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DEVELOPING CREATIVE THINKING IN PRIMARY SCHOOL STUDENTS THROUGH SCRATCH

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Abstract: This article examines the effectiveness of using modern pedagogical technologies in teaching literacy to primary school students through Scratch. The study explores the impact of interactive teaching methods, gamification, and visual materials on students' creativity and critical thinking. The findings indicate that innovative approaches significantly enhance students' engagement and improve learning outcomes. Based on the results, recommendations are provided for integrating modern technologies into the educational process.
Keywords: Scratch, primary education, pedagogical technologies, interactive learning, gamification, creative thinking.

Introduction

Developing creative thinking in primary school students is a crucial aspect of modern education. With the advancement of digital tools, platforms like Scratch provide an effective way to engage young learners in interactive and creative learning experiences. Scratch enables students to visualize concepts, develop problem-solving skills, and enhance their logical thinking. This paper investigates the impact of using Scratch as a pedagogical tool to foster creativity in primary school students.

Theoretical Foundations

At the age of seven, children have a well-developed direct memory, and the strong retention of early impressions in memory (as evidenced by adults recalling childhood memories vividly) proves this. At this age, involuntary, visual-emotional memory is predominant.

Children perceive information through emotional experiences (feelings). This process initiates the transition to indirect memory. Initially, children develop a need to retain information in memory (internal motivation). As a result, this information is analyzed and stored in the subconscious. To ensure that information is well-preserved in children's memory, it is advisable to conduct exercises that reinforce storage and retrieval processes. This, in turn, aids in the development of their imagination and cognitive skills.

To enhance first-grade students' motivation for learning (their internal drive) and foster their imagination, it is essential to create a **developmental educational environment**. Such an environment enables children to engage in independent learning, perceive information effectively, and develop their creative thinking. As L.Vygotsky stated, the value of a child's creativity at this age lies not in the final product of their activity but in the positive influence of the learning process on the child.

In general, six- to seven-year-old children are well-suited for developing creative activity. Firstly, their psychological state makes them highly curious, and secondly, their brains have fewer memory traces, making them more receptive to new information. In other words, children's **neuroplasticity** - the ability of neural circuits to change in response to external influences-is

highly pronounced. However, to leverage this potential, teachers must create a **creative and developmental learning environment**.

To help children analyze and retain information effectively in their memory (transforming it into subconscious reserves), the following principles should be emphasized:

- **Relying on visual aids** – visualizing information;
- **Building on prior knowledge** – connecting new information to existing knowledge;
- **Focusing on analysis rather than memorization** – encouraging interpretation based on personal perspectives.

According to C. Rogers' specialization theory of the brain's hemispheres, the **left hemisphere** is responsible for speech and logical thinking, while the **right hemisphere** governs intuition and imagination. Although creative activity relies on the joint function of both hemispheres, most people have a dominant left hemisphere, leading to underdeveloped imaginative skills.

Therefore, activating the **right hemisphere** through various techniques is crucial for developing children's imagination. One of the most effective ways to achieve this is through visualization—relying on visual aids in the learning process.

Methodology

This research employs the following methods:

1. **Literature Review** – Analysis of previous studies on the use of Scratch and modern pedagogical approaches in primary education.
2. **Experimental Study** – Implementation of Scratch-based learning activities with primary school students.
3. **Surveys and Interviews** – Gathering feedback from teachers and students on the effectiveness of Scratch in fostering creativity.
4. **Theoretical Analysis** – Evaluating the pedagogical impact of Scratch on creative thinking development.

Results

The study revealed the following key findings:

- **Interactive Learning Techniques** (Scratch projects, animations, and storytelling) significantly increase student engagement.
- **Gamification Elements** (reward systems, challenges, and interactive exercises) enhance motivation and participation.
- **Visual Learning Tools** help students better understand abstract concepts and improve their retention of knowledge.
- **Differentiated Learning Approaches** enable teachers to adapt instruction to meet individual student needs.

Discussion

The results indicate that integrating Scratch into the curriculum effectively supports the development of creative thinking in young learners. Compared to traditional teaching methods, Scratch-based activities provide a more engaging and interactive learning environment. Additionally, gamification elements further stimulate student interest and participation.

However, some challenges were identified. Not all teachers are proficient in using digital tools like Scratch, highlighting the need for professional development programs to enhance their technical and pedagogical skills.

Conclusion

The research findings demonstrate that using Scratch in primary education significantly improves students' creative thinking and engagement in learning activities. Implementing interactive and gamified methods contributes to a more effective educational experience. Therefore, it is essential to integrate modern technological tools into the teaching process and provide appropriate training for educators.

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