Development of Smart Board Pakapin Media in Science Learning Class V Elementary School

Ramadhani Syafitri Siregar[1], Sukmawarti[2]
[1] *(Universitas Muslim Nusantara Al Washliyah Medan)*
[2] *(Universitas Muslim Nusantara Al Washliyah Medan)*

* Corresponding Author. E-mail: Syafitriidhanii90@gmail.com

Abstrak

Penelitian ini adalah penelitian *Research and Development* (R&D) dengan menggunakan 3 tahapan dari model ADDIE, yaitu analisi, desain, dan pengembangan. Subjek dari penelitian ini peserta didik kelas V SD Negeri 060924 Medan tahun pelajaran 2022/2023 yang berjumlah 25 siswa. Produk akhir dari pengembangan ini adalah media papan kantong pintar. Pengembangan media pakapin ini divalidasi oleh 3 validator yaitu validasi ahli media, validasi ahli materi dan validasi ahli pembelajaran. Hasil penelitian ini membuktikan bahwa tingkat validitas media papan kantong pintar menunjukkan rata-rata persentase dari ahli media 92,5% , ahli materi 86% , dan ahli pembelajaran 100% yang artinya media papan kantong pintar dikategorikan sangat valid. Hal ini menunjukkan bahwa media pakapin dapat meningkatkan hasil belajar siswa.

Kata Kunci: Pengembangan, Media Papan Kantong Pintar, Pembelajaran IPA

Abstract

This research is Research and Development (R&D) research using 3 stages of the ADDIE model, namely analysis, design, and development. The subjects of this study were 25 students in class V SD Negeri 060924 Medan for the academic year 2022/2023. The final product of this development is the smart pocket board media. The development of Pakapin media was validated by 3 validators, namely media expert validation, material expert validation and learning expert validation. The results of this study prove that the validity level of smart pocket board media shows an average percentage of media experts 92.5%, material experts 86%, and learning experts 100%, which means that smart pocket board media is categorized as very valid. This shows that Pakapin media can improve student learning outcomes.

Keywords: Development, Smart Pocket Board Media, Science Learning

Introduction

The quality of human resources is one of the determinants of the progress of a nation. The creation of quality human resources begins with an educated generation, therefore, it is necessary to improve the quality of education to create the next generation capable of developing quality and noble human resources. According to (Haryono, 2014:1). Learning is assistance provided by educators so that the process of acquiring knowledge, knowledge, mastery, skills, character, and the formation of attitudes and beliefs of students takes place (Ahmad, 2014: 19). The

learning process that occurs is a process in which interaction activities occur between teachers and students communicating directly to achieve learning goals.

According to Permendiknas No. 22 of 2006, the standard content of science subjects for SD/MI, science relates to how to find out about nature in a systematic way, so that science is not only mastery of a collection of knowledge in the form of facts, concepts, or principles, but also is a process of discovery. Science education is expected to be a vehicle for students to learn about themselves and the environment as well as prospects for further development in applying it in everyday life.

Science learning cannot be done by rote or passively listening to the teacher explaining concepts, but students themselves must do the learning through experimentation, observation or active experimentation which will eventually form creativity and awareness to maintain and improve natural phenomena that occur to further form a scientific attitude. which in turn will be active in maintaining the stability of this nature in a good and sustainable manner (Sulthon, 2016: 39).

There are many kinds of animals. All kinds of animals are creations of God Almighty. In nature, animals have their own kind of food. The type of animal food studied is food available in nature. Some of these animal foods come from plants and some come from animals. Foods of plant origin, including grass, fruits and seeds. Meanwhile, food of animal origin, including meat. Based on the type of food, animals can be grouped into several groups. These categories include herbivores (plant eaters), carnivores (meat eaters), and omnivores (meat and plant eaters).

Media can be defined as an intermediary from information sources to information recipients (Wina, 2020:57). Learning media is a tool, a praga tool that can carry information in the learning process in the form of hardware or software, which is designed or not designed to facilitate communication between teachers and students which can stimulate thinking, channel messages and the willingness of students to achieve a goal. learning objectives.

Learning media is one of the important things in supporting the learning process. With learning media students will more easily construct the

understanding learned from abstract to concrete. The existence of learning media is very important in the learning process, especially for students. We all know that the age range of elementary school children is in the concrete operational stage, looking at the world objectively, thinking operationally, being able to classify objects around them, using cause-and-effect relationships. Therefore, the existence of learning media really supports the learning process of students in helping to recognize and understand concrete environmental conditions in the form of audio/visual/audio visual.

