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DEVELOPING ANDROID APPLICATION ASSISTED BY ANDROMO FOR SOLAR SYSTEM LEARNING

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ABSTRAK

Pesatnya perkembangan teknologi informasi salah satunya dipengaruhi oleh perkembangan teknologi dan *handphone* yang semakin maju, sehingga dapat dikatakan perkembangan keduanya sangatlah erat dan berjalan beriringan. Multimedia merupakan gabungan beberapa komponen seperti teks, audio, video, animasi, dan gambar yang berguna untuk menunjang proses pembelajaran, karena visualisasi dalam bentuk animasi sangat diperlukan untuk materi yang disampaikan oleh guru. Tujuan dari penelitian ini adalah mengembangkan produk aplikasi android dan untuk mengetahui penilaian terhadap produk yang telah dihasilkan oleh peneliti dan peneliti dapat mengetahui respon produk kepada siswa. Hasil penilaian yang dilakukan responden terhadap produk yang dihasilkan peneliti adalah produk yang dihasilkan sangat baik, hal ini dibuktikan dengan total skor rata-rata sebesar 20 dengan keterangan produk yang dihasilkan sangat baik dimana produk tersebut dinilai dari beberapa aspek, termasuk kemudahan penggunaan, presentasi, keterbacaan dan peran multimedia.

Kata kunci: Multimedia, Andromo, IPA

ABSTRACT

The rapid advancement of information technology, heavily influenced by the ever-advancing mobile phone technology, has led to a closely intertwined development of the two. Multimedia, comprising components such as text, audio, video, animation, and images, plays a vital role in supporting the learning process. This is especially important because visual aids, in the form of animations, are essential for conveying instructional material. The primary aim of this study is to evaluate the products created by the researchers. The significance of this research lies in enabling the researchers to identify areas for improvement in the multimedia products they have developed. The assessment conducted by respondents on the researcher-produced products yielded highly positive results, with an average score of 20. These results confirm the products' excellence, with evaluations encompassing factors like user-friendliness, presentation, readability, and the multimedia's overall contribution to the learning experience.

keywords, Multimedia, Andromo, IPA

I. INTRODUCTION

Technology and knowledge are undergoing remarkably rapid and profound advancements. This technological and knowledge-based evolution impacts all aspects of life, most notably education (1) and the 21st century has ushered in significant changes in both technology and the realm of education, leading to an accelerated synergy between the two (2). The surge in technological innovations has substantially increased the utilization of digital devices, which now play pivotal roles in formal and informal education, as well as in the professional sphere (3).

Technological progress unfolds swiftly across diverse domains, including the field of education. Learning processes in all their various forms have become notably more accessible (4). Digital technology is progressively finding its place in the educational sector, functioning as both an information resource for accessing knowledge and a learning tool that supports educational

activities and assignments (5). This swift technological advancement has given rise to user-friendly tools and applications that serve as effective educational media (6). This educational technology evolution empowers educators and students to swiftly access a wealth of knowledge via internet networks (7).

Learning is an intricate and lifelong process, with its occurrence stemming from the dynamic interaction between individuals and their environment (8). An evident indicator of learning manifests in changes in behavior, knowledge, and skills. This transformation may result from direct or indirect experiences (9). Indirect experiences necessitate the involvement of an intermediary or a medium to convey information to the recipient, and in this context, multimedia serves as a crucial mediator (10).

Multimedia designed for science education, particularly for subjects like the solar system, can serve as an interactive learning tool (10). By facilitating user control in computer-based learning, multimedia fosters interaction, making the learning process engaging and enjoyable (11). This multimedia capitalizes on computer technology to deliver learning content in textual, audio, and visual formats (10).

Notably, multimedia's role extends beyond content delivery. It can kindle learning motivation, promote a comprehensive understanding of the subject matter, foster direct engagement with the environment, and serve as a valuable educational resource (12). According to Qistina science education should be an investigative endeavor rather than a rote memorization of concepts. This approach instills in students the ability to formulate problems, draw conclusions, and cultivate critical thinking skills. In summary, science education places a strong emphasis on critical thinking, enabling students to recall, recognize, and apply their knowledge scientifically (13).

A preliminary study conducted at SMPIT Ibnu Qoyyim Pekanbaru revealed that teachers predominantly employ the lecture method when delivering subject material to students. Consequently, students often find themselves memorizing concepts without a comprehensive understanding, particularly with respect to the processes and characteristics of the subject matter. Considering that the millennial generation is already well-acquainted with Android, this presents a valuable opportunity to seamlessly integrate lifestyle with innovative and creative learning content.

