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THE DEVELOPMENT OF ISLAMIC EDUCATION LEARNING MEDIA BASED ON ARTICULATE STORYLINE 3 IN SENIOR HIGH SCHOOLS

Husni Idris
Universitas Islam Negeri Sultan Aji Muhammad Idris, Indonesia
Email: husni_idris@uinsi.ac.id

Rabiatul Adawiyah
Universitas Islam Negeri Sultan Aji Muhammad Idris, Indonesia
Email: rabiatul@uinsi.ac.id

Kautsar Eka Wardhana
Universitas Islam Negeri Sultan Aji Muhammad Idris, Indonesia
Email: kautsarekaptk@gmail.com

Qurrotu Ainii
Universitas Islam Negeri Sultan Aji Muhammad Idris, Indonesia
Email: qurrotu.aini@gmail.com

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Abstract

Islamic Education (PAI) plays a vital role in shaping students' cognitive development and character. However, it often relies heavily on traditional lecture methods, particularly given the theoretical nature of many PAI topics. This approach, combined with the limited use of varied learning media, has led to reduced student engagement. With the rapid advancement of technology, there is a pressing need for PAI teachers to incorporate interactive learning media into their teaching. However, many teachers need to develop more skills in the development of such media. This study aims to develop an Islamic Education learning media using Articulate Storyline 3 and evaluate its impact on student motivation. Using a Research and Development (R&D) approach based on the Borg & Gall model, the study involved ten stages of product development across six senior high schools in East Kalimantan. The results from field testing with 30 students revealed positive feedback across media, material, and learning aspects, with substantial improvements noted in the central and operational field tests. Statistical analysis using SPSS showed a significant difference in students' abilities

before and after using the interactive multimedia, with a p-value of 0.000 ($p < 0.05$), indicating the effectiveness of the learning media in enhancing student engagement and learning outcomes.

Keywords*: Articulate Storyline, Development, Instructional Media.*

1. Introduction

Islamic Education (PAI) plays a crucial role in shaping students' cognitive abilities and character. This is because PAI not only covers religious knowledge and worship but also addresses issues related to social interactions (muamalah). According to a study conducted by Rahmi Musadsas, students who learn PAI well are more likely to appreciate others, engage in social interactions without discrimination, and exhibit good moral conduct[1]. In this regard, the responsibility of PAI teachers is indeed significant.

PAI teachers must prepare the material to be delivered to their students in a way that ensures they develop both vertically and horizontally. To achieve this, there are four learning strategies that PAI teachers can prepare, namely: (1) identifying the material to be taught, (2) applying the knowledge gained in the classroom to the real-world environment in accordance with community expectations, (3) selecting and determining the most appropriate and effective teaching methods and techniques, which will be actively implemented during the learning process and serve as a guide for the teacher, and (4) setting norms and minimum standards of success or success criteria, which will serve as a reference for the teacher in evaluating the teaching and learning activities.

So far, the learning process in Islamic Education (PAI) has been conducted using conventional methods, predominantly the lecture method,[2] Where the learning process is teacher-centered, with the teacher acting as the primary agent for delivering information; in addition to this, PAI teachers have attempted to develop creativity in their teaching to ensure that the material is delivered effectively so that students do not quickly become bored. This is because the topics in PAI are theoretical and normative.[3] AI learning has rarely used varied learning media, resulting in low student engagement[4]. One of the reasons for the lack of media development in PAI subjects is the need for PAI teachers to have a better understanding of media development. This lack of understanding impacts the delivery of the material, leading to disinterest and monotony among students.

Based on this, an effective strategy in PAI learning is required to ensure that the learning objectives are achieved to their fullest potential. As facilitators and mentors,[5]

[1] Rahmi Musaddas, 'Efektivitas Pembelajaran Daring Terhadap Hasil Belajar PAI Di SMP Negeri 3 Rantau Panjang Ogan Ilir', *Al-Hikmah: Jurnal Agama Dan Ilmu Pengetahuan*, 19.1 (2022), 109–19 <https://doi.org/10.25299/al-hikmah:jaip.2022.vol19(1).7267>.

[2] Iyam Maryati, 'Penerapan Model Pembelajaran Berbasis M Asalah Pada', Jurnal Mosharafa, 7.1 (2018), 63–74.

