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The Development of Learning Media Using Powtoon for Junior High School

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Abstract *– This study aims to develop learning media using Powtoon and to determine students' responses. This type of research employed a 4-D development model developed by Thiagarajan with 4 stages, namely: defining, designing, developing, and disseminating stages. The research subjects were 25 students at SMP Ittihad Makassat in the academic year of 2020/2021. The research instrument includes a questionnaire in the form of a validation sheet and a student response sheet. The results of the study were obtained from material experts, media experts, and physics teachers with percentages of 87.5%, 80%, 83.2% respectively and have met the "very valid" criteria. The results of the questionnaire response analysis of students showed that the students' response score was 3.93 or 78.67%, being in the "good" category. Therefore, it can be concluded that the learning media using Powtoon which was developed on the subject of light is very valid to use and get good responses from students.*

Keywords: *learning media; powtoon; 4-D model*

I. INTRODUCTION

The COVID-19 pandemic that has hit the world has affected many aspects, including the aspect of education in Indonesia. The implementation of work from home as an effort to stop the spread of the corona virus has caused the learning process to change from learning that is usually in class to online learning at home. This online learning practice applies at various levels of education, from elementary to university. This drastic change caused the majority of teachers/lecturers to stutter, especially without prior preparation. This certainly has an impact on the learning methods used by teachers. This online learning that has not been properly prepared will certainly have an impact on the learning methods carried out by the teachers. Likewise, the acceptance of learning from students is also very diverse; often they do not understand the material or delivery from the teacher (Syatiri, 2020).

Based on the results of interviews with the principals and teachers, it was found that

the online learning process during the pandemic was far from effective. Learning is only done in one direction. The teacher makes a whatsapp group with students and parents, then gives assignments and then students collect assignments in the form of photos to the group. Of course this has an impact on the ability of students to receive lessons and achieve learning objectives. The lack of explanation of the material makes students confused and even do not know at all. The obstacle faced by teachers is their unpreparedness to face changes in the learning process which is usually done face-to-face and suddenly turns into online learning. For millennial teachers who are able to carry out online learning, they face obstacles with the inability of students to prepare quotas as a condition for implementing online learning. Even though they get a learning quota from the government, there are still problems in using quotas in the field. The solution that can be given by researchers is making learning media, where with this learning media the teacher can explain the learning material and students can access the material without draining the quota (Syatiri, 2020; Pertiwi, 2016).

The word "media" comes from Latin which is the plural form of "medium" which literally means intermediary or introduction. The Association for Educational Technology (AECT) defines the word media as one of the forms and channels used to process information (Putra et al., 2017).

Learning media functions as materials, tools, as well as methods or techniques used in teaching and learning activities, with the intention that the educational combination interaction process between teachers and students can take place properly both through hardware and software (Maesyarah, 2018). Learning media are media that carry messages with instructional purposes or contain teaching purposes. The use of learning media can generate students' motivation and interest (Arsyad, 2013).

Based on the explanation above, it is very necessary to conduct research and develop learning media that are interesting, easy to understand and able to increase students' motivation. One of the interesting learning media is Powtoon. Powtoon is animation, presentation, video software that is very exciting and fun because it is supported by the cartoon factor in its application. Based on the results of One research, the use of Powtoon as a learning medium can improve students' learning outcomes and motivation (One, 2017).

Powtoon is an audio-visual learning media that can make it easier for us to deliver learning materials and is a simple learning method. According to Nanni (2015), Powtoon is a website that allows users to create short videos using the provided element bank that

has been equipped with backgrounds, animations, backsounds, and props, and Powtoon's appearance is similar to PowerPoint and a development screen that is familiar to users.

The advantages of Powtoon are the interface in making videos that are good and easy to use and the availability of many funny and interesting animations that can be used as learning support (Abakhar, 2013). Another advantage is that the learning media covers all aspects of the senses, is more varied and motivating in the learning process, can be used in large groups and is practical in its use.

Powtoon is an online web app for making animated cartoon presentations or videos quickly. Powtoon has exciting animation features, including handwriting animations, cartoon animations, and more vibrant transition effects and more comfortable duration settings. The Powtoon operations are almost similar to PowerPoint, Impress, or even Prezi. Powtoon uses slides consisting of text and images that make it easier for the teacher to add animation and combine sounds or music provided in the application or through other external sources (Herawati et al., 2019).

The benefits of Powtoon learning media are: 1) clarifying the presentation of messages so that they are not too verbalistic, 2) can overcome the limitations of space, time and senses, 3) can overcome motion that is too slow or too fast (assisted by timelapse or high-speed photography, 4) can overcome the use of appropriate and varied educational media that can overcome the passive nature of children such as: learning motivation, allowing more direct interaction between students and the environment and reality, allowing students to learn independently according to their abilities and interests. Therefore, the purpose of this research is to develop and produce learning media using Powtoon as an alternative for teachers and a guide for students in the learning process, especially during the covid-19 pandemic.

