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Development of E-Modules Based on Whatsapp Media on IPA Mapel at SDN Gedangmas 02 Lumajang

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ABSTRACT

The purpose of this development is this development is to produce an E-Module Based on Whatsapp Media. The development model used in the development of interactive learning multimedia is the Borg & Gall model. The development process involves subject matter experts, learning design experts and learning media experts to provide feedback and suggestions for improvement. In addition, the science teacher and class VI students at SDN Gedangmas 02 Lumajang as users of the Whatsapp Media-Based E-Module also gave their feedback and input. The use of Whatsapp Media-Based E-Module Development using the ADDIE model for science subjects can effectively increase active learning interactions. The results of this development research are that this Whatsapp Media-Based E-Module Product has a material feasibility level of 93%, a learning design feasibility 94%, and a learning media feasibility 91%. While the small group trial rate is 91.75% and based on field trials 92.11% with very feasible qualifications and does not need to be revised.

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1. INTRODUCTION

The development of technology and information, especially the internet at this time, should be able to be used by the world of education to make it a means of learning, both outside and inside the classroom. There are many alternative learning that can be raised from the use of this internet. One of them is the use of social media as a learning medium (Chusna, 2017; Irwandani & Juariyah, 2016; Nurkolis & Muhdi, 2020).

However, based on the results of a preliminary study conducted at SDN Gedangmas 02 Lumajang, it was found that teachers still have not taken advantage of the rapid development of the internet as a medium of learning in the classroom, especially in science learning. Generally, new teachers use offline media in the form of powerpoints and learning videos. In fact, most of the internet support facilities (smartphones, wifi, laptops/computers) are owned by both teachers and students.

Students need new learning media so that the learning process in the classroom is not monotonous. Especially in science learning. One alternative solution that can be developed is the use of social media as a learning medium (Ahnaf et al., 2021; Karyati & Rahmawati,

2021; Kurniawati & Nita, 2018). Social media was chosen because it is a trend that is currently developing (Saputri & Guspatni, 2021; Sari, 2020; Wanda listiani et al., 2020).

Based on a survey conducted at SDN Gedangmas 02 Lumajang for science subjects, almost 99% of students have social media accounts such as facebook, twitter, and whatsapp and 97% of students always use the internet to do schoolwork. Based on the results of the survey, developers are trying to develop learning media assisted by social media whatsapp (Hadi, 2021; Hartinawanti et al., 2021; Wardhani et al., 2021).

Social media users in Indonesia currently mostly like the Whatsapp application, especially the category of teenagers and students (Baishya & Maheshwari, 2020; Dinata et al., 2020; Khasanah et al., 2021). This is because WhatsApp Messenger is an information technology application that has many benefits and is very easy as a communication tool. In WhatsApp Messenger there is a Group Chat feature that is very easy to use to form online discussion forums (anywhere and anytime) (Husaini et al., 2021; Kartini, 2021; Vusparatih, 2018). The existence of WhatsApp Messenger is inseparable from the digital generation who always wants updates on various internet-based technologies.

Recent empirical data shows that the generation of the social media era has an interest in collaborative learning, is passive towards the lecture learning method, wants information that they can receive easily and individually, and always wants a variety of learning materials that can be accessed easily through technological devices. Other research also shows that the adoption of the WhatsApp application can be accepted by students because it is considered useful for improving the quality of communication and learning between teachers and students (Sahid, 2021; Susilo & Sofiarini, 2021; Wulandari & Mandasari, 2021).

The potential of this interesting WhatsApp application has not been widely used to encourage the discussion process to take place more actively and interactively, both among teacher-student discussions and among students (Hariani, 2021; Rahardjo et al., 2020; Yensy, 2020). Often in lectures in class the discussion process cannot run optimally due to several factors. The first cause, the limited time for face-to-face meetings resulted in the discussion process being timed and time-limited so that not all discussion members could participate, either in terms of conveying ideas or asking questions. Second, each student needs different thinking time, including in terms of reading, searching or information from books and others as material for students to argue and understand problems. Third, the factors of interest and motivation of students to be active in discussion activities need to be improved by adopting the latest technology.

