Development *Si Ceria Game* in Science Subjects in Class VIII SMP

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Article Info	Abstract
	Learning media is a tool for teachers to convey information during the learning process. However, many schools still use learning media that are less varied and less engaging, causing students to tend to lose focus during the explanation process in learning. With the presence of technology, it can be used as an engaging learning medium in the form of Si Ceria Game in the subject of science. This research aims to produce a valid and practical cheerful game media for the 8th-grade junior high school Science subject. The type of research is development research known as Research and Development (R&D) using the 4D model. The development procedure in this research consists of 4 stages. (Define, Design, Develop, and Disseminate). The product validity test was conducted by 3 validators, namely 1 material validator and 2 media validators. The practicality test was trialed on eighth-grade students of SMP Muhammadiyah 6 Padang. Based on the assessment results from the material and media validators, the material validation obtained an average score of 4.60 with the category "Very Valid." Meanwhile, the media validation results from validator I obtained an average score of 4.00 with the category "Valid," and the media validation results from validator II obtained an average score of 4.86 with the category "Very Valid." After the media was deemed valid and feasible, it was tested on eighth-grade students at SMP, with the practicality test results obtaining an average score of 4.42 with the category "Very Practical." Based on the validity and practicality test results, it can be concluded that the developed Si Ceria Game media is suitable for use in learning.

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1. INTRODUCTION

Learning is a systematic process carried out to facilitate the learning process within students (Alwen & Fetri, 2012). An effective learning process can be realized if the components of learning can run well. One important component in the learning process is learning media. Learning media is anything that can convey messages through various channels, can stimulate students' thoughts, feelings and desires so that it can encourage the creation of a learning process to add new information so that learning objectives can be achieved well (Hamid & Rahmi, 2020). Meanwhile, according to Eldarni and Novrianti (2015), learning media is anything that is used to convey a message from the sender of the message to the recipient of the message. Based on this statement, it can be concluded that learning media is useful for conveying material to students which makes learning activities more interesting and enjoyable so that it will foster motivation and interest in learning in students.

Having learning media can make the learning process more interesting, for example in terms of appearance combined with several images or animations. An attractive physical appearance can influence the learning process, the more attractive the media appearance, the more it motivates students to be more interested in learning, thereby influencing student

learning outcomes (Resiani et., al 2015). Learning media can certainly make it easier for students to understand material that requires visualization, such as natural science subjects.

Science subjects are one of the compulsory subjects for students at junior high school (SMP) level. In science learning, learning media is needed to support continuity in learning and make it easier for students to understand the material presented by the teacher, and can involve students to actively participate in ongoing learning activities. Therefore, teachers should strive to create a learning process using science material that is creative, innovative and fun so that the learning atmosphere becomes more conducive.

Based on the results of interviews that researchers conducted with science subject teachers at SMP Muhammadiyah 6 Padang, problems were found during the learning process, namely that students lacked focus when the teacher explained the learning material. This was proven when the teacher explained the lesson, after only a few minutes the students were talking to their classmates because of an unpleasant classroom atmosphere that makes students feel bored and sleepy. Apart from that, in the science learning process the learning media used is less interesting and less varied, this is proven by the media used still being in the form of printed books, and LKS as the main learning source and power points displayed via a projector. Schools have facilities in the form of computer laboratories, but they have never been used optimally for science learning.

Therefore, science learning can be carried out optimally if there is learning media that is practical and easy to understand both in terms of use and in terms of presentation of the material which can explain the learning material concisely and with illustrations. One way that can be done is by using learning media in the form of *game* education. *Game* Education is a game created to stimulate thinking power and also train children so they can increase their focus in learning (Eli & Putri, 2022). *Game* Education is a game in which learning material is presented so as to create an atmosphere of playing while learning (Dinar et al., 2022). Learning that uses the principle of learning by playing is expected to be able to create a pleasant atmosphere for students and of course will make students enthusiastic about learning. As explained by Darmansyah (2010), enthusiasm for learning arises when the atmosphere is pleasant and learning will be effective if someone is happy in learning.

2. METHOD

The type of research used in this research is development research, known as *Research and Development* (R&D) which is a research method used to produce a product and test the quality of the product (Sugiyono, 2022:297). The model in development research (R&D) used is the 4D development model which consists of 4 stages, namely *Define* (Definition), *Design* (Planning), *Develop* (Development) and, *Disseminate* (Dissemination). In the defined stage, what is done is analyzing the curriculum, analyzing students and analyzing material. In the design stage, what is done is media selection, format selection and initial design. Next, at the development stage, researchers carry out product feasibility tests and field trials. The final stage is dissemination. This product distribution stage is carried out on a small scale.