Based on the results of researchers' observations of the learning process carried out at SDN 060924 class V in science learning material for classifying animals based on the type of food, students are still dominated by teacher-centered activities through the lecture method. The teaching and learning process is not as expected. There are still many students who lack interest in learning, are less active in terms of communication-related to lessons, and the teacher only races on books when giving material.

In current learning, teachers need to involve students actively in the learning process. One way that teachers can do to involve students actively in the learning process following the conditions and desires of students is to use interesting learning media in order to help students understand the material presented.

The media to be developed is PAKAPIN media (Smart Pocket Board). PAKAPIN media is one of the learning media which is a two-dimensional visual media in the form of pocket boards. As the opinion (Arsyad, 2014: 121) Pocket board is a tool that is very easy for every teacher to make. Pocket boards can be made of plywood (plywood) or thick cardboard. The size of plywood or thick cardboard is approximately 90 cm and 60 cm high. To this board or cardboard attach (with glue/staples or other adhesive) several rows of bags 5 cm high. While this media is in the form of a board made of plywood with a thickness of 1 cm covered with flannel and the pockets are also made of flannel, the aim is to complete science lessons about classifying animals based on the type of food they eat.

The use of two-dimensional learning media is expected that the material presented can increase

student learning motivation in learning material about the classification of animals based on the type of food they eat. Based on the explanation above, researchers feel the need to conduct research with the title "Development of PAKAPIN Media (Smart Pocket Boards) in Science Learning in Class V SD". PAKAPIN media is a learning media with the concept of learning while playing so that it can make students more active, creative, and make students happy because learning is not monotonous with assignments.

Method

Research and development are steps or a series of processes in developing existing products so that they can be accounted for. The research and development process shows a cycle that begins with a need, a problem that requires solving a particular product. The development model used in this study is a procedural development model that is descriptive of the ADDIE model. The development of the ADDIE model is a class-oriented development model (Hamzah, 2019). This model is a model of a balancing concept of learning products that is oriented to the needs of students. That is, the ADDIE concept is applied to develop learning designs based on student performance. the ADDIE model uses 5 stages, namely analysis (analysis), design (design or design), development (development), implementation (implementation/execution), evaluation (evaluation/feedback). However, researchers only used 3 stages in the ADDIE model, namely analysis, design, and development.

Results and Discussion

The results of the development of the smart pocket board media consist of several stages, namely as follows:

a) Product form
Pakapin media is media that can be developed by everyone. Making of this mediumusing ingredients that are easily available to everyone. The materials used in this development have been adapted to aspects of making media such as aspects of durability, practicality, easy to find, and so on.

The making of this media also adapts to the learning material in class V, which is about classifying animals based on the type of food they eat in science lessons. The media is an initial design which is then consulted by the researcher to the supervisor and also the validator team. The validator team in this study consisted of 3 validators, namely the media expert validator, the material expert validator and the learning expert validator who then revised the product if there was a revision from the validator team so that it could be declared feasible.

b) Components of Pakapin Media
Pakapin media is very easy to produce. In addition to adjusting to learning materials, in making media must also pay attention to the needs of students. Pakapin media loading uses materials that are easily found in the surrounding environment and does not contain hazardous materials.
The steps used in making this media consist of: (1) preparing the tools and materials to be used, (2) cutting plywood 80 cm wide and 60 cm high for boards, (3) cutting flannel90 cm wide and 70 cm high used as a layer of plywood for boards and styrofoam, (4) cut flannel with a width of 21 cm and 16 cm high in 3 pieces of flannel for herbivores, carnivores and omnivores, (5) cut flannel with a width of 40 cm and height 15cm for bags containing pictures of animals, (6) print pictures of animals belonging to herbivores, carnivores and omnivores using white HVS paper then the pictures of these animals are laminated to make them last longer if used several times.

c) Validation
Product validation was carried out by 3 validators consisting of 2 lecturers and 1 teacher. Pakapin media validation was carried out by Mrs. Siti Khayroiyah, S.Pd, M.Pd, material validation was carried out by Mrs. Lia Afriyanti Nasution, M.Pd, and learning validation was carried out by Mrs. Mei Elprida H, S.Pd. This validation process is carried out to determine the feasibility of Pakapin media to

be applied in the learning process, especially in science subjects.

