



# Flash Card Media To Improve Learning Outcomes Of Science Material On Cultural Diversity

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## ABSTRAK

Masih banyak siswa yang belum memahami pembelajaran IPAS yang disebabkan oleh penggunaan model pembelajaran atau media pembelajaran yang tidak tepat sehingga berdampak pada hasil belajar yang rendah. Tujuan penelitian ini yaitu mengembangkan Media Flash Card Untuk Meningkatkan Hasil Belajar Materi IPAS Pada Keanekaragaman Budaya. Jenis penelitian ini yaitu penelitian pengembangan atau Research and Development (R&D). Model yang digunakan untuk mengembangkan media yaitu ADDIE. Populasi dalam penelitian ini adalah seluruh peserta didik kelas IV SD berjumlah 20 peserta didik. Sampel yang diambil dalam penelitian ini adalah seluruh peserta yang berjumlah 20 peserta didik. Subjek penelitian yaitu ahli media pembelajaran dan ahli bahan pelajaran. Metode yang digunakan untuk mengumpulkan data yaitu metode tes dan non tes. Instrumen yang digunakan dalam mengumpulkan data yaitu kuesioner dan soal tes. Teknik yang digunakan untuk menganalisis data yaitu analisis deskriptif kualitatif dan kuantitatif, dan uji *n-gain*. Hasil penelitian yaitu menunjukkan perbedaan yang nyata pada rata-rata pretest dan posttest setelah penerapan Media Flash Card pada uji coba kelompok kecil dan kelompok besar. Hasil *N-gain* menunjukkan peningkatan skor pretest ke posttest berada pada kriteria efektivitas sedang atau tinggi. Disimpulkan bahwa Media Flash Card dapat meningkatkan hasil belajar IPAS pada siswa. Implikasi penelitian Media Flash Card dapat digunakan dalam pembelajaran.

## ABSTRACT

Many students still do not understand science learning due to the use of inappropriate learning models or learning media, which impacts low learning outcomes. This research aims to develop Flash Card Media to Improve Learning Outcomes for Science Material on Cultural Diversity. This type of research is development research or Research and Development (R&D). The model used to develop media is ADDIE. The population in this study was all 20 grade IV elementary school students. The samples taken in this research were all 20 students. The research subjects are learning media experts and learning materials experts. The methods used to collect data are test and non-test methods. The instruments used to collect data were questionnaires and test questions. The techniques used to analyze the data are qualitative and quantitative descriptive analysis and the *n-gain* test. The research results show a real difference in the average pretest and posttest after implementing Flash Card Media in small-group and large-group trials. The *N-gain* results show that the increase in pretest to posttest scores is in the medium or high effectiveness criteria. It was concluded that Flash Card Media can improve students' science learning outcomes. Research implications Flash Card media can be used in learning.

## 1. INTRODUCTION

Education is crucial for humans because it is a means that helps develop their qualities and potential. Through education, humans will gain knowledge, attitudes and skills (Aisyah et al., 2021; Istianah et al., 2021). Apart from that, education can also brighten life and improve human personality and morals. Education aims to shape students to have knowledge covering all life aspects (Listiwati, 2018; Prawiyogi et al., 2021). Education develops a well-rounded individual by cultivating strong moral character, intellectual capacity, and skills. National Education functions to develop abilities and shape the character and civilization of a dignified nation (Listiwati, 2018; Prawiyogi et al., 2021; Sabatari, 2013;

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Syahputra, 2020). Learning refers to integrated experiences that occur in all people and last a lifetime. Learning occurs through the interaction of mental processes and the environment, resulting in relatively constant change. Learning is a series of planned activities that involve the environment and information to facilitate students in educational activities (Besser et al., 2022; Hasriani G, 2022; Shaikhli, 2022). Learning refers to a planned educational activity that involves various learning resources to create a learning process for students. Good learning can develop potential, experience, knowledge, skills and positive values (Dudung et al., 2022; Wajdi et al., 2022).