Andromo, a user-friendly platform, simplifies the process for educators to create Android applications without requiring coding expertise. This resource empowers teachers to design Android applications that align with their teaching objectives (14). Thus, there is a pressing need to harness the capabilities of Andromo for developing Android applications that enhance the learning experience for solar system material.

II. METHODS

This research is classified as a Research and Development (R&D) endeavor with the primary goal of creating multimedia resources tailored for students at Ibnu Qoyyim IT Middle School. The Plomp model has been selected as the guiding framework for this research, as it has gained significant recognition among researchers in the field of research and development (R&D). The self-planned development model comprises three distinct stages, which encompass: 1) Preliminary Analysis, akin to preliminary research, 2) the Design Stage, which corresponds to the prototyping phase, and 3) the Evaluation Stage, mirroring the assessment phase (15).

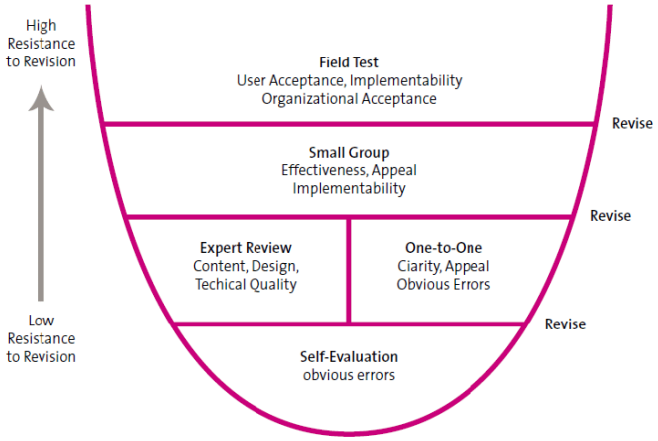

Figure 1. Stages Development Plomp

The subject of this study is Ibnu Qoyyim IT Middle School. The research methodology employed a combination of interviews and student questionnaires. The primary outcome of this research is the development of an interactive multimedia learning tool designed for the 7th-grade solar system science curriculum during the odd semester. This multimedia resource serves the dual purpose of assisting teachers in delivering lesson content effectively and enhancing students' comprehension of the subject matter. The researchers are optimistic that this multimedia tool will contribute to a more seamless understanding of the material among the students.

Table 1. Questionnaire response student

Aspect Evaluation	Number of Items
Convenience in use	3
Presentation	5
Legibility	4
The role of multimedia	6

Descriptor the results of the respondent's assessment, namely with a total mean score of 0 (very not good), < 5 (not good), < 10 (fairly good), < 15 (good), and 20 > (very good).

III. RESULTS AND DISCUSSION

Preliminary Analysis (Preliminary Research)

In the initial stages, an introduction and curriculum analysis were conducted. The analysis involved the careful selection of appropriate study materials that align with the curriculum, syllabus, knowledge standards (KD), indicators, and learning objectives. Consequently, the researchers decided to focus on the topic of the solar system, which was developed into an Andromo Android application. This decision stemmed from the realization that the complex nature of solar system-related content could pose a challenge for students if it were solely dependent on textbooks or rote memorization. Therefore, by utilizing interactive multimedia in solar system learning, the intention is to make the learning process more engaging and comprehensible for students.

Design stage (*prototyping phase*)

In the initial stages of this process, the planning for the development of multimedia, specifically the Android application utilizing Andromo, focused on the solar system material. The tools and resources employed for this purpose included smartphones or PCs, YouTube links, QR codes, middle school modules, and textbooks on solar system content.

The subsequent steps involved in creating learning multimedia through the Andromo application are as follows: The first essential step is to access the Andromo website by logging in via Google. Once logged in, the Andromo interface will be displayed, and the next action is to click on "Easy

Start."

Figure 1. Home display

Then click project, create a new project and a screen appears to type the name of the application.

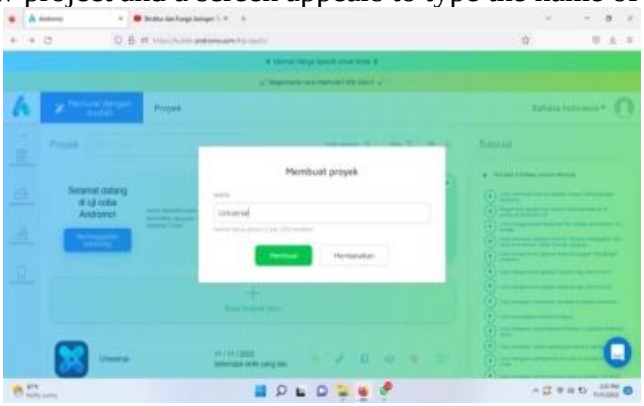

Figure 2. Appearance Project

Click settings and select the Android icon, then click browse image to change the application icon as desired.

