

THE EFFECT OF USING THE SCRATCH MEDIA ON THE CREATIVE SKILLS OF IPS LEARNING

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Abstract: This study aims to find out how using the Scratch media affects students' creative skills in Social Studies (IPS) learning at SDN Bangsal. This is based on the need for interactive learning media that can stimulate students' imagination, problem-solving abilities, and creative expression. The research method used is a quasi-experimental design with a pretest-posttest control group. The subjects are fifth-grade students at SDN Bangsal, divided into an experimental group and a control group. The research instruments include a creativity skills observation sheet and a learning outcome test. The results show that using Scratch media has a positive and significant impact on improving students' creative skills, especially in terms of fluency, flexibility, originality, and elaboration. Students who learn with Scratch media are better able to develop ideas, express IPS concepts through animations, and create creative solutions to social issues studied. Therefore, Scratch media is effectively used as an innovation in IPS learning at the elementary level to maximize students' creative skills.

Keywords: Scratch, creative skills, social studies learning

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INTRODUCTION

In the 21st century, students need to have critical thinking, creativity, communication, and collaboration skills to face global challenges (Trilling & Fadel, 2009). At the elementary school level, these skills form a key foundation for developing higher-order thinking abilities, which help students solve problems independently and in new ways. However, studies show that the creativity of elementary students in Indonesia is still low, especially in Social Studies (IPS), which is often seen as theoretical and not very interesting (Suyono & Hariyanto, 2017).

Since it inspires students to think creatively, generate new concepts, and develop ideas in a variety of circumstances, creativity is crucial to learning. The capacity to come up with fresh, original, and pertinent ideas in each circumstance is known as creativity. In the current digital era, creativity also entails the constructive expression of knowledge and ideas through technology. Therefore, digital media that can stimulate kids' imagination and creativity should be incorporated into elementary school instruction.

One suitable learning media for this purpose is Scratch, a visual programming platform developed by Mitchel Resnick at MIT Media Lab (Resnick, 2017). Scratch allows students to create animations, games, and digital simulations in a fun and project-based way. This means students not only learn academic concepts but also develop computational thinking—skills involving logical, systematic, and creative problem solving (Wing, 2014).

Several studies support the effectiveness of using Scratch to improve students' creativity. Lye and Koh (2014) found that learning with Scratch can strengthen creative thinking through simple programming activities that involve exploring ideas and visualizing concepts. Kalelioğlu and Gülbahar (2016) discovered that using Scratch improves students' problem-solving skills and learning motivation. Additionally, Tang and Hsiao (2019) emphasized that using digital storytelling with Scratch significantly enhances students' imagination and creativity. However, in many Indonesian elementary schools, the use of programming-based learning media is still very limited.

Based on initial observations at SDN Bangsal, IPS lessons still use traditional methods and static media like Canva and PowerPoint. This makes students less active in developing their own ideas and more likely to copy what the teacher shows without creating new thoughts. Therefore, it is necessary to innovate teaching using project-based, visual, and interactive media like Scratch to foster students' creativity in IPS learning.

With that background, this research was conducted to find out how using the Scratch media affects students' creative skills in IPS learning at SDN Bangsal. By integrating technology, it is hoped that students not only understand IPS concepts deeply but also can creatively, collaboratively, and contextually express their ideas, which aligns with the needs of 21st-century competencies.

METHODS

This experimental study aims to test the hypothesis about whether the use of Scratch media influences students' creative skills in IPS learning at SDN Bangsal. The researcher used a quasi-experimental design (a type of simulated experiment) because the subjects were already naturally grouped into classes and not all variables could be controlled. The research design takes the form of a pretest-posttest control group. **Table 1.** Experimental Procedure One Design

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Group	<i>Pretest</i>	<i>Treatment</i>	<i>Posttest</i>
Eksperimen (E)	O1	X	O2
Kontrol (K)	O1	-	O2

Information:

O1 = Pretest score

O2 = Posttest score

X = Treatments that receive learning with scratch

- = Treatments that receive learning using PowerPoint

The population of this study consists of all fifth-grade students at SDN Bangsal, totaling 90 students. The sampling method used in this research is purposive sampling. The sample includes 30 students from class V-A as the experimental class and 30 students from class V-B as the control class.

