Development of the Android Application "SAJ (Sinau Aksara Jawa)" as Javanese Script Learning Media Using the Addie Model

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Abstract : This research aims to develop an *Android*-based instructional media for Javanese language lessons, specifically focusing on Javanese script materials. Using this instructional media, it is anticipated that students can learn more effectively and efficiently, as they can research anytime and anywhere. The model utilized in this development is the ADDIE development model, consisting of five steps: (1) Analysis, (2) Design, (3) Development, (4) Implementation, and (5) Evaluation. The results of this developmental research manifest in an Android-based Javanese script learning application named "SAJ" (Sinau Aksara Jawa). A user guide book is provided alongside to facilitate students in utilizing it as a supplementary teaching material for script learning. Throughout the developmental process, in order to achieve a product that aligns with the objectives, validation is continuously conducted in stages by content experts, design experts, media experts, and student responses. The validation results from content experts obtained a total score of 67, with a percentage of 94% falling into the "highly suitable" category. From design experts, a total score of 49 was achieved, with a percentage of 94% categorized as "highly suitable." Meanwhile, media experts obtained a score of 67, with a percentage of 93% classified as "highly suitable." The testing was conducted twice; the first time with a small group resulting in a percentage of 95.7% falling under the "highly suitable" category. The field test yielded a percentage of 96.9% also categorized as "highly suitable." Therefore, the developed product can be utilized by students as a Javanese script instructional media.
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Keywords : Android application, instructional media, Javanese script.

Introduction

Indonesia is a country rich in cultural diversity. According to the 2010 Census by the Central Statistics Agency (BPS), Indonesia has 1,340 ethnic groups, with the Javanese ethnic group constituting 41 percent of the total population[1]. There are 718

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[1] BPS-Statistics Indonesia, "Statistical Indonesia Population 2020," *BPS-Statistics Indonesia, Jakarta* (2020).

Mother Tongues that have been identified[2]. The Mother Tongue is the first language an individual acquires and becomes the language of communication in their environment. With 718 mother tongues, Indonesia is ranked second among nations with linguistic diversity. This information is quoted from the World Economic Forum and Ethnologue's 2016 rankings[3]. The Javanese language, specifically the Javanese script (Aksara Jawa), is gradually being abandoned by adolescents. Writing in the Javanese script is one of the subjects that is largely disliked by many students in schools [4]. In light of this circumstance, the Governor of East Java issued Governor Regulation of East Java Number 19 of 2014 on April 3, 2014, concerning Local Language Subjects as Mandatory Local Content in Schools/Madrasahs. The regulation aims to be utilized to instill values of aesthetic education, ethics, morality, spirituality, and character, as articulated in Article 3. The issuance of these regulations aims to preserve, develop, and promote regional languages and literature, as stated in Article 4. Javanese language lessons, particularly Javanese script material, are considered challenging for students due to their intricate writing system and pronunciation differences from Indonesian. Additionally, the limited 2 hours per week is deemed insufficient as it needs to be divided among various other subjects.

The rapid development of technology has significant implications for the field of education. One of the impacts of technological advancement in education is the increasing proliferation of Android-based instructional media that students can utilize to enhance their understanding of knowledge-enhancing subjects. Additionally, technological progress has negative implications, such as the frequent use of smartphones, particularly among school children, leading to their preference for smartphone-based media over direct learning through hardcopy books or school materials. This phenomenon demonstrates that technology, particularly smartphones, plays a pivotal role in influencing users. This phenomenon underscores the significant role of technology, especially smartphones or gadgets, in influencing users [5].

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[2] Ahmad Kamal Arifin Mohd Rus and Sharifah Darmia binti Sharif Adam, "AKTA BAHASA KEBANGSAAN 1967: ISU, REAKSI DAN CABARAN," *SEJARAH* 16, no. 16 (2008): 123–147, http://dx.doi.org/10.22452/sejarah.vol16no16.7.

[3] Widya Rizky Pratiwi, "Interactional Language Use in EFL Classroom: Exploring the Phenomena of Mother Tongue in Indonesia," *TEFLIN Journal* (2018); Erna Andriyanti, "Language Shift among Javanese Youth and Their Perception of Local and National Identities," *GEMA Online Journal of Language Studies* (2019); Md. Yudyantara Risadi and I Ketut Ardiasa, "The Use of Mother Tongue for Education Field in Multilingual Society, Bali-Indonesia," *International Journal of …* (2020).

