



## Managing Fourth-Grade Elementary School Students' Learning Motivation through Scrapbook Media-Based QR Code in Social Studies

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### ABSTRACT

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#### Keywords

Scrapbook Media; QR Codes; Students' Motivation; Social Studies.

**Purpose:** This research examined the effect of Scrapbook media-based QR codes to improve students' motivation to learn Social Studies. **Methodology** This inquiry used the Research and Development (RND) method to develop a Scrapbook media-based QR code product and test the resulting product's effectiveness; the researcher used an experimental form of one group pretest-posttest design. This research and development used the ADDIE model, which contained five stages: analysis, design, development, implementation and evaluation. The population of this study comprised fourth-grade elementary school students from the Srengseng sub-district, Kembangan, West Jakarta. The sample of this study was drawn randomly, employing the Slovin formula, with 73 students as the experimental group. The data analysis approach in this study uses a paired sample t-test to test the hypothesis and the Kolmogorov-Smirnov test to test the normality of the data distribution.

**Findings** This study found that the posttest mean score for 73 students was 58.22, which was greater than the pretest means of 83.42. This study concludes that applying a Scrapbook media-based QR code positively improves the learning motivation of fourth-grade elementary school students in the Srengseng sub-district, Kembangan, West Jakarta, Indonesia. **Implications to Research and Practice** This research contributes to increasing students' motivation to gain knowledge and experience using technology in 21st-century learning, especially in fun social studies learning.

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## Introduction

In our modern times, scholastic education is a planned activity, aiming at helping students achieve their potential, by providing them the opportunities to acquire the knowledge and social skills needed in social life. Elementary school education is the most basic talent development process, where every student learns actively due to his motivation and a supportive environment for his best self-development. In the Indonesian context, education can potentially equip Indonesia's young generation to become active and productive citizens who contribute to developing their lives, society and nation. The government provides the content of social studies lessons in implementing education at the elementary school level as a provision for students to live social lives later to meet educational goals. There is much material in social studies learning, one of which is about culture in various provinces in Indonesia on themes like, the beauty of togetherness, and sub-themes like the cultural diversity of the nation.

Anthropology, sociology, history, geography, economics, political studies, and psychology are distinct branches of social studies – anthropology studies how physical qualities interact with socially acquired traits (Colander, 2019). Biological and cultural anthropology are two significant branches of anthropology, called the study of humans. Within cultural anthropology, topics include fossils, excavations of previously inhabited sites, artefacts, and cultural variations within community groups. Cultural anthropology, the focus of this research, is about the cultural diversity of the people in various provinces.

Education is becoming increasingly important in the 21st century to ensure students have high learning motivation by utilizing technology as a medium of information. Many previous studies have discussed the application of technology-based media to support the learning process in education. A study said that learning is an activity to gain knowledge, master skills, and shape student attitudes (Cen & Zheng, 2024). Changes in student attitudes are indicators of learning success. If students are motivated to learn, academic attainment events will execute well. Students will be encouraged to continue learning as a result of learning motivation. Other research suggests that reason can describe how much effort students make in various activities and can help students overcome learning barriers and improve their learning outcomes (Phung et al., 2023; Wentzel, 2022). Student learning motivation is based on their concrete experiences. Then, they will appear to have initiative to engage in learning activities. Encouragement is why students are involved in learning and represented by the goals they want to achieve.

A study found that teaching-learning requires media for students to absorb the material (Bokhove, Jerrim, & Sims, 2023; Mayer & Schwemmler, 2023). The students need experiential learning to involve them in building their knowledge and improving their motivation to learn. Therefore, teaching media is needed to help students understand the subject matter. Another similar study said that one aspect that affects the favourable result of studying is the use of education media because the media is a distributor of subject matter that bridges teachers and students in the teaching process. The target of using learning media is to refine the effectiveness of student schooling, and the media can encourage students to think, generate new ideas, and be involved in the learning process (Ambe et al., 2024; Knaus, 2023; Wang et al., 2023). The study found that teachers felt they were less able to develop learning media because teachers usually only took photos from textbooks. Effective learning media can help students to learn. Media use is also helpful to help students become more motivated and physically and psychologically involved in learning activities.

In addition, the media makes learning more meaningful because it maximizes all students' senses. As in other studies, it is said that students learn to use various images as conceptual visualization (Barr & Kirkorian, 2023). In this study, the teacher used scrapbook media to realize the material with full visual images. Visual learning media is used as a support for textbooks. The scrapbook the teacher uses only stimulates the students' sense of sight. Furthermore, another study said that Scrapbook is a book that contains art to paste pictures on paper media and decorate it to become a creative work (Khan & AlGhamdi, 2024). The development of scrapbook media in this study is still conventional. The media only displays pictures of plant organs to increase student interest and motivation in studying plant organ material.

It differs from previous research, which focused on using conventional learning media that only displays visuals in measuring student learning motivation; researchers feel it is essential to conduct this research by incorporating technology such as QR codes in audio-visual learning media and focusing on increasing student learning motivation. To avoid boredom in student learning, especially in social studies learning, technology-based learning media needs to be applied in the classroom to gain knowledge and experience using technology in 21st-century education. Students can observe various pictures of traditional houses, listen to classic songs, and watch videos of traditional dances that can be accessed using a QR code so they can better understand the material on cultural diversity.

