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The Combination of Gamification Teaching and Technology

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Abstract: As technology continues to advance, its integration into kindergarten education is becoming more common. The use of electronic devices, such as smart televisions and educational software, enriches teaching and learning and enhances children's participation and learning. Interactive tools, including multimedia and gamified learning applications, can foster children's problem-solving, communication and cooperation skills and contribute to their overall development. Research has found that while technology can bring many educational benefits, early childhood educators and parents must be alert to potential risks, such as the negative impact on children's health of over-reliance on devices and prolonged screen use. This study analyses the impact of technology on young children's learning and lives through literature analysis and the study of past experimental results. The findings suggest that (1) teachers need to make thoughtful use of technology and select age-appropriate games and educational tools to meet children's developmental needs. (2) Ongoing teacher training and the development of innovative educational applications are essential to maximize the benefits of technology while protecting children's physical and mental health. (3) Appropriate assessment, feedback and data-driven personalized instruction can ensure the effective integration of technology in preschool education and lay a solid foundation for children's future learning.

Keywords: *E*CE, Educational technology, Gamified Learning, Technology Integration.

1. Introduction

Innovative methods of movement and gesture education help to enhance children's learning experiences and outcomes. Learning through play is a method of engaging and motivating students by incorporating elements of play into educational activities. This method is because when learning is like playing, it is more effective and fun.

Learning through play encompasses the basic principles of child participation, personalized learning, and the role of the teacher. Children's active participation in the learning process is essential to their development. Through personalized learning, we can recognize each child's unique strengths, weaknesses and learning styles, and tailor a lesson plan to meet those individual needs. In addition, the role of the teacher in Learning through play is more complex than in traditional teaching, and it becomes a facilitating and guiding role, creating an environment for students to explore and learn independently.

This critical review analyzes Learning through play in the context of innovative educational approaches, focusing on three aspects: children's participation, personalized learning, and the role of

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the teacher. Through our research on these aspects, we aim to understand the importance of game-based learning in improving early childhood development.

2. Current issue

2.1. Children participation

Learning through play is one of the important means of stimulating students' learning motivation [1]. This is one of the teaching methods in line with the age characteristics of children. However, due to the nature of its strong external driving force, it will bring many disadvantages in the learning process of children: developing dependence, reducing the internal motivation of children's learning, increasing anxiety and so on. Learning through play a greater role in teaching evaluation by enabling educators to add multiple game points and scoring points to the classroom, which are counted after the course, not only ensuring the objectivity of the evaluation, but also enabling students to maintain complete attention and engagement in the classroom [2]. This approach is also one of the "in-game" teaching features of learning through play proposed [3].

2.2. Personalized learning

Table 1: Impact of Gamification on Student Engagement and Motivation [3]

N	Statement	SD	D	N	A	SA	M	SD
1	Gamification has increased student and active involvement in my classes	5	15	19	150	153	4.52	0.68
2	I have observed improvement on student motivation when involving gamification into lessons	12	18	35	139	135	4.48	0.71
3	Gamified activities provided more learning time especially for the slow learners	11	15	30	163	150	4.49	0.72
4	Students were highly motivated to complete assignments because their scores were gamified	5	13	17	154	160	4.52	0.69
5	Gamification has enhanced the overall classroom settings, making it more interactive	11	12	17	160	150	4.51	0.72
6	I engaged the students in a number of classroom activities that involved gamified tasks	15	16	37	147	140	4.47	0.7
7	Gamification helps in building teamwork and student's problem-solving and critical thinking skills	9	15	30	167	141	4.48	0.69
8	Students show greater enthusiasm for learning when gamification is involved	12	16	30	164	153	4.51	0.71
9	Gamification has improved material retention and understanding of subject matters	16	15	35	154	145	4.48	0.71
10	Positive attitudes facilitate a lasting influence on their academic performance	14	12	30	164	154	4.52	0.68

Personalized learning emphasizes that teachers should tailor teaching content and teaching methods according to each student's needs and learning style, with the aim of improving children's learning outcomes. Learning content is arranged according to young children's interests and learning pace, and young children can get more challenging tasks and more meaningful learning experiences in new learning tools [3].