[3] Ayunda Serly, 'Pengembangan Game Interaktif Wordwall Pada Mata Pelajaran Pendidikan Agama Islam Materi Taharah Di SMPN Purwodadi', 2022.

[4] Lutviatul Khusna, 'Pengembangan Media Pembelajaran Berbasis Digimonica Pada Pembelajaran PAI Dan Budi Pekerti Kels VIII SMPN 13 Malang', 2022.

[5] Ayulia Septiani and Muhamad Taufik Bintang Kejora, 'edukatif : jurnal ilmu pendidikaN Tingkat Aktivitas Belajar Siswa Pada Pembelajaran Online Pendidikan Agama Islam Di Masa', 3.5 (2021), 2594–2606.

teachers must be creative and innovative in selecting models, methods, and, in particular, media that are appropriate for the diverse conditions and needs of students during the learning process. The success in achieving the competencies of PAI subjects is closely linked to the teacher's ability to deliver lessons effectively, using media that align with the cognitive development of students.[6]

To achieve the competencies of PAI subjects, the use of appropriate learning media is essential. Articulate Storyline 3 is an interactive learning media that aligns well with the competencies of PAI subjects. This third version of Articulate Storyline is software designed to convey information through presentations.[7] One of its advantages is its flexibility in publishing instructional material projects into various formats, such as CDs, HTML links, Word documents, worksheets, and even Learning Management Systems (LMS). As stated by Rivers, Articulate Storyline is a foundational program for creating electronic projects with systematically designed instructional features that can be applied to user-interface learning in interactive education.[8]

The use of this software is considered adequate because it greatly aids in visualizing the material and reduces verbal explanations, allowing teachers to avoid repetitive speech and present the content in a shorter amount of time. Articulate Storyline 3 offers various features, including textbooks, audio, video, animations, interactive quizzes, and hyperlinks, all of which can be directly used in the learning process. Another advantage of Articulate Storyline 3 is that it can be accessed offline, making it more convenient for both teachers and students to engage with the learning materials without the need for an internet connection.

An initial observation by the researcher revealed that the average PAI learning process in senior high schools (SMA) is already good, as some of the SMA institutions are considered prestigious and have adequate infrastructure. The use of educational technology in teaching and learning activities is ongoing. However, the utilization of interactive learning media based on software still needs to be improved, especially in PAI subjects. Another finding is the lack of interest among senior high school students in learning PAI, which can be attributed to several factors, including teachers still using learning media merely as tools for presenting material in a minimalistic way, teaching methods that have not fully maximized technology, and the failure to use the latest interactive learning media optimally.

When related to online learning, as experienced in the past, PAI learning indeed requires innovative learning media to enhance students' interest in the subject. If PAI lessons are presented with interactive media that includes videos, images, contextual explanations, and authentic assessments, students will undoubtedly be more enthusiastic about learning it. In terms of cognitive development, senior high school students are at the formal operational stage. At this stage, students are capable of abstract thinking and systematic reasoning and can conduct experiments and make contextual connections,[9]

[6] Nana Syaodih Sukmadinata, *Pengembangan Kurikulum Teori Dan Praktek* (Bandung: Remaja Rosdakarya, 2006).

[7] Nurhikmah Sam, "Pengembangan Multimedia Pembelajaran pada Mata Pelajaran IPS di SMP Negeri 46 Makassar", dalam Jurnal of Education Technology, Curriculum, Learning, and Communication Vol 1 No. 3, 2021, h. 141

[8] Rivers, David. 2015. Up and Running with Articulate Storyline. www.lynda.com/storylinetutorials/up-running-articulatestoryline-2/196582-2/ (diakses 15 Januari 2020)

[9] Moh Wahyu Kurniawan and Rini Setiyowati, 'Analisis Model Pembentukan Nilai-Nilai Karakter Di Sma N 1 Malang', *Integralistik*, 32.2 (2021), 2021 <https://journal.unnes.ac.id/nju/index.php/integralistik/index>.

Therefore, the use of Articulate Storyline 3 as a learning media is highly supportive of these cognitive development stages.