This science subject is a difficult subject and requires a lot of discussion activities because this subject emphasizes the independent ability of students to apply science concepts, essentially on the problems of everyday life. In the process of teaching and learning activities, many efforts have been made to increase discussion activities, students are divided into several groups and are free to choose the titles of cases that must be discussed, made papers and presented.

In addition, the Covid-19 pandemic has greatly affected the order of life in the world. Many sectors of life have been affected by the COVID-19 pandemic. One of the most influential is the world of education. The learning process, which is usually done face-to-face but during the COVID-19 pandemic, is done online. Inevitably, teachers must be creative in preparing learning media that can be accepted by students (Asih, 2021; Daheri et al., 2020; Rosmiati & Lestari, 2021).

Activities like this require easy, cheap, convenient and online communication technology so that each group member actively discusses anywhere and anytime. Based on the need for this technology, the integration of WhatsApp media in learning is the right choice (Fathuroji et al., 2021; Iskandar, 2020; Magdalena et al., 2020). Therefore, it is necessary to do research on the Development of Science Learning Media in the Form of E-Modules Assisted by Whatsapp Social Media as an Alternative for Learning in the Covid-19 Pandemic Period.

2. RESEARCH METHOD

This research belongs to the type of research and development, which aims to develop a new product. According to (Sugiyono, 2017) research and development is a research method used to produce a certain product, and test the effectiveness of the product. This research is used to produce a certain product and to test the feasibility, practicality, and effectiveness of a product, which aims to be able to produce learning media products, so that it uses research that is needs analysis and uses the effectiveness of the product so that it can be useful for students of class VI Mapel Science.

The research and development of Whatsapp Media-based E-modules in the 6th grade Science Map at SDN Gedangmas 02 Lumajang is known through validation by material experts, validation by media experts, validation by teachers or colleagues and trial use by students.

In the research and development of the Whatsapp Media-based E-module, the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model reference is used. This model is structured programmatically with systematic activities in an effort to solve learning problems related to learning media that are in accordance with the needs and characteristics of student learning. The ADDIE development model consists of five stages which include analysis, design, development, implementation (implementation), evaluation (evaluation) (Sugiyono, 2017). The steps of ADDIE development research in this study are presented in the following figure:

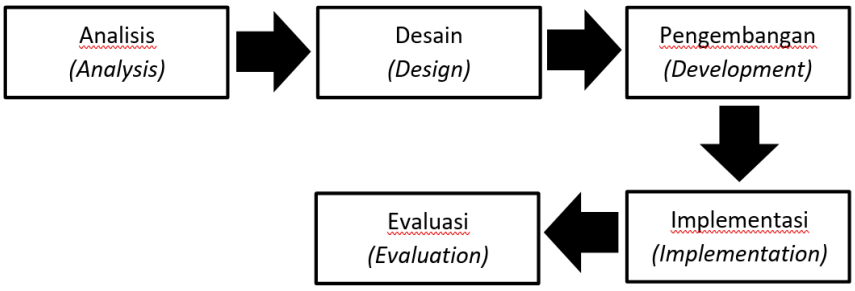

Figure 1. Steps of the ADDIE development model (Sugiyono, 2017)

3. RESULTS AND DISCUSSIONS

The data presented are the results of responses or assessments of content experts, design experts, media experts, individual trials, small group trials, large group trials, and peer trials. In IPA MAPEL at SDN Gedangmas 02 Lumajang. Furthermore, conducting data analysis in this chapter also presented several things about: (1) content experts, (2) design experts, (3) media experts, (4) individual trials, (5) small group trials, (6) Field trials, and (7) peer trials.

The data presented sequentially are qualitative data in the form of responses from content experts, design experts, media experts, individual trials, small group trials and field trials. The following is a presentation of data from the expert review of the content of teaching materials.

Table 1. Test data from content or material experts.