II. METHODS

This type of research is a research using a 4-D development model developed by S. Thiagarajan with 4 stages, namely: the defining, designing, developing, and disseminating stages.

Defining Stage

The purpose of this stage is to determine and define the learning conditions. At this stage an analysis was carried out to determine the initial needs in developing media. These included analyzing teacher and students' problems in learning during a pandemic, analyzing students' characteristics and analyzing media.

Designing Stage

The purpose of this stage is to prepare a prototype of the learning media that is developed. At this stage, the researcher made a product design that was in accordance with

the results of the analysis at the defining stage. The steps taken included making the overall media storyboard that were loaded such as materials and templates that were used. Furthermore, the preparation of research instruments needed in collecting research data such as media validation sheets by validators and student response sheets was carried out.

Developing Stage

The purpose of this stage is to produce learning products that have been revised based on input from experts and after testing. The first step in this development stage is validation by experts. Based on the assessments, corrections, inputs and suggestions of these validators, further revisions were made. Furthermore, a trial of learning media that has been revised is carried out on students who are the subject of research.

Disseminating Stage

At this stage is the stage of packaging the device that has been through revision, validation and has been tested. Furthermore, there is a distribution for use on a wider scale, for example in other classes, other teachers, or even other schools.

The research subjects were students of class VIII SMP Ittihad in the academic year of 2020/2021. The research instrument used was a questionnaire in the form of a validation sheet and a student response sheet.

The data obtained from the assessment instruments of expert and practitioner validators (media and materials), and the students' response instruments to learning tools were analyzed as follows:

Analysis of the validity of learning media and Research Instrument Sheets

Validity shows the degree of accuracy between the data that occur on the object and the data collected. The following are the steps to determine the validity of the instrument sheet.

a. Converting the validator's qualitative value into quantitative form, with the provisions according to Table 1 (Umar, 2003)

Table 1. Scoring Rules

Category	Score
Very Poor	1
Less	2
Enough	3
Good	4
Very Good	5

b. Calculating the average score of all assessment indicators using the formula (1) (Djaali, 2008)

$$\bar{X} = \frac{\sum X}{N} \qquad (1)$$

Information:

$\bar{X}$ = Average score of indicators

$\sum X$= Total score of indicators

N = Number of Indicators

c. Determining the percentage of learning media with the formula (2) (Sudjono, 2007)

$$\text{Ideal percentage} = \frac{\text{average score}}{\text{highest score}} x100\%$$

d. Comparing the results of the percentage of expert validation sheets with the criteria in Table 2 (Radyan, 2012).

Table 2. Expert Team Validation Criteria

Percentage (%)	Number	Description
76-100	4	Very Valid
56-75	3	Valid
40-55	2	Invalid
0-39	1	Very Invalid

Analysis of Student Response Sheets

a. Converting the validator's qualitative value into quantitative form, with the provisions according to table 1.
b. Calculating the average score of all assessment indicators using the formula (1).
c. Determine the percentage of learning media with the formula (2).
d. Comparing the results of the percentage of student responses with the criteria for the percentage of student responses in Table 3 (Arikunto, 2006).

Table 3. Criteria for the Percentage of Student Responses

No	Percentage (%)	Description
1	0-10	Very Poor
2	11-40	Less
3	41-60	Enough
4	61-90	Good
5	91-100	Very Good

III. RESULTS AND DISCUSSION

Defining Stage

Based on the results of the researcher's interview with the science teacher and several eighth grade students at the school, several facts were found. First, online learning carried out during the pandemic only uses WhatsApp application. The teacher sends assignments to students and then collects them through the whatsapp group. In addition, the teacher also only attaches the material without any further explanation through face-to-face in cyberspace. Some teacher complaints in learning because students do not know how to use zoom/google meet and there are some students who don't have gadgets and some have gadgets but use them together with their siblings. Meanwhile, the complaints from the students were the number/out of quota, the lack of material explanation from the teacher, the less stable network, and the use of cellphones simultaneously with other relatives. Students' desires regarding the preferred learning method are questions and answers, using video and via whatsapp but without draining the quota. The high use of quota fees when studying online is related to the economic capacity of the parents of students, who commonly work as casual daily labourers. Of course these findings make learning less effective so that it affects the achievement of learning objectives, motivation and understanding of students.

Based on the results of the analysis, the researchers are interested in developing interesting learning media, which are easily accessible by teachers and students with a small quota so that learning runs effectively and students become motivated.