The instruments used in this study include both tests and non-tests. The creative thinking skills test is in the form of a project/product-based task related to social studies, assessed using a creativity rubric on a scale of 1 to 5. The rubric also covers dimensions

such as fluency (number of ideas), originality (originality of ideas), elaboration (development of ideas), and relevance. Non-test instruments include an observation sheet for learning processes, which measures participation, initiative, and collaboration. Prerequisite tests include normality and homogeneity checks. Data analysis uses an independent sample t-test. The significance level used is 5%. Data analysis calculations are performed using SPSS 25.0 for Windows.

RESULTS

There is a big difference in the improvement of creative skills (N-Gain) between students in class V of SDN 1 Bangsal who learned using the Scratch media and those who learned using the usual media used by teachers, which is Canva, at a significance level of 5%.

Table 2. Normality Test

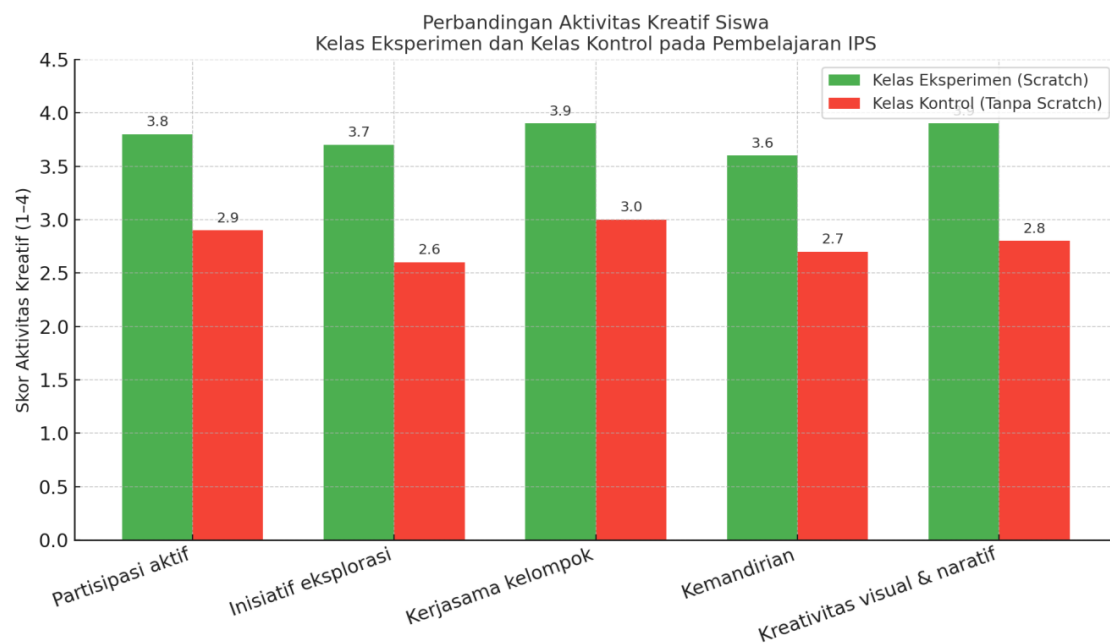
F	Sig. (p-value)	Keterangan
1.560	0.217	Jika Sig. > 0.05, varian Homogen .

Using Scratch proved to be more effective in improving the creative skills of students in class V of SDN 1 Bangsal.

Table 3. T-Test

T	df	Sig. (2-tailed)	Mean Difference	Std. Difference	Error
6.559	58	0.000	0.2300	0.03507	

The data analysis shows there is a significant difference between the experimental group (class V-A, $n = 30$) that used Scratch and the control group (class V-B, $n = 30$) that used conventional media (Canva) in terms of the improvement of creative skills after the intervention. Based on the increase score of 6.559 and the independent samples t-test, the average improvement in the experimental group was greater, and the difference was significant at $\alpha = 0.05$. Before conducting the comparative tests, the data had gone through normality and homogeneity checks, so the independent t-test could be applied properly. These quantitative findings are included in the research results report.



DISCUSSION

The significant results on the N-Gain show that using Scratch in learning really improved students' creative abilities, and this wasn't just a coincidence. It was because of the treatment given to the experimental group. Since this study used a quasi-experimental design with a pretest and a posttest with an active control group, the evidence is strong enough to support the claim that Scratch is effective in this context (even though it's not as strong as a fully randomized experiment).

