e-ISSN: 2808-8263
p-ISSN: 2829-0976
International Conference on Elementary Education
Volume 8, Nomor 1

Development of Differentiated Learning-Based Interactive Media to Overcome Difficulties in Learning Science in Grade IV/Islamic Elementary School Students

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Abstract. This research aims to develop interactive media based on differentiated learning to overcome the learning difficulties of IPAS students in grade IV of SD/MI. This research is a Research *and Development* (R&D) research, using a 4D development model consisting of the stages of definition, design, development and dissemination. The subjects of this study are 71 students and 3 educators who will conduct a media practicality test, media experts, linguists, and material experts. Data collection techniques were carried out by observation, interviews and questionnaires.

The results of the study show that interactive media is valid and practical in overcoming learning difficulties in learning IPAS. Interactive media was declared valid in terms of language with a percentage of 94%, material with a percentage of 90% and media with a percentage of 96% so that an average of 93.3% was obtained with a very valid category. The practicality of interactive media by educators and students was obtained on average 94% by educators in the Very Practical category and 89.4% by students in the Very Practical category. The development of differentiated learning-based interactive media products does not use an effectiveness test but only uses a validity test and a practicality test. Based on these results, it can be concluded that differentiated learning-based interactive media to overcome learning difficulties in learning science in grade IV of SD/MI is categorized as very valid and very practical and can overcome students' learning difficulties in learning science.

INTRODUCTION

In the 21st century, technology is developing very quickly. So that human resources (HR) must be able to adjust to technological developments, so that human resources are not replaced by technology. In order not to be replaced, the quality of human resources (HR) in Indonesia is required to be further improved in order to keep up with the rapid development of this era. The improvement in quality depends on the improvement of the quality of education in Indonesia. The quality of education also depends on how learning is carried out in the education system itself. Likewise, the quality of learning will be influenced by the quality of teachers and the learning practices implemented.

In order for the learning process to run well, learning supports such as interactive learning media are needed. Media as an auxiliary equipment in the learning process is an undeniable reality because the existence of media can help teachers in delivering messages from the learning materials given by teachers to students. Not only that, the media can also represent what teachers are less able to say through certain words or sentences. Learning media is facilities and infrastructure to support the implementation of educational activities.

e-ISSN: 2808-8263
p-ISSN: 2829-0976

The word "interactive" generally means two-way communication or more than the components of communication. More simply, "interactive" means active communication between communicators and communicators. No one party is passive. Interactive Media generally refers to multimedia products and digital services in the IT system that respond to user actions by presenting audio content, visual content and audiovisual content. Therefore, the definition of Interactive Learning Media is a multimedia-based tool that can describe messages or information from teachers to students in the process of active two-way communication between multimedia and users (students) which aims to facilitate the learning process. Therefore, educators must create creative and innovative learning media that can be used in delivering material messages to students (Hasan et al, 2021) .

However, the reality is that the use of digital technology media in supporting the learning process has not been applied optimally in learning, causing students to be less enthusiastic in following the learning process (Anindya, 2023). In addition, in the learning process, educators tend to use conventional models such as lectures or questions and answers (Khoirunisa et al., 2023) .

One of the main subjects at the elementary school level is the subject of Natural Sciences (IPA). In the Independent Curriculum, there is an update from the previous curriculum, one of which is to combine two subjects, namely Science and Social Studies, into IPAS (Natural and Social Sciences) (Nuryani et al, 2023: 602). IPAS is a discipline that focuses on understanding living and inanimate beings in the universe, as well as the interaction between them and involves the study of individual human life as social beings (Alfatonah et al., 2020: 3398).

Based on observations made by the researcher in July 2023 at MIN 2 West Pasaman, the researcher conducted an interview with the homeroom teacher of grade IV, the homeroom teacher stated that educators in learning, especially IPAS, have not received maximum results because there are still students who find it difficult to receive the material. In the learning process, educators use learning resources in the form of package books and picture media contained in books, but this makes students feel bored and difficult to receive material. The learning process also tends to take place in one direction, the teacher dominates the learning process without any aids to convey the meaning of learning, so the learning process becomes monotonous resulting in students being less active in learning. It was also seen that students in learning did not respond to questions given by educators, students made noises during the learning process and some students just sat and listened to explanations from educators.