In early childhood education, individualized learning and game-based learning are mutually reinforcing and can work together to promote the holistic development of children. Personalized learning can provide customized support for Learning through play. By understanding each child's learning characteristics, teachers can design Learning through play activities that are more in line with the child's learning characteristics and needs. Conversely, learning through play can enhance personalized learning. Learning through play is often characterized by fun and timely feedback, which can help improve children's learning outcomes. By allowing children to participate in a variety of games, children can continue to try, learn, and progress in a pleasant atmosphere, to better develop their own potential, and then achieve the purpose of personalized learning. Some researchers argue that the relationship between personalized learning and learning through play lies in the autonomy, game, affinity, and spatial dimensions in learning through play, which are closely related to

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personalized learning [4]. Autonomy in Learning through play refers to the fact that young children can choose what and how they like to learn, which is the same as emphasizing the individual needs and interests of learners in personalized learning. In addition, the playfulness of Learning through play emphasizes openness, autonomy, and intrinsic motivation for learning activities, which is consistent with personalized learning's emphasis on learner initiative and exploratory spirit. Finally, the spatial dimension refers to the environment of Learning through play, which is related to the aspect of the impact of the learning environment on learning outcomes in personalized learning. In general, by combining the advantages of personalized learning and game-based learning, educators can better meet the learning needs of different children, improve children's learning interest and motivation, and achieve more comprehensive educational goals.

From the teacher's perspective, Zhang points out in his article that the three-step embedding process of Learning through play is particularly important in children's personalized learning [5]. In the first step, before the game starts, teachers should consider the individual needs and learning styles of each child when introducing the game and explaining the learning objectives, and tailor the teaching content according to the child's interests and abilities to improve the child's learning effect. In the second step, during the game, children can participate in the game according to their own learning pace and level of understanding, to achieve personalized learning. In the third step, after the game, the teacher should summarize the knowledge learned in the game to the children, and should also understand each child's learning situation, and provide them with personalized feedback and support to promote their learning and development.

From a child's perspective, personalized learning can provide young children with more options and allow them to choose their own learning style. Through personalized learning, children can choose different learning activities according to their interests and ability levels. Similarly, through Learning through play, young children can receive immediate and targeted feedback that will help them improve their learning methods, which in turn will improve their effectiveness in learning through play [6].

2.3. Teacher role

In the process of the integration of Learning through play and educational informatization, teachers assume various roles and tasks in the course design and implementation.

In gamification teaching, the teacher is first and foremost a facilitator. They should guide students into the teaching of the game and help students understand the rules and objectives of the game. Through guidance, teachers can let students better integrate into the game situation, stimulate their learning interest and initiative. The role of facilitator requires the teacher to have game design skills. They should understand the characteristics and rules of games and be able to design challenging and interesting game tasks and situations according to students' needs and learning goals [7]. By carefully designing games, teachers can better guide students to learn and stimulate their interest in learning. The promotion of digital education requires more teachers to improve their information technology level. Kindergartens need to conduct systematic training for teachers and tell them how to use these devices hand by hand, and then teachers will lead children to carry out curriculum gamification. The teacher then designs the curriculum according to the characteristics of children at different ages and completes the classroom teaching in a way that is easier for children to accept and more interesting. The integration of education informatization and teaching gamification requires teachers to have the ability of innovative thinking. They should be able to flexibly use game elements and technology to design innovative teaching programs that meet students' needs and learning goals. Through innovative thinking, teachers can promote the reform of teaching and improve the teaching effect.

Teachers also play the role of observers in gamification teaching. Teachers should closely observe the performance of students in the game and give them guidance and encouragement in time. By

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observing students, teachers can better understand their learning needs and problems and adjust game design and teaching strategies in time. Teachers need to reasonably arrange game tasks and control the use of information technology in games to ensure that each student can get corresponding learning opportunities. Intelligent equipment is only a means to empower preschool teachers to teach, it cannot become the classroom or the entire life of children. Therefore, in daily teaching, teachers let children control the game time by obeying the rules of the game, and do not indulge in playing the game, or after the game is over, teachers can take children to outdoor activities for a period. Through the process of games and resources, teachers can make students learn according to certain rules.

