

Media design made from recycled materials for muhammadiyah 2 Langsa students

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Abstract

The lack of use of learning media makes it difficult for students to understand the material. As a result, student test results have not optimally met the KKM score. Therefore, it is necessary to design a learning media so that the results achieved by students become better. The purpose of this study was to describe the stages of developing a magic box from recycled materials with the theme of weather at SD Muhammadiyah 2 Langsa, to determine the feasibility of developing magic box media, teacher and student responses, and to determine the learning outcomes obtained by students after using magic box media. This research method is (R&D) with the ADDIE development model which consists of 5 stages of development, including the stages of analysis, design, development, implementation, and evaluation. The results of this study are material expert validation of 80% "Feasible" criteria and media experts of 98.88% "Very Feasible" criteria. The results of the teacher response assessment amounted to 95% "Very Practical" criteria and the results of the student response assessment of 28 students amounted to 89.21% "Very Practical" criteria. Learning outcomes in this research and development have increased significantly as evidenced in the results of the paired sample t-test obtained Sig. (2-tailed) 0.000 < 0.05 so that H₀ is rejected and H_a is accepted, which means that there is an increase in student learning outcomes between before and after using the magic box media.

Keywords: Magic Box; Media; Recycling; Students; Weather Theme.

Abstrak

Minimnya penggunaan media pembelajaran membuat siswa kesulitan dalam memahami materi. Akibatnya hasil ulangan siswa belum optimal memenuhi nilai KKM. Oleh karena itu, dirasa perlu untuk mendesain sebuah media pembelajaran agar hasil yang dicapai siswa menjadi lebih baik. Tujuan penelitian ini adalah mendeskripsikan tahapan pengembangan kotak ajaib dari bahan daur ulang bertema cuaca di SD Muhammadiyah 2 Langsa, untuk mengetahui kelayakan pengembangan media kotak ajaib, respon guru dan siswa dan untuk mengetahui hasil belajar yang diperoleh siswa setelah menggunakan media kotak ajaib. Metode penelitian ini yaitu (R&D) dengan model pengembangan ADDIE yang terdiri dari 5 tahapan pengembangan, diantaranya ialah tahapan analisis, desain, pengembangan, implementasi, serta evaluasi. Hasil penelitian ini yaitu validasi ahli materi sebesar 80% kriteria "Layak" dan ahli media sebesar 98,88% kriteria "Sangat Layak". Hasil penilaian respon guru sebesar 95% kriteria "Sangat Praktis" dan hasil penilaian respon siswa sebanyak 28 jumlah siswa sebesar 89,21% kriteria "Sangat Praktis". Hasil belajar pada penelitian dan pengembangan ini mengalami peningkatan yang signifikansi dibuktikan pada hasil uji paired sampel t test diperoleh nilai Sig. (2-tailed) 0,000 < 0,05 sehingga H₀ ditolak dan H_a diterima yang berarti terdapat peningkatan hasil belajar siswa antara sebelum dan sesudah menggunakan media kotak ajaib.

Kata Kunci: Daur Ulang; Kotak Ajaib; Media; Siswa; Tema cuaca

Introduction

Learning media becomes equipment that can channel messages and support education in the classroom so that the meaning of the message to be informed is clearer and allows the achievement of educational goals effectively and efficiently (Nurrita, 2018). Learning media can also be a learning material for students to get news and messages from educators to further enhance understanding in receiving learning materials and form students' knowledge and cognition. (Aghni, 2018).

The benefits of learning media include providing guidelines to teachers on how to achieve learning objectives. Of course, this helps teachers to explain learning material systematically and present material that is as interesting as possible, besides that it can motivate and attract students' learning focus through the media presented. Students are expected to be able to think and analyze the material correctly during the learning process in a pleasant classroom so that it can support their understanding and explore the material in the hope that it will be better. (Tafonao, 2018).

Based on the observation, it can be seen that in learning Indonesian, the teacher is still dominant in lecturing and minimal in the use of learning media so that students tend to be passive. This makes the learning situation less effective and makes students do activities that are not useful. Many of them are busy on their own, disturbing friends, scribbling books, daydreaming, and even sleepy. Therefore, it will greatly affect the mastery of concepts on the theme of weather to be less than optimal. This can be proven through the scores obtained by students are still fairly low when given practice questions. This means that most students have not met the KKM score.