From the information that the researcher obtained at the ibtidaiyah madrasah, the media of books and pictures is often used as a learning medium. This causes students to get bored quickly when learning takes place because the media used is monotonous. Current teaching materials are usually monotonous and present the material directly, making students bored and eliminating learning activities. Teaching materials must have a unique and interesting form, content, and way of presenting material so that it attracts students to learn to use it (Haryanti, & Saputro, 2016). To realize active learning, alternative media are needed that can be used as learning media, one of which is interactive media based on differentiated learning.

Each individual has a different learning style because it is influenced by a number of factors that affect the way they receive, process, and remember information. Variability in factors such as intelligence and *multiple intelligences,* life and cultural experiences, neurological differences, cognitive processing, motivation and interests, the influence of educational experience, and psychological and emotional factors are the causes of these differences. For example, the theory of *multiple intelligences* by Howard Gardner suggests that each individual has unique intelligences and talents. Life experiences, cultural backgrounds, and neurological differences also contribute to the diversity of learning styles. The combination of these factors makes each individual have a distinctive learning approach. Understanding these different learning styles is key to creating a learning environment that is inclusive and responsive to the needs of diverse students.

This is in line with the concept of differentiated learning. Differentiated learning can be interpreted as unequal or different, diverse, and varied. So that the process in the implementation of this differentiated learning is how the efforts of an educator are in meeting the needs of students who are full of diversity in these learning activities (Nurazijah et al., 2023: 1800). (Umi et al., n.d.)

There are several previous studies that use interactive media as learning media, including: Research conducted by Siti Nurhalisa and Sukmawati (2022) on the use of canva-assisted interactive media in learning science water cycle materials with a scientific approach. The purpose of the study was to look at the use of canva-assisted interactive media in learning science of water cycle materials with a scientific approach. The similarities between this study and previous research are found in the use of interactive media in science learning. However, the difference between this study and previous research lies in the water cycle material and uses a scientific approach, while the previous research changed the form of energy and used a differentiated learning approach.

Research conducted by Meylia Alidya Rachman, Ani Rahmawati, Siti Susi Jeni, Rindi Rahayu (2023), on the Influence of Learning Media to Overcome Students' Learning Difficulties in Long Unit Mathematics Learning at SDN Lemahduhur II. The purpose of the research is to understand the various difficulties experienced by students in solving long unit problems in class II. The similarity of this research with previous research can be found in the use of learning media to overcome students' learning difficulties. However, the difference between this research and previous research lies in the type of research and learning materials, the type of research uses a qualitative approach, while the researcher uses the type of R&D research, the teaching material used in the previous research is mathematical material, while the researcher uses science material.

Research conducted by Yolla Riski Utami (2023), on the Development of Flipbook-Based Teaching Materials in Supporting Differentiated Learning in Grade IV of Elementary School. The objectives of the study are (1) to describe the procedure for developing flipbook-based teaching materials in supporting differentiated learning in grade IV elementary school, (2) to describe the level of validity of flipbook-based teaching materials in supporting differentiated learning in grade IV elementary school, and (3) to describe the level of practicality of flipbook-based teaching materials in

e-ISSN: 2808-8263
p-ISSN: 2829-0976

supporting differentiated learning in grade IV elementary school, the results obtained from the development of textbook-based teaching materials Flipbooks in supporting differentiated learning in grade IV elementary school are very valid and very practical. The similarity with previous research is that they both develop teaching materials with differentiated learning. However, the difference between the research and the previous study is that in the development procedure, the previous research used the ADDIE procedure, while the researcher used the four D procedure.