Science and social studies subjects stand alone in the 2013 and previous curriculum content. However, the developmental psychology of elementary/MI-aged children is considered a strategic period for discovering children's inquiry abilities. In the design of the Emancipation Curriculum, natural sciences and social sciences are combined into natural and social sciences (IPAS) (Adnyana & Yudaparmita, 2023; Muhardini et al., 2023). Apart from that, to reduce the burden on students' study hours, science and social studies lessons at Stage B and elementary school level. Social studies in elementary schools provide a foundation for developing scientific literacy skills. Science and Technology is a foundation for students studying natural and social sciences. IPAS involves learning about science and society, including studies of nature, Technology, the environment, geography, history and culture (Adnyana & Yudaparmita, 2023; Muhardini et al., 2023; Saadah et al., 2022). Several learning theories that are relevant to science learning include constructivism theory, cooperative learning theory, and project-based learning theory. Learning activities in elementary schools are expected to improve students' abilities in science and science (Adnyana & Yudaparmita, 2023; Muhardini et al., 2023).

However, the current problem is that many students still do not understand science learning. Previous research also states that many students still get low science learning outcomes (Dewi & Suniasih, 2023; Silvia et al., 2023). Other research also states that students' low science learning outcomes are caused by using inappropriate learning models or learning media, which impacts student learning outcomes (Muhardini et al., 2023; Pujiastuti, 2023). Based on the results of observations and interviews with class IV teachers at SDN Podosoko 02, Magelang Regency, serious problems were found. The problem is students' lack of understanding of subjects, especially social studies learning. The low value of students' understanding of these subjects is caused by teachers' low awareness of developing learning media and their reliance on teacher and student books. The average grade IV social studies test score is still below the specified KKM, namely 70. This is due to boredom if they only focus on books, making students less active and studying more. This shows that teachers and learning media can improve student learning significantly. Educators dominate learning in class, and the media used is less attractive to make students active in learning. Teachers use the lecture method when teaching. While science learning occurred, many students complained they were bored and chatted with friends. Students are also slow in doing the assignments given by the teacher; some even do not take notes or submit assignments.

Based on these problems, it is necessary to have alternative media that are interesting and fun for students, especially in the science and sciences subject of Cultural Diversity in Indonesia. Learning media is media used in learning that focuses on using media, tools, or instruments to deliver teaching materials (Ariani & Ujjanti, 2021; Suartawan et al., 2021). Learning media refers to the tools used in learning, including tools educators use in educational activities to convey messages from learning sources to learning recipients. Learning media is a tool to involve students in encouraging optimal educational activities (Gabriela, 2021; Inawati & Puspasari, 2021; Rahmatika et al., 2021). One media that is interesting and fun for students is Flashcard media. Flashcard media is a learning tool with pictures and words measuring 25x30 cm. Flash cards are alternating cards that are very effective for remembering and reviewing the learning process (Kusuma et al., 2017; Suartini et al., 2016; Utomo et al., 2023). Flashcards are effective learning cards with two sides, one containing pictures, text or symbols and the other containing definitions, picture descriptions, answers or descriptions that help remind or direct students to something related to the picture on the card. (Astuti & Suryani, 2022; Kusumawati et al., 2017).

Previous research findings state that innovative learning media can help students understand learning material (Limin & Kundiman, 2023; Muhaimin et al., 2023; Sari et al., 2023). Other research also states that learning media in the form of cards can increase enthusiasm and motivation for learning, impacting student learning outcomes (Artini et al., 2016; Herawati, 2017; Sari et al., 2018). This research can be a reference for researchers creating this project so that it can answer and solve problems and fulfil needs in the field. However, there has been no study regarding Flash Card Media to Improve Learning Outcomes for Science Material on Cultural Diversity. Based on this, this research aims to develop Flash Card Media to improve Learning Outcomes for Science Material on Cultural Diversity. The advantage of the Flash Card media is that it presents scientific material on cultural diversity with attractive and innovative images that help students understand the learning material. Hopefully, the development of Flash Card Media can improve student learning outcomes.

## 2. METHOD

This type of research is development research or Research and Development (R&D). This research aims to develop Flash Card media on Cultural Diversity material. The model used to develop Flash Card media on Cultural Diversity material is ADDIE, which consists of Analysis, Design, Development, Implementation, and Evaluation (Sugiyono, 2016). At the analysis stage, interviews and analysis of students' needs in the learning process were carried out. At the design stage, the flash card learning media used in the research was designed. Flash card learning media products were developed at the development stage based on results from previous designs. Apart from that, experts carry out product validation. The product validation stage is carried out by inviting several experts or experts who are experienced to assess the new product being designed so that the weaknesses and strengths of the learning media can be identified. In the implementation phase, product trials were carried out on students. At this evaluation stage, make revisions if you receive criticism from the student response questionnaire that has been determined. This aims to ensure that the products produced are suitable and can be used long-term.