Table 1. Data from Media Expert Validation Results

No	Rated aspect	Alternative Answers			
		1	2	3	4
1	The materials used in the manufacture of media are easily found in the environment around us				✓
2	The media design is in accordance with the in-depth concept of classifying animal material based on the type of food				✓
3	Media design is interesting to learn				✓
4	Pakapin learning media (smart pocket board) is in accordance with the function of the media				✓
5	The Smart Pocket Media Board has a simple shape that makes it easy to use				✓
6	Making media is easy and the materials needed are easy to find around us			✓	
7	Media design that does not require a lot of costs in the manufacturing process		✓		
8	Use of Smart Pocket Board media is not harmful				✓
9	Smart Pocket Board Media can be stored and used over and over again				✓
10	The presentation of the Smart Pocket Board media can develop students' learning interest				✓
Total score obtained		37 : 10 = 3.7			

Through the results of media expert validation, it is known that there are 10 questions and there are 4 assessment categories. Of the 10 questions, there are 8 questions in number 4, 1 question in number 3, and 1 question in number 2. The following is a summary of the results of the assessment:

Likert Scale Formula: T x Pn

T = Total number of respondents who voted

Pn = Choice of Likert score numbers

- 8 x 4 = 32
- 1 x 3 = 3
- 1 x 2 = 2

All results add up to $32 + 3 + 2 = 37$, so the total score is 37. And the average is $37 : 10 = 3.7$. And if the percentage is, $\frac{37}{40} x 100\% = 92,5\%$

The above suggests that the response of media experts states that using Pakapin media in learning science for class V SD is suitable for use by students in class V SD.

Table 2. Material Expert Validation Result Data

No	Rated aspect	Alternative Answers			
		1	2	3	4
1	Presentation of material in accordance with learning objectives			✓	
2	The material presented can achieve learning objectives			✓	
3	Completeness of the material in accordance with the learning objectives			✓	
4	The material presented is in accordance with learning to classify animals based on the type of food they eat			✓	
5	The material in the media is relevant to the material to be learned				✓
6	Consistency of learning material with the flow of thought of students				✓
7	PAKAPIN media				✓

		1	2	3	4
	encourages students to seek further information				
8	By using PAKAPIN media, students can easily understand the material			✓	
9	There is direct media interaction with students				✓
Total score obtained		31 : 9 = 3.44			

Through the results of media expert validation, it is known that there are 9 questions and there are 4 assessment categories. Of the 9 questions, there are 4 questions in number 4, and 5 questions in number 3. The following is a summary of the results of the assessment:

Likert Scale Formula: T x Pn

T = Total number of respondents who voted

Pn = Choice of Likert score numbers

- 4 x 4 = 16
- 5 x 3 = 15

All results add up $16 + 15 = 31$, so the total score is 31. And the average is 31 : 9 = 3.44. And if the percentage is, $\frac{31}{36} \, x \, 100\% = 86\%$

The above suggests that the response of material experts stated that using the media used in learning science for class V SD is suitable for use by students in class V SD.

Table 3. Data from Learning Expert Validation Results

No	Rated aspect	Alternative Answers			
		1	2	3	4
1	The design of the Smart Pocket Board learning media is very interesting				✓
2	The Smart Pocket Board media display is easy to operate				✓
3	The Smart Pocket Board media display helps students understand the material				✓
4	The Smart Pocket Board media design is easy for students to practice on				✓

		1	2	3	4
	their own				
5	Smart Pocket Board Media according to learning material (Classification of animals based on the type of food)				✓
6	The Smart Pocket Board media is in accordance with the basic competencies to be achieved by students				✓
7	By using the Smart Pocket Board media, learning is more meaningful				✓
8	Smart Pocket Board Media helps students understand learning material				✓
9	By using the Smart Pocket Board media, learning is more active				✓
10	By using the Smart Pocket Board media, it trains students to be responsible by their respective groups				✓
Total score obtained		40 : 10 = 4			

Through the results of media expert validation, it is known that there are 10 questions and there are 4 assessment categories. Of the 10 questions, there are 10 questions in number 4. The following is a summary of the results of the assessment:

Likert Scale Formula: T x Pn

T = Total number of respondents who voted

Pn = Choice of Likert score numbers

- 10 x 4 = 40

So the total score is 40. And the average is 40 : 10 = 40. And if it is presented, that is, $\frac{40}{40} \, x \, 100\% = 100\%$

The above suggests that the response of media experts states that using Pakapin media in learning science for class V SD is suitable for use by students in class V SD.

Based on the results of the overall data validation of media experts, material experts and learning experts on Pakapin media, it can be concluded that Pakapin media in science learning has developed so that Pakapin media is feasible to try out. This can be proven by the data obtained.

Discussion

This research is research and development (R&D) using the ADDIE development model which only takes 3 stages, namely *Analysis* (analysis), Design (Design), Development (development) aims to produce media suitable for use in science learning materials on classifying animals based on the type of food in class V SD Negeri 060924 Medan, and developing learning media in the form of smart pocket boards.

According to Sugiyono, the steps for developing media using the R&D approach used in media development research include: 1. Analysis, 2. Design, 3. Development.