Research conducted by Umi Isrotun, on the Analysis of Initial Needs for the Development of Differentiated Learning Teaching Materials Based on Local Wisdom in Pekalongan Regency for Science Science Subjects Class IV Elementary School. The purpose of the research is to analyze the initial needs for the development of teaching materials in the implementation of differentiated learning based on local wisdom in Pekalongan Regency in the science subject of grade IV elementary school. The results of this study are the results of an initial analysis conducted in three Muhammadiyah elementary schools in the AR Fakhrudin cluster, educators have not implemented differentiated learning because of the lack of understanding of educators in the implementation of differentiated learning, the teaching materials used are also not based on local wisdom in Pekalongan Regency. The similarity of this research with the previous research is that they both use differentiated learning. The difference with previous researchers is that the previous research used qualitative descriptive methods, while the researcher used the development method (R&D). (2022)

One of the solutions carried out by previous researchers to overcome learning difficulties is to develop interactive media in learning IPAS. However, the learning media developed from some of these studies are still developed separately in learning. No one has tried to develop interactive media based on differentiated learning to overcome students' learning difficulties in the independent curriculum, namely IPAS learning.

Based on the aspects stated earlier, the researcher aims to conduct research on the Development of Interactive Media Based on Differentiated Learning to Overcome the Learning Difficulties of IPAS Students in Grade IV SD/MI. The researcher hopes that this solution can overcome the learning difficulties of students in learning IPAS in grade IV SD/MI.

RESEARCH METHODOLOGY

1. Types of Research

   This type of research is research and development. Development research is a research method used to produce certain products and test the effectiveness of those products (Sugiyono, 2022: 297). Research and development (R&D) is a series of processes or steps in order to develop a new product or improve an existing product so that it can be held accountable (Sukmadinata, 2015: 164). This research produced a product in the form of interactive media based on differentiated learning to overcome the learning difficulties of science science students in grade IV SD/MI.

   The development model in this study is a 4D model consisting of four stages which include definition, design, development, and disseminate (Thiagarajan et al., 1974). These four stages are very simple when compared to other design models.

Its simple and systematically structured nature, this design model is easy to understand and apply.

2. Development Procedure
   a. Define Stage
      At this stage is the needs analysis stage. In product development, developers need to refer to the development requirements, analyze and collect information to the extent that development needs to be carried out. Thiagarajan said there are five activities that can be carried out at the definition stage, which include:
      1) Front-end analysis
         In this study, the researcher interviewed one educator as a homeroom teacher in grade IV, namely Risa Sangkot, S.Pd, an interview conducted with educators related to the learning conditions of social studies students in grade IV. Based on the results of the analysis, there can be a solution that makes it easier for students to learn science by providing teaching materials or supporting facilities and infrastructure in the form of interactive media based on differentiated learning.
      2) Student analysis
         The characteristics of grade IV students of MIN 2 West Pasaman still need learning media that are used based on visual, audio and audiovisual. Students also experience learning difficulties due to difficult, complex material and loss of concentration at the end of learning. This can happen because learning media is less attractive and media facilities in schools are rarely used by educators in learning.
      3) Task analysis
         This analysis aims to identify tasks that are structured according to the subject matter. The material includes in chapter 4 IPAS transforming the form of energy.
      4) Concept analysis
         Concept analysis is carried out to compile the main concept of the material supported by learning tools. This is done at this stage, namely by analyzing the skills trained with the aim of determining the number and type of teaching materials and analyzing learning resources, namely identifying sources that support the preparation of learning media.
      5) Analysis of learning objectives
         a) Identify the variety of energy transformations in daily life.
         b) Make energy transformation simulations using simple charts/tools in daily life.

   b. Design Stage
      At this planning stage, this is the stage to prepare the initial product. The design stage aims to design an interactive learning medium. There are 5 steps that must be taken at this stage, namely:
      1) Design a display
         Determine the design of the appearance of background color, size, type of writing, writing color and look for images that match the learning material.
      2) Format selection

e-ISSN: 2808-8263
p-ISSN: 2829-0976

This stage is the stage where the researcher chooses the format or appearance of learning media as the product developed. Precision in the selection of materials or formats will create a medium.