[4] Bhismo Aji Wibowo, "PENINGKATAN KETERAMPILAN MENULIS AKSARA JAWA MELALUI QUANTUM TEACHING THE IMPROVEMENT OF JAVANESE ALPHABET WRITING SKILLS THROUGH QUANTUM TEACHING," *Jurnal Pendidikan Guru Sekolah Dasar* (2018).

[5] Indah Puji Astuti, Ega Feri Romawati, and Ida Widaningrum, "Rancang Bangun Aplikasi Mobile Pengenalan Huruf Jawa (Aksara Jawa) Berbasis Android," *Jurnal CoSciTech (Computer Science and Information Technology)* 1, no. 2 (2020): 93–100.

Education must produce an excellent generation capable of competing in the fourth industrial revolution era[6]. In teaching, just as teachers should stay updated with the current developments, they should also create breakthroughs to embrace the era of the fourth industrial revolution. Teaching should become more engaging by leveraging technological advancements.

Instructional media is an integral part of the learning system. Since it is a component, the learning process will not achieve its maximum potential or yield favorable outcomes if instructional media is not involved. Instructional media is a tool used to convey messages and stimulate cognitive and affective aspects of learners to foster their learning motivation[7]. According to Sanaky as cited in (Lestari et al., 2018), instructional media is a channel used to convey notes, data, or lesson materials to note acceptors or learners. Instructional media is crucial in aiding learners to acquire new concepts, skills, and competencies.

Using instructional media within the classroom greatly aids teachers in cultivating students' learning interests. Using instructional media, students are assisted in comprehending the provided learning materials. In (Hidayat et al., 2019), it is noted that using tools in teaching can enhance students' attention and motivation while influencing their psychological state. Providing suitable instructional tools can create a more engaging learning atmosphere. Physical tools can convey messages and stimulate learners to engage in learning, serving as intermediaries for conveying information in the learning process.

In this research, the author will develop an Android-based Javanese script learning application that will serve as a more modern, innovative, and up-to-date learning media, thus dispelling the notion that learning Javanese script is dull. This application is named SAJ, an acronym derived from "Sinau Aksara Jawa," which translates to "Learning Javanese Script."

Methods

The type of research utilized in this research is Research and Development (R&D). According to Sugiyono[8] the Research and Development method, subsequently abbreviated as R&D, is employed to create a specific product and assess its effectiveness of that product. This developmental research employs the ADDIE model, which comprises five stages: Analysis, Design, Development, Implementation, and Evaluation.

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[6] Meria Ultra Gusteti et al., "The Development of 3D Animated Video for Mathematics Learning in Elementary Schools," *Journal of Physics: Conference Series* 1940, no. 1 (2021): 1–7; T. Gayatri, H. Soegiyanto, and P. Rintayati, "Development of Contextual Teaching Learning-Based Audio Visual Adobe Flash Media to Improve Critical Thinking Ability of Geography Learning at Senior High School," in *IOP Conference Series: Earth and Environmental Science*, 2018.

[7] Gayatri, Soegiyanto, and Rintayati, "Development of Contextual Teaching Learning-Based Audio Visual Adobe Flash Media to Improve Critical Thinking Ability of Geography Learning at Senior High School."

[8] Sugiyono, *Metode Penelitian Kunatitatif Kualitatif Dan R&D* (bandung: Alfabeta, 2008).

The field trial of the product is carried out with a different number of respondents compared to the small group trial. This trial is conducted directly with a larger subject group than the small group trial. After conducting the trial based on established procedures, the author identifies the strengths and weaknesses of the product tested, which will guide future revisions.

The researcher then conducted a small group test with a limited number of students, wherein the questionnaire on user responses to the Android-based instructional media application was distributed to the students. After collecting all questionnaire data, the researcher evaluated the questionnaire. The evaluation was conducted to determine the students' responses regarding the suitability of the developed Android-based instructional media application. Subsequently, a field test was conducted with a larger group of respondents than the small group test. The user response questionnaires were evaluated using the Likert scale.

