Development of Android-Based Construction Alphabet Learning Media to Improve Reading Literacy and Digital Literacy at SDN 23 Batara, Palopo City

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ABSTRACT

The development of information and communication technology in the revolutionary era 4.0 has resulted in people being accustomed to using Android as a product of information and communication technology developments. Developments in technology and communication have had an impact on all fields, especially in the field of education. The formulation of the problem in this study is to test the feasibility of the media being developed. The purpose of this study is to carry out feasibility tests through validity tests and practicality tests of the media being developed. The research method used is the Research And Development (R ND) research method with the 4D model (Define, Design, Development and Dissemination). The analysis technique used is validity test, practicality test. The results of the validity test of the construction alphabet media obtained from the three validators were 97.5% with a very high validity category. The results of the practicality test of construction alphabet media through a student response questionnaire obtained an average class value of 3.7 in the very high category. Based on the results of the validity test and media practicality test, it shows that the construction alphabet media is suitable for use in elementary school students at SDN 23 Batara, Palopo City.

Keywords: [Construction Alphabet Learning Media, Reading Literacy, and Digital Literacy]

INTRODUCTION

The development of information and communication technology in the 4.0 revolution era has resulted in people getting used to the use of Android as a product of the development of information and communication technology. Developments in technology and communication affect all fields, especially in the field of education. According to Hadisi (2015), Pratama et al (2017), and Gumilar, et al (2022) the development of technology and communication is very beneficial for the world of education, both for teachers and for students. One of the benefits of the development of information and communication technology received by teachers and students is the use of Android. Android can be used as a medium and learning resource for teachers and students

The use of Android-based learning media is an example of using technology in education. According to Satria (2020), Purwanti, et al (2021), Dewi and Nugraha (2015) learning media can be understood as something that can convey or channel messages from conducive sources where the recipient can carry out the learning process efficiently and effectively. Android-based media is learning media using an Android feature. Learning media using Android features will provide an attractive learning media design and bind a

student's interest in using media. Learning by using Android-based media will increase students' interest in participating in learning, especially learning to read.

Minimum Competency Assessment (AKM) is an assessment of basic competencies or abilities that is carried out on students so that they are able to develop and apply them in everyday life. According to Nugraga and Imawati (2021) the Minimum Competency Assessment (AKM) is a national assessment instrument for students based on two basic abilities, namely reading literacy and digital literacy.

Reading literacy according to the Big Indonesian Dictionary (KBBI) literacy has three meanings, namely (1) the ability to write and read (2) knowledge or skills in certain fields or activities and (3) the ability to process information and knowledge to be applied in everyday life. One of the causes of very low reading literacy in elementary schools is the lack of interest and interest in reading among students. Another cause is that there are some students who cannot read which is caused by a lack of students' understanding of the alphabet. Students' knowledge of the alphabet in elementary school is only limited to memorization, but they do not understand and recognize the letters. There are various kinds of media that can help learn the alphabet. The types of alphabet learning media are alphabet card media, game-based alphabet and alphabet multisensory media. The alphabet can also be constructed so that meaningful learning occurs for students. The constructed alphabet letters will be developed in an android-based construction alphabet media.

Android-based construction alphabet media that will be developed can improve reading literacy and digital literacy. The use of android-based construction alphabet media can also develop students' knowledge in the digital field. The development of students' knowledge in the digital field can also develop students' interest in learning. In line with the stages of cognitive development and learning tendencies of elementary school age children, teachers are required to design

learning that is interesting, fun and meaningful by utilizing the environment as a learning resource so as to achieve the goals to be achieved. Learning materials and media are one of the learning tools that must be prepared by the teacher. The media used must be in accordance with the needs and material to be presented.

The use of Android is no stranger to children. It has become a trend and a tool to eliminate child boredom, such as playing games. Technological developments in the revolutionary era 4.0 require all people to have and be able to utilize technology, Rahmi (2021), Ashim et al (2019), Ridwanullah et al (2022) and Fakruddin et al (2017). One of the uses of technology in the world of education is its use in learning to facilitate increased digital literacy in students, Suitmiko et al (2021) and Fahmy et al (2021).