The types of data used in this research are qualitative and quantitative. In this research, qualitative data was obtained from observations and interviews with students and teachers. Meanwhile, quantitative data was obtained from validation sheets and questionnaires. The assessment sheet used in this research is a questionnaire. The questionnaires used were material validity questionnaires given to material experts, namely science subject teachers at SMP Muhammadiyah 6 Padang, media validity questionnaires given to media experts, namely 2 lecturers from the Department of Curriculum and Educational Technology, and

practicality questionnaires given to students. The empirical average of the validation and practicality result scores is sought using the formula:

$$\overline{x} = \frac{\sum x}{n}$$

Information:

$\overline{x}$ = Average value

$\sum x$ = Number of Values

n   = Number of Respondents

After the validation and practicality values are obtained, they are then categorized according to the level of validity and level of practicality. According to Ridwan (2012), the following criteria for the validity of learning media are based on the values obtained.

Table 1. Validity Score Interpretation Criteria

Mark	Range	Category
5	X>4,01	Very Valid
4	3,34<X<4,01	Valid
3	2,26<X<3,34	Fairly Valid
2	1,19<X<2,26	Invalid
1	X<1,19	Very Invalid

According to Ridwan (2012), the following are the criteria for the practicality of learning media based on the values obtained.

Table 2. Practicality Score Interpretation Criteria

Mark	Range	Category
5	X>4,01	Very practical
4	3,34<X<4,01	Practical
3	2,26<X<3,34	Quite Practical
2	1,19<X<2,26	Impractical
1	X<1,19	Very Impractical

3. RESULTS

Define (**Definition**)

Curriculum Analysis (Curriculum analysis)

Curriculum used by researchers in development *Si Ceria Game* is an independent curriculum. After the researcher discussed it with a material expert, namely one of the science subject teachers in class VIII at SMP Muhammadiyah 6 Padang, the subject that the researcher would develop was the science subject with material on the Digestive System in Humans.

Learners Analysis (Student Analysis)

Student analysis is carried out, aimed at exploring information about student characteristics and understanding the difficulties experienced by students during the learning process so that it can be adapted to the design of learning media. Based on the results of observations that researchers conducted at SMP Muhammadiyah 6 Padang, problems were found, especially for class VIII students in science subjects, where students had fewer active responses during the learning process.

Material Analysis (Material Analysis)

Material analysis is carried out, aimed at identifying, detailing and systematically compiling the materials that will be included in *Si Ceria Game* based on curriculum

analysis. The learning material that will be loaded in *Si Ceria Game* is the Digestive System in Humans with sub material, namely the understanding and function of the digestive system in humans, the organs in the human digestive system, disorders that occur in the human digestive system and efforts to prevent disorders in the human digestive system.

Design (Planning)

Product planning at the level *design* based on the results of previous analysis. There are three stages *design* namely as follows:

- *Media Selection* (Media Selection). Based on curriculum analysis, student analysis, and learning material analysis that has been described at stage *define,* So the appropriate media used in this research is *Si Ceria Game* in science subjects in class VIII of junior high school.
- *Format Selection* (Format Selection). Under development *game* the cheerful, the format chosen must meet the standards of being interesting, simple, and easy to learn about the human digestive system.
- *Initial Design* (Early Plan). Preliminary plan stage of manufacturing *Si Ceria Game* starts with making *flowchart*. *Flowchart* is a comprehensive overview of the program flow made with symbols and arrows that connect them. Next is manufacturing *storyboard*. *Storyboard* contains visualization design *Si Ceria Game* which contains a more complete explanation of each groove found in *flowchart*. After creating *flowchart* and *storyboard*, the next stage is to create *Si Ceria Game* uses the application *smart apps creator*.

Development (Development)

This stage is carried out in the development stage with material validation tests, media validation tests and practicality tests, the results of which will provide an illustration that the product that has been developed meets its feasibility aspects and is ready to be tested. Validation is carried out by providing an assessment sheet in the form of a questionnaire. Material validation is carried out by paying attention to several aspects of material quality, alignment with learning objectives, feedback and adaptation and motivation. Material validation obtained an average of 4.60 in the "Very Valid" category. Meanwhile, media validation was carried out by paying attention to several aspects of game design, ease of use, accessibility and ease of reuse. Media validation with two validators obtained an average of 4.00 and 4.86 in the "Valid" and "Very Valid" categories. .

