (2017) summarised the teacher's role during pedagogical activities, ranging from planner to leader/motivator, tutor/facilitator/organiser, and also a reflector. The teacher plays a crucial role in selecting and deciding on tools and materials, facilitating and scaffolding students' learning, triggering their motivation, sparking their thinking, and evaluating the learning process.

The teacher plays an important role as a pedagogical designer. In the study by Nolan and Paatsch (2018), they argue that it is the role of the teacher and the extent to which they influence the play that are decisive for how the play is experienced by the students and what is learned. For instance, the teacher selects a book or story they know the children like, designs a space inside or outside where the play can occur, and plans a play scenario or problem that needs to be solved. The teacher must adapt the games to allow the players to practice various skills and make decisions under actual game conditions. Teachers have an important role when including play as a pedagogical approach, assessing learning, and guiding students to meet curricular outcomes (Johnstone et al. 2017).

The teacher's roles are as a leader or motivator. Borsos (2018) argued that it is up to the teacher to address children's natural curiosity and enhance their creativity and critical thinking, with the teacher's roles and responsibilities directly benefiting the learning process.

The teacher acts as a scaffolder, facilitator, and organiser. For instance, the teacher takes on a support role during class time by observing students and asking them questions to elicit reasoning (McFeetors and Palfy 2018). They can facilitate games to develop children's catching or throwing abilities (Johnstone et al. 2017). The teacher identifies their students' strengths and assists in improving their learning through scaffolding, direction, and explicit teaching (Stagnitti et al. 2016). The teacher organises teaching and learning activities (Bjerknes, Skalstad, and Räpple-Freudenreich 2023). Teachers need to realise that they are not just knowledge transmitters but facilitators who allow children to question, investigate, and interact (Ruiz-Bañuls et al. 2021).

During playful learning processes, the teacher acts as a supervisor, supporting students in their learning and verifying the accuracy of their responses (Borsos 2018; Stagnitti et al. 2016). The teacher not only guides the play but also helps students reflect on their activities and learning. For example, teachers took on roles as mentors alongside the students and even played an active role as co-players (Bjerknes, Skalstad, and Räpple-Freudenreich 2023). The classroom teacher can also be directly immersed in the classroom experience (Kobylak and Kalyn 2017).

To summarise, the study underscores the importance of teachers' pedagogical efforts, their critical role, and their active engagement in implementing playful pedagogical approaches. Kangas et al. (2017) stressed the need for a precise description of teachers' activities, highlighting their responsibility for fostering high-quality pedagogy. This emphasises the significance of understanding how and why to integrate playful learning into pedagogical practices and curriculum frameworks. By doing so, teachers can unlock the full potential of playful learning to enhance student engagement and academic achievement.

Discussion

Learning through play in schools ranges from child-initiated and directed activities to more adult-initiated and guided experiences (Mardell, Lynneth Solis, and Bray 2019). Some teachers may experience difficulty in understanding playful pedagogy at both conceptual and practical levels (Cheng 2012). Fisher (2021) points out that even when teachers support play-based pedagogy, they may feel constrained by policies from other teachers, principals, and guardians. Therefore, practical and conceptual knowledge and research on playful learning pedagogy is needed. This practical knowledge includes pedagogical understanding of how to plan and implement playful learning processes, and how to evaluate students' learning. The findings of the present literature review indicate that teachers' activities in different playful learning phases (Table 3) are clear. This provides evidence of how the pedagogical process is structured, offering examples for educational practices. To overcome these barriers, Jay and Knaus (2018) illustrate that teachers' experience and knowledge of pedagogy and practice, combined with the opportunity to observe other teachers using the same approach, are key factors that support and challenge the introduction of a playful learning activity in schools.

Teachers' pedagogical activities, the role of the teacher, and the teacher's engagement in pedagogy are of great importance in implementing playful approaches in teaching (Kangas et al., 2017). In addition, the teacher's motivational scaffolding strategies, such as listening to students' voices, providing help when needed, and being responsive and empathetic to students' perspectives, are considered important in playful learning pedagogy and contribute to student motivation (Ollonen and Kangas 2024). Recent studies emphasise that the teacher's own playfulness is also critical in designing and implementing playful learning pedagogy and see it as an essential part of teachers' pedagogical competence (Hurme et al. 2023).

