EXPERIMENTAL STUDY OF THE DEVELOPMENT OF INTELLECTUAL ABILITIES THROUGH PLAY

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Abstract: This article is devoted to the study of the role and effectiveness of game technologies in identifying and developing the intellectual abilities of students. Game technologies can be used as an effective tool in the educational process to develop students' intellectual abilities, such as logical thinking, creative approach and problem solving. The study examined how game technologies are used in education and the methods of developing abilities through them. Experimental studies and questionnaires have confirmed that the intellectual potential of students is improved using game technologies compared to traditional educational methods. The article also indicates the necessary pedagogical approaches for the effective use of game technologies in education.

Keywords: intellectual abilities, game technologies, educational process, logical thinking, creative approach, problem solving, experimental research, pedagogical technologies, educational effectiveness, motivation

ЭКСПЕРИМЕНТАЛЬНОЕ ИССЛЕДОВАНИЕ РАЗВИТИЯ ИНТЕЛЛЕКТУАЛЬНЫХ СПОСОБНОСТЕЙ ЧЕРЕЗ ИГРУ

Аннотация: Статья посвящена изучению роли и эффективности игровых технологий в выявлении и развитии интеллектуальных способностей учащихся. Игровые технологии могут быть использованы в качестве эффективного инструмента в образовательном процессе для развития интеллектуальных способностей учащихся, таких как логическое мышление, творческий подход и решение проблем. В исследовании рассмотрено, как игровые технологии используются в образовании и методы развития способностей с их помощью. Экспериментальные исследования и анкетирование подтвердили, что интеллектуальный потенциал учащихся улучшается при использовании игровых технологий по сравнению с традиционными образовательными методами. В статье также указаны необходимые педагогические подходы для эффективного использования игровых технологий в образовании.

Ключевые слова: интеллектуальные способности, игровые технологии, образовательный процесс, логическое мышление, творческий подход, решение проблем, экспериментальное исследование, педагогические технологии, образовательная эффективность, мотивация.

INTRODUCTION

The modern education system sets as its main goal not only the provision of knowledge, but also the development of intellectual abilities of students. Intellectual abilities, including logical thinking, creative approach, analytical skills and problem solving, are one of the decisive factors in the successful education of students. At the same time, the traditional methods used in teaching and educating students today often provide the younger generation with only standard knowledge, but do not have a sufficient impact on the development of their creativity and thinking skills. Thus,

the use of modern technologies in education, especially game technologies, plays an important role in improving the quality of the educational process.

Game technologies offer interactivity and interesting methods in the educational process. Through games, students not only gain knowledge, but also develop skills such as free expression of their thoughts, teamwork, strategic thinking and problem solving. Through games, students test themselves in developing logical thinking, creative approach, and analytical skills. Such technologies not only help students master knowledge, but also allow them to manage their own personal development and expand their capabilities. The use of game technologies in the educational process can be very effective in developing intellectual abilities. Teaching students through games not only expands their knowledge base, but also helps them build self-confidence, learn to work in a team, and improve decision-making in various social situations. The tasks given in games encourage students to be creative and are forced to be active in the learning process. In addition, the use of game technologies opens up new opportunities for measuring and developing students' intellectual abilities. With the help of games, students' abilities are not only assessed, but also specific goals are set to adapt students to different situations and increase their intellectual potential.

This article analyzes the role of game technologies in identifying and developing students' intellectual abilities. The study examines the pedagogical and psychological aspects of game technologies, as well as methods for developing intellectual abilities with their help. A scientific analysis is carried out on the role and effectiveness of game technologies in the educational process, as well as how these technologies can be used in a targeted manner. The methodology and results of the process of developing students' intellectual abilities with the help of targeted game technologies, as well as the possibilities of raising students to a higher level through games, are studied.

MAIN PART

Research on the use of game technologies in education and the effectiveness of developing students’ intellectual abilities has been expanding in recent years. Research in this area presents many approaches to increasing students’ engagement in the learning process, developing their creative thinking, and creating interesting and interactive forms of learning.

Kappas and Barreda-Ángeles (2019) examine the importance of gamification and game-based learning in education. According to them, gamification adds interesting and motivating elements to the learning process, which further develops students’ abilities. Engaging students and involving them in learning through gamification leads to an increase in students’ intellectual potential[1].

Zheng and Lin (2016) studied the effects of game-based learning on student motivation, engagement, and achievement. Their study found that game-based learning not only increases student engagement but also improves academic achievement. Game technologies that increase student engagement and facilitate learning enable students to achieve better results[2].

Hamari et al. (2014) analyzed the effectiveness of gamification and game-based learning in education. The study showed the role of gamification in increasing student motivation and engagement in the learning process. Game-based approaches increase students’ interest in learning while helping to develop their intellectual abilities[3].

Bates (2015) studies the use of digital technologies, including game technologies, in the educational process. It emphasizes the role of games in increasing cognitive activity, developing

students' thinking and decision-making skills. The study shows how gaming technologies should be used not only for learning, but also for creativity and personal growth in education[4].