Development of android-based constructional alphabet learning media which is planned to be developed to improve reading literacy and digital literacy. The characteristics of the constructional alphabet media consist of a series of numbers that are formed and then constructed. This media is made by adjusting the needs of students and in accordance with the conditions of student learning. This media is packaged in an Android-based application. Apart from increasing students' reading literacy, this media can also improve digital literacy, Aribowo and Sukario (2022).

According to Purnomo (2022), Sumantri and Rachmadtullah (2016) stated that Android has the potential to remove obstacles to success in developing and selling application software from a new generation of mobile devices. In the past, people communicated long distances by using the telephone. Along with the times, telephone technology has developed a lot. For example, Android, which is now known and used by almost all people around the world. Therefore, learning media is very likely to be implemented in the form of Android applications because there are many advantages to be gained, especially for students or students who are having difficulty finding learning materials,

Supriyanto, et al (2019), Sukmawati and Nensia (2019).

According to the Ministry of Education and Culture (2017: 7) Digital literacy was first put forward by Paul Glister in 1997 as the ability to understand and use information from various everyday sources. Bawden argues that digital literacy is the ability to use technology and information from digital devices effectively and efficiently in various contexts, such as academics, careers and life. Thus, referring to Bawden's opinion, digital literacy is more associated with the technical skills of accessing, assembling, understanding, and disseminating information, (Nurhayati and Lestari, 2020). Douglas A.J. Belshaw in Asari et al (2019) said that there are eight essential elements for developing digital literacy, namely as follows: 1) cultural, namely understanding the various contexts of users of the digital world; 2) cognitive, namely the power of thought in assessing content; 3) constructive, namely creating something expert and actual; 4) communicative, namely understanding network and communication performance in the digital world; 5) responsible self-confidence; 6) creative, doing new things in new ways; 7) critical in addressing content; and 8) Socially responsible.

LITERATURE REVIEW
1. Android-based construction alphabet learning media is media that aims to improve reading literacy and digital literacy of elementary school students Sari, (2022), Purwandari, et al (2021). According to Arif and Zein (2022) The development of android-based construction alphabet media can improve students' reading literacy through the features contained in the alphabet construction media. Students' reading ability to understand the meaning of the features contained in the media will increase students' reading literacy. While the process of using Alphabet construction media can increase students' digital literacy. The purpose of using Android-based construction alphabet

learning media can improve students' ability to understand the use of technological equipment.
2. Reading literacy is the use of written symbols in the writing conveyed by the author. Reading literacy is not limited to reading letters/words/sentences/on a piece of paper or a book, but more broadly when someone has used it in meeting their daily needs, Tichor Wagner, (2016).
3. Digital literacy is the ability to understand and use digital-based media, Sultaryono and Setyasto (2021), Akwani (2019), and Dermawan et al (2022). Digital literacy is currently very much needed in education. In line with technological developments, students are required to be skilled in digital literacy. Making media by utilizing Android is really needed at this time because it is very helpful in developing students' digital literacy skills.

MATERIALS & METHODS
This research uses a type of research and development (R&D) research. Educational research and development (research and development) aims to produce new products through the development process. The research procedure used in this research is 4D. This research model uses the Thiagarajan model (1974). Thiagarajan (in Sugiyono 2015: 37) suggests that the research procedure with the 4D model is Define, Design, Development and Dissemination. The research subjects were 21 students of grade II SDN 23 Batara Palopo City who would conduct product trials. Product testing is carried out to obtain information regarding the feasibility of the media being developed. Data collection techniques used are interviews, questionnaires, and tests. The analysis technique used is the Validation test and Practicality Test.

RESULT
The feasibility of android-based construction alphabet media is determined by 2 things,

namely validation and practicality. The media validation test is carried out by validator experts according to the area of expertise. The practicality test of the android-based construction alphabet media was carried out by distributing questionnaires to students' responses to the construction alphabet learning media.