Learning through play emphasizes positive motivation and reward mechanisms, and teachers are one of the key factors to motivate students. Teachers should give encouragement and affirmation to students in time and stimulate students' learning motivation and creativity through the reward mechanism [8]. Children always have a special preference for novel and newly released materials, like to scramble, so in order to solve this problem, teachers can make reservation rules on the one hand, children can use the area card to make an appointment in advance, if the number of reserved people is full, they will wait for the next game; On the other hand, teachers can combine the opportunity to play App games with the class CD rewards, nap rewards, etc., to give these children the right to priority choice, so that the placement of information equipment and class management integration. At the same time, teachers should be able to correctly deal with the competition and cooperation between students to create a good learning atmosphere [9]. Teachers also need to have the ability to work as a team and collaborate with other teachers and teaching teams to jointly promote the implementation and development of Learning through play and education informatization.

3. Evaluation

Table 2: Effect sizes by moderator variables on the meta-analysis [3]

Moderator Variables		n	ES	95% CI		Qb
				Lower	Upper	
Age	K-12	146	0.92	0.29	1.55	26.7**
	College students	578	0.15	-0.04	0.35	
	Adults	12455	0.95	0.70	1.12	
Intervention length	Days	492	1.57	1.25	1.90	67.2**
	Weeks	12282	0.39	0.21	0.57	
	Years	18381	-0.20	-0.47	0.09	
Measurement	Test score	3059	0.30	0.03	0.18	3.38
	Participation level	15322	0.60	0.40	0.77	

**p<0.01.

Many studies have a positive view of Learning through play, but it is important to consider whether this teaching method can have a long-term positive impact on children's learning. From Kim et al.'s study tables, gamification strategies differ in attractiveness with students of different ages, with adults having higher levels of engagement than K-12 students and college students. Therefore, finding a suitable way to store children's participation is a direction that needs to be considered in future research.

Then, this study presents a subversive argument that short-term interventions (less than one week) are more effective than long-term interventions The researchers believe that this may be related to students' preference for immediate rewards, but there may be a conflict between the persistence of this short-term effect and the long-term goals of education [3].

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In terms of personalization, the key to personalized learning is to understand each student's learning needs and learning style. Using technology tools and educational data analytics, teachers can better understand how students are learning so they can provide them with personalized learning content and support. Learning through play can adjust the difficulty and content of games according to students' learning progress and performance to keep students motivated and challenged. In addition, learning through play also stimulates children's learning motivation by setting up meaningful rewards and incentive mechanisms, such as points, badges, etc., to help them choose their own learning path. Overall, learning through play plays an important role in personalized learning by combining game design and educational concepts to provide students with a more engaging and effective learning experience.

Due to the popularization and application of multimedia technology, its application in preschool education has gradually gained popularity. Kindergartens should strengthen teacher training of multimedia information technology, improve teachers' understanding and application ability of multimedia information technology, so that they can better use multimedia information technology for curriculum design and teaching implementation [10]. Teachers should actively embrace the trend of education informatization and apply information technology to the gamification teaching in kindergartens, to build a good teaching system with game courses, stimulate children's learning enthusiasm and initiative, let children learn in happiness, and expand their thinking.

4. Conclusion

In general, the use of gamification has the potential to enhance student engagement and motivation. In addition, learning through play also plays an important role in personalized learning, which combines game design with educational concepts to provide students with a more engaging and effective learning experience. The role of preschool teachers in gamification teaching has a direct impact on the learning effect and development of children. Their roles are mainly reflected in stimulating interest and participation, promoting communication and cooperation, cultivating autonomous learning ability, and evaluating and adjusting teaching strategies.

At the same time, teachers should also design personalized Learning through play activities based on students' personality and interests to stimulate students' learning enthusiasm and participation. Teachers need to constantly improve their own educational concepts and teaching skills to adapt to and guide the implementation of Learning through play, to better play the important role of teachers in the process of Learning through play and information teaching practice.

Overall, the rational use of extrinsic rewards such as badges, achievements, points and other extrinsic rewards is of positive significance, but research has shown that this kind of Learning through play can only bring great changes in a short period of use, so as teachers should still be aware of the importance of improving their own teaching skills and reasonable arrangements, in Learning through play, games are only a tool to promote the advancement of the curriculum and mobilize children's participation. What really matters in the teaching process is still the teachers and students.

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