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The Validity and Practicality of Integrated Thematic Digital Science Teaching Materials with the Iqra Learning Model to Improve Concept Mastery and Creative Thinking

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ABSTRACT

The development of the world in the 21st century is marked by the use of information and communication technology in all aspects of life. An alternative solution to this problem is to develop thematic digital science teaching materials integrated with the Iqra learning model to improve concept mastery and creative thinking for Grade VIII students of junior high school. This type of research is development research. The model used is the 4D model. The data obtained at the practicality were analyzed using descriptive percentages. First, the thematic digital science teaching materials integrated with the Iqra learning model are valid with a score of 90.40 which is in the very good criteria. Second, Iqra integrated thematic science teaching materials are practical according to teachers and students with scores of 92.08 and 81.01 with very good criteria. Third, Iqra integrated thematic digital science teaching materials are effective for improving concept mastery and creative thinking skills for students. Based on the results of this study, it can be concluded that Iqra integrated thematic science teaching materials to improve conceptual mastery and creative thinking for Grade VIII students of junior high school meet practical criteria.

INTRODUCTION

The role of IT is increasingly important to support work in all fields. One of them is in the world of education that is being faced today. The students who will be faced are students who were born and developed in the digital era, so whether they like it or not, like it or not, teachers must also have high technological literacy. Eggen and Kauchak (2012) emphasized that standards for 21st century or digital century schools for teachers and students relate to the application of technology in learning. Teachers must be able to prepare their students to live in the digital age, one of which is using their knowledge of subject matter, learning and technology to facilitate advanced student learning experiences, creativity, innovation and contextualization.

The Iqra learning model is a learning model that encourages students to play a more active role and be able to understand and relate the subject matter to real life around them and be able to read what God created. In its learning activities, this model invites students to read about natural phenomena, natural symptoms and natural facts, both real and artificial. The iqra learning model is a learning model that invites students to exploit the environment around them (Wisudawati, 2015). They are invited to take active activities, for example conducting experiments, practicing, predicting, modeling, and so on. In the iqra learning model, before starting learning, students are invited to get to know the characteristics of divinity. Students will be aware that everything or knowledge is proof of the oneness of God. Through iqra learning, students are guided to be able to see or read everything that Allah SWT has created in the form of the universe and its riches. With learning like this, it is hoped that students will be able to understand or discover natural science concepts without abandoning or ignoring divine concepts. With the iqra learning model, students are invited to experience the sounds of nature, God's creation, explore the environment, and feel with nature so that students not only understand, but hone their personal, social and artistic abilities (Ridlo, 2005).

Science learning should be carried out as far as possible according to the characteristics of science. Science learning is a dynamic process of seeking mastery of concepts through searching, investigating, and verifying natural behavior that occurs in the surrounding environment (Nowrgu & Otum, 2014). Students should build their own mastery of concepts by discovering concepts through observing and investigating natural phenomena in the environment around them. This research aims to develop thematic science teaching materials to improve students' mastery of science concepts and creative thinking skills.

First, concept mastery in the science context is students' ability to connect concepts to each other so that they can be applied to solve problems (Holme et al, 2015). Students must master science concepts, this is because science concepts are interconnected with each other. Low mastery of previous concepts causes students to have difficulty understanding other related concepts.

Mastery of concepts is the ability to understand material and be able to express that material in a form that is simpler and easier to understand (Yulianah, et al, 2020). According to Murnaka and Dewi, (2018), one of the efforts that teachers can make to improve the ability to understand concepts is to guide students to discover and discover the concepts of material themselves.

Concept mastery is students' ability to understand concepts after learning activities. Mastery of concepts can be interpreted as students' ability to understand scientific meaning, both theory and its application in everyday life (Dahar, 2006: 4). Meanwhile, a more comprehensive definition of concept mastery was put forward by Bloom, namely the ability to grasp understanding, such as being able to express material presented in a form that is more understandable, being able to provide an interpretation and being able to apply it. Second, creative thinking skills. The word creative comes from the word creativity. A person's creativity can make themselves better, improve their quality of life. A person is said to have creative thinking if they have thinking characteristics that characterize the ability to think, namely fluency, flexibility, originality, decomposition and formulation (Festiyed, 2018). Creative thinking is the ability to combine data or information into something new and use it to find many possible answers to a problem (Munandar, 1999). In solving problems, creative thinking is shown by having ideas that are different from solutions in general (Sani, 2015). To

develop students' creative thinking abilities by asking students to think about ideas or opinions that are different from the opinions proposed by their friends.