The current study develops a Scrapbook media-based QR code and finds ways to use technology-based learning media, which is expected to expand the instruction motivation of fourth-grade primary school pupils in Srengseng sub-district, Kembangan, West Jakarta, Indonesia. The questions raised in this study are: "Is there an improvement in the application of Scrapbook media-based QR code on the learning motivation of fourth-grade elementary school students? ". This research seeks to answer the following two problems: (i) How do you develop a Scrapbook media-based QR code? (ii) Does developing a Scrapbook media-based QR code have a positive effect on increasing student learning motivation? Hence, the main objective of this article was to develop a scrapbook media which is expected to improve student motivation in learning social studies. Furthermore, it also aimed to use scrapbooks as digital learning media and examine their impact on learning outcomes, skills, and other student aspects. In addition, it narrated the varieties of instruction motivation with ways to improve student learning motivation.

## Literature Review

- *Scrapbook as a Digital Learning Media*

Learning with digital media differs from usual learning because it utilizes technology. Digital technology has become the primary educational medium and an essential part of students' daily lives, which brings significant changes in education, and digital media has become part of the learning process. Therefore, schools must prepare a highly mediated school world for students (Greve et al., 2022; Kucker, 2021; Papouli, Chatzifotiou, & Tsairidis, 2020; Qureshi, Pan, & Zheng, 2021; von Gillern et al., 2024). The study said that the exploitation of digital media in primary school training in Germany is very calculated to meet the demands and achieve the goals of education itself. Digital media, as learning media, aims to make it easier for teachers to deliver subject matter. Many studies discuss technological advances, mainly used as digital learning media to create quality learning.

The desire of schoolchildren to exert digital media as learning media will significantly impact investigation success and allow students to improve their knowledge and skills in using technology as a provision for the future. Integrating technology into learning media will enable teachers to create exciting learning materials (Cain et al., 2023; Gao & Li, 2024; Hammer, Scheiter, & Stürmer, 2021; Poultzakis et al., 2021). In the 21st century, digital media has become a part of children's daily lives that provide learning opportunities in a fun way. Therefore, teachers must learn to use digital media. Thus, teachers and students can work together to achieve the expected learning objectives. Digital media makes a real contribution by involving students in learning through direct feedback and authentic assessment.

Learning media is essential in the acquisition process because it makes it uncomplicated for students to know the substance. The learning media must also be innovative and integrated with technology, thus encouraging students to be more active in learning and helping them build meaningful knowledge with the core of their knowledge and life occurrences. Technology is also a visualization of information presented in various ways using digital media, such as visual and auditory, so that it can motivate and develop student creative activities (Chuang et al., 2019; Degner, Moser, & Lewalter, 2022; Kyoj & Mori, 2024; Rodrigo et al., 2022; Slivinskaya & Westerholt, 2021). The study also said that technology-based media can arouse desire and interest and stimulate students to participate in class learning activities. With technology, it is easier for teachers to design digital media from the internet in the pattern of relatively more realistic and practical figures than conventional media. One of the alternative media that can be used as a learning medium is Scrapbooks. Scrapbook media that previously only displayed photos can be developed by utilizing technology, such as QR codes, to become digital media that can display videos and are suitable for application as learning media in elementary schools.

- *Student's Motivation*

Motivation means the drive towards high grades or for achievement that a person receives, refers to specific goals and is considered very important because it impacts learning performance. To maintain learning motivation, students must improve their interpretation of the learning material in the teaching and learning process. Students can learn effectively only with high motivation (Blanco, Holliman, & Carroll, 2019; Dunn & Kennedy, 2019; Law, Geng, & Li, 2019; Schunk & DiBenedetto, 2020; StamoV Roßnagel, Fitzallen, & Lo Baido, 2021). There are various kinds of motivation, namely outside and inside. Intrinsic stimulation is associated with enthusiasm among students. Intrinsic motivation plays a significant role in student academic achievement. However, it cannot be denied that external motivation from the environment also plays a role for students.

In this study, teachers need to create an environment that connects with students because teachers play an active role in encouraging and increasing student learning motivation, and teachers play a role in interaction with students during learning (Calderón, Meroño, & MacPhail, 2020; Li et al., 2024; Singh & Singh, 2021). An operational learning environment that connects teachers and students, provides chances for students to be included in the learning procedures. Student involvement is seen when they interact with the teacher or other students in learning activities. Thus, the student-centred learning process can produce a consistent positive relationship between motivation and learning outcomes.

Many studies have found that students' active participation in learning can improve their learning motivation. The ability of students to direct themselves in learning can affect the effectiveness of their education. Teachers are encouraged to use game-based approaches and media to improve student motivation (Geng, Law, & Niu, 2019; Snezhko et al., 2022; Tirado-Morueta et al., 2020). Therefore, the tutor, as a good motivator, must involve students in the learning action in the classroom. The active participation of students in class is also determined by the teacher's skills in managing the course and the supporting devices used by the educator in the learning way. Learning support devices such as engaging learning media can enrich the classroom atmosphere. So that students are encouraged to be involved during the learning process.

Increasing student motivation to learn also needs to be emphasized in social studies subjects. Social studies learning encourages students to develop attitudinal competence, knowledge competence, and student skill competence to improve abilities in society, nation and state (Belfi & Goldstein, 2023). This study found that many teachers needed help to develop student motivation to study social studies. The many concepts of social studies material that must be studied make it difficult for students to understand them. In addition, some teachers need more creativity to make lessons interesting for students. As a result, these conditions affect student motivation and interest in studying social studies.

Responding to the above problems, teachers should use interactive learning media in the learning process. As previously explained, namely digital media, teachers can use media to improve student learning motivation. The development of digital media that is applied as a learning medium in the classroom can encourage student activity in learning. In addition, it can also improve student learning motivation and enhance their competence and skills.

