Differentiated Learning Assisted by Digital STRIP Comic Media Improves Elementary School Student Learning Outcomes

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Abstrak

Kendala yang terjadi dalam kegiatan pembelajaran yaitu siswa yang memahami materi pembelajaran sehingga mendapatkan hasil belajar yang rendah. Berdasarkan hal tersebut maka tujuan penelitian ini yaitu untuk menganalisis pengaruh pembelajaran diferensiasi berbantuan media komik STRIP digital terhadap hasil belajar siswa sekolah dasar. Jenis penelitian yang digunakan pada penelitian ini adalah penelitian kuantitatif dengan kuasi-eksperimental sebagai desain penelitian. Penelitian ini menggunakan desain penelitian eksperimen semu. Populasi pada penelitian ini adalah siswa yang berjumlah 38 orang siswa. Dalam penelitian ini dipakai cara mentukan sampel dengan metode random. Metode yang digunakan untuk mengumpulkan data yaitu wawancara, observasi, dokumentasi, angket dan tes. Instrumen yang digunakan dalam mengumpulkan data yaitu lembar kuesioner dan soal tes. Teknik yang digunakan untuk menganalisis data yaitu analisis statistik infrensial. Hasil penelitian yaitu terdapat perbedaan hasil belajar siswa pada kelas eksperimen yang menggunakan pembelajaran berdiferensiasi berbantuan media komik strip dibandingkan dengan kelas kontrol yang menggunakan pembelajaran konvensional. Hasil uji-n gain menunjukan adanya skor rata-rata kelas kontrol berada pada kategori kurang efektif dan pada kelompok eksperimen dalam kategori efektivitas sedang. Disimpulkan model pembelajaran diferensiasi berbantuan media komik STRIP digital dapat meningkatkan hasil belajar siswa sekolah dasar.

***Kata Kunci**: Pembelajaran Berdiferensiasi, Comic Strip, Seni Rupa, Hasil Belajar.*

Abstract

The obstacle in learning activities is that students do not need to understand the learning material, so they get low learning outcomes. Based on this, this research aims to analyze the influence of differentiation learning assisted by digital STRIP comic media on the learning outcomes of elementary school students. The type of research used in this research is quantitative research with quasi-experimental research as the research design. This research uses a quasi-experimental research design. The population in this study was 38 students. A random method was used to determine the sample for this research. The methods used to collect data are interviews, observation, documentation, questionnaires, and tests. The instruments used to collect data were questionnaire sheets and test questions. The technique used to analyze data is inferential statistical analysis. The results of the research are that there are differences in student learning outcomes in the experimental class, which uses differentiated learning assisted by comic strip media, compared to the control class, which uses conventional learning. The results of the n-gain test show that the average score of the control class is in the less effective category, and the experimental group is in the moderate effectiveness category. It was concluded that the differentiation learning model assisted by digital STRIP comic media could improve elementary school students' learning outcomes.

Keywords: Differentiated Learning, Comic Strip, Fine Arts, Learning Outcomes.

1. INTRODUCTION

Education is important because it aims to develop cultured, experienced, and potential people. It is also crucial in shaping the character of a nation (Agustina et al., 2019; Dewi E & A., 2020; Hariti et al., 2020). National education functions to develop the nation's abilities, character, and civilization to improve its intellectual abilities. It has been shown to develop the potential of students to become individuals with a humanitarian spirit. Human values include faith and devotion to God Almighty, high morals and character, and healthy, knowledgeable, capable, creative, independent, and responsible citizens. The national education system aims to develop the country's intellectual potential (Alwi & Iqbal, 2022;

Diana et al., 2021; Lamb et al., 2019). Education allows for optimal development. Research reveals that learning activities in the classroom are one of the aspects that influence it, and learning in the classroom dramatically influences the achievement of exemplary learning achievements (Dewantara & Dibia, 2021; Suartama et al., 2020). In achieving learning success, students actively participate in classroom teaching, especially elementary school students (Arent et al., 2020; Nurrita, 2018). Elementary School (SD) or Madrasah ibtidaiyah (MI) is the initial level of formal education. Founded to identify and develop student potential and provide fundamental information and skills through various subjects (Alnashr, 2018; Ashirin et al., 2021; Munthe et al., 2023). Teachers need to maximize a number of elements that hinder the learning process, such as other teachers, student-teacher relationships, curriculum, social environment, and educational media. These elements impact how well the learning process takes place (Bustanil S et al., 2019; Fahmi et al., 2018; Nurhadiyati et al., 2021). A good learning process can be achieved if the teacher can direct students to achieve learning goals by optimizing all existing resources that can be accessed inside and outside the classroom to help achieve learning goals.