The obtained data is subsequently analyzed. The data analysis technique in this research involves describing all opinions, suggestions, and feedback received from the validators through critique and suggestion sheets. The questionnaire data constitutes qualitative information that is quantified using a four-level Likert Scale, and then analyzed through calculating the percentage score of each item in every answer to each question on the questionnaire.

$$P = \frac{X}{\sum xi} \text{ x } 100\%$$

Description:
P = The sought-after score
X = Total number of respondent answers across all points
$\sum xi$ = Total ideal score in points
Product suitability criteria

Percentage Scale (%)	Level of Suitability/Validity
85,01 – 100,00	Highly suitable, no revisions needed.
70,01 – 85,00	Suitable, and usable but requires minor revisions.
50.01 – 70,00	Less suitable, and usable but requires significant revisions.
01,00 – 50,00	Not suitable, should not be used.

Result and Discussion

The product resulting from this developmental research is an Android-based Javanese script instructional media. This instructional media product is created and designed by the researchers, aiming to serve as a tool for teachers to convey Javanese script material and as a self-learning resource for students, accessible anywhere and anytime.

The development of this instructional media utilizes the ADDIE instructional design model. The ADDIE model comprises five stages: Analysis, Design, Development, Implementation, and Evaluation.

A. Expert Validity Test

Validation testing is utilized to assess the developed application's suitability. This validity testing is carried out by subject matter experts, design expert, and media expert.

1. Subject Matter Expert Test

The validation conducted by the subject matter expert involves collecting suggestions and opinions to revise the developed Android-based Javanese script instructional media as follows:

No.	Aspect	Statement	Assessment Scale
1.		The presented material aligns with the Competency Standards (KI and KD) of the Javanese language subject, particularly in Javanese script materials.	4
2.	Relevance of the Material	The presented material corresponds to the Javanese language subject, particularly Javanese script materials.	4
3.		The presented material aligns with the learning objectives of the Javanese language subject, particularly in Javanese script materials.	4
4.		The presented material adapts to the curriculum.	4

The validation results for the relevance of the material by the subject matter expert show a total score of 16 with a feasibility percentage of 100%, indicating high suitability.

No.	Aspect	Statement	Assessment Scale

No.	Aspect	Statement	Assessment Scale
1.		Clarity of delivery and accuracy of the content.	4
2.		The presented material is organized engagingly.	4
3.		Comprehensive coverage of the presented material.	3
4.	Presentation of Material	The presented material is current and accurate.	4
5.		The presented material is arranged coherently.	4
6.		Audio presentation serves as a means to enhance student comprehension as a learning supplement.	3
7.		Supporting examples that reinforce the content are presented clearly.	4

The validation results for the presentation of the material show a total score of 26 with a feasibility percentage of 92%, indicating high suitability.

No.	Aspect	Statement	Assessment Scale
1.		The level of difficulty of the formulated questions varies.	3
2	Self-Practice and Grammar Exercises	The alignment of practice questions with the content of the material.	4
3.		The terms used are accurate and appropriate.	3
4.		The language used is easily understandable by students.	4

The validation results for self-practice and grammar exercises show a total score of 26 with a feasibility percentage of 87.5%, indicating high suitability.

No.	Aspect	Statement	Assessment Scale
1.	Impact on Learning Strategies	The instructional media assists students in learning Javanese script materials.	4
2.		The instructional media facilitates students in applying the concepts of the subject matter.	4

		The instructional media supports students in independently learning Javanese script.	4

3.

The validation results for self-practice and grammar exercises show a total score of 26 with a feasibility percentage of 100%, indicating high suitability..

2. Design Expert Test

The validation conducted by the design expert involves gathering data related to the design of the developed application. The validation results by the design expert are as follows:

No	Statement	Statement	Assessment Scale
1	General Appearance	Media design is aligned with Javanese script materials.	4
		Media design aligns with the concept of Javanese script learning.	3
		Media design is visually appealing.	4
		Media design presents appropriate Javanese script sizes.	4
		Media design maintains a non-dull appearance.	3
		Media design incorporates suitable color combinations.	4

The assessment results regarding general appearance obtained a total score of 22 with a percentage of 91.6%, indicating high suitability.

No	Statement	Statement	Assessment Scale
2	Special Appearance	Selection of colors in the media.	4
		Selection of unique media.	4
		Incorporating real-life integration.	4

The assessment results regarding specific appearance obtained a total score of 12 with a percentage of 100%, indicating high suitability.

No	Statement	Statement	Assessment Scale
3	Media Presentation	Attractive and portable media design.	4
		Provided with a title or media description.	4
		Includes instructions for media usage and maintenance.	3

| | | The media presentation is capable of fostering students' learning interest. | 4 |

The assessment results regarding media presentation obtained a total score of 15 with a percentage of 93.7%, indicating high suitability.