This research was located at SD Negeri Podosoko 02, Magelang Regency. The population in this study was all students in class IV at SD Negeri Podosoko 2, Magelang Regency, totalling 20 students. The participants in this research were all class IV students at SD Negeri Podosoko 2, Magelang Regency, totaling 20 students. The research subjects are learning media experts and learning materials experts. The methods used to collect data are test and non-test methods. The test method collects student data in the form of student learning outcomes after applying Flash Card media to Cultural Diversity material. Non-test methods include observation, interviews, questionnaires and documentation. The observations in this research are non-participant observations, meaning the researcher is only an observer. The interviews conducted in this research used unstructured interviews conducted directly or face-to-face with the teacher. The questionnaire in this research was used to analyze teacher needs and as input from experts for flash card learning media. Documentation data in this research was obtained from limited face-to-face learning observation documentation data at SD Negeri Podosoko 2, Magelang Regency. The instruments used to collect data were questionnaires and test questions. The instrument grid is presented in Table 1.

**Table 1. Research Instrument Grid**

No	Aspect	Question
1	Learning process	<ol style="list-style-type: none"> <li>How active are students during science learning activities?</li> <li>What is the student's attitude when receiving science learning materials?</li> <li>Are there any obstacles in the science and science learning process?</li> </ol>
2	Learning model	<ol style="list-style-type: none"> <li>What learning model is usually used in science learning?</li> <li>Why did you choose this model in the science and science learning process?</li> </ol>
3	Instructional Media	<ol style="list-style-type: none"> <li>Do you use auxiliary media when learning Indonesian?</li> <li>What types of media are usually used in science teaching?</li> <li>Are the learning media currently used effective in improving science and science learning?</li> <li>Have you ever used technology-based media in science learning before?</li> </ol>
4	Motivation	<ol style="list-style-type: none"> <li>Is there encouragement for student motivation in learning?</li> <li>Is there a student's desire to succeed in learning?</li> <li>Are there rewards in learning?</li> <li>Are there interesting activities in learning?</li> <li>Is the learning situation conducive enough to increase students' learning motivation?</li> <li>Does motivation have a significant influence on the value of science learning outcomes?</li> </ol>
5	Facilities and infrastructure	<ol style="list-style-type: none"> <li>How do the infrastructure and facilities support learning?</li> <li>How is internet access at school?</li> <li>How does each student access gadgets (cellphones or laptops)?</li> </ol>
6	Learning methods	<ol style="list-style-type: none"> <li>What learning methods are often used?</li> <li>Is this method effective to apply?</li> </ol>

The techniques used to analyze the data are qualitative and quantitative descriptive analysis, and the n-gain test. Qualitative descriptive analysis is used to manage data in the form of input provided by

experts regarding Flash Card media on Cultural Diversity material. Quantitative descriptive analysis is used to manage data in the form of scores given by experts regarding Flash Card media on Cultural Diversity material. The N-gain test is used to test the effectiveness of Flash Card media on Cultural Diversity material in improving student learning outcomes in IPAS lessons.

### 3. RESULT AND DISCUSSION

#### Result

This research uses the ADDIE model to develop Flash Card media on Cultural Diversity material. The results of each stage are as follows. First, the analysis stage. The results of the analysis stage are students' lack of understanding of subjects, especially social studies learning. The low value of students' understanding of this subject is caused by teachers' low awareness in developing learning media and their dependence on teachers' and students' books. The average grade IV social studies test score is still below the specified KKM, namely 70. This is due to boredom if you only focus on books, which makes students less active and study a lot. This shows that teachers and learning media can improve student learning significantly. Educators dominate learning in class, and the media used is less attractive in making students active in learning. Students are also slow in completing assignments given by the teacher; some do not take notes or submit assignments. Second is the design stage. At this stage, we designed Flash Card media on Cultural Diversity material. In this stage, choose the place and students from the tested settings. The design of flash card learning media is still in the form of designs and ideas from researchers. The flash card learning media that researchers will develop is shaped like a card sheet. The media will be developed by creating the required card and card box designs using the Canva application. Third is the development stage. Flash Card media was developed on Cultural Diversity material at this stage based on the results of previously developed designs. The results of developing Flash Card media on Cultural Diversity material are presented in [Figure 1](#).