Designing Stage

At this stage, the researcher designed the product concept. The product was designed

by creating a storyboard that contained an outline of the content of the developed media including the design of templates and materials.

The material was referred to the syllabus in the even semester of class VIII, namely light subject. Furthermore, the preparation of the material is adjusted to the template in Powtoon. There are many interesting templates provided by Powtoon, but users can also create their own templates. The content is in line with Agustina (2019) who stated that the videos created can use existing templates or can be creative by using an empty workspace.

The material used is light which consists of five meetings, namely the properties of light, flat mirror, concave mirror, convex mirror, concave lens and convex lens.

The learning media consists of the start page, the learning objective page, the material page, the sample question page and the assignment page. The table 4 shows an example of a storyboard at the first meeting.

Table 4. Storyboard of the first meeting of the material properties of light

Slides	Storyboard	Duration
1	Name, female character with hijab greeting, background color, writing Assalamualaikum, title and light image.	30 seconds
2	Background Colors, Properties in the form of a blackboard, a female character wearing a hijab explains, Learning Objectives.	20 seconds
3	Background Colors, Female Characters wearing hijab explain, Understanding Light, Eyes Drawing.	45 seconds
4	Background Colors, Female Characters in Hijab Explaining, Understanding Light Sources, Pictures of the sun, candles and lamps.	45 seconds
5	Background Colors, Female Characters wearing hijab explain, Understanding dark objects and their types accompanied by pictures.	1 minute, 15 seconds
6	Background Colors, hijab female characters explain, light properties	30 seconds
7	Background Colors, Female Characters wearing hijab explain, Explanation of light traveling straight, Picture of spotlights, pictures of light coming in through windows, experimental pictures of light propagating straight, transitions.	45 seconds
8	Background Colors, female characters wearing hijab explain, explanations of reflected light, laws of reflection, pictures of the law of reflection, pictures of diffuse and regular reflections, transition.	1 minute 30 seconds
9	Background Colors, Examples of reflection events in everyday life, transition.	15 seconds
10	Background Colors, hijab female characters explain, light refraction explanations, refraction law images, transition.	1 minute 30 seconds
11	Background Color, Image examples of refraction events in everyday life, transition.	30 seconds
12	12 Background Colors, Female Characters wearing hijab explain, Light Decomposition Explanation, Rainbow Image, Light dispersion image, transition.	45 seconds
13	Background Colors, Female Characters wearing hijab explain, Explanation Light penetrates clear objects, transition.	30 seconds
14	14 Background colors, female characters wearing hijab ask questions, practice questions, transition.	1 minute
15	Closing, Thank You Writing.	20 seconds

Next is the preparation of hardware and software used to create media designs. The hardware used is Asus Laptop A442U Intel Core i5-Gen8 RAM 4GB HDD 1TB WIN 10. The software used is Powtoon, and Kinematster. New users can only use

Powtoon in full for 3 days and a maximum duration of 3 minutes. If you want to use it for a longer and more complete time, then the user must upgrade his account to a higher package with a fairly expensive fee. But this can be overcome by logging into the application using a different email. The duration can be circumvented by using a video editing application such as Kinemaster. Another way is to buy a Powtoon account on the marketplace or offline at an affordable price, the video duration is up to 20 minutes and is valid for a certain time.

At this stage, validation sheets were also prepared for media experts, material experts and response sheets for students.

Developing Stage

After going through the defining and planning/designing stages, a learning media video produced was called product 1. This stage aimed to produce the valid version of the learning media.

The validity of learning media using Powtoon is carried out with the assessment of media and material experts consisting of 3 validators.

Material expert validation was carried out to determine the quality of the material from the developed learning media. The material aspect relates to the relevance of the material to the basic competencies, the material is presented systematically, the accuracy of the sentence structure and language is easy to understand, the material is in accordance with what was formulated, the material coverage is related to the sub-themes discussed, the material is clear and specific, the images used are in accordance with the material, examples given according to the material.

Media expert validation was carried out to determine the quality and appearance of the developed learning media. Media aspects are related to well-readable text, selection of background graphics, text size and typeface, colors and graphics, supporting images, animated presentations, video presentations, clearly audible voice, clarity of material descriptions, clarity of instructions, ease of use of media.

Validation by subject teachers was carried out to determine the quality of both aspects, namely from the material and appearance of the learning media developed. This is done because the teacher knows and understands the character of the students better.

The results of the expert validation analysis can be seen in table 5.