The problems found in the field were conditions that did not meet expectations. There are two ways to obtain initial data in this research, namely interviews and analysis. Interviews were conducted with three science teachers, one Class VIII science teacher at SMPN 34 Padang and two class VIII science teachers at SMPN 7 Padang regarding online learning as well as teaching materials used during learning and the use of models in thematic science learning. Analysis was carried out to determine the thematicity of science books and 21st century skills. The first results are regarding learning and teaching materials used during online learning. The technique used is an interview. Teachers stated that online learning was not going well. The reason is that many students do not complete assignments and are always late in submitting assignments. Another reason students are often late or absent from online learning is that the internet connection at the student's home is not all good and students are not active in studying and doing activities. During online learning, teachers do not assess students' skills because when students complete assignments, the grades immediately come out of the application. Based on the results of the analysis, it can be said that the implementation of online learning still has weaknesses.

Based on the facts on the ground, it is necessary to find a solution to resolve this problem. One solution that can be implemented is to develop thematic digital science teaching materials integrated with the iqra learning model to improve concept mastery and creative thinking for Class VIII Middle School students. The advantage of the solution is that the teaching materials can be used as useful teaching materials during online learning like today. Teachers can use the iqra learning model to increase students' active activities in science learning.

METHODS

The type of research used in this research is research and development (R&D). The development model applied is the 4D model. The aim of this research is to develop thematic digital science teaching materials applying the Iqra learning model to improve the 21st century skills of class VIII junior high school students. What is expected from this research is that a thematic digital science teaching material applies the iqra learning model to improve students' 21st century skills that is valid, practical and effective. It is hoped that this teaching material can help teachers and students in implementing learning in the 21st century.

The development stage is the process of turning a design into reality. At this development stage, the framework that has been prepared at the design stage will be realized into a product. The product developed is thematic digital science teaching materials integrated with the iqra learning model to improve the 21st century skills of class VIII junior high school students.

At the development stage, it is necessary to carry out formative evaluation and validity testing of the product being developed, product practicality testing, and product effectiveness testing. First, test the validity of the thematic digital science teaching materials integrated with the iqra learning model carried out by experts or practitioners who act as validators. Validity testing uses a validity sheet which consists of several assessment indicators, namely: material substance, learning design, display or visual communication and use of software. The steps to test the validity of the thematic digital science teaching materials integrated with the iqra learning model to validators are as follows:

a. Requesting the willingness of Physics lecturers and educators to see the feasibility of integrated thematic digital science teaching materials with the iqra learning model created as well as the correctness of the learning concepts that have been created.
b. Physics lecturers and teaching staff were asked to provide an assessment of the thematic digital science teaching materials integrated with the iqra learning model which had been created based on the items in the validity test questionnaire.
c. After the assessment is carried out, revisions are made according to the suggestions given by the validator.

Product practicality test. Practicality testing is a process to reveal the practicality of a product or the level of use of a product that has been developed. Product practicality testing was carried out by carrying out learning trials using thematic digital science teaching materials integrated with the iqra learning model which had been revised based on assessments by validators. This activity aims to find out whether it is usable, easy to use, interesting and efficient from thematic digital science teaching materials integrated with the iqra learning model. Practicality results are obtained through practicality sheets given to teachers and students.

Practicality means that it is practical. According to Ahmad (2013) practicality is the level of interest and usability of users and experts. The practicality referred to here is practicality in thematic digital science teaching materials integrated with the Iqra learning model. Practicality is related to the ease and progress that students get by using thematic digital science teaching materials integrated with the Iqra learning model, instruments or other products.

The practicality test of integrated thematic digital science teaching materials with the Iqra learning model was assessed using a practicality questionnaire. The purpose of the practicality test. This is to assess the level of practicality of thematic digital science teaching materials integrated with the Iqra learning model. A product is said to be practical if it is easy to use, useful in learning, and clear. This means that the thematic digital science teaching materials integrated with the Iqra learning model developed are said to be practical if teachers and students can use them. To determine the level of practicality of the thematic digital science teaching materials integrated with the Iqra learning model, a practicality questionnaire sheet was given to teachers and students after the product was used.

RESULTS AND DISCUSSION

Results

Validity

The validity tests carried out will provide input on the products and instruments being developed. The product validity test will produce a better product, because the validity test provides the validator with the opportunity to provide input and suggestions on the product being developed. The validators involved in assessing this product are one physics lecturer and two science lecturers.

