

Development of Android-Based Early Reading Learning Media

Estuning Dewi Hapsari^{1)*}, Yoga Prisma Yuda²⁾, Yoga Akmal Mubarak³⁾

^{1,2,3)} PGRI Madiun University, Indonesia

¹⁾estuning@unipma.ac.id, ²⁾yogaprismal@unipma.ac.id, ³⁾yogaakmal11@gmail.com

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Abstract: Early reading is a skill that students should have. This skill becomes a provision for the next stage of skills. Learning to recognize letters, especially early reading in Golan Kindergarten during the pandemic, experienced problems. Students feel less interested when the learning process is carried out conventionally. In addition, parents also have difficulties when it comes to delivering material to children. Through the use of android-based learning media, the learning process is expected to attract students. The method developed the Borg & Gall model, which consisted of ten stages. The data collection techniques used include observation, interviews, and questionnaires. Observation is used to find out the learning conditions in schools. Interviews, conducted with teachers to find out the use value of the media created. Meanwhile, the questionnaire is used as a reference to find out the level of needs in schools. The resulting learning media is tested through media expert validation tests and practicality tests. Validation of media experts to assess whether media is suitable for use as an alternative to learning media in schools. Practicality test, used to assess the level of practicality of the resulting medium. The results of media expert validation obtained a percentage of 81.5, stating that the media was valid. The practicality test was 8,262, and the mean score of students was 77. The two results presented that the android-based learning media for early reading was feasible.

Keywords: android; development; learning media; read

INTRODUCTION

The pandemic has affected all sectors of life. Education is one sector that must be transformed immediately. Learning activities at all levels of education must reverse direction from offline to online. This condition requires all elements of education to look for alternative learning media as needed. Learning media is a learning process aid that attracts the learners' thoughts, feelings, attention, and abilities so that the learning process takes place (Tafonao, 2018). Learning media is crucial because it functions as a learning liaison (Jamuri, et al., 2015).

Online learning requires adaptation from all education actors. Nowadays, learning that initially brought together teachers and students directly has changed. This condition requires all students, including parents, not to stutter with conditions and demands teachers to innovate. Thus, the use of learning media can help convey information from teachers to students (Khairani & Febrinal, 2016).

Online learning impacts all students, both in rural and urban areas. For those who live in cities with adequate infrastructure, the impact of online learning is not so felt. This condition is inversely proportional to students in villages and even remote areas. As stated by Aji (2020), online learning will impact long-term inequality and justice between community groups in Indonesia. Therefore, the Indonesian community carried out innovation and technological adaptation (Jamuri et al., 2015).

Online learning can use various technologies to access the material (Lestariyanti, 2020). Technological developments are also used to explore to add insight and knowledge in completing work. Technological advances also encourage the development of electronic media technology such as mobile phones or Android-based smartphones. Online learning during the pandemic sometimes experiences several obstacles. These obstacles start from parents' difficulties in operating smartphones, internet network difficulties, and difficulties in growing children's interest in learning. Various difficulties experienced have an impact on understanding the subject matter.

Early age is called the *golden age* because, currently, it is a fundamental primary education to determine further development (Asmonah, 2019). Language is a daily communication tool in the form of written and spoken language (Jayanti & Rosita, 2019). Reading ability is an essential thing that a child must have (Ariyanti, 2014). Reading is the primary key to the success or failure of the learning process. If students are delayed in learning to read, it will affect the achievement obtained (Hapsari, 2019). Early reading learning will be the provision of other

*name of corresponding author



language skills. One of the goals of early reading at the initial level is to build language competence that will affect the use of language directly in life (Ornellas et al., 2019).

One of the obstacles Golan Kindergarten teachers faced during the pandemic was early reading. Many students do not know letters due to the restrictions on learning in schools. Beginning reading skills are not far from the core of learning for early childhood, namely learning while playing (Asmonah, 2019). The skill that plays a significant role in the learning process is reading (Afriyanti, 2016). This condition is inversely proportional to children's demands in elementary school. Various materials require students to be fluent in reading. Therefore, learning is sought to use learning media to generate interest, motivation, and even psychological influence on students (Arsyad, 2014).

Based on the problems above, an Android-based learning media for early reading is used. Android-based learning media was chosen because almost all parents have smartphones that can be used to support children's learning processes. Parents can repeat teaching children to read through their smartphone media. This application is equipped with interesting animated images, sounds, and illustrated practice questions for kindergarten children. Materials and exercises for pre-reading questions for kindergarten are limited to letter recognition and reading two syllables with the help of images next to the text.

Research by Diana (2011) explained that the help of image media improved early childhood reading skills. Research by Bahrin (2020) stated that word and picture cards could simplify students learning early reading. Furthermore, research by Widyowati et al. (2020) stated that the development of learning media with the R&D method could simplify students learning to read. Gustiawati et al. (2020) found that early reading teaching materials using fable stories were developed and used to support early reading in the second grade of elementary school.