2. Literature Review

Learning media is a tool used to convey messages through various means of delivering messages. The message conveyed can move students' thoughts, feelings, and motivation to participate in learning activities so that changes in behavior and achievement of learning objectives are obtained.[10] The use of learning media has many benefits including (1) increasing the quality of learning implementation, (2) facilitating students to learn independently, (3) familiarizing the use of technology, providing interactive learning presentations, (4) serving as a tool for students who experience learning difficulties, (5) streamlining learning time, (6) increasing student attention.[11] The use of learning media can also improve learning outcomes because innovative and creative media development can improve student learning outcomes which have an impact on improving learning outcomes.[12] In the era of rapid development of technology and information, the use of media has shifted to digital media.

Digital media is media that works with digital data. This media produces digital images that can be accessed and distributed using various digital devices.[13] The advantage of digital media is that it can be used as an alternative learning for teachers who want to package their learning to be more interesting and varied. The use of digital media can facilitate students to learn more widely, anywhere and anytime, and facilitate the delivery of material by teachers.[14]

Articulate Storyline is a type of software that can be developed with various forms of media and content that can be used as a presentation tool in conveying information.[15] Articulate storyline is one type of tool for making interactive learning multimedia or what is commonly called multimedia authoring tools. It is a tool for making multimedia because there are facilities in the form of combining several components consisting of text, images, graphics, sound, animation, and video.

The articulate storyline has a similar look and function to that of Ms. PowerPoint. Articulate Storyline has functional features that can be a place for makers, in this case teachers, to create various forms of teaching materials in the form of multimedia as interactive as possible.[16]

Articulate Storyline has many interesting features that make it superior, such as adding characters, quiz maker, URL links and buttons, and various ways of publishing,

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[10] Mustofa Abi Hamid and others, *Media Pembelajaran* (Yayasan Kita Menulis, 2020).

[11] Andrew Fernando Pakpahan and others, *Pengembangan Media Pembelajaran* (Yayasan Kita Menulis, 2020).

[12] HIUINSA Muhammad, FRUINSA Muhammad, and ..., 'Pengembangan Multimedia Pembelajaran Autoplay Dalam Meningkatkan Hasil Belajar Siswa Di MTs Kota Samarinda', *Journal.Uinsi.Ac.Id*, 04.01 (2021), 97–107 <http://journal.uinsi.ac.id/index.php/SAJIE/article/view/3929%0Ahttp://journal.uinsi.ac.id/index.php/SAJIE/article/download/3929/1559/>.

[13] Hamdan Husein Batubara, *Media Pembelajaran Digital* (PT Remaja Rosdakarya, 2021).

[14] Dewi Hendraningrat and Pujiyanti Fauziah, 'Media Pembelajaran Digital Untuk Stimulasi Motorik Halus Anak Usia Dini', *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 6.1 (2021), 58–72 <https://doi.org/10.31004/obsesi.v6i1.1205>.

[15] Rizky Yahya, dkk, "Pengembangan Perangkat Pembelajaran Flipped Classroom Bercirikan Mini-Project", dalam Jurnal Pendidikan Matematika Vol. 4 No. 1, 2020, h. 79

[16] Amiroh, Mahir Membuat Media Interaktif Articulate Storyline, (Yogyakarta: Pustaka Ananda Srva, 2020), h. 2

both online and offline.[17] Projects that have been completed and will be published can be web-based media (html5) or application files that can be accessed by devices such as laptops, computers, tablets, and smartphones. The aim is that it can be accessed anywhere, in any form, and by anyone. It is also one of the main objectives of technology-based learning/e-learning in order to enable users to learn independently and in terms of technology literacy.

Articulate Storyline offers several advantages that contribute to the success of the learning process. It is user-friendly, accessible to both experienced and inexperienced users, and allows for the integration of various media types, such as text, images, videos, and animations. The platform is audio-visual, enabling the creation of sounds and images directly within the software. It also offers features like quizzes, making the learning experience more interactive and helping engage students' attention.[18] For beginners, Articulate Storyline simplifies button navigation creation through its trigger feature, eliminating the need for complicated coding. [19] Its interface is similar to Microsoft PowerPoint, making it easy to learn for those already familiar with PowerPoint. Additionally, it supports interactive learning through game-type slides and provides flexible publication options, including desktop applications, web browsers, Android smartphones, and Learning Management Systems (LMS) like Moodle. With a relatively small built-in file capacity, it runs smoothly on smartphones, and there is a wealth of resources, tutorials, and documentation available to assist new users in creating and operating products with Articulate Storyline. [20]