Product development is carried out based on the design that has been created and suggestions given by the validator when validating the product. Each validator provides an assessment that makes the product better and in accordance with the correct theory. Validators not only assess the appearance of the e-modu, but also the structure and content of the digital teaching materials. Several parts of the Integrated Thematic Science digital

teaching materials with the Iqra Learning Model that have been carried out can be described in Figure 1 below.

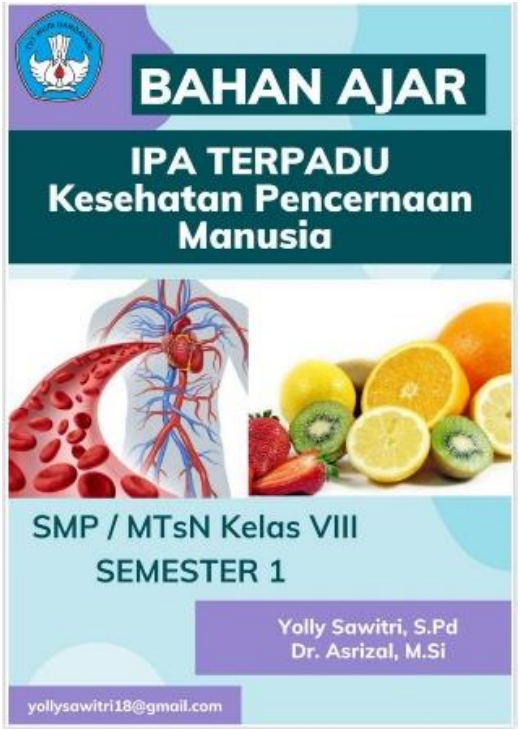

Figure 1. Cover

On the general cover of Thematic Science digital teaching materials applying the Iqra Learning Model there is the title, class, semester, tut wuri handayani logo, 2013 curriculum logo and the identity of the compiler. The general cover is supported by images that match the overall material. The design of the image on the general cover pays attention to attractive colors and images. This aims to appeal to readers and describe the content of digital teaching materials. Before entering the learning material, there is a special cover to mark each sub-theme. The special cover contains the relevant sub-theme. Apart from that, to provide an attractive appearance, there are supporting images.

Learning activities are an important part of digital teaching materials. Learning activities consist of study instructions, learning objectives, material descriptions, exercises, worksheets and evaluations. The following describes the components contained in the learning activities section in the IQRA Integrated Thematic Science digital teaching materials. The Iqra Learning Model Integrated Thematic Science digital teaching materials have been validated by three experts. The product validators in this research include a lecturer from the Science Department of Medan State University, a lecturer from the Science Department of Padang State University, and a lecturer from the Physics Department of Padang State University. Expert review of the Integrated Thematic Science digital teaching materials with the Iqra Learning Model including the appropriateness of material substance, learning design, visual communication and use of software. The results of the validator assessment for each component of the validity of the Integrated Thematic Science digital teaching material with the Iqra Learning Model are presented in Table 1.

Table 1. Validity Results of Thematic Science digital teaching materials

No	Validity Component	Marks	Category
1	Substantion	94	Very Good
2	Design	93	Very Good

3	Visual Communication	92	Very Good
4	Software used	86	Very Good
5	Evaluation	88	Very Good
	Rata-rata	90,4	

Practicality

The practicality test results were obtained from a practicality questionnaire given to teachers and students of class VIII SMPN 7 Padang. First, the teacher response questionnaire aimed to find out teachers' responses to the Iqra Learning Model Integrated Thematic Science digital teaching materials. The teachers involved were two teachers, namely: Mrs. Hj. Ermawati, S.Pd. (EM) and Mrs. Deffi Mailita, S.Pd (DM). The teacher response practicality questionnaire consists of four components, namely: 1) usable, 2) easy to use, 3) interesting and 4) efficient. The results of teacher responses to the practicality of the Integrated Thematic Science digital teaching materials with the Iqra Learning Model are shown in Table 2.

Table 2. Practicality of Thematic Science digital teaching materials Applying Iqra Learning Based on Teacher Responses

No	Komponen Praktikalitas	Nilai Praktikalitas	Kategori
1	Dapat digunakan	89.58	Baik Sekali
2	Mudah digunakan	95	Baik Sekali
3	Menarik	90	Baik Sekali
4	Efisien	93.75	Baik Sekali
Rata-rata		92.08	Baik Sekali

Based on the data in Table 2, it shows the practicality of the Integrated Thematic Science digital teaching materials with the Iqra Learning Model according to teacher responses. Based on the teacher's responses, the average practicality score was 92.08. It can be interpreted that the practicality of the Integrated Thematic Science digital teaching materials with the Iqra Learning Model based on the teacher's response is very good. Results of teacher responses to the practicality of integrated thematic digital science teaching materials with the Iqra Learning Model.