LITERATURE REVIEW

Early reading ability is one of the skills that kindergarten students must possess. Early reading in kindergarten is limited to recognizing letters and reading two syllables. Early reading skills are the basics, so students will be ready with more complex learning materials. Besides, early reading skills are vital because they will affect the reading skills of students in the first grade (Taseman et al., 2021). Through reading skills, students will more easily understand the material (Widyowati et al., 2020). Thus, learning in kindergarten must support the purpose of early reading to recognize letter symbols, recognize words and sentences, find keywords, and tell stories of short reading (Iskandarwassid & D. Suhendar, 2008).

Early reading learning is emphasized basic reading skills. The basic skills include being able to voice letters, syllables, and words that have been presented from written to the oral form. Exciting and fun learning media are needed to attract the interest of kindergarten children. Animated image media is needed that can teach children to learn while playing.

Media is a tool or also called a communication channel (means of communication). Media is also considered a form of mass communication involving a system of symbols and equipment to produce and distribute it (Rogers, 2003). Learning media are all equipment that has been designed to convey learning messages (Yaumi, 2017). Kozma (1991) believes that the media contributes considerably to the process and learning outcomes and can generate motivation and interest in learning. Some of the causes of obstacles in children not reading fluently are reading communication, which is only one way. Pictures do not accompany the media, and reading is in the form of sentences instead of syllables (Bahrin, 2020). Therefore, learning media has a significant contribution to creating effective and efficient learning conditions and student achievement (Yaumi, 2017).

The operating system can be described as a liaison between the device and the user so the application can run (Suryaputra, 2016). According to Prianto (2020), Android has several advantages, including an open-source operating system, affordable prices, and ease of modification. Meanwhile, the disadvantages of Android include a reasonably heavy work system, and the modification results cause an unstable system work and an extended response.

METHOD

This research used the research and development method (R&D). According to Gustiawati et al. (2020), development research is a research method that produces certain products by testing their level of effectiveness. This research used a procedural model by adapting the learning design model (Sugiyono, 2015). In this research, there were modifications to the stages of the development model to suit the needs. Furthermore, other research carries out modifications, including Friston et al. (2021). The stages of development research based on Sugiyono consisted of (1) collecting information from literature studies, (2) making research plans according to research objectives, (3) developing products (initial drafts), (4) field trials, (5) product revisions, (6) main field trials, (7) field results revisions, (8) operational field trials, (9) final product revisions, and (10) product implementation and dissemination.

*name of corresponding author



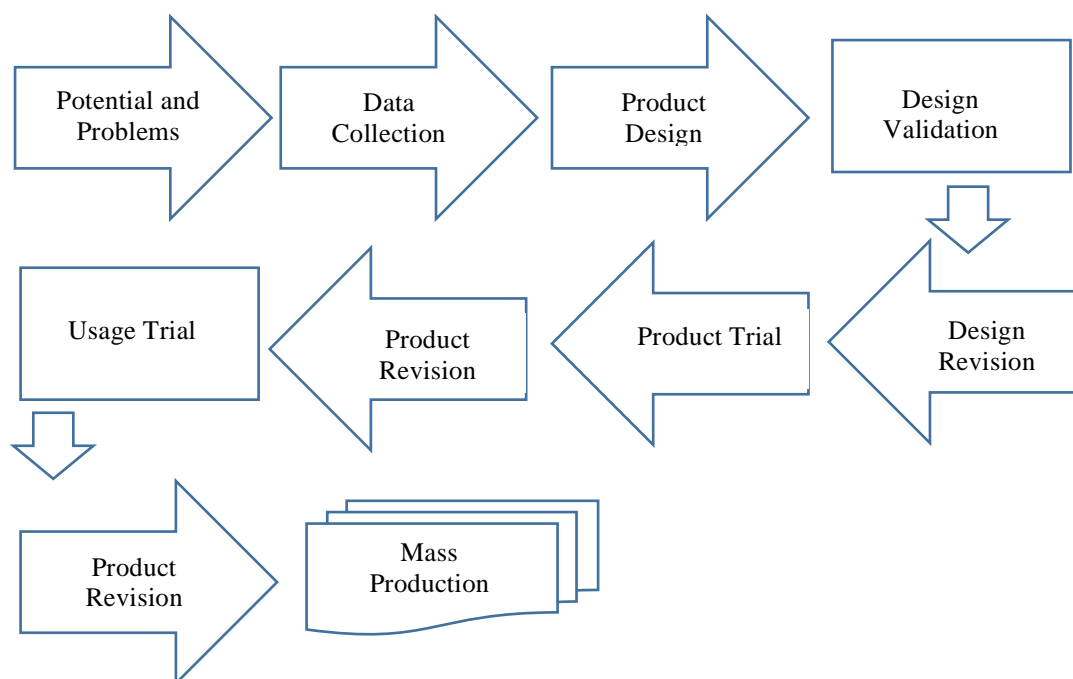


Figure 1. Research and Development (R&D) Model (Borg and Gall in Sugiyono (2015: 409))

The data collection technique was performed by observing the learning conditions in Golan Kindergarten related to learning media by giving a questionnaire. Additionally, interviews were conducted with teachers to assess learning media. Questionnaires were used to find out the needs and problems in schools. This research resulted in a new product. Media and material experts validated learning media. Thus, the response of teachers and parents could be known. This research was conducted at Golan Kindergarten, Sawahan Sub-district, Madiun District. The research was conducted from September 2021 to February 2022. The analysis of media and material experts is as follows.