NO	COMPONENT	RESULTS EVALUATION	PERCENTAGE VALUE AVERAGE

1	The level of relevance of the E-Module with the curriculum.....	4	
2	The accuracy of the unit title with the material description in each unit	5	
3	Introductory clarity on each theme	5	93%
4	Clarity of content outline (epitome)	5	
5	Appropriateness of indicators and basic competencies	4	
6	Conformity of indicators with material description	5	
7	Conformity between basic competencies, indicators and material descriptions	5	
8	Clarity of description	4	
9	The suitability of the examples presented with the learning material	5	
10	Clarity of completion of sample questions on the sidelines of the material description	5	
11	Clarity of the contents of the summary	4	
12	Conformity between competency test and indicators	5	
13	The attractiveness of the components in the E-Module	5	
14	Interesting learning content	4	
15	The attractiveness of organizing E-Modules using the ADDIE model	5	
	TOTAL SCORE	70	93%

The result of calculating the percentage level of achievement of Whatsapp Media-Based E-Modules in class VI Science Subjects at SDN Gedangmas 02 Lumajang is 93%, in very decent / very good qualifications.
The following is a presentation of the data from the design expert's review obtained as follows:

Table 2. Trial data from Design experts.

NO	COMPONENT	RESULTS EVALUATION	PERCENTAGE VALUE AVERAGE
1	Binding quality	5	94 %
2	Attractive cover design	4	
3	Typing layout accuracy	5	

4	Consistent use of title space, sub and typing material	4	
5	Clarity of writing/typing	5	
6	Completeness of the components in each chapter of the textbook	5	
7	The accuracy of the presentation of the material	5	
TOTAL SCORE		33	94%

The results of the percentage calculation, the level of Whatsapp Media-Based E-Modules in class VI Science Subjects at SDN Gedangmas 02 Lumajang is 94%, in very good qualification.

The following is a presentation of data from media expert reviews as follows:

Table 3. Trial data from media experts

NO	COMPONENT	RESULTS EVALUATION	PERCENTAGE VALUE AVERAGE
1	The accuracy of the illustrations used in the cover of the textbook	4	91%
2	The suitability of the material with the media used	4	
3	Quality of paper used	5	
4	Font size accuracy	4	
5	Image placement accuracy	5	
6	Text quality	5	
7	Organizing learning message design	5	
TOTAL SCORE		32	91%

From the table it is known that the average percentage of Whatsapp Media-Based E-Modules in class VI Science Subjects at SDN Gedangmas 02 Lumajang is 91% and shows that the Whatsapp Media-Based E-Modules are in very good qualification and have met the requirements for use by students.

The trial data for individual students was carried out using a questionnaire consisting of 3 students in class VI of science subjects at SDN Gedangmas 02 Lumajang. The data obtained are as follows:

Table 4. Individual trial data

COMPONENT	RESPONDENT SCORE			RATING RESULT	PERCENTAGE OF AVERAGE VALUE
	1	2	3		
1	5	5	5	15	92%
2	5	5	5	15	
3	5	4	5	14	
4	4	4	5	13	
5	4	5	4	13	
6	5	4	5	14	
7	4	5	4	13	
TOTAL SCORE	32	32	33	97	92%

From the table it is known that the average percentage of Whatsapp Media-Based E-Modules in class VI Science Subjects at SDN Gedangmas 02 Lumajang is 92% and shows that the Whatsapp Media-Based E-Modules are in very good qualification and have met the requirements for use by students. The trial data for individual students was carried out using a questionnaire consisting of 9 students in class VI of science subjects at SDN Gedangmas 02 Lumajang. The data obtained are as follows:

Table 5. Small Group trial data

COMPONENT	RESPONDENT SCORE									RATING RESULT	PERCENTAGE OF AVERAGE VALUE
1	5	5	5	5	5	5	5	5	4	44	91,75%
2	5	5	5	4	4	5	5	5	4	42	
3	4	5	5	4	5	4	4	5	5	41	
4	5	4	4	5	4	5	4	5	4	40	
5	4	5	4	5	5	5	5	4	5	42	
6	4	5	4	5	5	4	4	5	4	40	
7	4	4	5	5	5	4	5	4	4	40	
TOTAL SCORE	31	33	32	33	33	32	32	33	30	289	91,75%

From the table it is known that the average percentage of Whatsapp Media-Based E-Modules in class VI Science Subjects at SDN Gedangmas 02 Lumajang is 92.11% and shows that the Whatsapp Media-Based E-Modules are in very good qualification and have met the requirements to be used by student.