Steps that can be taken in overcoming these problems are the application of the use of learning media so that it can encourage the learning process to be better. Teaching media or learning media can be obtained by making it yourself or the result of a teacher's creativity (Asmara, 2019). In making learning media, there are many things to consider, such as cost and availability of local resources. The availability of local sources means that if the media is not available in the existing sources at school then the media must be purchased or produced by yourself. So that in making self-made learning media can be used by utilizing used goods around the environment, provided that used goods can be recycled and do not harm humans or the environment (Yusup et al., 2021).

Making media from used materials in the learning process further minimizes costs because most of the materials come from used materials. In addition, teachers and students can be more creative in creating learning media using objects that are around the environment so that it becomes something meaningful and can be used, especially in the field of education. One of them is the magic box media. With this magic box media made from recycled materials, it is able to present an understanding of the theory and concept of material on the theme of weather. This visual learning media is intended to increase understanding and improve student memory because the images presented are able to encourage interest with the link between learning materials and actual events (EMILIA, 2021).



Figure 1: Magic Box Media Design

Method

The research method used in this study is research and development (R&D). Research and development are research that produces a product and develops pre-existing products that can then be validated. The product developed in this study is a magic box media made from recycled materials on the theme of weather. The development model in this study follows the flow of ADDIE. As the name implies, ADDIE has 5 development procedures including the stages of analysis, design, development, implementation, and evaluation. (Abdillah, 2019). Data collection techniques using validation sheets as well as learning outcomes tests. The test that researchers conducted in this study was a paired sample t-test using the SPSS version 28 application to see a significant increase in student learning outcomes in the learning process using the magic box media.

Result and Discussion

Result

This research produces a visual learning media product, namely learning media that can be captured by students' vision in a real and direct way. The media is a weather-themed magic box media in class IIIC which was developed through the use of materials in the surrounding environment and made manually by following the ADDIE development stages.

1. Analysis

The analysis stage of the researcher examines the problems that occur at SD Muhammadiyah Langsa by finding out and consulting with homeroom teachers and assistant homeroom teachers to students of class IIIC SD Muhammadiyah 2 Langsa. The problems and obstacles that are often faced during the learning process that researchers get in the material of the process of rain, namely: a. learning conditions that are less effective because the teacher teaches through lecture explanations only so that it makes students noisy, bored and asleep in class, b. minimal use of learning media due to the lack of availability of learning media from schools, c. material taught only through thematic books only.

2. Design

In the design stage, researchers prepared several preparatory stages before developing the media. The following are the stages in designing the magic box media:

- a. Determine the material and size of the magic box;
- b. Selecting some reference images that are suitable for weather changes in the material on the process of rain;
- c. Arrange the pictures in the magic box;
- d. Develop materials and learning tests;
- e. Sketching the magic box media design;
- f. Developing research instruments.

3. Development

At this stage, researchers develop a magic box based on the points that have been made at the previous stage. After the media is ready to be developed, the magic box will carry out an instrument development stage process carried out by two validators.

- a. Magic box development: sunny weather, cloudy weather, rainy weather, rainwater falling from the mountain;
- b. Instrument development: 1) material experts obtained a score of 80% with the criteria "feasible" and 2) media experts obtained a score of 98.88% with the criteria "very feasible".

4. Implementation

After the magic box passes the development stage and is declared very feasible by validators, namely material experts and media experts, the next stage is that the magic box is ready to be tested on teachers and students totaling 28 people in class IIIC SD Muhammadiyah 2 Langsa. At this stage the researchers carried out the learning process with two meetings in the classroom by conducting a Pre-test as well as a Post-test.

Table 1. Magic box trial schedule

Number of meetings	Class	Day/Date	Material	Duration
1x	III C	Friday/21 January 2022	The process of rain (without media)	35 minutes
1x	III C	Monday/24 January-2022	The process of rain (media)	70 minutes

5. Evaluation

After the magic box media is completed from the four stages, the magic box will pass the final stage in this research and development, the stage is the evaluation stage, where researchers get input and suggestions from teachers and students as material for revising this magic box learning media listed on the questionnaire sheet given when implementing in class.

