Effectiveness of Creative Instructional Multimedia on Students' Motivation and Learning Styles

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ABSTRACT

This study aims to analyze the effectiveness of creative instructional multimedia in enhancing students' learning motivation and to identify students' learning styles in the Science and Social Science (IPAS) learning process at Sekolah Dasar Islam Plus of the Riau Islamic Education Foundation. The creative instructional multimedia used was based on visual, auditory, and kinesthetic modalities, with the expectation of accommodating differences in learning styles and increasing motivation. This study used a quasi-experimental method with a pretest-posttest control group design. The sample consisted of fourth-grade students selected through purposive sampling. The research instruments included a motivation questionnaire, a learning style test, observation sheets, and interview guidelines. The learning style test was conducted at the beginning of the study to identify students' learning preferences to optimize the use of creative instructional multimedia according to each student's characteristics. This test was not repeated at the end of the study, as changes in learning styles are long-term in nature and influenced by multiple factors. Quantitative data were analyzed using descriptive and inferential statistics, including t-tests, while qualitative data from observations and interviews were analyzed using descriptive-qualitative techniques through data reduction, data display, and conclusion drawing. The results show an increase in motivation scores from 77.30% to 81.15% (a difference of 3.85%, $p = 0.000$), indicating a significant improvement. The multimedia also proves effective in facilitating various learning styles. These findings indicate that creative instructional multimedia enhances the learning motivation of elementary school students.

Keywords: creative instructional multimedia, motivation, learning styles

INTRODUCTION

In the increasingly developed digital era, the integration of technology into education has become a necessity to improve the quality of learning. One prominent innovation is the use of creative instructional multimedia, which has been proven effective in increasing learning motivation [1], particularly in Science and Social Science (IPAS) learning at the elementary school level [2]. Creative instructional multimedia offers excellent potential to create more interactive and engaging learning experiences. The integration of creative instructional multimedia in IPAS learning at Sekolah Dasar Islam Plus of the Riau Islamic Education Foundation (SDIP YLPI), Pekanbaru, serves as a suitable instructional media in the learning process during the digital era.

Previous studies on instructional multimedia generally focus only on the improvement of learning outcomes [3], without directly linking them to students' motivation and learning styles. To date, studies examining the effectiveness of creatively designed instructional multimedia on learning motivation while considering differences in students' learning styles, particularly in Science and Social Science (IPAS) learning at the elementary school level, remain limited. This study offers novelty by integrating creative multimedia and learning style analysis to evaluate their effect on learning motivation, thereby contributing to the development of more adaptive and student-centered instructional strategies that address individual learning needs.

Creative teaching strategies, as highlighted in various studies, have been proven to significantly improve students' achievement and motivation by transforming monotonous traditional learning methods into more engaging and interactive experiences [4], [5]. The use of digital technology, such as hybrid e-learning and virtual reality, has been highly effective in fostering active learning environments where students can apply knowledge practically, thereby enhancing their engagement and motivation [6]. In addition, the digitalization of instructional media has been found to positively affect students' motivation and learning

styles, as it enables more personalized and adaptive learning experiences [7].

However, the successful implementation of creative instructional multimedia technology requires addressing challenges such as infrastructure limitations and the need for teacher training to integrate digital tools into the curriculum effectively [8], [9]. Generally, the use of creative multimedia in teaching not only aligns with the evolving educational landscape but also holds the potential to significantly enhance the quality of learning by accommodating various learning styles and increasing students' motivation [10].

The *Merdeka* Curriculum implemented in Indonesia emphasizes the importance of student-centered learning that is flexible and adaptive to individual needs [11], [12]. However, the implementation of this curriculum in several schools still faces challenges, particularly in providing innovative learning resources that align with students' characteristics [13], [14]. At Sekolah Dasar Islam Plus of the Riau Islamic Education Foundation Pekanbaru, for instance, there is a need to develop teaching methods that not only deliver content but also enhance motivation and accommodate various student learning styles.

Previous studies have shown that the use of creative instructional multimedia in learning can enhance students' conceptual understanding and learning motivation [15]. One study found that the implementation of creative instructional multimedia in science learning at the elementary school level was effective in improving students' conceptual understanding [16]. However, research specifically examining the effectiveness of creative instructional multimedia in the context of Science and Social Science (IPAS) learning at the elementary school level remains limited. In addition, there is a lack of studies linking the use of multimedia with adaptation to various student learning styles.

Based on this background, this study aims to analyze the effectiveness of using creative instructional multimedia in enhancing students' learning motivation and to identify students' learning styles in Science and Social Science (IPAS) learning. Thus, this study is expected to contribute to the development of learning style-based creative instructional multimedia for more effective, adaptive, and motivating educational practices.

