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Interactive Learning Media with IMTAQ Content for Science Subjects in Class VII

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ABSTRACT

Science learning requires visualization of the objects, so teachers need to provide an integrated learning environment with technology and IMTAQ that allows students to drive their learning independently and understand the concepts better. This study aimed to produce valid and practical multimedia with IMTAQ content that can be effective for science subjects in grade VII. Data were obtained from the results of the media's design, validity, practicality, and effectiveness through questionnaires, tests, and interviews. The results show that the developed interactive media is valid, practical, and effective because it gets a good response from teachers and students. It can also improve learning outcomes and affect the IMTAQ understanding of seventh-grade students.

Keywords: Development, Interactive Media, IMTAQ, Science learning.

INTRODUCTION

Based on Law No. 20/2003, the dimensions of belief and piety or religious knowledge and noble character are part of the national education goals. One of the efforts that can support national education goals is to develop learning materials or media with content that refers to the values of the faith and religious knowledge known as Iman and Taqwa (IMTAQ). In addition, it is necessary to integrate with the environment and technology in every learning activity, considering that the young generation is currently in a disruptive era or the era of the industrial revolution 4.0 with speedy technological developments. So they can achieve the desired outcomes, such as adaptive students who have technology literacy skills and honorable character.

Teachers in this era need to provide learning guides for students to involve in learning activities and a conducive learning environment to help students achieve their goals. Media is one of the needed components to create a learning environment that allows students to drive their learning independently. It is based on learning objectives to help students achieve the expected competencies. Media for learning can be displayed in the form of images, text, sound, and even in the form of artificial objects (models) that are arranged in such a way as to facilitate students in learning activities. Because it has many forms, teachers need to select and determine which media is the most suitable for their students.

Science is a complex subject that requires media to visualize essential concepts and objects, such as microscopic or unapproachable objects. According to Suprapto et al. (2019) *"dalam pembelajaran IPA dibutuhkan media yang mampu mengkonkretkan konsep dan membantu peserta didik serta guru untuk membangun pemahaman"*. However, the observation results show that science learning did not fully integrate into technology or IMTAQ. It is only limited to PowerPoint slides (ppt), even though science learning

requires visualization of the objects so that students can understand the concepts better. The limited media for learning and delivering material that requires visualization of the concepts make it difficult for students to achieve the expected competencies.

The information provided by the teacher is limited to theoretical explanations with the help of printed books or *slides only. Moreover, it was not enough, c*onsidering education in the 21st century has transformed into providing opportunities for students to explore topics and create meaningful learning experiences by integrating technology into learning activities. The learning media used have not been fully able to provide opportunities for students to improve the independent learning experience directly with technology. Furthermore, printed books, teaching materials, and science learning media have not fully integrated the subject matter with IMTAQ knowledge. *Meanwhile, interactive learning multimedia* is the type that is compatible with the demands of education in this era and objectifies national education goals. Multimedia is the sequential use of various media in a presentation or self-study program. Computers are often involved in multimedia presentations that incorporate text, audio, and still or animated image (Smaldino et al., 2014). Interactive multimedia for learning uses computers to create and combine text, audio, graphics, and moving images (video and animation) by combining *tools* and *links. It* allows users to navigate, create, interact and communicate. Interactive multimedia is designed as a form of programmed learning so that students can do individual learning and be directly involved in decision-making during learning. The implementation of learning depends on the ability and speed of students in understanding the learning material. The choice of interactive multimedia is due to the current fast-paced, visual, and responsive era. So, interactive learning media are needed to attract students' attention while achieving the expected competencies. In addition, it can also be custom-made to contain IMTAQ.