3) Application type selection
   Selection of interactive media based on apps that support interactive media creation features.
4) Selection of interactive media themes
   The selection of themes in media creation must be adjusted to the material to be taught.
5) Learning media design

c. Develop Stage

The development stage is divided into two activities, namely: expert appraisal and develop mental testing. Expertappraisal is a technique to validate or assess the feasibility of a product design. In this activity, an evaluation was carried out by experts in their fields. *Develop mental testing* is a product design trial activity on the actual subject target (Putri, 2016).

d. Disseminate Stage

The deployment stage is divided into three activities, namely: validation testing, packaging, diffusion and adoption, at the validation testing stage, the revised product is then implemented to the actual target. Once the product is implemented, development needs to see the results of achieving goals. Goals that have not been achieved need to be solved so that the same mistakes do not repeat themselves after the product is disseminated. The last activity is packaging, diffusion and adoption. This stage is done so that the product can be used by others.

3. Product Trial Design
   a. Validity Test
      Testing the validity of interactive media is carried out by linguists, material experts and media experts.
   b. Practicality Test
      The practicality test is seen in terms of time, appearance and ease of use. Where the media will be used by educators and students, this assessment will be given through a questionnaire to find out the response from educators and students to the extent of the level of practicality of differentiated learning-based interactive media.

4. Trial Subject
   The subjects of the interactive media validity trial consisted of 3 expert validators. 1 language validator, 1 media validator, and 1 material validator. The subjects of the practicality test consisted of 3 educators in class IV and 3 classes of students in class IV.

5. Data Collection Techniques

a. Observation
Observation is a research that is defined as focusing attention on an object that involves all senses to obtain data.
b. Interviews are a form of dialogue conducted by researchers to obtain information from respondents or also called interviews.
c. Questionnaire
Questionnaires are used to obtain information and collect data on media development, validation questionnaires by media experts, are used.

6. Data Analysis Techniques
a) Validity questionnaire analysis
This validation questionnaire uses a likert scale using assessment guidelines. The following scale is described in the following table:

Table 1 Instrument Validity Statement Score

Statement	Statement Weights
Strongly agree	5
Agree	4
Nervous	3
Disagree	2
Disagree	1

(Riduwan et al., 2010: 15)

The calculation of the final value data of the validation results is analyzed on a scale (0-100) using the formula:

$$V = \times 100\% \frac{X}{Y}$$

Information:
V = Value of validity of research instrument
X = The score obtained from the instrument's validity results
Y = Maximum score of instrument validity results
After the questionnaire is filled out by the respondents, the scores of all respondents are averaged in the interpreted percentages and can be seen in the following table:

Table 2 Percentage of Instrument Validity Criteria

Percentage	Criterion
81% -100%	Highly Valid
61% - 80%	Valid
41% - 60%	Quite Valid
21% - 40%	Less Valid
0% - 20%	Highly Invalid

(Riduwan et al., 2010: 13)

b) Analysis of the practicality questionnaire

e-ISSN: 2808-8263
p-ISSN: 2829-0976

The data that has been obtained from the questionnaire that has been filled out by educators and students is then analyzed quantitatively to determine the students' response to interactive media, then calculated on the likert scale as follows:

Table 3 Instrument Validity Statement Score

Statement	Statement Weights
Strongly agree	5
Agree	4
Nervous	3
Disagree	2
Disagree	1

(Riduwan et al., 2010: 15)

The calculation of the final value data of the validation results is analyzed on a scale (0-100) using the formula:

V= ×100%$\frac{X}{Y}$

Information:
V = Value of validity of research instrument
X = The score obtained from the instrument's validity results
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Table 4 Percentage Instrument Validity Criteria

Percentage	Criterion
81% -100%	Highly Valid
61% - 80%	Valid
41% - 60%	Quite Valid
21% - 40%	Less Valid
0% - 20%	Highly Invalid

(Riduwan et al., 2010: 13)

Interactive media is stated to be able to be used if the percentage reaches 61%, if it has reached 61%, then the developed media has reached practicality, then if it is less than 61%, it needs to be revised so that it can be disseminated.