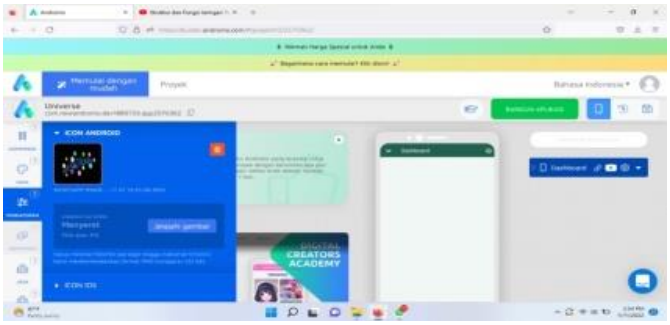

Figure 3. Icon Display

Click the dashboard and change the dashboard name to the main display/main menu as desired. Click style and select the activity appearance to change the background.

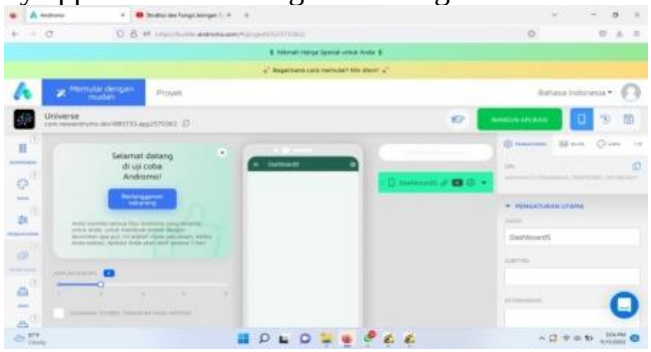

Figure 4. Appearance Change background

Click components, select popular and click custom page to add a new page view. Type as you wish, for example material, content, questions, quizzes, etc.

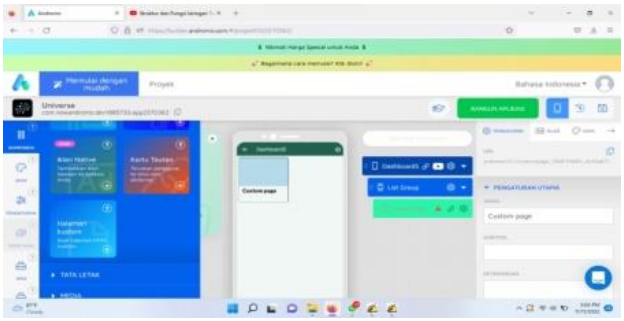

Figure 5. Appearance filling contents

Click style and select dashboard view to resize the dashboard view as desired. Select the activity appearance to change the page display background.

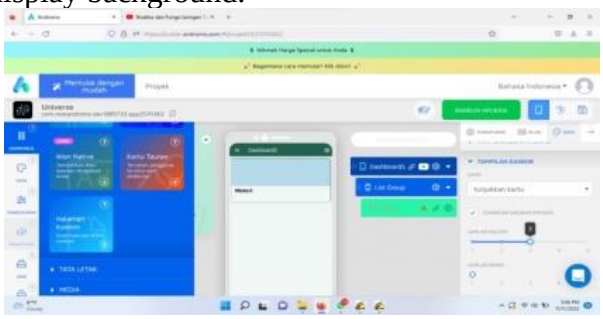

Figure 6. Displaying dashboard

If you want to add YouTube, click components, select media and click YouTube. Then enter the desired YouTube link.

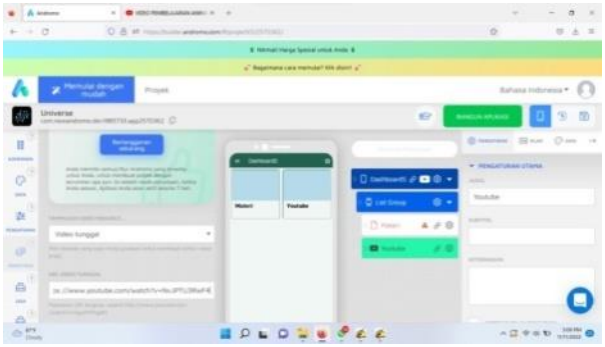

Figure 7. Add youtube inside _ application

Finally, click the build column to create the application and wait a few moments to complete the application, and later it will be able to be installed on Android via the application file that has been sent to WhatsApp.