3. Research Method

The type of research used in this study is Research and Development (R&D). This research follows the learning development model by Borg & Gall. The design of this development model presents ten stages in the learning design process. Below is the diagram of the Borg & Gall learning development mode:

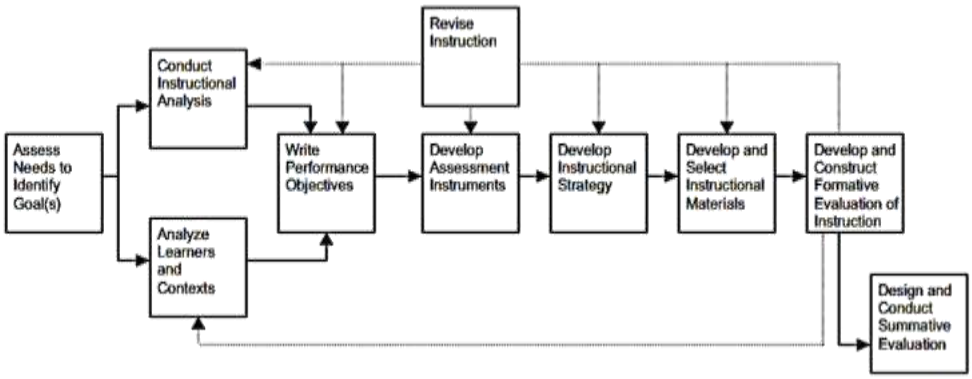

Figure 1: Borg & Gall Development Model Design [21]

[17] Rika Kurnia Sari & Nyoto Harjono, "Pengembangan Media Pembelajaran Interaktif Berbasis Articulate Storyline Tematik terhadap Minat Belajar Siswa Kelas 4 SD", dalam Jurnal Pedagogi dan Pembelajaran Vol. 4 No. 1, 2021, h. 124

[18] Made Sri Indriani, dkk, "Penggunaan Aplikasi Articulate Storyline dalam Pembelajaran Mandiri Teks Negosiasi", dalam Jurnal Pendidikan Bahasa dan Sastra Indonesia Vol. 1 No, 1, 2021, h. 28

[19] Rianto, "Pembelajaran Interaktif Berbasis *Articulate Storyline* 3", *dalam Jurnal Pendidikan Bahasa dan Literatur* Vol. 6 No. 1, 2020, h. 85

[20] Amiroh, "Kenapa Harus Articulate Storyline?", diakses melalui http://amiroh .web.id/kenapa-harus-articulate-storyline/ (Jogja, 2021).

[21] Nusa Putra, Research & Development, (Jakarta: PT Raja Grafindo Persada, 2015), h. 119

The steps are as follows: (1) Access needs to identify the goal, (2) Conduct Instructional analysis, (3) Analyze Learners and Contexts, (4) Writing Performance Objectives, (5) Develop assessment instruments, (6) Develop Instructional Strategy, (7) Develop and select instructional materials, (8) Design and conduct formative evaluation of instruction, (9) Revise Instruction, (10) Design and conduct summative evaluation.

a. Initial Situation Analysis Stage:

The procedures that need to be followed in the initial situation analysis stage are as follows:

Curriculum Review, the initial stage involves reviewing the content of the material to be included in the interactive learning multimedia. With the applicable curriculum, it is possible to determine the core competencies and essential competencies that must be included, as well as to define the theme in order to structure subtopics and sub-materials that are interconnected with the developed product. In this study, the material developed is based on the 2013 Curriculum.

Study on Motivation Theory. It aims to find out and bring up learning motivation in students, as well as find out how students towards PAI learning based on existing theories.

Review of Articulate Storyline Software. This study was conducted as an effort to introduce Articulate Storyline software to students, so they can first become familiar with and interested in the software. The goal is to ensure that the software can be easily applied, and that students do not feel burdened by the learning media that will be developed.

b. Development Stage Design of Articulate Storyline interactive learning multimedia

What is done in this step is as follows: Determination of essential competencies that students must achieve. The step at this stage is held in order to compile aspects of learning objectives, which include several essential competencies, to determine the content of learning materials and sub-materials to be developed and adjusted to the predetermined time allocation.