**Figure 1.** Flash Card Media on Cultural Diversity Material

Flash Card Media on Cultural Diversity Material was then tested by experts. The assessment results given by learning media experts obtained a score of 4.6, resulting in a decent qualification. The assessment results given by the learning materials expert obtained a total score of 4.4, resulting in a very decent qualification. It can be concluded that the Flash Card Media on Cultural Diversity Material developed is suitable for use in learning. Fourth, evaluation. At this stage the aim is to determine whether the product is valid, practical and effective in solving existing problems. At this evaluation stage, revisions are made if criticism is received from the predetermined student response questionnaire. This aims to ensure that the resulting product is suitable and can be used in the long term. The results of the normality test in small groups are presented in [Table 2](#).

**Table 2.** Normality Test Results in Small Group Trials

	Class	Kolmogorov-Smirnov			Shapiro-Wilk		
		Statistik	df	Sig.	Statistik	df	Sig.
Learning Outcome	Pre-tes	0.243	6	0.200	0.944	6	0.692
	Post-test	0.122	6	0.200	0.982	6	0.961

Based on the SPSS output above, the pre-post test normality test using the Shapiro-Wilk formula assisted by SPSS version 23 obtained a sig value = 0.692 for the pretest and a sig value = 0.961 for the posttest. From the output above, the pretest sig value = 0.692>0.05, meaning the pretest value is normally distributed. The posttest sig value = 0.961>0.05 means the posttest value is normally distributed. The results of the normality test in the large group are presented in [Table 3](#).

**Table 3. Normality Test Results in Large Group Trials**

	Class	Kolmogorov-Smirnov			Shapiro-Wilk		
		Statistik	df	Sig.	Statistik	df	Sig.
Learning Outcome	Pre-tes	0.136	25	0.200	0.974	25	0.738
	Post-test	0.160	25	0.098	0.936	25	0.122

Based on the SPSS output above, a pre-post test normality test was obtained using the Shapiro-Wilk formula assisted by SPSS version 23, sig = 0.738 or pretest and sig = 0.122 posttest. From the output above, the pretest sig pretest = 0.738>0.05, meaning the pretest value is normally distributed. Posttest sig value = 0.122>0.05, meaning the posttest value is normally distributed. Next, a data homogeneity test was carried out. The homogeneity test was carried out using the Levene Statistics test assisted by SPSS version 23. Based on the results of data analysis in the small group trial, a significance value of 0.473 was obtained. Considering that the sig value is greater than 0.05, it indicates that  $H_0$  homogeneity is accepted. This shows that the two data sets in the small group trial are homogeneous. Based on data analysis in the large group test, a significance value of 0.080 was obtained. A sig value >0.05 indicates homogeneous data (supports  $H_0$ ). With a sig value of 0.080 (>0.05), the data is homegene. Next, a t-test was carried out. The t-test results are presented in [Table 4](#).

**Table 4. T Test Results in Small Group Trials**

		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	-30.000	7.071	2.887	-37.421	-22.579	-10.392	5	0.0000

The results of the small group trial analysis showed that there was a visible difference in the average pretest and posttest using SPSS version 23 with sig. (2-tailed) value 0.000. In the paired samples t-test (Paired Samples T-Test), a sig (2-tailed) value of less than 0.05 indicates that there is a fairly large difference between the pretest and posttest data. Meanwhile, a sig (2-tailed) value greater than 0.05 indicates there is no significant difference between the pre-test and post-test data. From the output above, the t-test sig value (2-tailed) is 0.000 (<0.05) indicating that there is a fairly large difference in pretest and posttest scores. The results of the T Test in the Large Group Trial are presented in [Table 5](#).

**Table 5. T Test Results in Large Group Trials**

		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	-40.000	8.898	1.780	-43.673	-36.327	-22.478	24	0.000

The results of data analysis from the Large Group Trial show that there is a difference in the average pretest and posttest using SPSS version 23 with sig. (2-tailed) value 0.000. In the paired sample t-test (Paired Samples T-Test), a sig (2-tailed) value of less than 0.05 indicates that there is a fairly large difference between the pretest and posttest data. Meanwhile, a sig (2-tailed) value greater than 0.05 indicates there is no significant difference between the pre-test and post-test data. From the output above, the t-test (2-tailed) sig value of 0.000 (<0.05) shows that there is a striking difference in the pretest and posttest scores. The results of the N-gain test in the small group showed that the value N gain Score =

0.6465 was in the interval  $0.3 \leq g \leq 0.7$ . This shows that the increase in pretest to posttest scores is classified as moderate or effective. The results of the N-Gain Test in the Large Group Trial obtained N Gain Score = 0.7816. And from the interpretation table it was obtained that the N gain Score = 0.7816 was in the interval  $g \geq 0.7$ . This shows that the increase in pretest to posttest scores falls within the criteria of medium or high effectiveness.