Media Validity Test

The initial design of construction alphabet learning media will be validated by the validator. Validation test consists of 3 tests, namely material validation test, media validation test and language validation test. The material validation test consists of two validators who validate the material on Android-based construction alphabet learning media. The media expert validation test and the linguist validation test were carried out by one validator each. The results of the material expert validation questionnaire test are in Tables 1 and 2.

Table 1. Results of material expert validation test I by lecturers

No	Assessment Indicator	Score				
		5	4	3	2	1
1.	The suitability of the material with the concept of reading literacy	√				
2.	The suitability of the material with the concept of digital literacy	√				
3.	Alphabet understanding concept		√			
4.	Clarity of study instructions	√				
5.	Providing learning exercises	√				
6.	Material actualization	√				
7.	Truth content/concept		√			
8.	Completeness of Information	√				
9.	The material is presented logically and systematically	√				
10.	The way of presenting the selected material is useful for motivating students	√				

Table 2. Results of material validation test II by the teacher

No	Material Feasibility Indicators	Score				
		5	4	3	2	1
1.	The suitability of the material with the concept of reading literacy	√				
2.	The suitability of the material with the concept of digital literacy	√				
3.	Alphabet understanding concept	√				
4.	Clarity of study instructions	√				
5.	Providing learning exercises	√				
6.	Material actualization	√				
7.	Truth content/concept	√				
8.	Completeness of Information	√				
9.	The material is presented logically and systematically	√				
10.	The way of presenting the selected material is useful for motivating students	√				

The results of the analysis of the material validation test were carried out by the validator by providing a response and assessment of the material on the construction alphabet media (Table 1). The assessment aspect consists of 10 assessment indicators. The results of the validation of the material expert sheet questionnaire I are carried out according to the formula that has been set, namely:

$V = \frac{TSh}{TSe}$ x 100%

$V = \frac{49}{50}$ x 100%

$V = 98\%$

Material expert validation II carried out by teachers at SDN 23 Batara Palopo City (Table 4.3), namely:

$V = \frac{TSh}{TSe}$ x 100%

$V = \frac{50}{50}$ x 100%

$V = 100\%$

The language validation test is carried out by the validator by providing a response and assessment of the use of language in the construction alphabet media. The assessment aspect consists of 10 assessment indicators. The results of the questionnaire analysis are in table 3.

Table 3. Language validation test results

No	Assessment Indicator	Score				
		5	4	3	2	1
1.	Use simple and easy-to-understand language	√				
2.	Use of symbols that are easy to understand	√				
3.	Use of writing and punctuation according to EYD		√			
4.	The suitability of the diction used	√				
5.	Clarity of sentences used	√				
6.	Using good and correct language rules		√			
7.	Use terms appropriate to the concept	√				
8.	The language used is communicative	√				
9.	Spelling accuracy		√			
10.	The sentences used are simple	√				

The results of the language validation questionnaire analysis using the formula described earlier. The results are:

$V = \frac{TSh}{TSe}$ x 100%

$V = \frac{49}{50}$ x 100%

$V = 98\%$

The media validation test was carried out by the validator by providing a response and assessment of the android-based construction alphabet media. The assessment aspect consists of 10 assessment indicators. The results of the validation test carried out by the validator are in Table 4.

Table 4. Media expert validation results

No.	Assessment Indicator	Score				
		5	4	3	2	1
1.	The attractiveness of the initial view	√				
2.	The composition of the colors used	√				
3.	Background color selection	√				
4.	The correct selection of type and size of letters	√				
5.	The displayed menu page displays	√				
6.	Display instructions for use of media		√			
7.	The use of media is very easy	√				
8.	Display simplicity	√				
9.	The accuracy of the arrangement of words	√				
10.	Setting spacing (letters, lines, characters)	√				
11.	Has traction	√				
12.	Use of Animation	√				
13.	Sounds heard clearly	√				

The results of the validation test analysis by the validator are in accordance with table 4 with the formula that has been set, namely:

$V = \frac{TSh}{TSe}$ x 100%

$V = \frac{47}{50}$ x 100%

$V = 94\%$

The overall percentage of validation test results by the validator is carried out using the following formula:

$V = \frac{V1+V2+V3+V4}{4}$

$V = \frac{98+100+98+94}{4}$

$V = 97,5 \%$

Based on the results of the validity test above, it shows that the validity level of the android-based construction alphabet media is 97.5% with a very good level of validity category.