The practicality of the Integrated Thematic Science digital teaching materials with the Iqra Learning Model can be seen from students' responses after using the teaching materials. Students are given a practicality questionnaire with four assessment components, namely: 1) usable, 2) easy to use, 3) interesting and 4) efficient. The results of students' responses to the practicality of the Integrated Thematic Science digital teaching materials with the Iqra Learning Model are shown in Table 2.

Table 2. Practicality of Integrated Thematic Science digital teaching materials Iqra Learning Model Based on Student Responses

No	Practicality components	Marks	Category
1	Usable	79,66	Good
2	Easy to used	78,56	Good
3	Appealing	86,08	Very good
4	Cost Effective	78,45	Good
Rata-rata		80,69	Very good

Based on the data in table 11, it shows the practicality of the Integrated Thematic Science digital teaching materials with the Iqra Learning Model based on student responses.

Based on the students' responses, the average practicality score was 80.69. This can be indicated that the practicality according to students is very good. In detail, the results of the student response questionnaire regarding the practicality of the Iqra Learning Model Integrated Thematic digital science teaching materials in the field test.

Implementation of thematic digital science teaching materials implementing a valid iqra learning model. At the implementation stage there are two tests carried out, namely the practicality test and the effectiveness test. The practicality test was carried out to see the response of teachers and students to the use of thematic digital science teaching materials implementing the iqra learning model. According to Rochmad (2012), the level of practicality is seen from whether teachers and other experts consider that the material is easy and can be used by teachers and students.

Discussion

In the research that has been obtained, Thematic Science digital teaching materials Applying the Iqra learning model to improve Concept Mastery and Creative Thinking for Class VIII Middle School Students are valid, practical and effective. The development model used is a 4D model. The stages of the 4D development model include four stages, including Define, Design, Develop and Disseminate. Linda et al (2021) have implemented Connected Type Thematic Interactive Science Digital Teaching Materials in Energy Materials for SMP/MTs to increase student independence and learning outcomes using a 4D model with the development results meeting valid, practical and effective criteria. Furthermore, Sari (2017) has developed an electronic module based on 3D Pageflip Professional using a 4D model with the development results meeting valid, practical and effective criteria.

Practicality Thematic digital science teaching materials apply the iqra learning model relating to four assessment components, namely: 1) usable 2) easy to use, 3) interesting and 4) efficient. Practicality according to teachers and students is in the very good category. This indicates that the thematic digital science teaching materials apply the iqra learning model to be practically used in the learning process. With the existence of thematic digital science teaching materials implementing the iqra learning model, they can be used anywhere and at any time, making it easier for students to learn the concepts in the learning material. This is confirmed by the opinion of Asrizal (2020) who states that electronic teaching materials can provide students with the opportunity to study learning materials in their homes or other places.

Electronic thematic science modules implementing the iqra learning model are said to be effective if used in learning to achieve predetermined learning outcomes. Effectiveness is seen from the attitude competency, mastery of concepts, and creative thinking skills obtained from students. The results of statistical testing showed that there were significant differences in students' behavioral competence in using thematic digital science teaching materials applying the iqra learning model. This emphasizes that the use of thematic science digital teaching materials implementing the iqra learning model is effective in improving the attitudinal competence of class VIII SMP students. For students' mastery of concepts, significant differences were found in students' mastery in the use of thematic digital science teaching materials applying the iqra learning model. This emphasizes that the use of thematic science digital teaching materials implementing the iqra learning model is effective in improving the mastery of class VIII SMP students.

CONCLUSION

Based on the research results, three conclusions were obtained as follows. The results of the preliminary study revealed information that teachers in schools have not used electronic-based teaching materials, science learning resources are not yet thematic, the delivery of lesson material is still fragmented, the language in students' books is difficult to understand, thematicity for basic competencies in knowledge and skills are in the sufficient and insufficient categories, students already have good characteristics in learning, science material in teaching materials at school is not yet thematic, student's mastery of concepts is still below the KKM and students' creativity scores are also low. Thematic digital science teaching materials integrated with the iqra learning model to improve 21st century skills for class VIII SMP students are valid with a score of 91.29 which is in the very good criteria. Thematic digital science teaching materials applying the Iqra learning model to improve 21st century skills for class VIII SMP students are practical according to teachers and students with scores of 92.08 and 80.69 with excellent criteria. Thematic digital science teaching materials applying the Iqra learning model are effective in improving 21st century skills in class VIII SMP students.

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