RESULTS AND DISCUSSION

After collecting data from the research conducted, this development research produced a product, namely an interactive media based on differentiated learning to overcome students' learning difficulties in valid and practical science learning by using the development steps of a 4D model consisting of 4 stages of development, namely define, design, develop, and dissiminate. The stages that have been carried out in this study are:

1. Define Stage
   a. Front and Analysis
      The data collection carried out at this stage is by interviewing educators at MIN 2 West Pasaman. The interview was conducted in July 2023 with Mrs. Risa Sangkot, S.Pd., as a homeroom teacher for grade IV at MIN 2 West Pasaman. Based on the results of interviews conducted by researchers and educators in grade IV, it can be concluded that students' mastery of the concept of science is still said to be low due to the difficulties of students in responding to the learning provided by educators. In addition, the media used has not been maximized to overcome the learning difficulties of social studies for students. So an interesting learning media is needed that can overcome the learning difficulties of social studies for students.
   b. Student analysis
      Based on the results of interviews conducted by researchers and grade IV students, it can be concluded that students' mastery of the concept of science is still said to be low due to the learning difficulties of students in responding to the learning provided by the educator. In addition, the media used has not been maximized to overcome the difficulties of social studies students. So an interesting learning media is needed that can overcome the learning difficulties of social studies for students.
   c. Analysis of learning objectives
      The learning objectives in this interactive media were created and designed for two general learning objectives in chapter IV which consisted of three topics, namely describing the change in the form of energy around us, potential energy and Kinetic energy.
      1) General objectives of learning IPAS chapter IV
         Describe the variety of energy transformations in daily life and make energy transformation simulations using simple charts/tools in daily life.
      2) Topic A
         The purpose of topic A is that learners understand the concept of energy conservation and learners can identify changes in the form of energy around them based on observations.
      3) Topic B
         The purpose of topic B is that learners can identify a variety of potential energies based on simple experiments and learners can create simple simulations of tools that use potential energy.
      4) Topic C
         The purpose of topic C is that students can identify various forms of energy included in kinetic energy and students can understand the

e-ISSN: 2808-8263
p-ISSN: 2829-0976

relationship between kinetic energy and light, heat, sound, and electricity energy.

d. Task Analysis

Table 5 Task Analysis List

Chapter IV	Assignment
Topic A	1. Understanding the concept of energy conservation 2. Identify change shape Surrounding energy
Topic B	1. Identifying potential Assortment Energy
Topic C	1. Identifying kinetics Assortment Energy

e. Concept analysis

Based on the results of the research, the concept analysis that students need to master is understanding the concept of energy conservation, identifying the form of energy, identifying various potential energies and kinetic energy.

2. Design Stage

a. Design a display

Differentiated learning-based interactive media contains subject writing, classes, chapter titles and researcher names. The researcher used a font size 25, using a black font, with a marykate font type on the identity slide.

Differentiated learning-based interactive media also formulates learning outcomes, learning objectives and flow of learning objectives on the learning objectives slide using a hero font type with a size of 30 and a green font. Furthermore, for the learning objectives and learning flow slides, the hero font type is used which is 30 in size with a green font color.

b. Format selection

The display of learning-based interactive media is differentiated in energy transformation materials that contain visual media, namely in the form of slides containing images, audio, videos and writings accompanied by clear colors, as well as science subject material in chapter VI grade IV SD/MI.

c. Application type selection

The researcher designed this interactive media based on differentiated learning using the Canva application. In the Canva application, there are

various templates, elements, backgrounds, animations, texts, effects and many other features that can be used to create interesting interactive media.

d. Theme selection
The selection of themes in making media must be adjusted to the material to be taught, namely energy transformation material. The selection of themes is very decisive in the creation of this media, there are many types of themes that have been provided by the Canva application.

e. Learning media design
1) Cover display
The interactive media cover display contains the identity of the interactive media in the form of subjects, chapter IV material titles, phases, and classes.