An investigation of the learning effects can also contribute to the development of pedagogical activities. Even though the effectiveness of play as a pedagogical approach has been disputed in the research literature (Murtagh, Sawalma, and Martin 2022), playful learning pedagogical activities have greatly contributed to enhancing student engagement and learning outcomes, improving teacher practices, and contributing to professional knowledge (Kobylak and Kalyn 2017). There seems to be a consensus among most scholars and education professionals who argue that play is not only a good teaching and learning tool, but a natural way of learning (Bateson and Martin 2013; Heljakka 2024) and contributes to the construction of knowledge (Suzana, de Oliveira, and de Oliveira 2017). Therefore, further research on the effects of pedagogical activities should be encouraged.

The age of the participants and the research location are crucial factors that should be taken into account when evaluating the relevance and generalizability of findings related to playful learning pedagogy. Given that the age at which children begin formal primary education varies worldwide – and in some instances, the early years of schooling incorporate a play-based curriculum – the age of the participants plays a critical role in understanding the relevance and applicability of the findings. Additionally, identifying the countries where the research was conducted allows for the consideration of cultural, educational, and societal differences that may have influenced the study's outcomes.

In addition, it is noteworthy that the discussion is not solely about playful learning in pedagogical contexts, but also about play and playful learning in digital contexts (Heljakka 2024). Playful learning

pedagogy connects playful approaches with the use of digital tools, providing learners with meaningful and creative learning opportunities through play (Kangas et al., 2017; Heljakka 2024). This also means that playful learning and related research will increasingly connect with AI-based human–computer interaction and AI Play research (Kangas and Heljakka 2024), where the teacher plays a crucial role in designing and organising such playful learning environments.

The study provides practical and conceptual insights into playful learning pedagogy, emphasising the importance of teachers' pedagogical activities and roles. The Systematic Literature Review (SLR) contributes valuable information on playful learning pedagogy, but the framework of playful learning is broad (Whitton 2018) and can be approached and implemented in many different contexts, such as technological, inquiry-based, and art-based learning settings (Boysen et al. 2022). Therefore, it requires in-depth analysis and further research in different contexts. Nevertheless, this literature review offers valuable foundations for future research and practical applications.

Limitations, implications and future research

This review provides initial insights into the process of pedagogical activities within playful learning in primary education. Consistent with prior review studies (e.g. Kangas et al., 2017), the current study supports the feasibility of conducting pedagogical activities in primary school playful learning. There are some limitations in applying the four-phase PRISMA framework. We narrowed the sample to studies wholly focused on playful learning pedagogical activities and the teacher's role. This resulted in a limited amount of material, even though our search was both broad and deep. In addition, related terms such as 'teaching,' 'teacher,' 'teacher activity,' or 'teaching methods' were not included in the search due to the vast number of research results. Given the large number of results in the screening process and the complexity of interpreting teacher's activities in the playful learning process, there may have been some misinterpretation. More research is needed to ensure accurate recommendations regarding the planning, orientation, playing, and elaboration of pedagogical strategies in playful learning settings. Despite these limitations, we conclude that the 21 studies examined highlight the need for a growing awareness of teachers' pedagogical activities and roles, which are essential for supporting the development of playful learning in primary education.

Credit authorship contribution statement

Xiaoyan Li: Ph.D student. University of Lapland, Finland. Idea construction, data collection, data analysis, writing – original draft preparation and editing.

Marjaana Kangas: Ph.D. Adjunct Professor, University of Lapland, Finland. Idea construction, writing – reviewing and editing.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Appendix

Table A1. List of the papers used in this Review.