The trial data for individual students was carried out using a questionnaire consisting of 21 students in class VI of science subjects at SDN Gedangmas 02 Lumajang. The data obtained are as follows:

Table 6. Field trial data

KOMPONEN	SKOR RESPONDEN																					HASIL PENILAIAN	PERSENTASE NILAI RATA-RATA
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		
1	4	4	5	4	5	5	4	5	5	5	5	4	5	4	5	5	5	4	4	5	5	97	
2	5	4	5	4	4	5	5	5	4	5	4	5	5	5	5	4	5	5	5	5	5	99	
3	5	5	4	5	5	5	4	5	5	5	4	5	4	5	5	4	5	4	5	4	4	97	
4	4	5	4	5	5	5	4	5	5	5	4	5	5	4	5	5	5	5	4	5	5	99	92,11%
5	5	5	4	4	4	5	5	4	5	5	5	4	4	5	4	4	5	5	4	4	5	95	
6	4	4	4	5	4	4	4	5	5	5	5	5	4	4	5	5	4	5	4	5	4	94	
7	5	4	5	4	5	5	5	4	4	5	5	4	5	4	5	4	5	5	5	4	4	96	
JUMLAH SKOR	32	31	31	31	32	34	31	33	33	35	32	32	32	31	34	31	34	33	31	32	32	677	92,11%

From the table it is known that the average percentage of Whatsapp Media-Based E-Modules in class VI Science Subjects at SDN Gedangmas 02 Lumajang is 92.11% and shows that the Whatsapp Media-Based E-Modules are in very good qualification and have met the requirements to be used by student.

The trial data for the Whatsapp Media-Based E-Module product was carried out through a field test with teacher respondents (colleagues) and developers asking several questions about the WhatsApp Media-Based E-Module learning as a result of the product being carried out by a science subject teacher at SDN Gedangmas 02 Lumajang, namely Mr. Bambang, S.Pd, M.Pd, as for the results of the review, are as follows:

Table 7. Peer trial data.

NO	COMPONENT	RESULTS EVALUATION	PERCENTAGE VALUE AVERAGE
1	The accuracy of the illustrations used in the cover of the textbook	5	95%
2	The suitability of the material with the media used	5	
3	Quality of paper used	4	
4	Font size accuracy	5	
	TOTAL SCORE	19	95%

According to the results of the assessment of subject teachers through questionnaire data that has been presented in table 4.7, the average results of teacher assessments of Whatsapp Media-Based E-Modules In class VI of Science Subjects at SDN Gedangmas 02 Lumajang by 95% shows Whatsapp Media-Based E-Modules have met eligibility requirements as student learning materials. The appraiser gave comments/suggestions that this Whatsapp Media-Based E-Module has met the requirements for teacher guidance, it only needs revision in terms of writing a bibliography so that this Whatsapp Media-Based E-Module is more effective for students.

Based on the observations at the analysis stage that have been stated in the results of the study, it is known that students find it difficult to absorb the material presented, learning media is limited to books and texts, the display is not attractive so students get bored of studying, therefore, develop learning media that can facilitate students in learning.

In the student analysis stage, it is known that students need learning media that can facilitate students in learning so that they are interesting and not bored to learn. Selection of Whatsapp Media-Based E-Module learning as a supporter of learning media that was developed because it can make it easier for students to learn and attractive appearance so that students like science lessons at SDN Gedangmas 02 Lumajang.

Whatsapp Media-Based E-Modules can be used as teaching aids because Whatsapp Media-Based E-Modules are media that have sound, motion and animation elements. After the analysis of the problem was obtained, the researcher continued to select the Whatsapp Media-Based E-Module for learning as a learning medium.