However, the current problem is that many learning activities still need to be achieved optimally. Previous research findings also reveal that many students still need higher learning outcomes (Firmansyah, 2013; W. Lestari et al., 2018; Puspitasari et al., 2020). Other research also confirms that low student learning outcomes are caused by students lacking focus (Nurhadiyati et al., 2021; Sulistiyono et al., 2021). Students who do not focus on learning impact their ability to grasp learning material, which could be improved, resulting in learning objectives not being achieved optimally (Sutiani et al., 2021; Witha et al., 2021). This problem was also found at one of the Podorejo 03 State Elementary Schools. The observations and interviews conducted at the Podorejo 03 State Elementary School also found low student learning outcomes. The results of interviews conducted with teachers were due to students feeling bored while studying and needing to focus when listening to the teacher's explanations. The interview results also showed that students needed to be more interested in participating in learning activities. This is because the teacher applies conventional learning activities so that students only focus on listening to the teacher's explanation. The lack of learning media also impacts students who need help understanding learning material (Aslam et al., 2021; Oktafiyana & Septiana, 2021). This impacts students' abilities, which could be more optimal. Based on these problems, the solution is implementing differentiation learning assisted by STRIP Digital comic media. Teachers who use differentiated learning must recognize several approaches to teaching a subject (Cindyana et al., 2022; Herwina, 2021). In ensuring personalized teaching, teachers must organize learning materials, activities, daily assignments, and assessments according to students' learning profiles, interests, and readiness. With differentiated learning, teachers concentrate on their students' interests, readiness, and learning styles (Suwartiningsih, 2021; Syarifuddin & Nurmi, 2022).

Teachers can change the learning process, the final product or results of the material taught, the learning environment, and the substance of the lesson (content). Schools implement different learning processes so students can learn freely because students do not need to be the same as other people. The differentiated learning model allows teachers to present material by emphasizing students' interests, desires, and learning (Mulyawati et al., 2022; Safei, 2020). In teaching and learning, using media is essential, especially to convey and clarify the meaning of messages. In teaching and learning, using media is very important, especially in conveying and clarifying the meaning of messages (Fadilah et al., 2023; Ikhbal & Musril, 2020; Sukardi et al., 2020). Learning media channels messages that can trigger students' thoughts and curiosity, thus encouraging the addition of new information to students (Sholihin et al., 2020; Suryani et al., 2020). Learning media is something that is used to

channel messages, information, or materials or teaching materials between teachers and students to attract students' attention, interest, and involvement in learning activities so that they are practical and efficient (Fadilah et al., 2023; Ikhbal & Musril, 2020; Iskandar et al., 2020; Sukardi et al., 2020).

Comic media can be used in learning process activities from two directions, namely as a teaching aid for teachers and as a learning media for students. Comics are a two-dimensional learning media included in graphic media that can be used as a medium to convey learning messages that are more interesting compared to ordinary reading, which only contains writing (Subroto et al., 2020; Wahyudin et al., 2020). Previous research findings also reveal that using learning media is essential because it can make it easier for students to capture learning material and impact student learning outcomes (Darlis et al., 2020; Sudarma et al., 2020). Other research also reveals that digital comics can be said to be easily accessible either via website pages, applications, or online, so they are efficient to use (Lestari & Irwansyah, 2020; Wijaya et al., 2020). Other research related to differentiated learning reveals that differentiated learning creates a diverse class by providing opportunities to obtain content, process ideas, and improve the results of each student so that students will be able to learn more effectively (Saputra & Marlina, 2020; Suwartiningsih, 2021). However, there has yet to be a study regarding Differentiated Learning Assisted by Digital STRIP Comic Media to Improve Student Learning Outcomes. Teachers can easily connect comic strips with the material taught by using comic strips. The teacher must also explain coherently according to the content of the comic, and students must listen. Based on this, this research aims to analyze the influence of Differentiated Learning Assisted by STRIP Digital Comic Media in improving student learning outcomes.