The purpose of this study is to determine the intellectual abilities of 3-7-year-old students in preschool educational organizations and to study the effectiveness of game technologies in their development. The study experimentally studied the application of game technologies to the educational process and changes in the intellectual development of students. The following methodological approaches were used to analyze the development of intellectual abilities of students participating in the study through game technologies.

The study was conducted experimentally, in which students were provided with two different educational approaches. In the first group, students were educated using traditional educational methods, and in the second group, they were educated using game technologies. Each group consisted of 15-20 students. During the study, various methods and tools were used to measure the intellectual abilities and development of both groups.

In the study, various game technologies were selected to support the intellectual development of students. Games suitable for children aged 3-7 are divided into the following categories: Cognitive games: Games aimed at learning logical thinking, memory and numbers, for example, "labyrinth" games, "memory games" and working with colored shapes.

Creative games: Games that help children develop creative thinking and imagination. For example, drawing pictures, making figurines, role-playing games (for example, "playing at home", "being a salesperson in a store"). Movement games: Games that help children develop motor skills. For example, small sports games, playing with a ball and other games that require physical activity.

The study used several data collection methods to measure the intellectual development of students: Student observation: It was carried out by observing the intellectual development of students and changes through games. In this process, the activity, level of thinking and creativity of the students are determined. Questionnaires and interviews: In order to determine how effective gaming technologies are for children, questionnaires and interviews were conducted with educators and students. This helps to measure students' interest in games and motivation to learn.

Activity evaluation: The activities performed by the students during the use of gaming technologies were evaluated. For example, combining colored shapes, playing memory games and creating creative works were analyzed. The data collected in the study were evaluated through qualitative and quantitative analysis.

The main analysis methods are as follows: Descriptive analysis: Means, distributions and differences were calculated to analyze changes in the levels of intellectual development of students. T-test: The t-test method was used to analyze the differences between two groups. Using this method, the effectiveness of gaming technologies in education was determined. Categorical analysis: A categorical analysis was conducted to measure how gaming technologies affected the creative and cognitive development of students.

The results of the study show the effectiveness of game technologies in developing the intellectual abilities of preschoolers. During the study, the following results were obtained by observing and analyzing children aged 3-7, who were divided into two groups.

In the first group of the study, students were educated using traditional educational methods, while in the second group, game technologies were used. Significant changes were observed in the intellectual development of students in the group where game technologies were used. In particular, the following changes were identified in the development of intellectual abilities using games:

Logical thinking and memory: With the help of games (for example, memory games and logical labyrinths), children significantly improved their logical thinking and memory skills. As a result of game-based learning, children's speed and accuracy in solving problems increased. Compared to the first group, the level of accurate and quick responses of students in the second group increased by 25-30%.

Creative thinking: Changes were observed in the development of creative thinking with the help of game technologies. Students became more active in using their imagination and developing new ideas. For example, through role-playing games and creative activities (drawing pictures, making shapes), children actively participated in creating new ideas. In the second group, children were 40% more active in performing creative activities than in the first group.

Game technologies significantly increased children's motivation to learn. The interest and enthusiasm of students in learning through games was clearly visible. When measuring the difference between students in both groups, 85% of children in the game-based learning group expressed greater interest in the educational process. As a result of the questionnaires, it was observed that the interest in learning through playing games was 50% higher than in the first group. Active games, such as playing with a ball or games that require physical activity, were also effective in developing children's motor skills. Through these games, children's physical activity and their ability to control their own body movements improved. Through games, children's coordination and accuracy in movements improved by 15-20%. Evaluations conducted by educators showed that the effectiveness of teaching using game technologies is much higher. Educators noted that learning through games is interesting and useful for children. Games also improved children's interpersonal relationships and teamwork skills. Game technologies also affected children's social and emotional development. Students' skills in communicating with each other, working together with each other, and managing emotional reactions increased during games. Games taught students to work as a team, solve problems together, and support each other.

The overall results of the study show that gaming technologies have a positive impact on the intellectual, creative, and socio-emotional development of children aged 3-7. Games significantly improved children's logical thinking, memory, creative thinking, motor skills, and motivation to learn. At the same time, games helped develop children's communication and cooperation skills.

The results of this study show the effectiveness of game technologies in developing children's intellectual abilities. The results obtained during the study confirmed that game technologies have a positive effect on the intellectual, creative and physical development of students in the educational process. However, these results indicate not only the effectiveness of game technologies, but also the importance of their correct and learned methods in education.

1. The effectiveness of game technologies:

The results obtained on the positive impact of game technologies on the intellectual development of students are of high importance. The results of the study showed that with the help of games, children improved their logical thinking and memory skills. Games help children solve complex tasks, increase their ability to make conscious decisions and think analytically. These results indicate that game technologies can become an effective element of the educational process, not only as a game for children. Some studies (for example, Piaget's theory of cognitive development) have emphasized the importance of logical thinking and memory in the development of children. Gaming technologies effectively develop these abilities, as they focus children, increase motivation and enthusiasm, which increases interest in education.