Study number	Author details	Year	The title	Publication title
1	Bjerknes, A.-L., Skalstad, I., & Räpple-Freudenreich, S	2023	Conceptual Playworld as a Method of Facilitating Learning Beyond Subject Matter in Elementary School.	Nordisk tidsskrift for utdanning og praksis
2	Borsos, E.	2018	The gamification of elementary school biology: a case study on increasing understanding of plants.	Journal of Biological Education
3	Gouseti, A., Abbott, D., Burden, K., & Jeffrey, S.	2020	Adopting the use of a legacy digital artefact in formal educational settings: opportunities and challenges.	Technology, Pedagogy and Education
4	Hooshyar, D., Malva, L., Yang, Y., Pedaste, M., Wang, M., & Lim, H.	2021	An adaptive educational computer game: Effects on students' knowledge and learning attitude in computational thinking.	Computers in Human Behavior
5	Hui, A. N., Chow, B. W., Chan, A. Y., Chui, B. H., & Sam, C. T	2018	Creativity in Hong Kong classrooms: transition from a seriously formal pedagogy to informally playful learning	Education
6	Jay, J. A., & Knaus, M.	2018	Embedding play-based learning into junior primary (Year 1 and 2) curriculum in WA	Australian Journal of Teacher Education
7	Johnstone, A.	2022	An Inquiry into Teachers' Implementation of Play-Based Learning Aligned Approaches within Senior Primary Classes	Kairaranga
8	Johnstone, A., Hughes, A. R., Janssen, X., & Reilly, J. J.	2017	Pragmatic evaluation of the Go2Play active play intervention on physical activity and fundamental movement skills in children.	Preventive Medicine Reports
9	Kärki, T., McMullen, J., & Lehtinen, E.	2022	Improving rational number knowledge using the NanoRoboMath digital game.	Educational Studies in Mathematics
10	Kobylak, K., & Kalyn, B.	2017	Play and exploration in grade one: Extending the principles of early learning.	Journal of Childhood Studies
11	McFeetors, *P.* J., & Palfy, K.	2018	Educative experiences in a games context: Supporting emerging reasoning in elementary school mathematics.	The Journal of Mathematical Behavior
12	McGuinness, C., Sproule, L., Bojke, C., Trew, K., & Walsh, G.	2014	Impact of a play-based curriculum in the first two years of primary school: literacy and numeracy outcomes over seven years.	British Educational Research Journal
13	Murtagh, E. M., Sawalma, J., & Martin, R.	2022	Playful maths! The influence of play-based learning on academic performance of Palestinian primary school children	Educational Research for Policy and Practice

(*Continued*)

Table A1. Continued.

Study number	Author details	Year	The title	Publication title
14	Nolan, A., & Paatsch, L.	2018	(Re) affirming identities: implementing a play-based approach to learning in the early years of schooling	International Journal of Early Years Education
15	Ritonga, D. A., Damanik, S., Damanik, S. A., & Priyambada, G	2022	Development of Learning Variations to Improve Basic Jumping Skills and Play Approaches of Elementary School Students.	International Journal of Education in Mathematics, Science, and Technology
16	Ruiz-Bañuls, M., Gómez-Trigueros, I. M., Rovira-Collado, J., & Rico-Gómez, M. L.	2021	Gamification and transmedia in interdisciplinary contexts: A didactic intervention for the primary school classroom	Heliyon
17	Silva, I. S., Cunha-Saraiva, F., & Silvestre, S	2023	Acceptability and effectiveness of the 'Education in Action – ABALL1' intervention program in primary school-aged children.	Frontiers in Psychology
18	Sipone, S., Abella-García, V., Barreda, R., & Rojo, M	2019	.Learning about sustainable mobility in primary schools from a playful perspective: A focus group approach.	Sustainability
19	Stagnitti, K., Bailey, A., Hudspeth Stevenson, E., Reynolds, E., & Kidd, E.	2016	An investigation into the effect of play-based instruction on the development of play skills and oral language.	Journal of Early Childhood Research
20	Suzana Cinthia Gomes de Medeiros Silva, Maria Marly de Oliveira & Gilvaneide Ferreira de Oliveira	2017	Playful teaching work of school science teachers fundamental in a municipal school in Pernambuco, Brazil	Early Child Development and Care
21	Zetou, E., Vernadakis, N., Derri, V., Bebetsos, E., & Filippou, F.	2014	The effect of game for understanding on backhand tennis skill learning and self-efficacy improvement in elementary students	Procedia-Social and Behavioral Sciences