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Development of an integrated electronic module with Al-Qur'an verses using the Canva Application on static fluids

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Abstract

This study aims to determine the validity and practicality of the Integrated Physics Electronic Module of Al-Qur'an Verses Using Canva Applications on Static Fluids. This research was conducted at one public senior high school in Indonesia. The data collection technique in this study used Random Sampling. Research subjects used two groups, one control group and one experimental group. The validation results from the experts resulted that majority of several experts such as teaching material experts, learning media experts, language experts, integration experts, and educators have argued that this module was appropriate to be used in teaching of static fluids. This meant his module was valid to be used in the physics learning in the context of static fluid. In addition, students' responses to the use of this module showed that they have argued that this module was very practical to enhance students' understanding in statics fluids.

Keywords: Al-Quran, physics, Canva, electronic module

1. Introduction

The 2013 curriculum has been implemented since the government made changes to government regulation No. 19 of 2005 concerning National Education Standards by issuing government regulation No. 32 of 2013. With the implementation of the 2013 curriculum, there is a demand for independent scientific learning in the classroom that must be implemented. Supported by scientific independent learning media as well. One of the learning media that is widely used in the module. Learning activities in the 2013 curriculum must also take advantage of the role of information and communication technology to increase the efficiency and effectiveness of learning (Indonesia 2013).

Regarding the implementation of learning activities, the annex of the Minister of National Education and Cultural Regulation No. 65 of 2013 concerning Process Standards, confirms that the learning process in education units is held in an interactive, inspiring, fun, challenging manner, motivating students to participate actively, providing sufficient space for initiative, creativity and

independence in accordance with their talents, interests and development. physical and psychological learners (Permendikbud, 2013).

A fun learning process needs to be applied to all subjects, one of which is physics. Physics is a subject that involves the concepts of matter and energy. Its interrelationships in everyday life make physics a science that is easy to understand directly. Students in this case as students certainly need good learning resources to understand the concept of physics as a whole. Learning resources are anything that can facilitate students in obtaining a number of information, knowledge, experience, and skills in the teaching and learning process.

One of the learning resources that can be provided by the teacher is teaching materials. Teaching materials are a set of learning tools or devices that contain learning materials, methods, limitations, and evaluation methods that are designed in a systematic and attractive way to achieve the expected goals, namely the achievement of competencies or sub-competencies with all their complexity (Fajriah, et.al., 2016). The rapid development of technology today also motivates teachers to be able to provide innovative and creative teaching materials. Technological developments in the world of education, many new technologies have emerged. This technology comes with a period that functions to facilitate system learning in the form of an interaction process between teachers and students both inside the classroom and outside of school (Kawuri et al. 2019).

Based on the results of observations, the learning process activities carried out at one of senior public school found that teachers as teachers still use conventional methods and media in delivering material, especially in physics subjects. As a result of students learning to use conventional media in the form of print modules and lecture-style methods, the material presented is very boring. The print module is less able to present material using simulations, so that students do not have a picture or cannot imagine the material presented, especially in physics.

2. Literature Framework

2.1 Electronic Module

E-module is a set of teaching media for the need for self-learning that is systematically arranged in digital or non-printed forms that guide students to learn solve problems in their own way (Santosa, Santyadiputra, and Divayana 2017). Text, animated images, and videos can be displayed on the E-module, besides that you can run the E-module on a computer or electronics (Laili et al. 2019). E-module self-study material equipped with the presentation of video tutorials, animation and audio presented in an electronic format for the learning process systematically arranged as well as each learning activity in it connected by a link (link) so as to make students become more interactive and add to the experience in learning (Sutanto 2018).

E-module can be embedded in a multimedia technology so that it can be a learning resource that can be better than the usual print media module. E-modules that are arranged in electronic form can also save on the use of writing instruments such as paper so that they will indirectly help reduce waste paper (Artiniasih, Agung, and Sudatha 2019). Based on research, module Electronic is an innovative medium that can increase interest students in learning. A learning process to be able improve the achievement of learning outcomes need to be supported by learning the right guide. This is considering face-to-face time in front of the class very limited when compared with the volume of material that must be resolved (Sriyanti 2022). Therefore, a capable learning guide is needed activate students in learning. Among the learning guides that allows for an increase in student learning outcomes and prioritizing the active independence of students is the electronic module (Herawati 2018).