Interactive learning multimedia with IMTAQ knowledge is suitable for SMP IT Dar el Iman because it is under the MTs/SMPIT program, which integrates scientific studies with Islamic values and knowledge. The integration of IMTAQ knowledge in multimedia is an effort to improve learning outcomes and motivate students to be more grateful for the blessings and gifts that Allah SWT has given. Based on the research from Aditia & Muspiroh (2013), learning material with science-based learning, environment, technology, society, and Islam makes the learning process more efficient and helps students understand the subject more. It also helps students link the material with ayat that has been explained in the Al-Qur'an. Based on the problems stated above, this study aims to identify and describe the process, validity, practicality, and effectiveness of interactive learning media containing IMTAQ for science subjects on the Solar System material in class VII SMPIT/MTs.

METHODS

This study belongs to Research and Development with a Four-D Model. The procedures divide into four stages: define, design, develop, and disseminate the product. Data were obtained from the results of the definition, design, validity, practicality, and effectiveness of the media through questionnaires, tests, and interviews. Data for the media's validity was acquired through a questionnaire sheet by experts to assess the media's materials, language, and design. The practicality data was acquired through a questionnaire sheet to determine the responses of teachers and students as users. The effectiveness data of the media was obtained through a test for students. The sample of this study was seventh-grade students at SMP IT Dar el-Iman Padang.
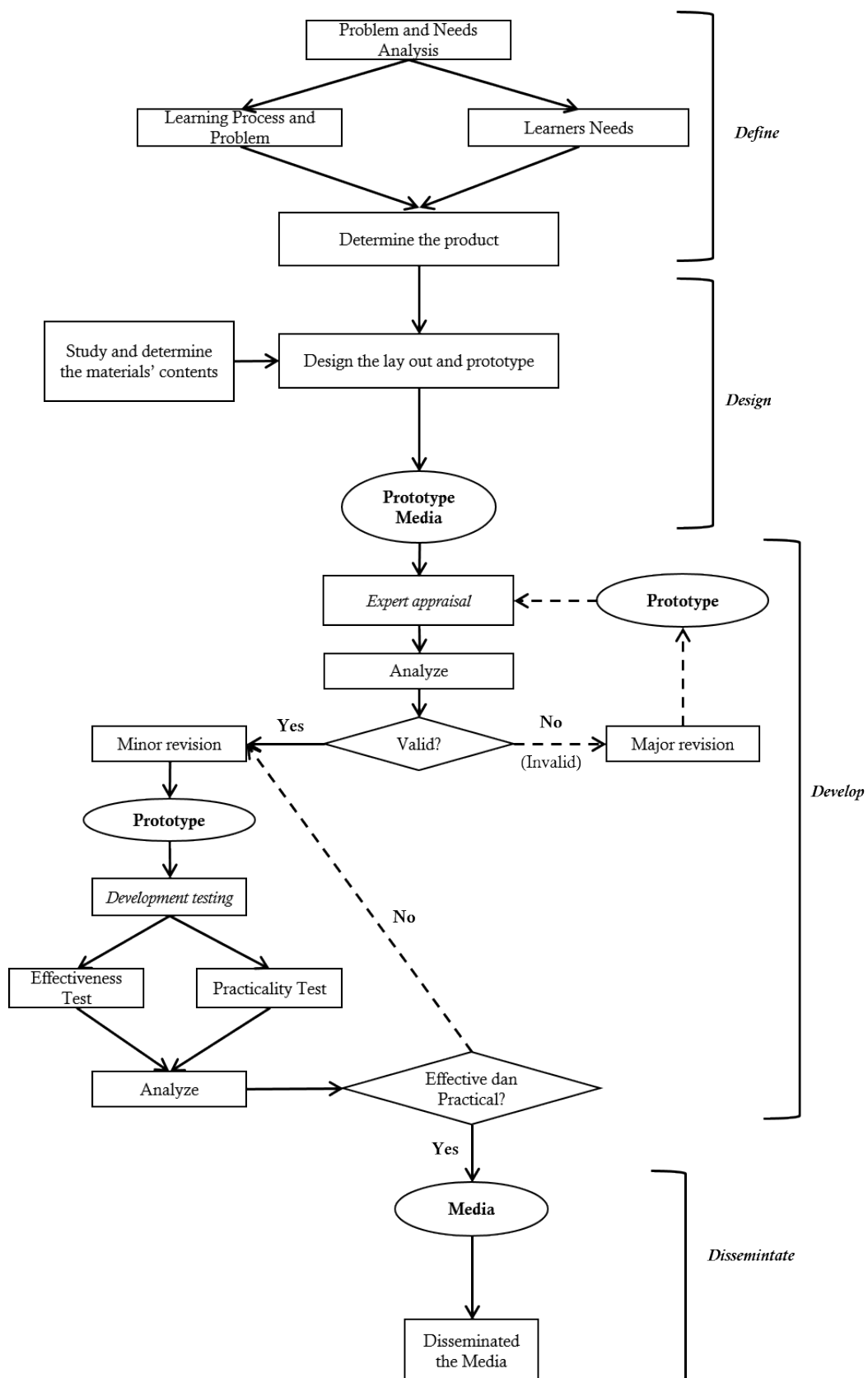
Problem and Needs Analysis