Figure 1 Interactive Media Cover Display

2) Formulating learning objectives
In the design of the learning objectives, the green hero writing is used in size 30, given a size and green color with a white background so that it can be seen from afar by students and increase the interest in interactive media that is adjusted to the background.

Figure 2 Learning Objectives Display

e-ISSN: 2808-8263
p-ISSN: 2829-0976

3) Home View

In the design of the home or menu for interactive media based on differentiated learning, it contains selection buttons in the form of back instructions, visual, auditory and kinesthetic selection buttons.

Figure 3 Home View

This interactive media contains selected buttons in the form of visual buttons, auditory buttons, kinesthetic buttons and back buttons. Each button when clicked will go to the frame, see figure 4.

Figure 4 Main Selection Menu Display

4) Auditory media display

In the design of the auditory material contains audio about the material chapter 4 changes the form of energy, consisting of material about energy, various types of energy, energy utilization, forms of

energy change, kinetic energy and potential energy. For example, the hand movements made by Ian produce heat energy. While doing so, Ian is converting motion energy into another form of energy, which is heat energy. On this page, there is an instruction button to return to the main menu.

Figure 5 Display of Auditory Material

5) Visual media display

In the design of the visual material by displaying pictures and writings in the form of Ian's conversation and the theme about the hand movements made by Ian produce heat energy. While doing so, Ian is converting the energy of motion into another form of energy, which is heat energy.

4 Changing the form of energy, consisting of material about energy, various energies, energy utilization, forms of energy change, kinetic energy and potential energy. On this page there is a guide button return to the main menu and there is a guide button for the next page.

Figure 6 Visual Material Display

e-ISSN: 2808-8263
p-ISSN: 2829-0976

6) Kinesthetic material display

The view in the design of kinesthetic material in chapter 4 changes the form of energy, consisting of material about energy, various types of energy, energy utilization, forms of energy change, kinetic energy and potential energy. The material is displayed through learning videos and experiment or experiment videos so that students can imitate the experiment. The experiments carried out are like spiral paper that moves, this happens because of the chemical energy in the candle and match, the heat and light energy from the fire, the motion energy when lighting the match, the motion energy in the spiral paper when near the fire. The energy transformation that occurs in the form of chemical energy into heat and light energy (candles and matches). Motion energy becomes heat energy (lighting a fire). Heat energy becomes motion energy (spiral paper).

Figure 7 Display of Kinesthetic Material

3. Develop Stage

The development stage aims to produce interactive media in the science lesson of the material on changing the form of energy in class IV of MIN Pasaman Barat that is valid and practical after being revised by several validators.

a. Validity Stage

Interactive media before being validated by expert lecturers and educators is first validated by one expert/expert called a Validator expert. The instrument expert validator was validated by Mr. Abdul Basit Annabhani, M.Pd.

Validation of interactive media in the IPAS lesson on transforming energy form in class IV was carried out by 3 experts consisting of 1 linguist, 1 media expert and 1 material expert. The results of validation from expert lecturers and educators were used to determine the feasibility of interactive media in learning IPAS material to change the form of energy in grade IV SD/MI.

Table 6 List of Validators

Yes	Validator	Information
1	Abdul BasitAnnabhani, M.Pd	Linguist
2	Dorisno, M.Pd	Media Member
3	Afritayeni, S.Pd	Material Expert

1) Linguist validation results

Based on the assessment of linguist validators, for the language feasibility indicator in Interactive media, the average percentage obtained is 94% with a very valid category. The results of the validity processing in terms of material feasibility can be seen in the appendix. However, revisions are still made based on the responses and suggestions given by linguists

e-ISSN: 2808-8263
p-ISSN: 2829-0976

Table 7 Validation Results of Language Use by Validators

Assessment Aspects	Items	Percentage	Category
Language Compatibility	1	80%	Valid
	2	100%	Highly Valid
	3	100%	Highly Valid
	4	100%	Highly Valid
	5	100%	Highly Valid
Use of punctuation marks	6	80%	Valid
	7	100%	Highly Valid
Total Score		**660**	
Average		**94%**	**Highly Valid**