## Method

- *Research Design*

This study endeavors to achieve the influence of Scrapbook media-based QR codes on increasing the learning motivation of fourth-grade elementary school students in the Srengseng sub-district, Kembangan, West Jakarta, Indonesia. This research method uses Research and Development to develop a Scrapbook media-based QR code and experimental research to test the effectiveness of the resulting product. This research and development use the ADDIE development model, which is composed of 5 levels: analysis, design, development, implementation, and evaluation. The experimental model using One Group Pretest and Posttest Design can be seen in Table 1. Researchers used one group as research subjects and took measurements before and after treatment. Differences in measurement results are considered treatment effects.

**Table 1**

*Experimental Research Design to Improve Learning Motivation Through Scrapbook Media-Based QR Codes.*

Group	Pretest	Treatment	Posttest
Experiment	O 1	X	O 2

where:

O1 : Pre-test

O2 : Post-test

X : QR code-based Scrapbook

• *Population and Sample*

This study involved fourth-grade elementary school students in Srengseng sub-district, Kembangan, West Jakarta, Indonesia. This study took a random sample using the Slovin formula to identify a sample of 73 students for the experimental group. The sample calculation in this testing was calculated exercising the Slovin formula with a population of 274 and a margin of error of 10%; the analysis is as follows:

$$n = N / (1 + (N \times e^2))$$

$$n = 274 / (1 + (274 \times 0.1^2))$$

$$n = 274 / (1 + 2.74)$$

$$n = 274 / 3.74$$

$$n = 73$$

• *Research Instruments*

This research and development used pretest and posttest instruments related to students' learning motivation. The grid of the pretest and posttest instruments for students learning motivation can be detected in Table 2 and Table 3. After giving the treatment experimentally, the posttest was presented to the experimental group. The pretest results were compared with the experimental group's posttest marks after being given treatment. Comparison between the pretest and posttest groups shows the treatment's effect.

**Table 2**

*Grid of Students' Social Studies Learning Motivation Pretest Instrument.*

Aspect	Indicator	Statement	No. Item
a. Saturated Feeling	Motivation to study Social Studies	I feel less motivated to learn social studies.	1
	Tired of following social studies lessons	I often feel bored when I take social studies lessons.	3
	Interest in studying social studies	Social Studies is a less interesting subject.	5
b. Participation	Difficulty understanding social studies material	It is challenging to understand the social studies learning material.	2
	Honesty in doing assignments/ tests.	I often ask other people for help in doing assignments/ tests.	8
	Discipline in doing the tasks given by the teacher	I am fond of working on finishing the projects given through the teacher.	9
c. Intelligence	Awareness of the importance of studying social studies	Studying social studies is optional.	4
	Understanding of Social Studies learning materials	I need help understanding the subject matter of social studies.	6
d. Teacher's Encouragement	The attractiveness of social studies learning media.	Social studies learning media used by teachers are less attractive.	7
	The attractiveness of the social studies assignment	The assignment the teacher gave did not interest me in studying social studies.	10

**Table 3**

*Grid of Students' Social Studies Learning Motivation Posttest Instrument.*

Aspect	Indicator	Statement	No. Item
Feeling happy	Happy to learn about social studies	I became more motivated to study social studies.	1
	Enthusiastic about participating in social studies lessons	I started to get excited about taking social studies lessons.	3
	Interest in studying social studies	I became interested in social studies subjects.	5
Participation	Ask the teacher when it is difficult to understand social studies material	When I have difficulty understanding social studies learning material, I will try to ask questions.	2
	Honesty in doing assignments/tests.	I take the initiative to do assignments/tests without the help of others.	8
	Discipline in doing the tasks given by the teacher	I will immediately do the assignments given by the teacher.	9
Intelligence	Awareness of the importance of studying social studies	Studying social studies is essential for my future.	4
	Understanding social studies learning materials	I began to understand the subject matter of social studies.	6
Teacher's Encouragement	The attractiveness of social studies learning media.	Social studies learning media used is fascinating.	7
	The attractiveness of the social studies assignment	The social studies assignment given is exciting to do.	10

In addition, this research and development also used validation instruments from matter specialists and medium professionals to test the workability of the media at the trial stage.

**Table 4**

*Material Expert Validation Grid.*

No	Aspect	Indicator
1.	Material Quality	1. The suitability of the material with the cultural diversity learning indicators.
		2. The suitability of the material with the learning objectives of cultural diversity.
		3. Information in Scrapbook media-based QR code provides new knowledge for students.
		4. Submission of material on the Scrapbook media-based QR code follows students' characteristics.
		5. The material is accessible for students to perceive.
		6. Consistency of the material with the subject matter.
		7. The exercises used in the QR Code-based Scrapbook are per the material of cultural diversity.
2.	language	8. Compatibility of the contents of the QR code with the material
		9. The language used is easy to keep up with.
		10. The sentences used do not have a double meaning.
		11. Correct spelling, punctuation and grammar.
3.	Well-done	12. Ease of use.
		13. It can be used individually and in groups.
		14. The suitability of Scrapbook media-based QR codes with the needs of students.
		15. Practical Scrapbook media-based QR code.