2. METHODS

The type of research used in this research is quantitative research with quasi-experimental research as the research design. This research uses a quasi-experimental research design (Sugiyono, 2012). In order to find out the differences in learning outcomes in differentiated learning assisted by digital comic strip media in Fine Arts Education subject matter between those who use comic strip media and those who do not use conventional media, this research was carried out by first giving a pretest then continuing with providing treatment and a posttest. This research was conducted in two places: SD Negeri Podorejo 03 as an experimental class and SD Negeri Podorejo 01 as a control class. The population in this study were Class V students at SD Negeri Podorejo 03 and Class IV students at SD Negeri Podorejo 01, totaling 38 students. A random method was used to determine the sample for this research. This was done because student V had the same background with the same learning material, there were no superior classes, and the use of lecture model learning. So, the random method was deemed suitable. From the random results obtained at SD Negeri Podorejo 02 Class V as a trial class, SD Negeri Podorejo 01 Class V as a control class, and SD Negeri Podorejo 03 Class V as an experimental class. The methods used to collect data are interviews, observation, documentation, questionnaires, and tests. This research uses structured interview techniques. A structured interview is an interview where the researcher has determined the questions in a structured or standard manner. The subjects in this research used as sources or interviewees were the fifth-grade teacher at SD Negeri Podorejo 03 and the fifth-grade teacher at SD Negeri Podorejo 01. The observation method was used for direct observation of the process of teaching and learning activities or teaching and learning activities between students and teachers in the content of Fine Arts Lessons in grade V SD Negeri Podorejo 03 and class V SD Negeri Podorejo 01 using observation sheet guidelines. Documentation is used to collect data on students' names and data on learning outcomes for artwork materials from recycled household waste, namely using report cards (formative and

summative scores). In this research, the type of questionnaire used was a checklist in the form of a checklist with respondents from class V students at SD Negeri Podorejo 03 and SD Negeri Podorejo 01 to measure student learning motivation in order to collect data about the application of differentiated learning assisted by digital comic strip media to improve learning outcomes. Student. The test method is used to collect student learning results before and after using the Digital Comic strip learning media, and the post-test is carried out after using the Digital Comic strip media. The instruments used to collect data were questionnaire sheets and test questions. The instrument grid is presented in Table 1.

Table 1. Research Questionnaire Grid

Question Indicator	Cognitive Domain
• Presented questions, students can examine types of waste based on facts that occur in the surrounding environment	C4
• Presented with pictures, students can determine the types of waste that are often found in the surrounding environment	C3
• Presented questions, students can describe problems that occur in the environment	C4
• Presented questions, students can examine the recycling process correctly	C4
• Presented with pictures, students can determine the results of recycled objects correctly	C3
• Presented with questions, students can determine the steps in making recycled crafts correctly.	C3
• Presented with pictures, students can analyze parts of the used materials used in making the work	C4
• When presented with questions, students can express their responsibilities in maintaining the surrounding environment appropriately	C3
• When presented with questions, students can explain the principles of recycling used to properly maintain the surrounding environment	C4
• Presented with pictures, students can determine the waste used in making the work correctly	C3
• Understanding is presented, students can determine the type of waste based on a precise explanation of the meaning	C3
• When presented with questions, students can conclude the causes of environmental pollution	C4
• Presented questions, students can examine ways to reduce waste use appropriately	C4
• Presented with a statement, students can conclude the materials that can be used in making the work correctly	C4
• Presented questions, students can analyze the techniques used in making works correctly	C4
• Presented questions, students can determine the materials used in making the work correctly	C3
• Presented with questions, students can analyze the correct statements as an effort to reduce waste appropriately	C4

The technique used to analyze data is inferential statistical analysis. Before testing the hypothesis, prerequisite tests are carried out, namely normality and homogeneity tests. This study used a normality test using the Chi-Square formula. The homogeneity test determines

whether the two groups studied are homogeneous. The homogeneity test is carried out as a prerequisite in independent sample t-test analysis with the help of SPSS. Hypothesis testing is used to determine whether the hypothesis proposed in this research is accepted or rejected. Hypothesis testing was carried out by comparing the average pre-test and average post-test scores of students between the experimental class and control classes. Hypothesis testing uses the t-test.