The practicality test of the android-based construction alphabet media was carried out by distributing student response questionnaires to each student in the class. The results of the questionnaire analysis for class II students can be seen in table 5Tabel 5.

Table 5. Student response questionnaire about the practicality of alphabet media

No	Indicator	Answer			
		SS	S	TS	STS
1.	Media pembelajaran mudah digunakan	16	5	0	0
2.	Learning media is easy to understand	19	2	0	0
3.	The instructions for using the media are very clear	19	2	0	0
4.	The sound/audio used on the construction alphabet media is clear	18	3	0	0
5.	I want to continue using android based construction alphabet media	17	4	0	0
6.	I enjoy using media	16	5	0	0

	Table 5 To Be Continued…				
7.	I am interested and interested in learning to use construction alphabet media	19	1	1	0
8.	I am passionate about using media	17	2	2	0
9.	Media helps me to learn the alphabet	18	3	0	0
10.	Media can help improve reading literacy and digital literacy	18	3	0	0
Number of Frequency		177	30	3	0
Total Score		708	90	6	0
Total number Score		804			
Average		3,7			
criteria		Very High			

Based on table 5, the practicality of construction alphabet media is in the very high category, where the average value of the student response questionnaire reaches 3.4 <3.7.

DISCUSSION

The assessment of the expert validation test questionnaire was carried out by material expert validators, media expert validators and language expert validators. The results of the assessment by experts are:

Language expert test

The language expert test was carried out by one of the language expert lecturers at Cokroaminoto Palopo University. Language assessment on the Android-based construction alphabet learning media consists of ten other assessment indicators. The use of language for android-based construction alphabet media which will be revised according to the assessment indicators, namely the use of writing and punctuation according to the EYD, the use of good and correct language rules, and the accuracy of spelling. In line with Saputri's opinion (2021) that language assessment indicators in learning media include the use of appropriate language, use of punctuation and writing in accordance with EYD. According to Batubara (2018) the indicators for assessing the use of language in learning media are straightforward, communicative, and conformity with language rules.

Revision of writing punctuation according to EYD by the validator is at level 3 stage 1. Punctuation in a word from the sentence structure is not in accordance with EYD, so this indicator only gets a value of 4 from the validator. The second revision is the use of inappropriate language rules. Furthermore, spelling accuracy is still lacking in the construction alphabet media. The display of level 3 of the first stage before the revision and after the revision is shown in Figures 1 and 2

Picture 1 Before Revision

Picture 2 After Revision

Picture 1 is an image of an android-based construction alphabet media before being assessed by a linguist validator. Whereas figure 2 is a picture of the construction alphabet media after being revised according to suggestions from the validator. The final result of language testing by the validator is suitable for use with revisions.

Material expert testing was carried out by 2 material expert validators. Material expert validation was carried out by Batara 23 SDN teachers and lecturers at Cokroaminoto

Palopo University. Material validation was carried out by 2 validators according to the assessment indicators, there were several revisions made to the material on android-based construction alphabet media. The revision provided by the material expert validator is the concept of understanding the alphabet and the correctness of the contents/concepts. The concept of understanding the alphabet and the correctness of the contents of the concept meant here is that the mention of letters must be in accordance with the articulation. Material assessment is also in line with the

delivery which states that in the development of a material an assessment of material will be carried out in accordance with the objectives to be achieved. The conclusion given by the material expert validator I is that it is feasible to use with revision.

The results of the material expert assessment conducted by the validator will be revised by the researcher. The indicator that the researcher revised was regarding the mention of articulations that must be in accordance with the rules. Alphabetical menu display in Picture 3.