**Table 5**

*Media Expert Validation Grid.*

No	Aspect	Indicator
1.	Display Design	1. Scrapbook media-based QR code display layout.
		2. Illustration of an image on a QR code-based Scrapbook view.
		3. The color combination on the Scrapbook display is based on the QR code.
		4. The use of fonts (type and size) is easy to read.
		5. QR code-based Scrapbook cover illustration.
		6. Contents are consistent with the table of contents Scrapbook media-based QR code.
2.	Content Design E-book	7. The use of letter variations is reasonable.
		8. Spacing between letters is average.
		9. The title corresponds to the character of children aged 10-11 years.
3.	QR Code	10. Quality QR Code.
		11. The quality of the audio-visual material on the QR code.
4.	Serving Eligibility	12. The suitability of the video material on the QR code.
		13. Easy to use Scrapbook media-based QR code.
		14. Practical Scrapbook media-based QR code.
		15. The presentation of Scrapbook material fosters student learning motivation.

• *Data Analysis*

In statistical analysis, the Kolmogorov-Smirnov test was performed to test the normality of the data distribution. The rationale for shaping normality test decisions, namely: 1) If the significance value > 0.05, then the residual value is usually distributed. 2) If the significance value is < 0.05, then the residual value is not normally distributed. In this study, inferential statistics for hypothesis testing using paired sample t-test. Conclusions from the hypothesis are made using criteria with a significance level of 0.05. The rationalization for decision-making in the UHI paired sample t-test, namely:

1. If the significance value (2-tailed) < 0.05, Ho is rejected, and Ha is accepted.
2. If the significance value (2-tailed) > 0.05, Ho is accepted, and Ha is rejected.

The data measurement analysis technique was used to determine media and material experts' responses using a Likert scale with the questionnaire score category in [Table 6](#).

**Table 6**

*Validation Score-Category Media Experts and Material Experts.*

Scoring scale	Alternative Answer
5	Very good
4	Well
3	Pretty good
2	Not good
1	Very Not Good



The feasibility testing of the QR Code-based Scrapbook learning media was analyzed with a percentage rating scale. The average percentage of each component is calculated using the formula:

$$\text{— Total score obtained from Maximum score multiplied by 100\%}$$

The validation criteria used in the validity of the Scrapbook media-based QR code research are presented in Table 7.

**Table 7**

*Media Eligibility Indicator Based on Rating Scale.*

No.	Percentage of Scoring Results	Eligibility Criteria
1.	86%-100%	Very Worthy
2.	51%-85%	Worthy
3.	26%-50%	less worthy
4.	0%-25%	Not feasible

## Results

- *The Outcome of the Establishment of QR Code-Based Scrapbook Media*

The Scrapbook media-based QR code was developed by integrating QR Code technology to access material in audio-visual form. The Scrapbook contained material on the cultural diversity of eight provinces in Indonesia; each sub-province described had a learning video that students can directly access via QR Code.



**Figure 1.** Cover of Scrapbook Media-Based QR Code.

Figure 1 shows the cover display of the Scrapbook media-based QR code. The cover presents an illustration of a woman dancing, suggesting dance as an element of Indonesian cultural diversity. In addition, there are also pictures of temples, clock gadang, and monas which are Indonesian cultural heritages.



Figure 2. Provinces in Indonesia.

Figure 2 shows a map view of the provinces in Indonesia; 11 provinces of various cultures are discussed in the Scrapbook media-based QR code. These provinces include Aceh, West Sumatra, Jakarta, West Java, East Java, Yogyakarta, Bali, West Kalimantan, NTT, South Sulawesi, and Papua.



Figure 3. Cultural Diversity of Aceh Province.

Figure 3 shows the display of the material for the cultural diversity of the province of Aceh. The elements of cultural diversity discussed include pictures and names of traditional Acehnese houses, traditional Aceh dances and songs that can be accessed via QR Code, and there are illustrations of traditional Acehnese clothes and explanations.

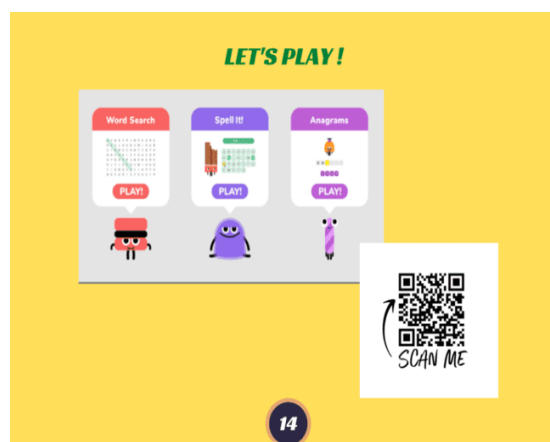


Figure 4. Cultural Diversity Exercise.

Figure 4 shows the display of cultural diversity exercises in educational games such as word search, spell it, and anagrams that can be accessed via QR Code. The activities designed in the form of games are expected to increase student's motivation to study social studies.

- *The Effect of Scrapbook Media Based QR Code on Student Learning Motivation*

Scrapbook media-based QR code in social studies learning material on cultural diversity in the fourth grade of elementary school was tested by two experts, a media expert and a material expert, who validated the Scrapbook media-based QR code developed. Table 8 presents the assessment of the validity of the Scrapbook media-based QR code by a media expert, a fourth-grade elementary school teacher.