2) Media expert validation results

Media feasibility is an assessment for the feasibility of media on interactive media validated by media expert validators. The Interactive Media Eligibility Indicator has 15 statements. The percentage of interactive media eligibility results can be seen in the following table 7:

Table 8 Media Feasibility Validation Results by Validators

Criterion	Items	Percentage	Category
Content Quality	1	100%	**Highly Valid**
	2	100%	**Highly Valid**
	3	100%	**Highly Valid**
Implementation	4	80%	**Valid**
	5	100%	**Highly Valid**
	6	100%	**Highly Valid**
Media Display	7	100%	**Highly Valid**
	8	100%	**Highly Valid**
	9	100%	**Highly Valid**
	10	100%	**Highly Valid**
	11	100%	**Highly Valid**
Media Criteria	12	100%	**Highly Valid**
	13	100%	**Highly Valid**
	14	80%	**Valid**
	15	80%	**Valid**
Total Score		**1440**	
Average		**96%**	**Highly Valid**

Based on the table above (Table 7), the assessment of the media feasibility indicators in Interactive media shows that the average percentage obtained is 96% with a very valid category. The results of the validity processing in terms of material feasibility can be seen in the appendix. However, revisions are still made based on the responses and suggestions provided by each expert.

3) Subject matter expert validation results
Assessments for the feasibility of materials in Interactive media are validated by validators of material or content experts. The content/material feasibility indicator based on the validation instrument has 10 statements. The percentage of the eligibility results of interactive media content can be seen in the table
The following 8:

Table 9 Results of Material Feasibility Validation by Validators

Assessment Aspects	Items	Percentage	Category
Quality of Content	1	100%	**Highly Valid**
	2	80%	**Valid**
	3	100%	**Highly Valid**
	4	100%	**Highly Valid**
	5	80%	**Valid**
	6	100%	**Highly Valid**
	7	100%	**Highly Valid**
Material Density	8	80%	**Valid**
	9	80%	**Valid**
	10	80%	**Valid**
Total Score		**900**	
Average		**90%**	**Highly Valid**

Based on the table above (Table 8) on the material validity indicator, the average of all statements on the material validity assessment indicator with an average value of 90% with the Very Valid criterion is obtained. The results of the processing of the validity of the essence in terms of material feasibility can be seen in the appendix. As for the suggestions from the validators, revisions are still carried out based on the responses and suggestions given by each expert.

Table of 10 Average Percentages by 3 Interactive Media Validators

Yes	Indicators	Percentage	Category
1	Language Qualifications	93%	Highly Valid
2	Media Eligibility	96%	Highly Valid
3	Use of Materials	90%	Highly Valid

e-ISSN: 2808-8263
p-ISSN: 2829-0976

Average Score	93%	Highly Valid

The results of interactive media validation by 3 validators can be concluded that the three indicators obtained with an average percentage are with a very valid category. Based on product quality, the interactive media in science learning class IV material on changing the form of energy has met valid criteria and can be used as a learning medium.

b. Practicality Stage

1) Practicality by educators

Phase Retrieval data by Educators of the product was carried out to 3 educators of class IV MIN 2 West Pasaman.

Table 10 List of Names of Educator Practicality

Yes	Educator Name	Information
1	Risa Simplic, S.Pd	Class A Guardian
2	Afritayeni, S.Pd	Class B Homeroom
3	Yuni Karniza, S.Pd.I	Class C Guardian

Table 11 Results of Practicality by Educators

No Item	Percentage	Category
1	100%	**Very Practical**
2	93,3%	**Very Practical**
3	93.3%	**Highly Practical**
4	100%	**Very Practical**
5	86,6%	**Very Practical**
6	100%	**Very Practical**
7	93,3%	**Very Practical**
8	93,3%	**Very Practical**
9	86,6%	**Very Practical**
10	93,3%	**Very Practical**
Total Score	**939,7**	
Average	**94%**	**Very Practical**

Based on the table above (Table 11), it can be seen that the Interactive media developed obtained an average practicality value of 94% with the Very Practical criterion. The results of the processing of practicality data by educators can be seen in the appendix. Thus, the results of the analysis of response questionnaire data by educators show that the Interactive media developed meets the criteria of being very practical.