E-modules have files that are relatively small in size stored in the flash disk, easy to carry, can use it offline, as long as there is a computer / laptop can learn when just. To browse the material students are directed to get certain information assisted by links (Puspitasari 2019). An E-module has the characteristics that participants students do not depend on other people (self-instructional),

participants students can study e-modules at any time and students are given active opportunities in the learning process (Song, Tan, and Awang 2021). E-modules as teaching materials have characteristics namely include: self-instructional, self-contained, stand-alone, adaptive, user friendly, consistent use of spacing, fonts and layout, convey it and the function of electronic media is utilized, a wide selection of software applications utilized and designed by paying attention to learning principles (Asmiyunda, Guspatni, and Azra 2018).

2.2 Canva for Education

Canva is an online design program that provides equipment such as presentations, resumes, posters, pamphlets, brochures, graphics, info graphics, banners, flyers, certificates, diplomas, invitation cards, business cards, thank you cards, post cards, logo, label, bookmark, desktop, template, photo editing, image mini youtube, instagram stories, twitter posts and covers Facebook. (Rahma, 2019). Canva provides the features or uses for education, explaining that Canva is a creative tool and collaboration for all classes. The only design platform needed in class. Develop creativity and collaborative skills, create visual learning and communication becomes easy and fun.

2.3 Integration Al-Qur'an Verses with Static Fluid Concept

Pressure is a physical quantity that can show the characteristics of a material, the strength of a material can be shown by the amount of pressure it can accept. The Qur'an has alluded to the emphasis in QS. Asy-Syu'ara: 63.

فَاَوْحَيْنَا إِلَىٰ مُوسَىٰ أَنْ اضْرِبْ بِعَصَاكَ الْبَحْرَ ۖ فَانْفَلَقَ فَكَانَ كُلُّ فِرْقٍ كَالطَّوْدِ الْعَظِيمِ

Lalu Kami wahyukan kepada Musa, “Pukullah laut itu dengan tongkatmu.” Maka terbelahlah lautan itu, dan setiap belahan seperti gunung yang besar.

Allah told Musa to hit the sea with the stick. Instantly the ocean was split into two halves, according to the groups of the Children of Israel. Each path was separated by a huge and sturdy mountain-like wall of water. Allah said, "Then We revealed to Musa, “Pukullah laut itu dengan tongkatmu”. So Prophet Musa hit the sea with his staff. (so the sea was split) forming twelve roads (each part is like a great mountain) between the two mountains there is a path that will be passed by them.

In the verse above, it alludes to pressure, namely the force acting perpendicularly per unit surface area. In other words, pressure (P) is the quotient between the compressive (hit) force (F) and the compressive area (ocean) (A). Fluid pressure can be explained by a kinetic model. Molecules always move randomly so they collide with each other, Continuing collisions will cause a change in the momentum of the molecules. The Qur'an has been alluded to about pressure in QS. An-Nur: 40.

أَوْ كَظُلُمَاتٍ فِي خَرِّ لُجِّيٍّ يَغْشَاهُ مَوْجٌ مِّنْ فَوْقِهِ مَوْجٌ مِّنْ فَوْقِهِ سَحَابٌ ۖ ظُلُمَاتٌ

بَعْضُهَا فَوْقَ بَعْضٍ إِذَا أَخْرَجَ يَدُهُ لَمْ يَكَدْ يَرَاهَا ۚ ...

Atau (keadaan orang-orang kafir) seperti gelap gulita di lautan yang dalam, yang diliputi oleh gelombang demi gelombang, di atasnya ada (lagi) awan gelap. Itulah gelap gulita yang berlapis-lapis. Apabila dia mengeluarkan tangannya hampir tidak dapat melihatnya. Barangsiapa tidak diberi cahaya (petunjuk) oleh Allah, maka dia tidak mempunyai cahaya sedikit pun.

This is another parable of the deeds of the unbelievers, ie like the darkness of the wide and deep sea. The waves are mutual collide as they are blown away, creating layers. Then the waves were covered by thick, pitch-black clouds that blocked out the light. This is the accumulating darkness. No one on board the ship at sea could see his hands even if they were brought to his eyes, and he stopped in bewilderment. How could he see anything and be free from confusion without a light to enlighten him on his way and protect him from destruction. (Or) the deeds of the disbelievers are bad (like darkness in a deep ocean) namely a very deep sea (which is covered by waves above it) above those waves (there are waves too, above it again) meaning above the second wave (cloud) is cloudy and dark; this is (overlapping darkness) namely the darkness of the sea, the darkness of the first wave, the darkness of the second wave, and the darkness of the cloud (if he takes it out) namely the person who sees it (his hand) in this very darkness (there is no he can see it) meaning that he almost cannot see his own hands (and whoever is not given light by Allah does not have the slightest light) meaning whoever is not guided by Allah, surely he will not get guidance.