## Discussion

The results of data analysis show that the Flash Card Media on Cultural Diversity Material developed is suitable for use in learning because the following factors cause it. First, the Flash Card Media on Cultural Diversity Material that has been developed is suitable for use in learning because it can improve student learning outcomes. Media is a tool used to convey or describe information (Lestari et al., 2021; Oktafyani et al., 2022; Y. Sari et al., 2018). "If media is used in teaching, it is called learning media" graphically (visually) and additively. Flashcards are practical and applicable graphic media. This is because flashcards are effective learning cards with two sides, one containing images, text or symbols and the other containing definitions, image descriptions, answers or descriptions that help remind or direct students to something related to the image: what is on the card (Evianti & Atika, 2021; Maronta et al., 2023; Utomo et al., 2023). This can make it easier for students to understand learning material so that it impacts improving student learning outcomes. Previous research findings also state that students who quickly understand the material will improve learning outcomes (Nugraha et al., 2020; Putra et al., 2018; Trisnanti et al., 2018). Second, the developed Flash Card Media on Cultural Diversity Material is suitable for use in learning because it motivates students to learn. Media is a tool or something similar that can be used as a messenger in a learning activity (Hanifah et al., 2020; Khaulani et al., 2019; Sari et al., 2019). The message in question is the subject matter. The existence of media is intended so that messages can be more easily understood by students (Fitri et al., 2021; Zahro et al., 2018). Engaging learning media certainly has an impact on increasing student learning motivation. Learning will attract more students' attention to foster learning motivation (Kurniawan et al., 2017; Putri et al., 2020). Flashcard media presents material that is clear and easy for students to understand. The meaning of learning materials will be more precise so that students can better understand them and enable them to master and achieve learning goals. With its various potentials, media can display information through sound, images, movement and colour, both naturally and manipulated (Fitri et al., 2021; Hanifah et al., 2020; Sidiq & Nuswantoro, 2021; Zahro et al., 2018). Media can help teachers and students communicate actively during the learning process. This makes the Flash Card Media on Cultural Diversity Material that has been developed suitable for use in learning because it motivates students to learn.

Third, the Flash Card Media on Cultural Diversity Material that has been developed is suitable for use in learning because it creates a fun learning atmosphere. This is supported by findings which reveal that well-designed learning media can create an active and enjoyable atmosphere (Anitasari & Dyah Utami, 2022; Dianawati, 2019). The use of media makes the learning process more efficient and helps students absorb learning material more deeply and completely. With media, the learning process becomes more attractive, encouraging students to love science and search for sources of knowledge themselves (Herawati, 2017; Mariyah et al., 2021). The benefits of this media are, of course, a consideration for teachers in utilizing media in the teaching and learning process because by using media, the cold message conveyed will be more easily transmitted (Aurora & Effendi, 2019; Salsabila et al., 2020). Flash card media provides variety in learning so students do not get bored. This variation can arouse students' motivation to be more actively involved in learning. Previous research findings state that Flash Card media uses attractive images and visualizations to attract students' attention and arouse their interest in the studied material (Alam & Lestari, 2020; Diartini & Ratnawuri, 2017). Other findings state that Flash Card Media can help students remember and repeat the material studied more effectively (Hamer & Rohimajaya, 2018; Kurniawati, 2019). It can be concluded that the Flash Card Media on Cultural Diversity Material developed is suitable for use in learning. The limitation of this research is that Flash Card Media was developed only on Cultural Diversity material for elementary school students. This research implies that Flash Card media can support learning activities. Thus, through the flashcards developed, students can quickly and easily learn about various kinds of cultural diversity in Indonesia, such as traditional clothing, houses, typical food, weapons, ceremonies, musical instruments and dance. This research contributes by examining the potential of flashcard media for learning about Indonesia's cultural diversity.

## 4. CONCLUSION

The results of data analysis show that Flash Card Media in Cultural Diversity Material has very good qualifications from experts. The t-test results show visible differences in the pretest and posttest

averages after applying Flash Card Media in small group and large group trials. The N-gain results show that the increase in pretest to posttest scores falls within the medium or high effectiveness criteria. It was concluded that Flash Card Media can be used in learning and is effectively used to help students learn.

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