2) Practicality by students

The data collection stage by students at MIN 2 West Pasaman was carried out to 71 students in grade IV in grades A, B and C.

Table 12 Average Values of Interactive Media Practicality

Yes	Practitioners	Percentage	Category
1	3 educators	94%	Very Practical
2	71 students	89,4%	Very Practical
Average Score		91,7%	Very Practical

Based on (table 12), the results of the practicality of interactive media were obtained by 91.7% with the category of very practical. Based on the quality of these products, interactive media-based media has met the quality of very practical.

Table 12 Results of Practicality by Students

Assessment Aspects	Class					
	IV A		IV B		IV C	
	Percentage	Category	Percentage	Category	Percent	Category
1	88%	SP	87%	SP	88%	SP
2	91%	SP	90,7%	SP	93,3%	SP
3	94%	SP	91,5%	SP	78,4%	P
4	96%	SP	83,8%	SP	92%	SP
5	96%	SP	87%	SP	84%	SP
6	89%	SP	92,3%	SP	88%	SP
7	86%	SP	91,5%	SP	86,4%	SP
8	93%	SP	86%	SP	93,3%	SP
Total Score	733		709,8		703	
Average	**91,6%**	**Very Practical**	**88,7%**	**Very Practical**	**88%**	**Very Practical**

e-ISSN: 2808-8263
p-ISSN: 2829-0976

Based on the table above (Table 12), it can be seen that the media developed obtained an average practicality score of 89.4% for students, so interactive media was declared very practical to use.

Table 13 Average Value of Interactive Media Practicality

Yes	Practitioners	Percentage	Category
1	3 educators	94%	Very Practical
2	71 students	89,4%	Very Practical
	Average Score	91,7%	Very Practical

Based on (table 13), the results of the practicality of interactive media were obtained by 91.7% with the category of very practical. Based on the quality of the product, interactive media-based media has met practical quality.

CONCLUSION

Based on the results of research and development that has been carried out by the researcher with the title of the development of interactive media based on differentiated learning to overcome learning difficulties in science science class IV SD/MI, several things can be concluded as follows:

1. The development of interactive media based on differentiated learning to overcome the learning difficulties of IPAS students in grade IV SD/MI was made using the help of the Canva application. By considering auditory, visual and kinesthetic learning styles. Interactive media is carried out using 4D development steps which are guided by 4 stages, namely define, design, develop and dissiminate.

2. The quality of interactive media based on differentiated learning obtained the results of media validity with a percentage of 96%, language validity with a percentage of 94% and material validity with a percentage of 90% with valid and very valid categories. Then practicality was assessed by educators with a percentage of 94% with a very valid category and from students with a percentage of 89.4%, with a very valid category. The average of practicality results is 91.7% with a very valid category. So it is concluded that the quality of the interactive media developed is said to be valid and practical.

IMPLICATION

Based on the conclusions and findings in the research, the development of interactive media has high implications compared to the learning media that has been used by educators and students in the learning process. The implication in question is that the media developed will provide practicality, especially for educators in the process of implementing learning. This media provides convenience in the implementation of learning in the classroom so that it has an impact on learning effectiveness and can overcome students' learning difficulties. Thus, the media developed can be used as a consideration for educators in conveying IPAS learning in chapter 4 "Changing the Form of Energy".

SUGGESTION

Based on the results of research and development of interactive media based on differentiated learning to overcome the learning difficulties of IPAS students in grade IV SD/MI that have been implemented, the following are some research suggestions:

1. The interactive learning media based on differentiated learning that has been developed has been proven to be able to overcome students' learning difficulties in carrying out learning activities so that its use needs to be supported by adequate facilities.

2. The development of this interactive media only reaches the stage of practicality of educators and students, it is recommended for the next researcher to improve it to the final stage, namely dissemination.

3. The number of learning media development products can be increased. And there needs to be further development with other materials in science learning.

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