6. Student learning outcomes

After the researcher finished applying the magic box media and giving tests in the form of question sheets, the researcher managed to collect data on student learning outcomes from 28 students of class IIIC SD Muhammadiyah 2 Langsa as a research sample, then the researcher obtained the results of the acquisition of the average value of student learning outcomes before using the magic box (pre-test) of 66.14 and the value after using the magic box (post-test) amounted to 92.68. The type

of test that researchers use is the paired sample t-test, this test is a test conducted to see the comparison of the difference between two means that are paired with each other with both data normally distributed. The test results in this study can be proven in the test table below.

Table 2. Paired Sample Test

Paired Samples Test										
		Paired Differences							Significance	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	One-Sided p	Two-Sided p
					Lower	Upper				
Pair 1	PRETEST POST TEST	- 26,5 36	8,085	1,528	-29,671	-23,401	- 17,3 67	27	<,001	<,001

The table above shows the answers in this study through the Paired Samples Test with the acquisition of the Sig value. (2-tailed) less than 0.001, namely 0.000 < 0.05. The acquisition of the t table value = $t(0.05; 27) = 2.05$. This means that the sig value < a, namely 0.000 < 0.05 and $t_{count} > t_{table}$, namely $17.367 > 2.05$. Therefore, the researcher concluded the hypothesis withdrawal in this study that H_0 was rejected and H_a was accepted, meaning that there was a significant increase in learning outcomes between before using the magic box and after using the magic box on the theme of weather in class IIC SD Muhammadiyah 2 Langsa.

Discussion

Based on the results of the above research, researchers can obtain a product in the form of a magic box learning media on the process of rain in B. Indonesia learning in class IIC SD Muhammadiyah 2 Langsa. In this study to produce an expected product, researchers followed the ADDIE development stages which consisted of 5 stages, including the stages of analysis, design, development, implementation, and evaluation.

1. Analysis of product feasibility by material experts and media experts

The magic box learning media in Indonesian language subjects has been tested by Mrs. NBM as a material expert and produces an average score of 80% with the criteria "feasible". Then the feasibility test was also carried out by Mrs. CJP as a media expert and resulted in an average score of 98.88% with the criteria "very feasible". From the results of the product feasibility analysis, it can be concluded that

the magic box that has been developed is feasible to be applied to third grade elementary school students as a valid learning media.

2. Practicality analysis by student and teacher responses

The teacher and student responses to the magic box were taken based on the assessment of the questionnaire that the researchers distributed after conducting the trial on Monday, January 24, 2020 in class III C of SD Muhammadiyah 2 Langsa with a total of 28 student subjects and resulted in an average score of 89.21% with the criteria "very practical". The teacher's response in class IIIC was carried out by Mrs. SH and resulted in an average score of 95% with the criteria "very practical". From the results of the analysis of the practicality of the product, it can be concluded that the magic box that has been developed is very practical or feasible to use according to the needs of students and teachers in the classroom.

3. Analysis of student learning outcomes

The learning outcomes obtained by students of class IIIC SD Muhammadiyah 2 Langsa between learning by using the magic box media and not using the magic box have a significant learning effect. This is evidenced by the acquisition of the paired samples test value using the SPSS version 28 application of $0.000 < 0.05$ and the acquisition of the t table value = $t(0.05; 27) = 2.05$. This means that the sig value $< \alpha$, namely $0.000 < 0.05$ and $t_{\text{count}} > t_{\text{table}}$, namely $17.367 > 2.05$. So, the conclusion that can be obtained regarding the hypothesis is that H_0 is rejected and H_a is accepted, namely there is a significant increase in student learning outcomes using the magic box media in class IIIC SD Muhammadiyah 2 Langsa.

Conclusion

Based on the results and discussion above, it can be concluded that this research produces a product, namely the magic box media following 5 stages of development including analysis, design, development, implementation, and evaluation stages. The magic box media can provide an increase in the learning outcomes of grade IIIC students at SD Muhammadiyah 2 Langsa as evidenced by testing on the SPSS version 28 application, namely the paired sample test and producing a Sig value. (2-Tailed) $0.000 < 0.05$, this states that H_0 is rejected and H_a is accepted, meaning that there is an increase in student learning outcomes between before using the magic box media and after using the magic box media.

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