Picture 3. Alphabetical letter menu

Material assessment carried out by validator II by one of the teachers at SDN 23 Batara gave an assessment without revision. The construction alphabet media that has been developed fulfills the assessment indicators for the material. The assessment indicators are seen in the feasibility aspects of the content and presentation aspects. The concept of reading literacy and digital literacy material is appropriate. This is in line with Mardhotillah's statement (2021) that an

indicator of reading ability is students' ability to understand the content of the reading. The conclusion given by the material expert validator II is that it is feasible to use without revision.

The results of the tests carried out are in accordance with the scoring indicators, namely the instructions or guide menus are not in accordance with the intended use of the menu. The menu display before the revision was carried out, namely Picture 4.

Picture 4. Guide

The display on the menu does not yet explain how to use construction alphabet media. The guide menu following Figure 4 only explains the purpose of using construction alphabet media. The media assessment indicators consist of design aspects which consist of 5 assessment indicators and media characteristic aspects consist of 7 assessment indicators. Media assessment indicators are also explained by Wadiastika (2021) that media assessment indicators consist of display, control and interaction. In line with this, Putri (2021) explains that media assessment indicators consist of media appearance, media attractiveness, and the benefits of using media.

The revised results of the guide menu explain the guidelines for use and the purpose of using the media. The final conclusion from the validator regarding the media is that it is feasible to use with revision.

The practicality test of the android-based construction alphabet media was carried out by distributing questionnaires to students' responses to the construction alphabet media. The student response questionnaire consists of 10 assessment indicators. Student response questionnaire indicators are adjusted to the research variables. Students respond to the media that has been used. The average value of student responses according to the results of the research shows the very good category.

The results of the average response score of students who reach the very good category because the media developed is in accordance with the indicators of learning media easy to use and understand, clear instructions for use, the voice used in the media is clear, students who want to continue using the media, the media helps students learn the alphabet and media to help improve reading literacy and digital literacy. In line with Sanjaya's statement (2021) states that in preparing learning media it must be able to attract students' interest. According to Muttaqin (2021) making learning media must pay attention to the learning objectives to be achieved, adjusting the concept of the material to be taught.

CONCLUSION

Based on research on the development of android-based construction alphabet media, it can be concluded that android-based construction alphabet media is suitable for use in elementary schools, according to the results of the validity test, practicality test and effectiveness test. The results of the media validation test were stated to be valid with a value of 97.5% in the very good validity category. The results of the practicality test of construction alphabet media through a student response questionnaire obtained an average value of 3.7 with the practicality of construction alphabet media in a very high category. The results of the reading literacy effectiveness test obtained the number of students who achieved completeness, namely 80% and digital literacy, obtained the number of students who achieved completeness, namely 75%, where reading literacy and digital literacy scores achieved classical average values.

REFERENCES
1. Aribowo, W. P., & Sukarjo, S. (2022). Pengembangan Media Pembelajaran Multimedia Interaktif Adobe Flash Berbasis Budaya untuk Meningkatkan Hasil Belajar Muatan Ips Siswa Kelas V Sd. Joyful Learning Journal, 11(1), 38-43.
2. Aribowo, W. P., & Sukarjo, S. (2022). Pengembangan Media Pembelajaran Multimedia Interaktif Adobe Flash Berbasis Budaya untuk Meningkatkan Hasil Belajar Muatan Ips Siswa Kelas V Sd. Joyful Learning Journal, 11(1), 38-43.
3. Asari, A., Kurniawan, T., Ansor, S., & Putra, A. B. N. R. (2019). Kompetensi literasi digital bagi guru dan pelajar di lingkungan sekolah kabupaten Malang. BIBLIOTIKA: Jurnal Kajian Perpustakaan Dan Informasi, 3(2), 98-104.
4. Dermawan, dkk (2022). Pengembangan Instrumen Assesmen HOTS Pada

Pembelajaran IPA Kelas V Sekolah Dasar. JIKAP PGSD: Jurnal Ilmiah Ilmu Kependidikan, 5(3), 387-394.

5. Fahmy, dkk. (2021). Dampak Pandemi Covid-19 terhadap Minat Baca Siswa Sekolah Dasar. Jurnal Sastra Indonesia, 10(2), 121-126.