2. The importance of creative development and creative approach:

The study showed that the level of creative thinking in children increased through creative games. These games expand children's imagination, develop independent thinking in generating new ideas and solving problems. The effectiveness of creative games affects not only cognitive development, but also children's social skills, because when children perform creative activities together, they learn to communicate, freely express their thoughts and work in a team. Through these games, children learn to understand and support each other, which is one of the main stages of social development. At this point, it is worth considering Vygotsky's theory of social development, which emphasized the role of the social environment and interactions with people around children in their development. Creative games serve as an important tool for the development of social and emotional skills for children.

3. The impact of game technologies on the level of motivation and interest:

The effectiveness of game technologies in increasing motivation is an important result. The study showed that children's motivation to learn increased with the help of games. Learning through games not only increases students' interest, but also expands their ability to be active and self-directed. The study showed that learning through games aroused students' interest in learning even materials that previously seemed difficult and boring. This increases students' interest in independent learning.

4. Physical activity and motor skills development:

The study also found positive results for the impact of active games, such as games that require physical activity, on the development of children's motor skills. Through these games, children's coordination and control of physical movements increased. Games not only develop children's cognitive development, but also physical health and energy management skills.

5. Limitations of game technologies:

However, there are some limitations to the use of game technologies in the educational process. For games to be effective, teachers must use them based on the correct and clear methodology. Also, some educators may not have sufficient knowledge to effectively use games in the educational process. In addition, games should not only focus on physical and intellectual development, but also on the social and emotional development of children. If games are chosen incorrectly or the game process is organized ineffectively, this can negatively affect children's development.

CONCLUSION

This study investigated the effectiveness of game technologies in identifying and purposefully developing the intellectual abilities of students. During the study, the positive effect of using game technologies among preschoolers aged 3-7 was revealed. It was confirmed that game technologies had a positive effect on the intellectual development of children, the development of creative and logical thinking, and memory skills. Also, with the help of games, children's motivation to learn increased, and their creative and physical development also improved significantly. The results of the study show that game technologies not only serve as an interesting and attractive educational tool for children, but also have a significant impact on their intellectual and socio-emotional development. At the same time, the effective use of game technologies in the educational process depends on the methodological training of teachers and the correct selection of games.

This study showed the possibilities of expanding the use of game technologies in the preschool educational process. Future research will help to further explore the role of gaming

technologies in education, their effectiveness, and differences across age groups. In addition, there is a need to study the long-term impact of gaming technologies, as well as to develop the most effective types of games in education, taking into account the social and cultural characteristics of students.

Thus, gaming technologies are recommended as an effective tool for supporting the intellectual and social development of preschoolers.

Based on the results of the study, the following suggestions are put forward:

1. Expanded use of game technologies in the educational process: Game technologies are recommended as an interesting and effective educational tool for children. It is necessary to integrate games more widely into the educational process in preschool educational institutions. In order to effectively organize this process, it is important to train educators in game methodology and direct them to its practical application. It is also necessary to improve the quality of games and adapt them for different age groups.

2. Development of new methodologies for intellectual development through games: New methodologies should be developed for the effective use of game technologies in strengthening the intellectual development of children. Games should include specific methodological recommendations aimed at developing various intellectual abilities. Innovative approaches should be developed so that different forms of games (logical, creative, physical) cover all aspects of children's development.

3. Training educators in the use of game technologies and providing them with methodological guides: For the effective use of game technologies in the educational process, educators must have high methodological training. Therefore, it is necessary to conduct regular trainings to teach teachers and educators how to correctly use game technologies in the pedagogical process. For this, it is necessary to develop manuals, courses and programs aimed at using games for pedagogical purposes.

4. Using game technologies to support socio-emotional development: Game technologies are an effective tool for supporting not only intellectual development, but also the socio-emotional development of children. Through games, children can develop skills in communication, teamwork and managing emotional reactions. Therefore, game technologies should also be focused on the social and emotional development of children.

5. Development of adapted forms of game technologies for different social and cultural groups: When using game technologies in preschool educational organizations, it is necessary to take into account social and cultural differences. Taking into account the cultural and social differences between children, the forms and methods of game technologies should be adapted for each group. This will help ensure that children are successful in their education.

6. Studying the long-term impact of game technologies: Although the research has identified the short-term effectiveness of game technologies, it is necessary to study their long-term impact. Research should be conducted to study the long-term impact of game technologies on children's development. This will allow for a deeper understanding of the role and effectiveness of game technologies in the educational process.

7. Harmonizing games in supporting individual and collective development: Game technologies should be focused not only on individual development, but also on the development of collective work. For example, through games, children can develop skills in collaborative problem-solving, brainstorming, and group decision-making. This helps strengthen their team spirit and social skills.

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