Creativity was assessed using a rubric that looked at four main areas—fluency (how many ideas students came up with), originality (how unique their ideas were), elaboration (how much they developed their ideas), and relevance (how well their ideas connected to the topic). The results showed a clear pattern of improvement:

1. Fluency (Number of Ideas):

Students in the experimental group came up with more ideas when making animation or simulation projects about the topic of population dynamics in social studies. The drag-and-drop feature in Scratch made it easier for students to try out different ideas without facing big technical barriers, so their idea generation process became more active and productive. Classroom observations showed that students in the experimental group came up with more alternative ideas and varied solutions during the project tasks.

2. Originality (Uniqueness of Ideas):

Creating characters, storylines, and interactive scenarios encouraged students to find unique ways to represent social studies topics. Instead of copying static examples, students built their own digital narratives that reflected their personal understanding of issues like the impact of urbanization on the local environment. This was clearly seen in the higher scores for originality in the experimental group.

3. Elaboration (Development of Ideas):

Scratch helped students build their ideas step by step. They added more animation details, arranged events in order, and included interactive elements like simulation buttons. Observations showed that projects made by the experimental group were more detailed compared to those of the control group, which were usually just descriptive and less developed.

4. Relevance (Connection to the Topic):

Because the projects were based on real-world issues, most of the ideas remained relevant to the social studies content. Scratch helped visualize abstract concepts, making the connection between ideas and social or environmental contexts clearer, which improved the relevance scores in the evaluation rubric.

Overall, the improvement in all four dimensions supports the finding that Scratch stimulates aspects of creative thinking such as fluency, flexibility, originality, and elaboration.

Some mechanisms that explain how Scratch helps increase students' creativity include:

1. **Interactivity and Immediate Feedback:** Scratch provides instant visual feedback when code blocks are run. This speeds up the trial-and-error process, allowing students to explore different ideas more quickly. As a result, the creative process becomes more iterative and reflective.
2. **Project-Based Learning:** Creating animation or simulation projects requires students to plan, build, and present their work. These steps help them understand concepts better while also developing their creativity. The teacher's role shifts from just delivering content to acting as a facilitator who guides debugging and reflection.
3. **Integration of Computational Thinking:** Scratch introduces components of computational thinking, like decomposition, pattern recognition, and simple algorithms. This helps students break down social problems into manageable parts that can be modeled. This process also supports structured creative thinking.
4. **Collaboration:** Many Scratch projects are done in groups. Discussions among group members about concepts, roles, and storylines lead to a combination of ideas, which increases originality and the flow of thoughts.

Although the results show a positive effect of using Scratch, some limitations should be considered:

1. **Quasi-experimental design (lack of full randomization):** Choosing classes as treatment units without full randomization of individuals allows for initial differences between classes (like teacher characteristics or classroom climate) to affect the results. Although a pretest was used to measure the baseline, internal validity threats still exist.

2. Small sample size and single location: The sample of 60 students (two classes) from one school limits the generalization of the results to a broader population. Cultural context and school facilities (like computer availability) can moderate the effectiveness of the medium.
3. Duration of intervention: If the intervention period is relatively short, the improvement may reflect an initial effect (novelty effect). Further long-term research is needed to see if the increase in creativity is sustained.
4. Confounding variables (teacher effect, differences in implementation): The teachers' competence and teaching style in facilitating Scratch can influence the results. More strict control over these variables would strengthen the findings.

These limitations are mentioned in the research report and should be considered when interpreting the results.

Based on the findings and discussion, there are several implications and practical recommendations:

1. Integrating Scratch into the Social Studies curriculum: Schools can consider including a visual programming module as part of local content or thematic learning activities to enrich the Social Studies learning experience.
2. Teacher training: To ensure effective implementation, teachers need pedagogical and technical training on integrating Scratch with project-based learning (PBL) approaches and strategies for assessing creativity.
3. Availability of resources: Schools should ensure the availability of equipment (computers/tablets, internet) and technical support to allow Scratch-based activities to run smoothly.
4. Further research: It is recommended to replicate the study using a randomized controlled trial (RCT) or multi-site study, increase sample size, measure long-term effects, and conduct moderation analysis (for example, the role of motivation and teacher competence) to strengthen the evidence of effectiveness.

CONCLUSION

According to the research findings, it can be concluded that using the Scratch media has a positive and significant impact on improving students' creative skills in IPS learning at SDN Bangsal. Scratch has been proven to enhance students' aspects of idea fluency, thinking flexibility, originality, and idea development. Additionally, Scratch also supports the development of computational thinking and encourages interactive, collaborative, and enjoyable project-based learning.

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