Table 8

*Media Expert Validation Assessment Results.*

No	Aspect	Indicator Score	Total score	Maximum Score	Percentage (%)	Validation Criteria	
		1	4				
		2	4				
1.	Display Design	3	4	21	25	84	Worthy
		4	5				
		5	4				
		6	5				
2.	Scrapbook Content Design	7	5	19	20	95	Very Worthy
		8	5				
		9	4				
		10	5				
3.	QR Code	11	4	13	15	86.7	Very Worthy
		12	4				
		13	3				
4.	Serving Eligibility	14	5	13	15	86.7	Very Worthy
		15	5				
Average Percentage of All Aspects					88.1%		
All Aspect Validation Criteria					Very Worthy		

On the basis of the products of the media expert validation assessment table, it is known that the average percentage of achievement obtained from 4 aspects, including 15 statements in the questionnaire, is 88.1%. Thus, the Scrapbook media-based QR code developed has a very possible interpretation.

Table 9 presents assessment of the validity of the Scrapbook media-based QR code by a material expert, a fourth-grade elementary school teacher. The following are the results of content expert validation.

**Table 9**

*Results of Material Expert Validation Assessment.*

No	Aspect	Indicator	Score	Total score	Maximum Score	Percentage (%)	Validation Criteria
		1	4				
		2	4				
		3	5				
1.	Material Quality	4	5	37	40	92.5	Very Worthy
		5	5				
		6	5				
		7	4				
		8	5				
		9	5				
2.	Language	10	4	14	15	93.333	Very Worthy
		11	5				
		12	4				
3.	Execution	13	4	16	20	80.0	Worthy
		14	4				
		15	4				
Percentage of All Aspects						88.6%	
All Aspect Validation Criteria						Very Worthy	

Based on the material expert validation assessment, it is known that the average percentage of achievement obtained from 3 aspects, including 15 statements in the questionnaire, is 88.6%. Thus, the Scrapbook media-based QR code material developed as a possible interpretation.

After getting a valid score from the experts, the Scrapbook media-based QR code was tested on a random sample involving 73 fourth-grade elementary school students as the experimental group. Before being tested, students were given a pretest questionnaire on learning motivation, and after the media test, students were given a posttest questionnaire on learning motivation. The pretest and posttest data analysis results of students' learning motivation are based on the Kolmogorov-Smirnov Test and the Paired Samples T-test as evident in Table 10 and Table 11.

**Table 10**

*One-Sample Kolmogorov-Smirnov Test.*

	N	Unstandardized Residual
	73	
Normal Parameters	Mean	.000
	Std. Deviation	.556
Most Extreme Differences	Absolute	.103
	Positive	.103
	Negative	-.093
	Test Statistic	.103
	Asymptotic Significance (2-tailed)	.197

Derived from the solutions of the normality test, Table 10 indicates that the significance value is  $0.052 > 0.05$ , so it can be concluded that the pretest and posttest residual values of fourth-grade elementary school students' learning motivation are typically distributed.

**Table 11**

*Paired Samples Statistics.*

Pair 1	N	Mean	Standard Deviation	Standard Error Mean
Pretest	73	58.22	10.972	1.284
Posttest	73	83.42	10.700	1.252

Established from the results of the paired sample t-test, Table 11 presents the average value of the pretest was  $58.22 <$  the average value of the posttest  $83.42$ ; it can be interpreted that the average value of the posttest after testing the scrapbook-based QR code is better than the average value of the pretest before being tested on the media.

**Table 12**

*Paired Samples Test.*

Mean	Std. Deviation	Std. Error Mean	t	df	Sig (2-tailed)	95% Confidence Interval of the Difference	
						Lower	Upper
-25.205	12.146	1.422	-17.731	72	.000	-28.039	-22.372

Stemmed from the paired sample t-test results in Table 12, it is recognized that the significance value (2-tailed) is  $0.00 < 0.05$ , so  $H_0$  is rejected, and  $H_a$  is accepted. There is an average difference between pretest and posttest learning motivation, which indicates that using a Scrapbook media-based QR code positively influences the learning motivation of fourth-grade elementary school students.

### Discussion

The current study produced a result in the form of the design of a scrapbook media traced from QR code on social studies learning containing theory about diversity culture for student class four school based in the Srengseng sub-district, Kembangan, West Jakarta. The theory of diversity culture is very suitable to make theory on Scrapbook media-based QR code development because it involves many objects that can be served in visual and audio form. QR Code-based Scrapbook designed via the Canva website and packed in PDF or Flipbook format that can be accessed through URL. Learning media contains pictures of traditional clothing, classic songs, videos, and dance traditions, which can be accessed using a QR code, as well as practice in the form of games about diverse cultures through educational applications.

The findings of the study were confirmed with two classroom teachers from four schools in the Srengseng sub-district, Kembangan, West Jakarta. The analysis showed that students felt fed up with following learning and the media used in social studies learning, particularly theory diversity culture using book media that is visually based only. The media used by the teacher is still character one direction and needs to utilize development technology. Engaged in digital learning media could make participants participate in learning and help participants understand the material presented.

This learning media was developed per the ADDIE model development stages, which consisted of 5 steps: Analysis, Design, Development, Implementation, and Evaluation.

- *Analysis*

The analysis phase was conducted by seeking information about student learning motivation and learning media teachers use in social studies learning. Data was collected utilizing questionnaires and interview techniques completed with two fourth-grade elementary school teachers in the Srengseng sub-district, Kembangan, West Jakarta, Indonesia. The analysis results are that students feel bored in participating in learning, and the media used in social studies learning, especially material on cultural diversity, only uses visual-based book media. The media used by the teacher is still one-way and has yet to take advantage of technological developments. In line with the results of the questionnaires and interviews, it was affirmed that the social studies learning process, on average, still only uses traditional media in the form of books, and the assignments given do not foster student motivation to study social studies.