In the verse above, it has alluded to hydro-static pressure that is, the molecules are always moving randomly so that they collide with each other, the continuous collision will cause a change in the momentum of the molecules. Pressure in a liquid is directly proportional to height or depth, density or density and acceleration due to gravity. The pressure generated by the fluid is called hydro-static pressure. The pressure at depth (h) in a fluid has a density (ρ).

3. Research Method

3.1 Research design

The design in this study is Research and Development research. Using the 4D research model, namely (1) Define (define); (2) Design (design); (3) Develop (development); (4) Distribute (spread) (Thiagarajan, 1974). However, this research is only limited to the developing stage. This research was conducted at SMA Negeri 1 Sembawa. The number of respondents for the small group trial used was 30 respondents. The instrument used in this study was a validation sheet in the form of a questionnaire. The first stage of research is the validation of the instrument to be used (questionnaire). After the questionnaire has been validated, product validation is in the form of an Integrated Physics Electronic Module for Al-Qur'an Verses Using Canva on Fluid Materials. There are five expert validations, namely material expert, linguist, media expert, integration expert, and educator expert. Expert validation to determine the validity of the product being developed. Furthermore, to find out the practicality of the developed module, students carry out validation. The data processing in this study uses a Likert scale.

3.2 Participants

The population in this study were all eleventh-grade science students at a public high school in Sembawa. The number of samples is 30 students aged between 16 and 17 years. The sample technique used in this study was purposive sampling, namely a sampling technique by determining certain criteria that the researcher wanted (Srihyati, 2022). This technique was chosen for certain purposes and reasons based on the research taken, for the criteria were eleventh grade science students who had finished studying the material of static fluid. All students have learned about the concepts of static fluid in class, so they should have a basis for choosing certain concepts and reasons.

3.3 Instruments

The instrument used in this study was a validation sheet in the form of a questionnaire. The first stage of research is the validation of the instrument to be used (questionnaire). After the questionnaire has been validated, product validation is in the form of an Integrated Physics Electronic Module for Al-Qur'an Verses Using Canva on Fluid Materials. There are five expert validations, namely material expert, linguist, media expert, integration expert, and educator expert. Expert validation to determine the validity of the product being developed. Furthermore, to find out the practicality of the developed module, students carry out validation. The data processing in this study uses a Likert scale.

3.4 Data analysis

This research result was used qualitative and quantitative analysis. Qualitative analysis is used to describe the results of observations, interviews, validation lecturer suggestions, and current documentation notes implemented. The data were analyzed descriptively qualitatively, some suggestions will be used for product improvement at the revision stage while documentation notes are described to determine the usefulness of the product being developed when used in learning. Quantitative analysis is used to describe the quality of the media based on the assessment of material expert lecturers, media expert lecturers and physics subject teachers as well as students who have received static fluid material.

There are two expert validation assessment instruments, namely material experts and media expert. Following are the steps to analyze the data validation assessment instrument. Scale in measuring media feasibility this is an ordinal scale. Ordinal scale data is then converted into a Likert scale. With scale Likert, then the variable to be measured is translated into an indicator variable. This indicator is used as a starting point for compiling instrument items in the form of statements or questions. Data that is communicative in nature is processed by the amount expected and obtained percentage. When explained with the formula will then be as follows:

4. Result of the research

4.1 Validation Result of Experts

4.1.1 Define Stage

In this first stage, the 4D model is a definition stage where to find out the needs in the development of electronic physics modules integrating the Verses of the Qur'an using the Canva application on Static Fluid material. As for what can be done at this stage, namely: Initial analysis is carried out to find out the problems that form the basis of development so that they can be overcome with reality. Student analysis is a study of the characteristics of students in accordance with the development design. Task analysis, namely a collection of procedures for determining content in a lesson, is broadly taken from core curriculum and basic competence in accordance with the K-13 curriculum. Concept analysis was carried out to identify the main concepts to be taught.