6. Fahmy, dkk. (2021). Dampak Pandemi Covid-19 terhadap Minat Baca Siswa Sekolah Dasar. Jurnal Sastra Indonesia, 10(2), 121-126.

7. Gumilar, G., dkk. (2022). Pengembangan Media Pembelajaran Video Animasi Ujang Entis untuk Meningkatkan Hasil Belajar IPA Pada Materi Kalor Kelas V SD. Joyful Learning Journal, 11(3), 100-107.

8. Hadisi, L., & Muna, W. (2015). Pengelolaan teknologi informasi dalam menciptakan model inovasi pembelajaran (e-learning). Al-TA'DIB: Jurnal Kajian Ilmu Kependidikan, 8(1), 117-140.

9. Hasanah, U., & Dewi, R. S. (2019, October). Integrated Learning Design Based on Google Classroom to Improve Student Digital Literacy. In 2019 5th International Conference on Education and Technology (ICET) (pp. 108-111). IEEE.

10. Misbah, M., Pratama, W. A., Hartini, S., & Dewantara, D. (2018). Pengembangan e-learning berbasis schoology pada materi impuls dan momentum untuk melatihkan literasi digital. PSEJ (Pancasakti Science Education Journal), 3(2), 109-114.

11. Murda, N., & Purwanti, P. D. (2017). Penerapan Strategi Pembelajaran Think Pair Shareuntuk Meningkatkan Kemampuan Membaca Intensif Siswa. International Journal of Elementary Education, 1(1), 11-18.

12. Nugraha, D. (2022). Literasi Digital dan Pembelajaran Sastra Berpaut Literasi Digital di Tingkat Sekolah Dasar. Jurnal Basicedu, 6(6), 9230-9240.

13. Nurhayati, I., & Lestari, P. (2020). Pembelajaran berbasis whatsapp dan flash game player. MAJU: Jurnal Ilmiah Pendidikan Matematika, 7(2).

14. Purnomo, E. A., & Suparman, S. (2020). Pengembangan Media Pembelajaran Berbasis Android pada Matakuliah Pembelajaran Matematika SD. Journal of Medives: Journal of Mathematics Education IKIP Veteran Semarang, 4(1), 187-195.

15. Rahmi, M. A. S. M., Budiman, M. A., & Widyaningrum, A. (2019). Pengembangan media pembelajaran interaktif macromedia flash 8 pada pembelajaran tematik tema pengalamanku. International Journal of Elementary Education, 3(2), 178-185.

16. Ridwanulloh, dkk. (2022). The Effects of a Problem-Based Learning Model Aided by Mind Mapping on Self-directed Learning in Elementary School Students. Journal of Primary Education, 11(1), 1-13.

17. Sari, R. C., Aisyah, M. N., Ilyana, S., & Hermawan, H. D. (2022). Developing a Financial Literacy Storybook for Early Childhood in an Augmented Reality Context. Contemporary Educational Technology, 14(2), ep363.

18. Satria, T. G., & Egok, A. S. (2020). Pengembangan Etnosains Multimedia Learning Untuk Meningkatkan Kognitif Skill Siswa Sd Di Kota Lubuklinggau. Jurnal Basicedu, 4(1), 13-21.

19. Sumantri, M. S., & Rachmadtullah, R. (2016). The effect of learning media and self regulation to elementary students' history learning outcome. Advanced Science Letters, 22(12), 4104-4108

20. Sutaryono, I. A., & Setyasto, N. (2021). Augment Reality (AR) Dalam Meningkatkan Kemampuan Literasi Digital Guru Sekolah Dasar. Jurnal Kreatif: Jurnal Kependidikan Dasar, 12(1), 234-238.

21. Tichnor-Wagner, A., Garwood, J. D., Bratsch-Hines, M., & Vernon-Feagans, L. (2016). Home literacy environments and foundational literacy skills for struggling and nonstruggling readers in rural early elementary schools. Learning Disabilities Research & Practice, 31(1), 6-21.

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