Based on the opinion of the interview results, learning media that can be applied to fourth-grade elementary school students to reduce boredom are technology-based media such as Scrapbook media-based QR code, which includes audio-visual material and interactive assignments. So, learning can take place effectively, and students do not just listen to the teacher's explanation.

- *Design*

The design stage of making a Scrapbook media-based QR code is carried out based on the needs analysis in the previous stage regarding the material of cultural diversity. The first step was to formulate indicators and learning objectives based on the theme of the beauty of togetherness, the sub-theme of the cultural diversity of nation in the fourth grade of elementary school. The materials discussed included understanding cultural diversity and elements of cultural diversity based on provinces in Indonesia, including traditional songs, dances, clothes, and houses. The next step was to create a storyboard to illustrate the arrangement of the layout of the material in the Scrapbook, determine illustrations of various traditional houses and images of traditional clothes, and find videos of dances and classic songs online. The last step was to prepare games about cultural diversity in the candy application.

- *Development*

The stage of developing a Scrapbook media-based QR code for social studies learning material on cultural diversity in the fourth grade of elementary school was divided into three steps. The first step was to prepare the Canva website as a media design application and complementary Scrapbook material in the form of online dance videos and traditional songs in a QR Code. The second step was to develop a Scrapbook media-based QR code by packaging cultural diversity materials and complementary Scrapbook materials prepared in the previous step. The third step was to re-check the completeness of the material, the accuracy of the selection of illustrations, the suitability of the video component, and the acceptability of the exercise with the material in the Scrapbook media-based QR code.

- *Implementation*

The implementation phase of the Scrapbook media-based QR code in social studies learning material on cultural diversity in the fourth grade of elementary school was tested on two experts, namely a media expert and a material expert who validated the Scrapbook media-based QR code developed. Media validation was done by distributing questionnaires. The results of the proof of these experts were used to improve the Scrapbook media-based QR code that was generated.

After getting a valid score from the expert, a Scrapbook media-based QR code trial was conducted on a random sample involving 73 fourth-grade elementary school students as the experimental group. The appraisal of the implementation data to 73 students stated that the data were normally distributed and the average posttest result was more significant than the pretest result. So, the use of QR Code-based Scrapbook learning media influences the learning motivation of fourth-grade elementary school students.

- *Evaluation*

The evaluation involved media experts and fourth-grade elementary school social studies learning materials experts. Researchers used this evaluation to improve the developed Scrapbook media-based QR code product. The evaluation results stated that the QR Code-based Scrapbook learning media could be manipulated and applied as a learning medium in elementary schools. Material experts and media experts have also validated this media. Several aspects become expert evaluation materials, including aspect quality material, aspect language, and aspect implementation. Aspect evaluation media experts include parts of design view, aspect design Scrapbook contents, QR code aspects, and aspect media eligibility. The results percentage earned from test validity expert theory of 88.6 % with criteria very worthy, and the percentage test validity media experts of 88.1% with standards very worth.

As for the test, try the effectiveness of the media on 73 students from class four schools based on the motivational pretest and posttest questionnaire study. Students produce data with normal distribution in the pretest and posttest motivation study. Besides, the paired sample t-test results marked significance (2 tailed)  $0.00 < 0.05$ , with the conclusion of the Scrapbook media based QR code providing positive influence in Upgrade motivation study student class four school base. As a result of product development, QR code-based Scrapbook learning media has excess and weaknesses. The advantages included: (1) Different views of the learning media used previously only display visuals; learning media is a media-based QR Code technology containing audio-visual theory. (2) This medium was convenient and could be used by individuals or groups when just and where, of course. (3) Material served with related pictures with learning diversity culture and becomes a power pull alone for para students. Besides the excess above, this medium needs to be improved, such as (1) Limited theory discussion described in this media, which only covers the theory of Diversity Culture class four school base. (2) Video material via QR Code could only be accessed using an internet network.

Scrapbook media-based QR codes can be useful for students discerning unobservable material together directly in the learning process because of room and time limitations. This learning media is interactive and designed for individual and group learning, but the teacher should give explanations to help speed up students' understanding. Teachers, too, should guide students in access theory via QR Code so that knowledge can walk effectively. This media also has a practice in the form of games on the candy application, which can also be accessed via the QR Code to learn about the theory of cultural diversity.

Applying Scrapbook media-based QR codes as a learning media in schools can advance students' learning inducement and ability to use technology. Students are expected to have high learning motivation because the Scrapbook learning media developed can deliver audio and visual material and is equipped with a QR Code to access online videos and games. The media is an innovation with an attractive media design so that students have new learning experiences in using technology and are more motivated to participate in social studies learning material on cultural diversity.

### **Conclusion**

Hinged on the scores of the posttest of students' learning motivation, it was known that the treatment of the Scrapbook media found that the QR code trial was more significant than the pretest of students' learning drive prior to the media trial was conducted with a statistically significant difference. Implementing a Scrapbook media-based QR code increases students' motivation to learn in the Srengseng sub-district, Kembangan, West Jakarta, Indonesia.

Elementary school teachers can use this media as social studies learning media because it has been proven valid and practical for fourth-grade elementary school students. In addition, integrating QR codes as a form of technological development can provide new experiences and knowledge for students. Teachers can guide students to access cultural diversity material through the QR code contained in Scrapbook media, so applying Scrapbook media-based QR codes as social studies learning media can positively increase students' learning motivation.