Learning Process and Problem → ← Learners Needs

Determine the product

Define

Study and determine the materials' contents → Design the lay out and prototype

Prototype Media

Design

Expert appraisal ⇠ **Prototype**

Analyze

Yes ← **Valid?** → **No** (Invalid) → Major revision

Minor revision

Prototype

Development testing

Effectiveness Test — Practicality Test

Analyze → **Effective dan Practical?**

No

Develop

Yes

Media

Disseminated the Media

Dissemintate

Fig.1 Procedure of this research and development with a Four-D Model

RESULTS

The developed product is interactive learning multimedia that contains material on the solar system for science learning in class VII SMP/MTs. The product design is under the results of analyzing the learning process and problem, science books and materials, Al-Qur'an, and other literature as a source for linking science and Al-Qur'an and supported by various resources such as the NASA website for the latest information about outer space. This interactive multimedia on solar system material is expected to be an independent learning resource that helps students learn, deepen the material and enrich solar system material independently, at home and school. This interactive multimedia was developed with the *Articulate Storyline* software that can produce media in the form of *.exe* for offline and distributed by CD or HTML to be shared by links. The learning media developed by Pratama (2018) with the same software received positive responses from users and was considered to overcome students' problems and difficulties in learning.
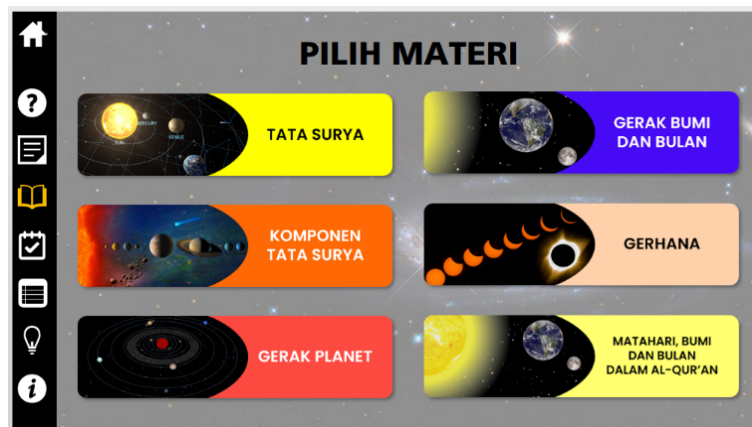

Fig.2 Media start page view

Fig.3 Material page view

The results showed that the developed interactive learning media on the solar system material for VII class was suitable for classroom learning with a validity value is 0.91 (valid) and 93% percentage (see for details result in Table 1). Media already has a clear identity and title, with a reasonably good layout and composition design. The navigation buttons and menus in the media are complete and precise, with a pretty exciting color composition. Black, white and gray are known to be neutral colors (McIntire, 2008).