Practicality test *Si Ceria Game* in science subjects, tested on class VIII students of SMP Muhammadiyah 6 Padang. Practicality tests are carried out to find out and assess how students respond to *Si Ceria Game* in the science subjects that have been developed. Based on data from the practicality test results, taking into account several aspects of appearance, ease of use, media operation, material presentation and usefulness, an average of 4.42 was obtained in the "Very Practical" category. So, it can be concluded that the media *Si Ceria Game* which was developed practically for use in learning.

Disseminate (Deployment)

The level of diffusion is done to study the use of media *Si Ceria Game* on the field. Class VIII students of SMP Muhammadiyah 6 Padang were research subjects who provided assessment responses to the media developed in terms of appearance, ease of use, media operation, material presentation and usefulness. This activity was carried out involving 23 students to test and assess the media *Si Ceria Game* that has been developed. In addition, the media was also distributed to IPA subject teachers in several schools. In dissemination, researchers include media *game* into *google drive* so it's easy to share and saves time and

money. Then spread using the link *google drive* and disseminated using the application *WhatsApp*. Apart from that, at this stage the researcher also included the *Si Ceria Game* inside *flash disk*.

DISCUSSION

The media developed in this research are *Si Ceria Game* in science subjects for class VIII SMP, especially in the material on the Digestive System in Humans using applications *Smart Apps Creator. This* cheerful person is one of the learning media that can be used with *Android* and *Windows* to support the achievement of learning objectives. Development *Si Ceria Game* in science subjects that can be opened with *android,* carried out to help students understand the material on the human digestive system due to limited class time so that the material presented by the teacher cannot be understood by students. So, this media can be used as a source of independent learning without having to be bound by time and space. *This* cheerful person is supported by text, images, illustrations, animation, games and videos that have been adapted to learning needs.

Development *Si Ceria Game* aims to increase students' interest and focus in the learning process. *Game* Education can educate students by playing while learning so that it is easier for students to understand the learning material (Eveline & Frista, 2022). The next step is to create the initial product by developing *game* education that includes text, images, videos and animations using applications *smart apps creator*. Next, validation was carried out by material experts and media experts as well as practical tests on class VIII students at SMP Muhammadiyah 6 Padang.

Based on data from the assessment results of material expert validators, validation results were obtained with an average value of 4.60 and based on the validity score interpretation criteria put forward by Ridwan (2012), this score is in the "Very Valid" category, so it can be concluded that the material contained in *Si Ceria Game* is valid for use in learning. The results of the media expert validator assessment obtained validation results with validator 1 with an average of 4.00 in the "Valid" category and validator 2 with an average value of 4.86 in the "Very Valid" category. In line with Arikunto's (2010) view, learning media can be said to be valid if the results comply with the criteria. From the assessment results, it can be concluded as a whole from the validation data by experts that *Si Ceria Game* in science subjects can be applied in learning with revisions that have been made based on suggestions and input from experts.

Based on data from practicality trials, an average score of 4.42 was obtained in the "Very Practical" category. From the results of the practicality trial assessment, it can be concluded that the product that has been tested is easy to use by the target users. This conclusion is strengthened by the opinion of Hartono (2019), the practicality or efficiency of the product is determined from the results of the user's assessment of the product. Meanwhile, according to Riduwan (2012), to measure the practicality score obtained, it is done by calculating the average number of scores obtained from respondents and their presentations and from the results of these presentations, practicality criteria can be applied to the product being developed.

The final stage in development viz *Disseminate* (Dissemination). The aim of the product deployment stage is to promote the development results so that they can be accepted by individuals, groups or systems (Albet, 2021). At this stage the researcher enters the media *game* into *google drive* to be more efficient, then spreads using links *google drive* and disseminates through WhatsApp applications. Apart from that, at this stage the researcher also included the *Si Ceria Game* inside *flash disk*. This received a good response, showing that the products developed by researchers are interesting and can be used as

innovative learning media. The media was distributed to science subject teachers in several schools, including SMP Negeri 1 Bayang and MTsN 1 Padang City.

4. CONCLUSION

This development research uses a 4D model which consists of 4 stages, namely *Define* (Definition), *Design* (Planning), *Development* (Development) and *Disseminate* (Dissemination). *Si Ceria* person can be used as a learning medium in the learning process for students or teachers who are expected to help students understand the material on the Human Digestive System and facilitate students to focus and be motivated to learn. The validation test results on the material obtained an average value of 4.60 in the "Very Valid" category and the media validation test results obtained an average value from validator I of 4.00 and from validator II of 4.86 in the "Valid" category and "Very Valid". The results of product trials with students obtained an average score of 4.42 in the "Very Practical" category. So, it can be concluded that the media *Si Ceria Game* is qualified and easy to use in the learning process.

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