3. RESULTS AND DISCUSSION
Result

The research stages were carried out after the instrument was successfully analyzed; the stages started with a pre-test, treatment, and posttest. The results of the initial pre-test in the control class showed that the average scores of the experimental and control groups were 46 and 45. The differences in the average scores achieved by the groups were visible. In the experimental group's pre-test score, the lowest score was 32 (thirty-two), and the highest was 56 (fifty-six). The control group's pre-test score was 34 (thirty-four), and the highest was 52 (fifty-two). The average scores of the experimental group and control group were 78 (seventy-eight) and 70 (seventy). The results of the data analysis show differences in the average scores achieved by the experimental and control groups. The test results in the experimental group increased by 32; from the initial test of 46, there was an increase to 78. Meanwhile, the control group also experienced an increase. Namely, from the initial test of 45 to 70, there was an increase of 30. The increase in the test results for the control group was smaller than that of the control group. Experiment. The posttest results of the experimental group and control group are as follows. In the experimental group's posttest score, the lowest was 66 (sixty-six), and the highest was 90 (ninety). In the control group's posttest score, the lowest was 58 (fifty-eight), and the highest was 76 (seventy-six). The results of the differences before treatment and after treatment are presented in Table 2.

Table 2. Results of Differences Before Treatment and After Treatment

Class	Treatment	N	Minimum Value	Maximum Value	Average
Control	Pretest	19	34	52	45
Experiment		19	32	56	46
Control	Posttest	19	58	76	70
Experiment		19	66	90	78

The results of data analysis show that there is an increase in student learning outcomes with the treatment, namely differentiated learning with the help of digital comic strip media which can be seen in the experimental class. Before testing the hypothesis, prerequisite tests are carried out, namely normality and homogeneity. The normality test was carried out to determine whether the data was normally distributed or not through the learning outcomes of class V students at SDN Podorejo 03. The normality test used was Shapiro Wilk with the help of SPSS version 29. The level of significance used was $\alpha=0.05$. The results of the pretest and posttest normality tests are presented in Table 3. Based on the normality test and control class calculations, the pretest data shows a significance value 0.131. The posttest results show a significance value of 0.073. To calculate the posttest value, the pretest data shows a significance value of 0.131, and the posttest data is 0.898. Data will be normally distributed if the significance value is > 0.05. It can be concluded that the control and experimental classes show that Ho is Obtained and Ha is Rejected, showing that the data is normally distributed. Next, a homogeneity test was carried out. With the help of SPPS

version 29, the Lavene test was used to test data homogeneity in this investigation. Data is said to be homogeneous if the significance value is more significant than >0.05. A significance value of less than <0.05 indicates that the data is not homogeneous. The calculation results are presented in Table 4.

Table 3. Pretest and Posttest Normality Test Results

Value	Class	The result of calculating the sig value	Significance level	Description	Data
Student Learning Outcomes	Pretest Control	0,131	0,05	$_{Ho}$ Retrieved	Normal
	Posttest Control	0,073	0,05	$_{Ho}$ Retrieved	Normal
	Pre-test Experiment	0,131	0,05	$_{Ho}$ Retrieved	Normal
	Post-test Experiment	0,898	0,05	$_{Ho}$ Retrieved	Normal

Table 4. Homogeneity Test Results of Student Learning Outcomes

		Levene Statistic	df1	df2	Sig.
Learning Outcomes	Based on Mean	1.041	3	72	0.380
	Based on Median	0.626	3	72	0.601
	Based on Median and with adjusted df	0.626	3	69.396	0.601
	Based on trimmed mean	1.019	3	72	0.390

Based on the results of data analysis, it was found that the sig value (0.380) > 0.05 means the data can be said to be homogeneous. Next, the hypothesis test is carried out using the t-test. The results of data analysis that have been calculated using SPSS show a sig value of 0.01 < 0.05, so there is a real difference because Ho is rejected and Ha is accepted. This shows that there is an influence of the use of digital comic media on student learning outcomes. The t-test results are presented in Table 5.

Table 5. T Test Results

		F	Sig.	t	df	Sig (2-tailed)
Learning Outcomes	Equal variance asumed	0.008	0.928	-4.878	36	0.001

Table 6. N-gain Test Results

Group	N-gain %	Kriteria
Control	43%	Less Effective
Experimental	60%	Moderately Effective

The n test determines how much the value of student learning outcomes increases is determined by the n test, namely the temporary decrease in the average value of the experimental class. These findings show an increase in the significance of learning objectives for SD N Podorejo 03 students who create works of art using comic strips and household waste that can be recycled. The results of the data analysis show that with an average score of 43%, the control class is in the less effective category. Falls into the moderate effectiveness

category at 60%. Therefore, differentiated learning in fine arts classes using comic strip media to teach fifth-grade students at SD Negeri Podorejo 03 how to make art from recycled household waste is quite interesting to use to improve student learning outcomes. The N-gain test results are presented in Table 6.