Determining the time allocation is an important stage to consider in order to create effective and efficient learning with the time available. Determining the time allocation aims to regulate the use and utilization of time in delivering PAI learning materials and sub-materials in interactive multimedia learning products.

Learning content development. The content of the learning material in the developed product must be arranged in accordance with the essential competencies that have been made previously. So that learning objectives can be synchronized and can be achieved by students. The content of this learning material is arranged in accordance with a series of objectives and essential competencies that students must achieve.

Development of Articulate Storyline interactive learning multimedia content: The development of Articulate Storyline interactive learning multimedia content is developed and synchronized with learning materials, student conditions, and the location or location where the research is held by combining various theories and learning materials.

Development of learning activities: The development of learning activities aims to activate students in class learning activities. With various types of learning activities that support them, it is hoped that the objectives and essential competencies that are compiled can be achieved.

c. Articulate Storyline Teaching Material Creation Stage:

According to Suardi, there are several procedures that users can follow when developing a product using Articulate Storyline Software. The steps include preparing a laptop/computer, installing Articulate Storyline software (which can be downloaded from the official website at https://articulate.com/p/downloads), and opening the software. Once opened, users can create a new project by clicking on "new slide," and the scene and slide blanks will be ready to be filled with various features. After completing the project, users can save their work by pressing the Ctrl + S keys or by clicking the save icon in the upper left corner, similar to other Microsoft products. To preview the project, users can click the preview icon on the Ribbon menu, and when satisfied, they can publish the project by pressing the Publish icon on the Ribbon menu.[22] Articulate Storyline offers several key features: the Timeline serves as a timer for the displayed objects; the Layer feature separates objects from each other; the Trigger feature gives commands or movements to the objects; and the Player feature contains various icons, including the menu, slide notes, glossary, resources, seek bar, navigation buttons, and other components that can be added around the slide.

Assessment stage of Articulate Storyline interactive learning multimedia

Interactive learning multimedia that has been made is then assessed by a team of experts, which is divided into material experts and media or learning design experts.

This step was taken to determine whether or not the media products developed by researchers already had a feasibility value when applied in PAI learning activities. Experts assess interactive learning multimedia; then, researchers make revisions based on input obtained through expert testing or validation until the final product of interactive learning multimedia is obtained from the development.

d. Trial Stage

There are several stages of a series of steps taken to test this learning media product, namely:

Product Trial Design

The product trial design is conducted with the aim of evaluating the level of attractiveness and effectiveness of the Articulate Storyline interactive learning multimedia products developed for students. The results will be obtained through testing, analysis, and trials carried out in several stages: the consultation stage, the expert team validation stage, and the direct trial stage with small, medium, and large groups. These stages can be described as follows:

In the Discussion Stage, the researcher reviews the developed interactive learning multimedia and provides input, direction, and suggestions for areas that need improvement. Based on this feedback, the developer revises and enhances the product. This stage ensures that the multimedia is refined according to the researcher's guidance and supervisor's input.

The Expert Validation Stage involves several key activities. First, material experts (PAI teachers) and media experts (Technology teachers and the School ICT Team) assess the developed interactive learning multimedia, offering input, criticism, and suggestions. These experts evaluate the content and media effectiveness, ensuring that the product meets educational standards and objectives.[23]

[22] Nurul Atsna Qonita, "Articulate Storyline: Teknologi Pembuat Media Pembalajaran Interaktif Mudah Dan Menarik-Update 2021", diakses melalui https://warstek.com /author/atsnaqonita/ (Semarang, 2021)

[23] Sugiono, Metode…, h. 302

Following this, the developer analyzes the assessment data and feedback received. Based on the input, the developer then revises the product, making improvements to the interactive media. This validation process, carried out by a group of experienced experts, aims to verify both the learning content and the effectiveness of the media. A questionnaire is used to gather expert opinions, and their suggestions are integrated into product development.

Assessment of the trial

The assessment of the trial in the development of interactive learning multimedia involved several parties, each contributing their expertise to ensure the quality and effectiveness of the product. The first party is the Material Expert, who holds a higher degree in education. This expert's role is to provide general and specific feedback on the learning content contained within the interactive multimedia. Their insights are crucial for ensuring that the material is accurate, relevant, and aligned with educational objectives.