In current learning practices, the use of multimedia as an instructional medium is increasingly being applied across various levels of education [17]. Teachers often rely on visual and audio-based media to deliver material more engagingly and interactively. However, based on preliminary observations at Sekolah Dasar Islam Plus of the Riau Islamic Education Foundation (SDIP YLPI), Pekanbaru, it was found that the use of multimedia in IPAS learning remains general and has not fully considered the variations in students' learning styles. Students with visual, auditory, or kinesthetic learning styles have not yet received optimal learning access aligned with their individual

characteristics, resulting in uneven development of learning motivation.

Although various studies have examined the effectiveness of multimedia in improving learning outcomes, the majority still focus on cognitive aspects without considering the diversity of learning styles. In addition, the integration of creative instructional multimedia within the context of the *Merdeka* Curriculum, particularly in Science and Social Science (IPAS) learning at the elementary school level, remains very limited in the literature.

As a solution to this issue, this study develops and tests the effectiveness of creative instructional multimedia designed in alignment with students' learning styles to enhance learning motivation in a more personalized manner. This study offers novelty by combining a creative instructional multimedia approach that adapts to visual, auditory, and kinesthetic learning styles in Science and Social Science (IPAS) learning. Thus, the results are expected not only to show an increase in learning motivation but also to contribute to the development of more responsive instructional media that align with the spirit of differentiated learning promoted in the *Merdeka* Curriculum.

RESEARCH METHOD

This study used a quasi-experimental method with a pretest-posttest control group design. This method was chosen to measure the effectiveness of creative instructional multimedia on students' motivation and learning styles. This design allows for a comparison between a control group that used conventional learning methods and an experimental group that used creative instructional multimedia. In the experimental class, this study utilized creative instructional multimedia, such as Interactive PowerPoint (PPT), instructional videos, and digital quizzes. This media was implemented in interactive learning activities, in which the researcher not only delivered the material but also actively engaged students through visualization, audio, and educational games. This creative instructional multimedia did not explicitly apply a specific learning model. Instead, they referred to a contextual learning strategy that utilized the strengths of multimedia to enhance motivation and adapt to students' learning styles.

Table 1. Research Design

Group	Pretest	Treatment	Posttest
Experimental	O1	X	O2
Control	O1	-	O2

Explanation:

O1 : Pretest

X : Treatment using creative instructional multimedia

O2 : Posttest

The population in this study consisted of all Grade IV students at SDIP YLPI Pekanbaru, totaling 41 students. Grade IVA, consisting of 21 students, served as the control group, while Grade IVB, consisting of 20 students, served as the experimental group. The sample in this study was selected using purposive sampling

from the entire population of 41 Grade IV students at Sekolah Dasar Islam Plus of the Riau Islamic Education Foundation (SDIP YLPI), Pekanbaru. This study employed several data collection methods to obtain clearer and more accurate information. The techniques and instruments used in this research were observation, questionnaires, and documentation.

The research method used was a quasi-experimental design with a pretest-posttest control group. The research sample consisted of Grade IV students at Sekolah Dasar Islam Plus of the Riau Islamic Education Foundation (SDIP YLPI), Pekanbaru, selected through purposive sampling. The instruments used included a learning motivation questionnaire, a learning style test, observation sheets, and in-depth interview guidelines for both teachers and students. The learning style test was conducted at the beginning of the study to identify students' learning preferences to optimize the use of creative instructional multimedia according to

each student's characteristics. This test was not repeated at the end of the study, as changes in learning styles are long-term in nature and influenced by multiple factors [18]. Quantitative data, namely the results of the learning motivation questionnaire, were analyzed using descriptive and inferential statistical tests, including the t-test to examine significant differences between groups. Meanwhile, qualitative data from observations and interviews were analyzed using descriptive-qualitative analysis techniques through data reduction, data display, and conclusion drawing.

RESULTS AND DISCUSSION
1. Normality Test

In this study, the Shapiro-Wilk test was used for the normality test due to the small sample size. The following are the results of the Shapiro-Wilk test using SPSS

Table 2. Normality Test Results

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
pretest	.195	20	.044	.930	20	.158
posttest	.211	20	.020	.911	20	.066

Based on Table 2, the significance value for the pretest data is 0.158 > 0.05, which means the pretest data are normally distributed. Meanwhile, the significance value for the posttest data is 0.066 > 0.05, indicating that the posttest data are also normally distributed.

2. Paired Test

Subsequently, a paired test was conducted to determine whether there was an effect of the treatment on students' learning motivation. Using SPSS, the following statistical data were obtained:

Table 3. Paired Samples Statistics Results

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	pretest	77.30	20	7.994	1.788
	posttest	81.15	20	8.393	1.877

Based on Table 3, it can be seen that the average student learning motivation score before the treatment, as shown in the pretest, was 77.30. After the treatment was given, the posttest score increased to 81.15. This indicates an improvement in students' motivation as a result of providing

treatment aligned with each student's learning style. Subsequently, it will be determined whether there is a relationship between the pretest and posttest data. Using SPSS, the results of the correlation test are as follows:

Table 4. Paired Samples Correlations Results

	N	Correlation	Sig.
Pair 1 pretest & posttest	20	.978	.000

Based on Table 4, it can be seen that the significance value is 0.000 < 0.05, which indicates that there is a relationship between students' motivation before and after the treatment was given according to their learning styles.