1. Analysis

   Science lessons are lessons that contain about the natural surroundings, not only about the types of living things but also about living things and the types of food they eat. In science learning, students are rarely brought close to nature so that students only know based on the books they study. This is an indication of a lack of interest in learning.

2. Media Design

   a. The media title is Smart Pocket Board Media Development

   b. The basic competency that will be achieved after studying the media is that students are able to explain various types of animals based on the type of food, students are able to explain herbivorous, carnivorous and omnivorous animals, and students are able to classify animals based on the type of food they eat.

   c. The design used in the smart pocket board media is the pakapin design which only changes the subjects and the arrangement of the pockets.

   d. The material on the smart pocket board includes material for classifying animals based on the type of food they eat.

3. Media Development

The stages of development of Pakapin media are:

a. Combining materials that have been collected, namely lesson plans, textbooks, and media that are ready to be developed.

b. Create product validation questionnaires for media experts, material experts, and learning experts. The questionnaire aimed at media experts, material experts and learning experts here aims to find out whether or not the use of Pakapin media is developed and implemented for students.

Conclusion

The definition of learning media according to Munadi is anything that is used as a means of conveying or channeling messages from sources in a planned manner so as to create a conducive learning environment where recipients can carry out an efficient and conducive teaching and learning process. And it can be concluded that learning media is anything that can be used to channel messages or as learning materials, so as to stimulate interest, attention, feelings of students and thoughts in teaching and learning activities to achieve learning goals. Pakapin media is made of plywood with a width of 80cm and a height of 60cm covered with styrofoam and flannel. This media is media consisting of 1 bag that is used to place images of herbivorous animals, carnivores and omnivores in learning activities. The making of Pakapin media has paid attention to the aspects of making learning media. Aspects of learning media which consist of the level of durability, feasibility, and effectiveness. The media development process uses the ADDIE development model. The ADDIE development model only takes 3 stages, namely analysis, design, and development. During the process of developing this media before testing, the media was first shown or validated by the validator. The validators in this development consist of media validators, material validators and learning validators. Media development carried out by researchers is in accordance with the theory used. The theory used in this development research is the theory of Sugioyo (2017: 395) who argue that research and development is a research method used to research in an effort to develop existing products (innovation).

Based on this media development trial, Pakapin media is categorized as valid (proper).

Reference

Dina Zairida, dkk. 2019. "Pengembangan Media Pakapindo (Papan Kantong Pintar Doraemon) Pada Materi Hukum-hukum Dasar Kimia Kelas X di MA Raudhatusysyubban". Universitas Islam Kalimantan (UNISKA). Jurnal Pendidikan Kimia dan Ilmu Kimia. Vol.2. No.2

Hasnul Fikri dan Ade Sri Madona. 2018. Pengembangan Media Pembelajaran Berbasis Multimedia Interaktif. Yogyakarta: Samudra Biru

Ihsana El Khulogo. 2017. Belajar dan Pembelajaran. Yogyakarta: Pustaka Belajar

Maria Melania. 2021. "Pengembangan Media Papan Kantong Pintar (Pakapin) pada Pembelajaran Tematik Sub Tema Gemar Berolahraga untuk Siswa Kelas 1 Sekolah Dasar". Universitas Negeri Surabaya. JPGSD. Vol.09. No. 08. Hal.3155-3165

Niken Bestari. 2017. Buku Tematik Terpadu Kurikulum 2013 Edisi Revisi 2017 untuk Kelas V SD Tema 5.

Nurdyansyah. 2019. Media Pembelajaran Inovaatif. Sidoarjo: UMSIDA Press

Nurul Huda Panggabean dan Amir Danis. 2020. Desain Pengembnagan Bahan Ajar Berbasis Sains. Medan: Yayasan Kita Menulis

Shoffan Shoffa, dkk. 2021. Perkembangan Media Pembelajaran di Perguruan Tinggi. Bojonegoro: Agrapana Media

Septy Nurfadilah, dkk. 2021. Media Pembelajaran. Sukabumi: CV. Jejak Anggota IKAPI

Sisilia Bahan, dkk. 2021. "Pengembangan Media Pakapin dalam Pembelajaran Tematik Muatan PPKN pada Siswa Kelas 2 SD Pengudi Luhur ST.Aloysius Sedayu".Universitas Surjanaluiyata Tamansiswa. Jurnal Pendidikan Ke-SD-an. Vol.8. No.1. Hal.1259-1263

Sukarman Purba, dkk. 2021. Landasan Pedagodik: Teori dan Kajian. Medan: Yayasan Kita Menulis

Yudi Ari R dan Sugiarti. 2020. Penelitian Pengembangan Model ADDIE dan R2D: Teori an Praktek. Pasuruan: Lembaga Academic & Research Institute