The second party involved is the Media Expert, an individual with specialized knowledge in learning technology, design, and media. The media expert's responsibility is to evaluate the overall design and presentation of the interactive learning multimedia. They provide feedback on the visual and functional aspects of the media, ensuring that the product is not only engaging but also effective in delivering the intended learning experiences.

The third group involved in the assessment process is the Class Students, who participate in the trial at three different stages: small, medium, and large groups. The students are tested using a pre-test and post-test system. Data is collected through a questionnaire administered before and after the use of the product. The collected data is then analyzed using the One Sample T Test to identify any significant changes or improvements in the students' learning outcomes as a result of using the developed interactive multimedia.

e. Data Type

Data serves as the foundation for observations, research, or inquiries, presented in the form of numbers, symbols, words, or properties that describe a set of facts or information. However, data in its raw form still requires processing, organization, and analysis before it can be presented in a more complex and helpful manner for research purposes.[24]

Qualitative data in this study is obtained during the validation process by a team of experts. This data comes from the input and feedback provided by the expert team regarding the interactive learning multimedia being developed by the researcher. Additionally, during the pilot test, qualitative data is collected from direct assessments and feedback given by students, who evaluate the Articulate Storyline-based interactive learning multimedia products used in PAI (Pendidikan et al.) lessons.

Quantitative data, on the other hand, is represented in numerical values or statistical scores. This data is derived from the validation provided by both the expert team and the students. It includes the numerical ratings or statistics given to the development of the Articulate Storyline-based interactive learning multimedia in PAI learning. These quantitative values help in measuring the effectiveness and quality of multimedia products.

[24] Admin Jurnal Manajemen, "Pengertian Data Terlengkap: Fungsi, Jenis, Teknik Pengolahan, dll" Artikel Jurnal manajemen, diakses melalui https://jurnalmanajemen.com /pengertian-data/ pada 16 Januari 2022

f. Data Collection Instruments

Data collection used in the development of interactive learning multimedia is in the form of a questionnaire. This questionnaire is intended for the assessment subjects, namely the expert team and the students of SMAN Se-Kalimantan Timur. The purpose of using a questionnaire-type instrument is to obtain quantitative and qualitative data and test the feasibility of the product to be disseminated to students in the classroom. In addition, it is also tested before and after the action, or what is often called the Pre-test and Post-test, to see the difference in the results. The following is a table of variable grids and questionnaire indicators for teaching materials based on Articulate Storyline 3.

g. Data Analysis Technique

The data analysis technique used in this research is to explain all the input, suggestions, and criticisms given by the expert team and students contained in the questionnaire sheet. The data is qualitative, which is converted into a quantitative type based on a Likert-type scale. This scale has 4 levels that show the results of data stating whether it is valid or not and whether or not product revisions need to be made.

The percentage calculation can be observed in the use of the following formula:

$$p = \frac{\sum x}{\sum X_1} \times 100\%$$

Description: P is the Percentage of eligibility.

$\sum x$: he total score of the validator′s responses (actual value)

$\sum x_1$: The total score of the highest possible responses (expected value)

The decision criteria for the results of the presentation that has been calculated based on the Likert scale, has four kinds of criteria which will be explained in the table below.

Tabel 1. Criteria for the Validity Level of the Questionnaire

Percentage (%)	Level of Validity
80-100	Valid/No Revision
60-79	Fairly Valid/No Revision
40-59	Less Valid/Partial Revision
0-39	Invalid / Revision

Based on the criteria above, the Articulate Storyline interactive learning multimedia is declared valid and without revision, if it meets the score criteria of 80-100 of all elements contained in the expert team assessment questionnaire, both from the validation of media experts, material experts, and questionnaires by students. In this assessment, the interactive learning multimedia Articulate Storyline must meet the valid criteria so that it can be feasible to use in PAI learning activities in class. Therefore, the developer must carefully revise this teaching media in order to meet the validation criteria.

4. Finding and Discussion

Product Description of Interactive Learning Multimedia Based on Articulate Storyline

This research product was developed using Articulate Storyline Based Interactive Learning Multimedia Products. In contrast, the target users of this Articulate Storyline Interactive Learning Multimedia product are Class X students of State High Schools

(SMA) in Kalimantan. This interactive learning multimedia product is packaged in the form of an interactive Flash Disk (FD) that can be run on a Computer / Laptop.