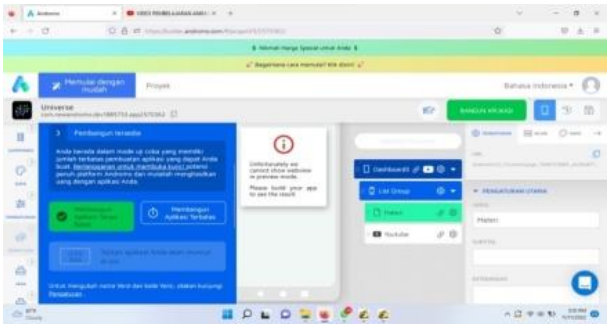

Figure 8. Covert application process become Android App

To navigate and utilize the Andromo application effectively, you should follow these steps:

1. Start by opening the downloaded application.
2. Next, choose the specific section or feature provided within the application. For instance, you can explore the theory page, simulation videos, quizzes, and more.
3. Enjoy the diverse range of features and resources available in the application to enhance your learning experience.

Evaluation phase (*assessment phase*)

In the subsequent stages, the existing application was subjected to effectiveness testing among students. Based on the implementation of multimedia science learning, specifically focused on solar system material, conducted by researchers at SMPIT Ibnu Qoyyim Pekanbaru, the responses from eighth-grade students were gathered through interviews. The student reactions to the application, which encompasses educational content, YouTube links, and interactive questions, were notably positive and engrossing.

Observing the students' enthusiasm when engaging with the application, as well as their inquisitiveness about its features, was quite telling. According to the students, the application significantly streamlined the learning process and made it more engaging compared to conventional book-based learning methods. Nonetheless, the application presented certain challenges when used within the school environment due to restrictions on students' cellphone use.

The application's effectiveness as an educational medium becomes evident through its visually appealing interface, which serves to further pique students' interest in the learning material, making it a valuable asset in the educational process.

Figure 9. Implement Multimedia individually

In the image presented above, you can observe the individual deployment of multimedia for the study of solar system material during the seventh-grade odd semester at SMP IT Ibnu Qoyyim. To assess the efficacy of this application, the researchers conducted a direct evaluation through a questionnaire administered using a Google Form, targeting respondents at Sultan Syarif Kasim State Islamic University, Riau. Here is a breakdown of the participant data from this comprehensive multimedia evaluation.

Table 2. Results Implementation Application

Variable	Category	Frequency	Percentage
Gender	Man	2	66.67%
	Woman	1	33.33%
Already Observing Multimedia	Already	3	100%
	Not yet	0	0%
Tools for accessing multimedia	Cellphone	3	100%
	Laptops	0	0%
Institution	UIN Suska Riau	3	100%

The multimedia evaluation process involves the direct distribution of questionnaires to respondents for assessing specific aspects. The following sections outline the evaluation criteria for this multimedia assessment.

After evaluating the questionnaire's validity, the subsequent sections present the assessment results as provided by the respondents.

Table 3. Questionnaire response student

Aspect Evaluation	Total Value	Mean
Convenience in use	15	5
Presentation	15	5
Legibility	15	5
The role of multimedia	15	5
Total score	60	20

The table presents the assessment results from respondents, categorized into the following score ranges: 0 (very poor), < 5 (poor), < 10 (fair), < 15 (good), and 20 > (excellent).

The product evaluation encompasses four key aspects: ease of use, presentation, readability, and the role of multimedia. Three students participated in the assessment, and the product evaluation was conducted through direct interviews. The respondents consisted of two male students and one female student, all of whom accessed the multimedia content via their mobile devices. They were students from Sultan Syarif Kasim State Islamic University, Riau. The assessment yielded overwhelmingly positive results, with the total mean score exceeding 20, indicating that the products created by the researchers were exceptionally well-received.

I V. CONCLUSION

4.1 Conclusion

Based on the conducted research, it can be conclusively stated that the multimedia science learning application focused on solar system material is not only effective but also valid for integration into the science learning process. This conclusion is reinforced by the overwhelmingly positive feedback obtained from the respondents who assessed the researcher-developed product. The high total mean score exceeding 20 is a testament to the excellent quality and effectiveness of the product, highlighting its potential as a valuable addition to science education.

4.2 Suggestions

Suggestions for the researcher for the subsequent stages involve conducting a field test. Implement the multimedia science learning application in real classroom settings. This will provide a more comprehensive understanding of its practicality and effectiveness when used by a larger group of students. Observing its performance in real-time will offer valuable insights into potential areas for improvement.

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