4.1.2 Design Stage

The second stage is the design stage. This stage is divided into 2, namely: (1) Format selection (Title, core curriculum, basic competence, Learning Objectives, Material description, evaluation, discussion), (2) the initial design refers to the first product made by the researcher (Prototype 1). In this initial design the researcher has produced an electronic module which includes a cover, preface, instructions for using the module, core curriculum, basic competence, indicators, concept maps, pre-matter questions, physics info, Qur'an Interpretation, sample questions, video tutorials, experiments.

4.1.3 Develop Stage

At this development stage the aim is to produce a valid Electronic Physics Integrated Module of Al-Qur'an Verses Using Canva on Fluid Material. This stage consists of five stages of validation, namely experts of material, media, language, integration, and educators.

Expert validation is five validators who are competent in their respective fields. Expert validation is carried out by providing electronic modules that are in accordance with the initial design and providing validation instruments. After the validator validates, there are criticisms and suggestions given. After that, the researcher improved according to the criticisms and suggestions that had been given by the validator so that the resulting electronic module was even better. First revision was carried out after the validator provided criticism and suggestions. The electronic module that has been repaired (Prototype 2) will then be reassessed by the validator. Following are the results of expert validation:

1. **Material Expert Validation** At the expert validation stage, the corrective material provided by the validator includes concept maps, addition of material, unit conversions, writing of image captions, writing units, and competency tests. The questionnaire used has 2 aspects of assessment, 6 indicators with 14 questions. The results of the validation data tabulation after being revised with material aspects getting a percentage of 90.62% and presentation component aspects getting a percentage of 91.66%. So that an average of all aspects of the assessment is obtained at 91.14%, which means that the module is very valid (feasible to use) in terms of material.
2. **Media Expert Validation:** In the validation stage, the validator media expert directly provides an assessment related to the electronic module being developed. The questionnaire used has 3 aspects of assessment, 7 indicators with 16 questions. The results of the tabulation of validation data after being revised with aspects of media form get a percentage of 75%, aspects of media quality get a percentage of 83.33% and aspects of media function get a percentage of 75%. So that an average of all aspects of the assessment is obtained at 77.77%, which means that the module is very valid (suitable for use) in terms of media.
3. **Linguist Validation:** At the validation stage, the corrective linguists provided by the validator include covers, material and verses of the Qur'an, achievement indicators, formula writing units and evaluation questions. The questionnaire used has 4 aspects of assessment, 7 indicators with 10 questions. The results of the tabulation of validation data after being revised with a straightforward aspect of 83.33%, communicative aspects of 75.00%, aspects of conformity of linguistic beliefs 91.66% and aspects of the use of the term symbol 100%. So that an average of all aspects of the assessment is obtained at 87.49%, which means that the module is very valid (feasible to use) in terms of media.
4. **Integration Expert Validation:** In the integration expert validation stage, the improvements provided by the validator include how to integrate physics material and Al-Qur'anic verses and improve the writing of physical meanings. Al-Quran verses that are integrated with static fluid material include: (1) Al-Baqarah Verse 74 discusses water, (2) Al-Furqan Verse 53 discusses density, (3) Al-Fathir Verse 12 discusses Archimedes' Law, (4) Ar-Rahman Verses 19-20 discusses Expansion Tension, (5) Al-Hajj verse 63 and Al-Khafii Verse 41 discusses Capillarity. The results of data tabulation with 10 questions produce a percentage of 85.00%, which means that the module is very valid (feasible to use) in terms of cohesiveness.
5. **Validation by educators:** At this stage, the validator immediately provides an assessment of the module being developed. The questionnaire used has 6 aspects of assessment with 20 questions. Tabulation results from educators for each aspect of content quality obtained a score of 100%, language aspect obtained a score of 87.5%, module content aspect obtained 87.5%, integration aspect with Al-Qur'an Verses obtained 87.5%, evaluation aspect obtained 83.3% and 100% physical appearance aspect. So that an average of all aspects of the assessment is obtained at 89.28%, which means that the module is very valid (feasible to use).

4.1.4 Disseminate Stage

At this stage the product that has been implemented at one public senior high school was then assessed by student learning outcomes with the aim of knowing the feasibility of the product. The feasibility of the product is assessed from the validation of material experts, media experts and learning outcomes with the pretest post-test experiment. Assessment is done by giving pretest and post-test. After all stages are passed then this product can be published with the hope is able to help students in mastering the material. Publication the product is carried out by distributing CDs/flash disks and the distribution is carried out through internet access through an account research you tube.