The limitations of this study included only elementary school students in West Jakarta. Researchers hope that applying Scrapbook-based QR codes as learning media in schools can improve students' motivation to learn social studies because the developed Scrapbook learning media can deliver audio and visual materials and is equipped with QR Codes to access online videos and games. Further research is recommended to apply this Scrapbook media-based QR code as a social study insight media to raise elementary school students' learning stimulus in all Jakarta areas to determine the positive effect of increasing elementary school students' learning motivation.

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## References

- Ambe, B. A., Agbor, C. E., Amalu, M. N., Ngban, A. N., Bekomson, A. N., Etan, M. O., Ephraim, I. E., Asuquo, E. E., Eyo, O. E., & Ogunjimi, J. O. (2024). Electronic media learning technologies and environmental education pedagogy in tertiary institutions in Nigeria. *Social Sciences & Humanities Open*, 9, 100760. <https://doi.org/10.1016/j.ssaho.2023.100760>
- Barr, R., & Kirkorian, H. (2023). Reexamining models of early learning in the digital age: Applications for learning in the wild. *Journal of Applied Research in Memory and Cognition*, 12(4), 457-472. <https://doi.org/10.1037/mac0000132>
- Belfi, A. M., & Goldstein, T. R. (2023). Editor's introduction December 2023. *Psychology of Aesthetics, Creativity, and the Arts*, 17(6), 673-674. <https://doi.org/10.1037/aca0000669>
- Blanco, P. J., Holliman, R. P., & Carroll, N. C. (2019). The effect of child-centered play therapy on intrinsic motivation and academic achievement of at-risk elementary school students. *Journal of Child and Adolescent Counseling*, 5(3), 205-220. <https://doi.org/10.1080/23727810.2019.1671758>
- Bokhove, C., Jerrim, J., & Sims, S. (2023). Are some school inspectors more lenient than others? *School Effectiveness and School Improvement*, 34(4), 1-23. <https://doi.org/10.1080/09243453.2023.2240318>
- Cain, M., Fanshawe, M., Armstrong, E., & Lieberman, L. (2023). Barriers to Physical Activity for Australian Students with Vision Impairment. *International Journal of Disability, Development and Education*, 1-19. <https://doi.org/10.1080/1034912X.2023.2232327>
- Calderón, A., Meroño, L., & MacPhail, A. (2020). A student-centred digital technology approach: The relationship between intrinsic motivation, learning climate and academic achievement of physical education pre-service teachers. *European Physical Education Review*, 26(1), 241-262. <https://doi.org/10.1177/1356336X19850852>
- Cen, Y., & Zheng, Y. (2024). The motivational aspect of feedback: A meta-analysis on the effect of different feedback practices on L2 learners' writing motivation. *Assessing Writing*, 59, 100802. <https://doi.org/10.1016/j.asw.2023.100802>
- Chuang, H.-H., Lin, R.-H., Chen, J.-Y., Yeh, W.-C., Lin, H.-F., Ueng, S. W.-N., & Hsu, K.-H. (2019). Effectiveness of a multi-faceted intervention among elementary school children. *Medicine*, 98(15), e15079. <https://doi.org/10.1097/MD.00000000000015079>
- Colander, D. (2019). Introduction to symposium on teaching undergraduate econometrics. *The Journal of Economic Education*, 50(4), 337-342. <https://doi.org/10.1080/00220485.2019.1654955>
- Degner, M., Moser, S., & Lewalter, D. (2022). Digital media in institutional informal learning places: A systematic literature review. *Computers and Education Open*, 3, 100068. <https://doi.org/10.1016/j.caeo.2021.100068>
- <sup>3</sup>Dunn, T. J., & Kennedy, M. (2019). Technology Enhanced Learning in higher education; motivations, engagement and academic achievement. *Computers & Education*, 137, 104-113. <https://doi.org/10.1016/j.compedu.2019.04.004>
- Gao, H., & Li, F. (2024). The application of virtual reality technology in the teaching of clarinet music art under the mobile wireless network learning environment. *Entertainment Computing*, 49, 100619. <https://doi.org/10.1016/j.entcom.2023.100619>
- Geng, S., Law, K. M., & Niu, B. (2019). Investigating self-directed learning and technology readiness in blending learning environment. *International Journal of Educational Technology in Higher Education*, 16(1), 1-22. <https://doi.org/10.1186/s41239-019-0147-0>