The production process of Articulate Storyline-based Interactive Learning Multimedia is done using several software applications, namely Photoshop, Adobe Premiere, Microsoft Office, and Nitro Pro 10. The production process can run smoothly, quickly, and more organized because it is based on prototypes and storyboards that have been made before and the readiness of the necessary materials that are in accordance with the characteristics of the learners, namely students.

Before this product was tested for feasibility by material experts and media experts, the product was tested internally, namely testing the running of the program as a whole, and externally, namely testing it on several types of computers/laptops with various brands. This Articulate Storyline-Based Interactive Learning Multimedia product on the subject of Islamic Religious Education (PAI) contains a learning package for Islamic Religious Education (PAI) with three (3) primary materials, namely "***Live Beneficially by Dressing in Muslim Clothing", "Maialikat Always Takes Care of You" and "Hajj, Zakat and Waqf"***.

Results of Validation of the Level of Interest and Effectiveness of the Product

The product testing was carried out in two stages: the first, namely limited feasibility testing by material experts and media experts, and the second, namely field testing, which consisted of preliminary field testing, main field testing, and operational field testing. From the results of these trials, in general, five types of data were obtained, namely limited feasibility test data from material experts and media experts, preliminary field testing data, primary field testing data, and operational field testing data.

Limited feasibility test from material experts evaluates Interactive learning multimedia development results from learning aspects and material aspects. A limited feasibility test from media experts evaluates interactive learning multimedia from media aspects. The results of the limited feasibility test from material experts and media experts are used to revise the developed Interactive learning multimedia and measure whether the multimedia is suitable for use in field tests consisting of preliminary field testing, main field testing, and operational field testing.

The results of preliminary field testing are used for product improvement before being used for main field testing. The results of the main field testing, in addition to improving the product before it is used for operational field testing, are also used to determine the impact of using interactive learning multimedia on improving learning outcomes in mastery of Islamic Religious Education subjects. Operational field testing is used to measure the quality of interactive learning multimedia in Islamic Religious Education subjects.

Material Expert Assessment Data

The material expert in this research product is Agustina Pelitawati, M.Pd., a PAI material expert and PAI teacher at a state high school in East Kalimantan. The material expert's assessment of the developed interactive learning multimedia consists of two aspects, namely the learning aspect 3.48, including the good category, and the material aspect 3.8, including the good category. Both data were obtained through questionnaires filled out by material experts. In addition to the assessment, comments and suggestions were also given to improve the developed interactive learning multimedia. The revision suggestions given by the material expert to revise the Interactive learning multimedia product development results, namely: In the use of language, there are still confusing

sentences that need to be corrected for smooth learning; Giving color to words or sentences so that students become more enthusiastic in learning and avoid the density of writing on the display that seems uninteresting.

Media Expert Assessment Data

The Media Expert for this research is Prof. Dr. Sigit Purnama, M.Pd, a Professor of Learning Technology and a lecturer in Learning Technology at the State Islamic University (UIN) Sunan Kalijaga Yogyakarta. His assessment of the interactive learning multimedia development, based on media aspects, included display aspects with a score of 3.61 (categorized as good), presentation aspects with a score of 3.86 (good), and programming aspects with a score of 3.70 (good). These assessments were gathered through a questionnaire filled out by Prof. Sigit. In addition to the ratings, he provided several suggestions for improvement, including: (a) adjusting the text color to improve contrast against the background on some slides, (b) reducing irrelevant animations that are overly distracting, and (c) ensuring consistent background use throughout the material to help students focus on the content.