3. Media Expert Test

The validation conducted by the design expert involves gathering data related to the media elements. The validation results by the media expert are as follows:

No.	Aspect	Statement	Assessment scale
1.		The instructional media can be operated easily.	4
2.	Ease Usage and Navigation	The media can be installed easily.	4
3.		The developed media can be shared (downloaded) easily.	4
4.		Navigation is in accordance with the designated functions.	4
5.		The application can be operated smoothly.	4

The assessment results regarding ease of use and navigation obtained a total score of 20 with a percentage of 100%, indicating high suitability.

No.	Aspect	Statement	Assessment Scale
1.		The attractiveness of the instructional media design.	3
2.		The neatness of the menu layout in the media.	4
3.	Visual Presentation	Neatness of text, images, and presented content.	3
4.		Appealing choice of colors used.	4
5.		Selection of font type used.	4
6.		Text is legible.	4
7.		Appropriate balance of the proportions of used images.	3

The assessment results regarding visual appearance obtained a score of 25 with a percentage of 89%, indicating high suitability.

No.	Aspect	Statement	Assessment scale
1.		The responsiveness of the navigation buttons when touched.	4
2.	Media Integration	Presentation of images that support the content.	4
3.		Presentation of audio that supports the content.	3

The assessment results regarding media integration obtained a total score of 11 with a percentage of 91%, indicating high suitability.

No.	Aspect	Statement	Assessment scale
1.		The media can stimulate students' curiosity.	4
2.	Benefits of the Media	The media can assist students in learning.	4
3.		The media can be used anywhere and anytime (flexible).	3

The assessment results regarding the benefits of the media obtained a total score of 11 with a percentage of 91%, indicating high suitability.

B. Group Test
   1. Small group test
      After the product was declared valid based on the validation results by experts and revisions were made according to their suggestions, the next step involved conducting a product trial activity with male and female students of SMA Negeri 1 Sukodadi, involving 5 students. This trial activity aims to determine whether the developed product is suitable for use in the learning process.
      Based on the results of the small group test, the developed product, Android-based Javanese script instructional media, received a positive response from students. As a result, the total score obtained was 383 with a percentage of 95.7%, categorizing it as highly suitable.
   2. Field Test
      After conducting a small group test and implementing several revisions, the subsequent step involved field testing the product with male and female students of SMA Negeri 1 Sukodadi, with a participation of 30 students. This

trial activity aimed to ascertain the feasibility of the developed product for use in the learning process.

Based on the field test results, the developed product in the form of Android-based Javanese script instructional media received a positive response from students, yielding a total score of 2326 with a percentage of 96.9%, categorizing it as highly suitable.

CONCLUSION

This research and development were carried out using the ADDIE model, which consists of *analysis, design, development, implementation, and evaluation phases.* The resulting product is an *Android-based Javanese script* instructional media developed using the SAC (Smart Apps Creator) for the Javanese language subject, specifically focusing on Javanese script materials. Consequently, the researcher can draw the following conclusions:

Conclusion:

1. The Android-based Javanese script instructional media developed using the ADDIE model has been validated by three validators: subject matter experts, design experts, and media experts, yielding highly suitable results. This indicates that, according to the validators, this media can be utilized.

2. The developed instructional media underwent testing with a small group, resulting in a score of 95.7%. Meanwhile, the field test scored 96.9%, signifying that the developed instructional media is highly appropriate.

3. Based on the validation outcomes and the results from the small group and field testing, it can be concluded that the developed instructional media is highly suitable and can be employed by students as a Javanese script learning tool.

Suggestion

After testing the product development and drawing several conclusions as stated earlier, the following suggestions can be put forth:

1. Teachers continue to innovate to develop technology-based learning media, aiming to create more diverse and engaging instructional materials. Diversified media will enhance students' learning outcomes.

2. The results of this development can be used as considerations for the school principal, who serves as the institution's leader, to guide and motivate each teacher in developing instructional materials.

3. As educational institutions, schools should provide a platform of facilities and resources for teachers to self-train in developing instructional materials.

4. This developmental research was conducted to generate a product and assess its feasibility level. For subsequent researchers, it provides the opportunity to

enhance the media's development more innovatively, thus enabling its utilization by a broader audience.

5. The outcomes of this development can be utilized as initial reflective material for the subsequent development of instructional materials in the following subjects.

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