- Greve, S., Thumel, M., Jastrow, F., Krieger, C., Schwedler, A., & Süßenbach, J. (2022). The use of digital media in primary school PE—student perspectives on product-oriented ways of lesson staging. *Physical Education and Sport Pedagogy*, 27(1), 43-58. <https://doi.org/10.1080/17408989.2020.1849597>
- Hammer, M., Scheiter, K., & Stürmer, K. (2021). New technology, new role of parents: How parents' beliefs and behavior affect students' digital media self-efficacy. *Computers in Human Behavior*, 116, 106642. <https://doi.org/10.1016/j.chb.2020.106642>
- Khan, M. A., & AlGhamdi, M. (2024). A customized deep learning-based framework for classification and analysis of social media posts to enhance the Hajj and Umrah services. *Expert Systems with Applications*, 238, 122204. <https://doi.org/10.1016/j.eswa.2023.122204>
- Knaus, T. (2023). Emotions in Media Education: How media based emotions enrich classroom teaching and learning. *Social Sciences & Humanities Open*, 8(1), 100504. <https://doi.org/10.1016/j.ssaho.2023.100504>
- Kucker, S. C. (2021). Processes and pathways in development via digital media: Examples from word learning. *Infant Behavior and Development*, 63, 101559. <https://doi.org/10.1016/j.infbeh.2021.101559>
- Kyoi, S., & Mori, K. (2024). Development of policy measures for diffusing human pro-environmental behavior in social networks—Computer simulation of a dynamic model of mutual learning. *World Development Sustainability*, 4, 100118. <https://doi.org/10.1016/j.wds.2023.100118>
- <sup>3</sup>Law, K. M., Geng, S., & Li, T. (2019). Student enrollment, motivation and learning performance in a blended learning environment: The mediating effects of social, teaching, and cognitive presence. *Computers & Education*, 136, 1-12. <https://doi.org/10.1016/j.compedu.2019.02.021>
- Li, X., Zhang, Y., Yu, F., Zhang, X., Zhao, X., & Pi, Z. (2024). Do science teachers' beliefs related to inquiry-based teaching affect students' science process skills? Evidence from a multilevel model analysis. *Disciplinary and Interdisciplinary Science Education Research*, 6(1), 1. <https://doi.org/10.1186/s43031-023-00089-y>
- <sup>3</sup>Mayer, S., & Schwemmler, M. (2023). Teaching university students through technology-mediated experiential learning: Educators' perspectives and roles. *Computers & Education*, 207, 104923. <https://doi.org/10.1016/j.compedu.2023.104923>
- Papouli, E., Chatzifotiou, S., & Tsairidis, C. (2020). The use of digital technology at home during the COVID-19 outbreak: Views of social work students in Greece. *Social Work Education*, 39(8), 1107-1115. <https://doi.org/10.1080/02615479.2020.1807496>
- Phung, T. M., Tran, Q. N., Nguyen-Hoang, P., Nguyen, N. H., & Nguyen, T. H. (2023). The role of learning motivation on financial knowledge among Vietnamese college students. *Journal of Consumer Affairs*, 57(1), 529-563. <https://doi.org/10.1111/joca.12511>
- Poultasakis, S., Papadakis, S., Kalogiannakis, M., & Psycharis, S. (2021). The management of digital learning objects of natural sciences and digital experiment simulation tools by teachers. *Advances in Mobile Learning Educational Research*, 1(2), 58-71. <https://doi.org/10.25082/AMLER.2021.02.002>
- Qureshi, I., Pan, S. L., & Zheng, Y. (2021). Digital social innovation: An overview and research framework. *Information Systems Journal*, 31(5), 647-671. <https://doi.org/10.1007/s10796-020-09991-6>

- Rodrigo, M.-H., Mónica, P.-P., Diego, V.-Q., Hernán, S.-V., Pamela, C.-B., Fabricio, V. D. L. B., Sergio, D.-L., & Tomás, C.-R. (2022). New psychometric evidence of a bifactor structure of the Emotional Regulation Questionnaire (ERQ) in Ecuadorian college students. *Psychology in Russia: State of the art*, 15(1), 120-134. <https://doi.org/10.11621/PIR.2022.0108>
- Schunk, D. H., & DiBenedetto, M. K. (2020). Motivation and social cognitive theory. *Contemporary Educational Psychology*, 60, 101832. <https://doi.org/10.1016/j.cedpsych.2019.101832>
- Singh, P., & Singh, M. P. (2021). The role of teachers in motivating students to learn. *An International Journal of Educational Technology*, 11(1), 29-32. <https://doi.org/10.30954/2231-4105-01.2021.6>
- Slivinskaya, L., & Westerholt, R. (2021). On the integration of place and urban morphology. In *Third international symposium on platial information science (PLATIAL'21), Enschede* (Vol. 8, pp. 61-66). PLATIAL'21. <https://doi.org/10.5281/zenodo.5767192>
- Snezhko, Z., Babaskin, D., Vanina, E., Rogulin, R., & Egorova, Z. (2022). Motivation for Mobile Learning: Teacher Engagement and Built-In Mechanisms. *International Journal of Interactive Mobile Technologies*, 16(1), 78-93. <https://doi.org/10.3991/ijim.v16i01.26321>
- Stamov Roßnagel, C., Fitzallen, N., & Lo Baido, K. (2021). Constructive alignment and the learning experience: relationships with student motivation and perceived learning demands. *Higher Education Research & Development*, 40(4), 838-851. <https://doi.org/10.1080/07294360.2020.1787956>
- Tirado-Morueta, R., Berlanga-Fernández, I., Vales-Villamarín, H., Guzmán Franco, M. D., Duarte-Hueros, A., & Aguaded-Gómez, J. I. (2020). Study of a sequence to stimulate the engagement in one-to-one iPad programs at elementary schools. *Education and Information Technologies*, 25, 509-532. <https://doi.org/10.1007/s10639-019-09974-4>
- von Gillern, S., Korona, M., Wright, W., Gould, H., & Haskey-Valerius, B. (2024). Media literacy, digital citizenship and their relationship: Perspectives of preservice teachers. *Teaching and Teacher Education*, 138, 104404. <https://doi.org/10.1016/j.tate.2023.104404>
- Wang, X., Wang, X., Huang, T., Liu, L., Chen, X., Yang, X., Lu, J., & Wang, H. (2023). Relationship between the Latent Profile of Online Socially Regulated Learning and Collaborative Learning Motivation. *Sustainability*, 16(1), 181. <https://doi.org/10.3390/su16010181>
- Wentzel, K. R. (2022). Does anybody care? Conceptualization and measurement within the contexts of teacher-student and peer relationships. *Educational Psychology Review*, 34(4), 1919-1954. <https://doi.org/10.1007/s10648-022-09702-4>