5. Discussion

The product produced in this study is an Electronic Physics Module Integrated with Al-Quran Verses Using Canva on Fluid Material. This module was developed according to the research design stage used. In the product development process, researchers used the 4D development model which consisted of 4 stages, namely Define, Design, Development, and Disseminate. In this research, the product of the Integrated Electronic Module of Al-Quran Verses was produced using the Canva Application on Static Fluid Materials. Science, especially physics, has a connection with the verses of the Al-Quran, so it becomes a must when studying physics accompanied by a study of the verses of the Al-Quran that underlies it. This means that the Quran is a source of knowledge. Humans when acting, behaving, and acting, must always make the Qur'an as a way of life (Fajar and Izzah 2023; Wulandari et al. 2022). In this research, the product of the Integrated Electronic Module of Al-Quran Verses was produced using the Canva Application on Static Fluid Materials. Science, especially physics, has a connection with the verses of the Al-Qur'an, so it becomes a must when studying physics accompanied by a study of the verses of the Al-Quran that underlies it (Astuti et al. 2020; Supriati and Haris 2021). This means that the Quran is a source of knowledge. Humans when acting, behaving, and acting, must always make the Quran as a way of life.

The development product of the Integrated Electronic Module of Al-Qur'an Using the Canva Application on Static Fluid Material has several advantages, including: 1) Electronic Module learning media is developed to have a flexible form so that students can study anywhere. This electronic module also contains pictures and video tutorials that can help students better understand concepts. This is in accordance with Rosalin's statement (2018) that learning media can improve student learning processes which in the end are expected to improve learning outcomes achieved. Because, in learning media, abstract things can be concretized, and complex things can be simplified. 2) Teaching materials based on electronic modules that have been developed are integrated with verses of the Qur'an so that students are not only able to understand existing physics concepts, but students also have spiritual values, not only thinking about things (something) they have exists and happens, but also understands, understands and reflects on the fact that there is Allah SWT behind all the events that occur in the universe (Karlina and Iryani, n.d.).

The product produced in this study is the Integrated Physics Electronics Module of Al-Qur'an Verses Using Canvas on Fluid Materials. This module was developed following the research design stages used, namely research and development. The module consists of a cover, preface, content standards which include competency standards, essential competencies, learning indicators and learning objectives, instructions for using the module, table of contents, concept maps, keywords, verses of the Al-Qur'an along with translations, materials, scientific info, summaries, examples questions, student worksheets, competency tests, answer keys, and glossary.

The validity level of learning media for the Electronic Module Integrating Quranic Verses Using the Canva Application on Static Fluid Material is measured from the results of the analysis according to predetermined validity criteria. As explained by Suharsimi (1998), a learning media is said to be valid if the results match the criteria, in the sense that the test results are aligned with predetermined criteria. In this study the level of validity was measured using a rating scale where the raw data



Figure 1. Display and part of modules content

obtained from the validator was in the form of numbers which were then interpreted qualitatively. Based on the results of the assessment carried out by material, media, language, cohesiveness, and educators get an average percentage of material experts 91.14% in the very valid category, media validators 77.77% in the valid category, language validators 87.49% in the category very valid. the validator integration category is 85.00% with a very valid category and the validator by educators is 90.96% with a very valid category. So it can be concluded that the Integrated Electronic Module Learning Media for Al-Qur'an Verses Using the Canva Application on Static Fluid is perfectly valid or very feasible to use.

6. Conclusion

Based on the results of the research developed, the percentage of each validator was obtained, namely the material validator with an average percentage of 91.14%, the media validator 77.77%, the language validator 87.49%, the integration validator 85.00% and the educator validator 90.96% in the very valid category (very feasible to use). The electronic module integrates verses of the Al-Quran using the Canva application. The Static Fluid Material developed has a very high category when viewed from the student response questionnaire. The results of the average percentage of large-scale student responses with 70 students get a percentage of 89.28% in the very practical category. The implication of this research is to enrich teaching materials in physics learning through the development of electronic modules that integrate verses of the Al-Qur'an using the Canva application on static fluid material. Besides that, it can make it easier for teachers to convey static fluid material well. Suggestions that can be given are continuity to test the effectiveness of using electronic modules on a larger number of sample.

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