Student Response Data

Based on the results of the research conducted, it is known that the data on student responses in preliminary field testing on learning development involving 30 student respondents are in the media aspect 20.24% perfect, 41.67% good, 34.52% sufficient, and 3.57% less and 0% significantly less. In the material aspect, 22.50% is perfect, 40.83% good, 35.42% sufficient, 1.25% less, and 0% significantly less. In the learning aspect, 28.79% were perfect, 46.21% were good, 23.11% were fair, 1.89% were less, and 0% were abysmal. Data on student responses in main field testing are in the media aspect: 28.99% perfect, 38.66% good, 34.45% sufficient, 0.42% less, and 0% significantly less. Material aspects 21.08% perfect, 37.55% good, 36.10% sufficient, 2.35%, less 0% significantly less. The learning aspect is 31.55% perfect, 41.18% good, 24.06% sufficient, 3.21% less, and 0% significantly less. Data on student responses in operational field testing are in the learning aspect 34.23% perfect, 45.04% good, 19.81% sufficient, 9.09% less, and 0% significantly less. In the material aspect, 26% were perfect, 52% were good, 19.50% were fair, 2.50% were less, and 0% were abysmal. In the media aspect, 27.5% very good, 48.92% good, 20.35% sufficient, 3.12% less, and 0% significantly less.

Pretest and Posttest

To determine whether the use of the developed product has a positive impact on the expected learning outcomes. To find out this, students are given a pretest, pretest, and posttest to see if there is a significant development in student learning outcomes before and after using the product. Pretest and post-test scores were processed with the help of the Excel program and SPSS version 12 so that they could be processed more quickly. By looking at student scores on the posttest, the percentage of students who achieved learning completeness with a minimum score of "75" can be obtained. The pretest pretest and posttest data analyses can be described as follows:

Based on this data, it can be concluded that the impact of using Interactive learning multimedia on improving student learning outcomes in Islamic Religious Education subjects is in the "Very Good" category by looking at the percentage of students who reach learning completeness of 91.7%.

In general, to prove it statistically, a comparison was made between the results of the pre-test and post-test evaluations of students using the paired sample t-test with the help of SPSS.

The results of the SPSS analysis are presented in the following table:

Table 2. Paired Samples Test (Pre-test and Post-test Results)

		Paired Differences			
		Mean	Std. Deviation	Std. Error Mean	Co Inter Di
					Lowe
Pair 1 Pretest-Posttest		-7,800	2,397	,536	-8,92

Research Hypothesis:

H_0 : "there is no difference in students' ability before and after the program. Using interactive learning multimedia"

H_a : "there is a difference in students' ability before and after using interactive learning multimedia".

Based on the results of the SPSS analysis above, the Sig value can be seen. (2-tailed) = 0.000 (see table above), which means it is smaller than 0.05. thus, it can be concluded that H_0 is not accepted and H_a is accepted, so there is a significant difference. So statistically, it can be said that: "***there is a difference in students' abilities before and after using Interactive learning multimedia***".

5. Conclusion

Based on the results of the research conducted, it is known that the data on student responses in preliminary field testing on learning development involving 30 student respondents are in the media aspect 20.24% perfect, 41.67% good, 34.52% sufficient, and 3.57% less and 0% significantly less. In the material aspect, 22.50% is very good, 40.83% good, 35.42% sufficient, 1.25% less, and 0% significantly less. In the learning aspect, 28.79% were perfect, 46.21% were good, 23.11% were fair, 1.89% were less, and 0% were abysmal. Data on student responses in main field testing are in the media aspect: 28.99% perfect, 38.66% good, 34.45% sufficient, 0.42% less, and 0% significantly less. Material aspects 21.08% perfect, 37.55% good, 36.10% sufficient, 2.35%, less 0% significantly less. The learning aspect is 31.55% perfect, 41.18% good, 24.06% sufficient, 3.21% less, and 0% significantly less. Data on student responses in operational field testing are in the learning aspect: 34.23% perfect, 45.04% good, 19.81% sufficient, 9.09% less, and 0% significantly less. In the material aspect, 26% were perfect, 52% were good, 19.50% were fair, 2.50% were less, and 0% were abysmal. In the media aspect, 27.5% very good, 48.92% good, 20.35% sufficient, 3.12% less, and 0% significantly less.

Data on the aspects of motivation and benefits at the Preliminary Field Testing stage is 3.46 in the outstanding category, Main Field Testing is 3.43 in the very good category, and Operational Field Testing is 3.42 in the outstanding category. The analysis of learning outcomes is also carried out based on the results of the SPSS analysis above; it can be seen that the value of Sig. (2-tailed) = 0.000 (see table above), which means it

is smaller than 0.05. Thus, H0 is not accepted, and Ha is accepted, so there is a significant difference. So statistically, it can be said that: "*there is a difference in students' abilities before and after using Interactive learning multimedia*"

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