Table 5. The results of the validation analysis from the Experts

No	Validator	Average Score	Percentage (%)	Criteria
1	Material Expert	4,34	87,5	Very Valid
2	Media Experts	4,00	80	Very Valid
3	Teachers	4,16	83,2	Very Valid

Based on the data presented in table 4 it can be seen that the results of the validation analysis by material experts obtained an average score of 4.34 with a percentage of 87.5% meeting the very valid criteria, and accompanied by several notes for revision. The results of the validation analysis by media experts obtained an average score of 4.00 with a percentage of 80% meeting the very valid criteria, and accompanied by notes and suggestions for revision. Finally, the results of the validation analysis by the teacher are in very valid criteria with an average score of 4.16 with a percentage of 83.2% also accompanied by some notes for revision. Based on the results of the validation analysis of the three validators, it can be concluded that the assessment of the validity of the learning media using the developed Powtoon can be said to be very valid so it is feasible to use. After making the revision suggested by the validator, a learning video is produced, hereinafter referred to as product 2. This product is then tested on class VIII students of SMP Ittihad Makassar to determine the students' responses to the developed learning media.

The results of student responses can be seen in table 6.

Table 6. Results of student response analysis

No.	Statement	1	2	3	4	5
1	The design of learning media using Powtoon is interesting				25	
2	The use of learning media using Powtoon is very easy			3	22	
3	Animation in learning media using Powtoon supports you to better master light material			11	3	11
4	The existence of learning media using Powtoon can provide motivation for you to study light material			12	3	10
5	Submission of material in learning media using Powtoon is related to daily life			21	4	
6	The material presented in learning media using Powtoon is easy for you to understand				11	14
7	This learning media using Powtoon contains practice questions that can test your understanding of light			4	21	
8	Presentation of material in this media helps you to answer questions			14	7	4
9	The shape, style and size of the letters used are simple and easy to read			3	8	14
Number of Frequency				68	104	53
Total Score Indicator				204	416	265
Total score				885		
Average				3.93		
Percentage				78.67		
Criteria				Good		

Based on the results of the analysis of student response data, it is known that from 25 students there are 68 who choose the moderate category, 104 choose good, and 53

choose the very good category. So that the average score is 3.93 with a percentage of 78.67%, which means that it is in good criteria.

The use of learning media using Powtoon at SMP Ittihad is considered interesting, easy to use, provides motivation to learn the material, and is easy to understand. However, the media developed is still in sufficient category at the point of delivering material related to everyday life. And this is an important note for the next revision. This is in line with the results of research conducted by Pratiwi that the Powtoon application-based learning media is very good for teaching and learning in schools about energy in elementary schools, because the Powtoon application is able to develop students' imagination and common sense in learning thus increasing their learning achievement (Pratiwi et al., 2021).

Other subjects are also suitable using the Powtoon application such as the following results:

1. Powtoon-assisted learning media on the material the system of linear equations of two variables for class VII SMP/MTs, is very interesting and quite effective (Astika et al., 2019).
2. The powtoon animation learning media on subjects Mathematics, especially the perimeter and area of flat shapes in grade IV can provide understanding to students, with very feasible and very practical categories to use, and get a very good response from students (Awalia et al,. 2019).
3. Learning using animation software is very interesting, it can help students understand the subject matter and improve social studies learning outcomes at SMP Negeri 16 Banda Aceh (Trina et al., 2017).
4. The interactive multimedia PowToon developed was appropriate to be used and utilized for the learning process of Economics subjects, the subject of Monetary Policy (Pangestu et al., 2018; Purwati et al., 2015).
5. There was a significant influence on the use of Powtoon learning media in Indonesian history subjects in growing learning motivation compared to the conventional lecture method (Yulia, 2017).
6. The Powtoon-based video media is suitable to be used in the social studies learning process on the material for preparation for indonesian independence and the formulation of the basic state (Puspitarini et al, 2019).
7. The implementation of the learning process using Powtoon media has an effect on improving student learning outcomes in the cognitive domain, both in terms of remembering (C1), understanding aspects (C2) and applying aspects (C3) in Integrated Social Studies subjects in Junior High Schools (Fajar et al., 2017).

Disseminating Stage

After passing the development stage and producing a very valid learning media and getting a good response from students, then the final product of learning media using Powtoon is used in the scope of SMP Ittihad Makassar. The results of this study were presented in the dissemination activities held by LPPM UMMA and published in an accredited journal, namely the Journal of Physics Education.

IV. CONCLUSION

Based on the results of the research that has been done, it can be concluded that the learning media developed using Powtoon meets the valid criteria of material experts, media experts, and physics teachers with percentages of 87.5%, 80%, 83.2% respectively, and getting a good response from students with an average score of 3.93 with a percentage of 78.67%. After passing the developing stage and producing a valid learning media and getting a good response from students, then the final product of learning media using Powtoon is used in the scope of SMP Ittihad Makassar.

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