After the analysis stage, the next stage is the design stage, at this stage the planning format of the Whatsapp Media-Based E-Module is carried out. Within the framework that has been determined, the planning of the E-Module title framework based on Whatsapp Media learning, competency standards and basic competencies, material content, and design framework is complete. After everything is designed, then proceed with the evaluation stage of what needs are needed in this design stage which is designed from some of the elements above.

The next stage is the development stage, namely the media development stage, which is based on the design stage. At the design stage of making Whatsapp Media-Based E-Modules, learning starts from the design and then evaluation by material and media experts is called validation.

The aim is to obtain suggestions to improve the learning Whatsapp Media-Based E-Module that was developed. Input from education experts and practitioners as a reference for revision. In addition, filling out a validation questionnaire will determine the feasibility of the media to be tested on students. This revision was carried out as a step in making an appropriate learning Whatsapp Media-Based E-Module. The product that has been developed is then revised on several components that must be corrected in the media, such as changing the color of the unit ladder to make it look more attractive, so that it is clearer and other components that must be improved.

The material expert's assessment of this learning media is included in the "appropriate" category with an average percentage of 93%. The media expert's assessment of this learning media is included in the "very decent" category with an average percentage of 91%. After the media was revised and declared good to be tested, then the students were tested. This stage is called the implementation stage. Student responses to the Whatsapp Media-Based E-Module on the test results are included in the "very feasible" category with an average of 91.75% in the small group and 92.11% in the large group. At this stage the product does not undergo revision, because students have stated that the product developed is already good.

In the research of Iqnas Brillian Retnaningrum who developed an E-Module Based on Whatsapp Media learning with the results of respondents being 84% in the very good category. Based on the results of the scores obtained from the experimental group using the Whatsapp Media-Based E-Module learning the highest score of students reached 95 and the lowest was 60 if an average of 76.6% while the control class group that did not use the Whatsapp Media-Based E-Module learning the highest score reached 90 and the lowest is 55 if the average student result is 70.3% so it can be concluded that there are differences in student learning outcomes using Whatsapp Media-Based E-Modules with students who do not use Whatsapp Media-Based E-Modules for learning.

Budi Purwanti's research that developed the Whatsapp Media-Based E-Module for mathematics learning showed that the media became more positive with the attractiveness of the Whatsapp Media-Based E-Module users to motivate students to learn mathematics as evidenced by the average grade XI 1 before 69.19 to 81.48 while class XI 2 averaged 69.58 to 81.55 after using the Whatsapp Media-Based E-Module for learning.

4. CONCLUSION

The results of data collection of content experts, design experts, media experts, individual trials, small group trials, large group trials, and peer trials on the development of Whatsapp Media-Based E-Modules which were carried out in class VI students of Science Subjects at SDN Gedangmas 02 Lumajang, it can be concluded: (a) Submission of learning materials on Science Subjects at SDN Gedangmas 02 Lumajang using Whatsapp Media-Based E-Modules based on a design expert questionnaire with a percentage of 94%, then Whatsapp Media-Based E-Modules are stated very suitable for use by grade VI students in science subjects at SDN Gedangmas 02 Lumajang, (2) With a questionnaire that has been collected from material experts who provide data with a total presentation of 93%, it requires revision of the time allocation so that the Whatsapp Media-Based E-Module development product is feasible to use students in order to increase interest in learning, (c) Questionnaires that have been distributed to colleagues who provide data with the percentage is 95% because this Whatsapp Media-Based E-Module development product does not make students bored but can increase student activity in learning science subjects at SDN Gedangmas 02 Lumajang, and (d) In collecting student questionnaire data for individual trials on E-learning development Whatsapp Media-Based Module learning Science Subjects at SDN Gedangmas 02 Lumajang by getting the number of the percentage of 920% from class VI because it still requires additional time and a summary of the Whatsapp Media-Based E-Module, the percentage is 90%. but overall students become active because learning is not centered on the teacher but students who are actively looking for their own needs needed in Whatsapp Media-Based E-Modules.

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