Next, it will be determined whether the treatment affects students' learning motivation. Using SPSS, the following results were obtained:

Table 5. Paired Samples Test Results

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 pretest – posttest	-3.850	1.755	.393	-4.672	-3.028	-9.808	19	.000

Based on Table 5, the significance value is 0.000 < 0.05, indicating that there is a significant difference in students' learning motivation before and after receiving the treatment. Therefore, it can

be concluded that the treatment has a significant effect on students' motivation and learning styles.

The use of creative instructional multimedia in the Science and Social Science (IPAS) subject for

Grade IV at SD YLPI Pekanbaru provides significant benefits to the learning process. One of the main benefits is the increase in students' motivation during learning, particularly among those who previously experienced difficulties in understanding abstract concepts in IPAS. Through the use of visual elements such as interactive animations, students can understand scientific concepts more clearly. For example, when learning about energy transformations, such as electrical energy converting into light in a lamp, electrical energy into motion in a fan, and other types of energy conversions, this activity enhances students' learning motivation. Recent studies show that multimedia-based learning can increase students' learning motivation and conceptual understanding by up to 35% compared to conventional methods [19]. In addition, creative instructional multimedia also enables personalized learning, allowing teachers to adjust the material based on students' level of understanding and learning pace [20]. Thus, the use of multimedia in Science and Social Science (IPAS) learning not only increases students' learning motivation but also supports the achievement of learning objectives more optimally.

Creative instructional multimedia is capable of providing learning facilities for students with various learning styles at Sekolah Dasar Islam Plus of the Riau Islamic Education Foundation (SDIP YLPI), Pekanbaru. Each student has a different way of absorbing information, and creative instructional multimedia allows them to access the material according to their learning preferences. Students with a visual learning style, for example, understand the material more easily through videos and illustrative images. Meanwhile, students with an auditory learning style are better able to comprehend the material through narration, educational music, or voice-based interactive discussions [21]. A concrete example in this study is when students were invited to listen to a narration in an educational video about energy transformations occurring around us, where the combination of visuals and sound strengthened their understanding of various types of energy changes, such as chemical, electrical, and water energy. Meanwhile, students with a kinesthetic learning style were more motivated when they could participate directly in virtual experiments or touch-based simulations, such as the use of interactive devices that allowed them to explore the concept of static electricity by rubbing a ruler with paper, generating static electricity capable of attracting hair and small pieces of paper [22]. As well as interactive digital quizzes at the end of the learning session. Previous studies have also found that the use of multimedia in learning enables students with various learning styles to be more active and independent in absorbing the material [23]. Therefore, the integration of multimedia in Science and Social Science (IPAS) not only supports better learning

motivation but also creates a more inclusive learning experience.

The increase in learning motivation among Grade IV students at Sekolah Dasar Islam Plus of the Riau Islamic Education Foundation (SDIP YLPI), Pekanbaru, is one of the significant positive effects of implementing creative instructional multimedia. Learning motivation improved because instructional multimedia provided access to each individual's learning style, indirectly contributing to students' comfort and motivation in engaging with the learning process. Based on the research findings and interviews with students, they felt more enthusiastic about participating in IPAS lessons with creative instructional multimedia compared to conventional learning, which relied more heavily on lectures and textbooks. Learning using creative instructional multimedia aligns with the theory of learning motivation in the study [24] which emphasizes that the presence of multimedia and visual elements in learning can enhance students' intrinsic motivation. In addition, the use of game elements (gamification) in instructional multimedia has also been proven to increase learning motivation, as evidenced by research showing that students who learn through gamification demonstrate higher levels of engagement compared to those using conventional methods [25]. Thus, creative instructional multimedia can serve as an effective tool for enhancing student learning motivation more enjoyably and engagingly.

CONCLUSION

Based on the results of the research conducted, it can be concluded that the use of creative instructional multimedia in Science and Social Science (IPAS) learning at Sekolah Dasar Islam Plus of the Riau Islamic Education Foundation (SDIP YLPI), Pekanbaru, has a significant positive effect on learning motivation and learning styles. Creative instructional multimedia significantly increases students' learning motivation compared to conventional methods. This improvement is supported by the results of statistical analysis, which show a significant difference between the experimental and control groups ($p < 0.05$). These findings indicate that the use of visual, auditory, and kinesthetic elements to accommodate learning styles in the learning process provides a more engaging learning experience and enhances active student engagement.

1. The use of creative instructional multimedia increases students' motivation to learn IPAS more effectively compared to conventional methods. The results of the pretest-posttest analysis show that the experimental group experienced a higher increase in learning motivation compared to the control group.

2. This study contributes to the development of innovative instructional media that align with students' needs in the digital era. Through the integration of technology into the learning process,

teachers can optimize teaching methods that are more adaptive and responsive to students' learning styles. This provides empirical evidence supporting the transformation of digital-based learning in elementary schools.

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