Discussions

The data analysis results show differences after implementing the differentiation learning model assisted by STRIP comic media on student learning outcomes. The following factors cause this. First, the differentiation learning model assisted by STRIP comic media can improve student learning outcomes. The results of the analysis show that there are significant differences in learning outcomes between the experimental and control classes. The experimental class was able to experience an increase in class V learning outcomes regarding artwork from recycled household waste. Differentiated and media-assisted learning can help students understand the material better. This is supported by previous research findings, which state that appropriate models and media can improve student learning outcomes (Melindawati et al., 2021; Mulyadinata et al., 2020; Zulfana et al., 2020). Differentiation learning means mixing all the differences to get information, create ideas, and express what they learn (Hadi et al., 2022; Pitaloka & Arsanti, 2022). In other words, differentiated learning is creating a diverse class by providing opportunities to obtain content, process ideas, and improve the results of each student so that students can learn more effectively. In addition, differentiation learning increases acceptance and respect for individual differences, which helps develop positive experiences of tolerance and respect for differences (Martanti et al., 2022; Rahmah et al., 2022). Second, the differentiation learning model assisted by STRIP comic media makes learning more accessible for students. Differentiated learning can help students understand the material better. Apart from that, they also feel that differentiated learning allows them to learn according to their abilities and interests (Hadi et al., 2022; Pitaloka & Arsanti, 2022; Putra, 2021). Comics help students understand the material because comics are close to children's worlds, and the illustrations are entertaining (Astutik et al., 2021; Hendra Saputra & Pasha, 2021; Nur Mazidah Nafala, 2022). Using comic media can make it easier for students to learn. This is revealed by research which states that the meaning of learning material will be more precise so that students can better understand it, and students will also master the learning objectives well and correctly (Mujahadah et al., 2021; Wulandari & Anugraheni, 2021). Learning media can be understood as media that functions in the learning process and objectives.

The essence of media in the learning process is communication, so learning media can be understood as the communication media used in the communication process. Learning media is essential in channeling learning messages that will be conveyed to students (Darmayanti & Surya Abadi, 2021; Khasanah et al., 2021). Third, the differentiation learning model assisted by STRIP comic media creates a fun learning atmosphere. Differentiated learning is the concept of organizing learning to facilitate the interests and talents of students in classes with diverse needs and abilities (Hadi et al., 2022; Pitaloka & Arsanti, 2022). Differentiated learning is an effort to adapt the learning process in the classroom to meet each student's individual learning needs. Students can learn according to each student's abilities and interests. Using learning media in teaching and learning process activities cancan arouse the desire for enthusiasm for learning and new interests, motivate students, and stimulate learning (Kurniawati & Koeswanti, 2021; Muawanah & Muhid, 2021). Apart from that, the media has a psychological influence on students. Comics as an educational learning medium are simple, straightforward, accessible, and personal. Comics are cartoons that reveal a character and tell a story in a close and orderly sequence (Darmayanti & Surya Abadi, 2021; Khasanah et al., 2021). The primary role of comics in instruction is their ability to create

student interest in student learning outcomes. Previous findings state that students feel that with differentiated learning, they can learn according to their abilities and interests (Gusteti & Neviyarni, 2022; Kusuma et al., 2023). Apart from that, other research states that comics help students understand the material because comics are close to children's worlds and are entertaining illustrations (Nur Mazidah Nafala, 2022; Suganda et al., 2022). This research shows that increasing the average of the experimental and control classes by using learning media in teaching and learning activities can arouse new enthusiasm and interest in learning, motivate students, stimulate learning, and psychologically influence this. Student. Cartoons that introduce characters and present the story correctly and sequentially are called comics. Their primary contribution to teaching is their potential to arouse student interest in student learning outcomes. The limitation of this research is that it only tests the effect of using the differentiation learning model assisted by STRIP comic media on student learning outcomes. Based on the explanation above, this research implies that learning carried out using differentiated learning and assisted by digital comic strip media experienced a significant increase in learning outcomes compared to the control class, which used conventional learning models.

4. CONCLUSION

The results of data analysis show that there are differences in student learning outcomes after implementing the differentiation learning model assisted by STRIP comic media on student learning outcomes. This can be proven by looking at the increase in the average score of the pretest and posttest results for each class. It was concluded that the differentiation learning model assisted by STRIP comic media could improve student learning outcomes. The use of digital STRIP comic media to support differentiated learning has been proven to improve student learning outcomes.

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