Table 1. Result score of expert appraisal (validation)

No	Validity	Percentage Score (%)	Category
1	Material	92,9%	Valid
2	Media	89%	Valid
3	Linguist	98%	Valid
	Mean Values of Validity by Expert	93%	Valid

The developed interactive multimedia contains a lot of material and content equipped with IMTAQ knowledge to be used for enrichment or deepening. Multimedia provides further details of learning materials in class on solar system material to facilitate students who want to learn more about solar system material and its relationship to IMTAQ. The advantages of interactive multimedia, which is content-rich, interactive multimedia that provides quite a lot of information content, contains material for the enrichment and provides further details of the content of the material or the elaboration of the content of specially prepared material that allows students to learn more (Warsita, 2008). The media also received positive responses, considered very good and practical by science subject teachers at 96% and students at 92%. Based on the results of practical tests with science subject teachers, it can be concluded that the interactive multimedia developed is excellent and practical for use in independent learning and classroom learning (Table 2).

Table 2. Result score of practical tests on science teachers

No	Aspect	Percentage Score (%)	Category
1	Appearance or appealing of Media	97%	Very Good and Practical
2	Usable and utility of Media	95%	Very Good and Practical
	Mean Values of Practicality	96%	Very Good and Practical

IMTAQ's content in this interactive multimedia is the appealing point of the media, which directly relates the material to Al-Qur'an and hadith. In addition, each sub-material has a drill, and evaluation can be a consideration for teachers to use media in learning, both as independent drills and enrichment at the end of learning. Respondents also hope that multimedia will be distributed to the public online through the website so that teachers and students can still access multimedia. Based on the results of practical tests with 25 students as users, it can be concluded that the interactive multimedia is very good and practical for use (The result in Table 3). Most of the students considered that the media helped them understand the solar system's material and attracted their attention. It increased their interest in learning further. The media is considered to help students more quickly understand the subject matter. More than 80% of students think the media is fascinating and want to learn more about the solar system by using it in the classroom or at home.

Table 3. Result score of practical tests on students

No	Aspect	Percentage Score (%)	Category
1	Appearance or appealing of Media	96%	Very Good and Practical
2	Usable and utility of Media	88%	Very Good and Practical
	Mean Values of Practicality	92%	Very Good and Practical

The final activity of the development stage is the effectiveness test through the evaluation of learning outcomes after using the media in the experimental class and without the developed media in control classes. From the effectiveness test, the average value of student learning in the experimental class was higher at 91, while the control class was at 77.6. The average value of the IMTAQ knowledge in the experimental class was 92.44, and in the control class was 86.92. The hypothesis test showed that for the learning outcomes is $t_{count} > t_{table}$ (6,1260 > 2,0106) and $t_{count} > t_{table}$ for IMTAQ scores (3,4886 > 2,0106), so Ho rejected and Ha accepted. There was a significant difference between the average value of learning outcomes and IMTAQ scores in the experimental class using interactive media than the average scores of students in the control class. Based on the result scores of the tests, both classes have increased the average learning outcomes (in different categories) because of differences in treatment in the experimental and control classes during learning (Table 4).

Table 4. Students' N-Gain Values

Class	Pretest	Posttest	Gain	N-Gain (g)	Category
Eksperiment	60,8	91	30,2	0,77	High
Control	54,4	77,6	23,2	0,51	Moderate

This result shows that the increase in student learning outcomes in the experimental class that uses interactive multimedia in science learning on the solar system material is much more optimal than the control class that does not use interactive multimedia.

CONCLUSIONS

Based on these results showed that the developed interactive media is valid, practical, and effective because it gets a good response from teachers and students. The material validity's value is 0.9 (valid) and 92,9% percentage, the media validity value is 0.85 (valid) with 89% percentage and the linguist value is 0.96 (valid) with 98%. The media also received positive responses, considered very good and practical by science subject teachers at 96% and students at 92%. From the effectiveness test, the average value of student learning in the experimental class was higher at 91, while the control class was at 77.6. The average value of the IMTAQ in the experimental class was 92.44, and in the control class was 86.92. There was a significant difference between the average value of learning outcomes and IMTAQ scores in the experimental class using interactive media than in the control class. It can also improve learning outcomes and affect the IMTAQ understanding of seventh-grade students.

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