Analysis of questionnaire data (media experts, material experts, and students) according to Arikunto (2013):

$$P = \frac{\sum X}{\sum Xi} \times 100$$

Information:

P = Percentage

100 = Constant

X = Respondent's answer in one item

Xi = The ideal number of scores in one item

The formula for processing data as a whole item:

$$P = \frac{\sum X}{\sum Xi} \times 100$$

Information:

P = Percentage

$\sum X$ = Total number of respondents' answers in all items

$\sum Xi$ = Total number of ideal scores in one item

100 = Constant

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The interpretation of the data above was adjusted to the following criteria for validity level.

Table 1. Validity Level of Learning Media

Category	Percentage	Description	Score
A	76-100	Valid	4
B	51-75	Sufficiently valid	3
C	26-50	Less valid	2
D	0-25	invalid	1

Assessment of learning outcomes

The data processing to process the data by determining the minimum standard of completeness, i.e., 71, is as follows.

The score of learning outcomes = $\frac{\text{Number of correct answers}}{\text{Number of question}} \times 100$

The percentage of successful learning outcomes = $\frac{\text{The number of students who passed the minimum completeness criteria}}{\text{Total number of students}} \times 100$

This development research created an android-based learning media for early reading. Learning media helped students recognize letters to read words.

RESULTS

The Forms of Android-Based Early Reading Learning Media that could Help Early Reading Learning for Golan Kindergarten Students

Android-based learning media was a product of this research. Learning media consisted of several menus. The development of this learning media started by introducing letters to words equipped with images. The product developed was a learning media for early reading skills for Kindergarten B children.

Learning media is developed in terms of content, presentation, and ease of use of the application. In terms of content, the materials used in learning media development are obtained from various sources that are adjusted to the competencies of kindergarten-age children, student needs, competency standards, and children's intellectual development. The presentation of the material is expected to be the foundation so that children can proceed to the early reading stage (Darwadi, 2020). The material is presented as an application accompanied by images and sounds so that it is exciting and children feel learning while playing.

The results and discussion of this development research are as follows:

Early Reading Learning Needs

The initial stage of this research was needs analysis and problem finding from the learning process. This stage is the embodiment of several stages of the development model (Borg & Gall, 1983), namely gathering information from literature studies and planning research according to objectives. At this stage, the researchers conducted data collection techniques using observations and interviews (unstructured) and identified student needs.

The results of data analysis based on observations obtained the following data: (1) there was no variation and innovation in introducing letters, (2) delivery of material in the form of photocopies, and (3) the media used was less attractive to kindergarten children. Meanwhile, the literature study data were in the form of preliminary reading learning documents such as lesson plans, assessment rubrics, teaching materials, and the results of student assignments. The findings obtained (1) the quite monotonous material for kindergarten children, (2) the task led to cognitive aspects related to knowledge of letters, (3) the assessment rubric could accommodate the exercises and assignments given, and (4) students did not collect assignments according to time given and sometimes did not even collect assignments.

Researchers conducted interviews with tutors and google forms on students' parents to identify the needs for early reading learning. Based on the results of interviews with teachers, it can be concluded that the need for early reading learning consisted of (1) exciting learning media for kindergarten, (2) learning was carried out with games that attract students' attention, (3) assignments and assessments could be accessed easily as a reference source learning. Meanwhile, the needs of parents/ guardians showed that parents needed learning media that were packaged in an attractive manner accompanied by images, animations, audio, or videos so that children were

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interested in learning. Because the material was only in the form of photocopies and the parents/ guardians were present, students were lazy and reluctant to learn.

Product Design

The product design stage refers to the steps of designing and developing products based on the results of problem identification and the need for early reading learning. This stage will collaborate with the stages (Borg & Gall, 1983) which include product development in the form of materials and evaluation. Collaboration (Dick & Carey, 1996) with developed objectives, assessment instruments, and selected learning materials.

The stages of product design were carried out by designing android-based learning media in accordance with the development of kindergarten as follows:

a. *Defining Stage*

An analysis of learning media needs was carried out in this aspect. Needs were related to indicators, materials, and learning objectives. It was necessary for the materials needed in the development of learning media that be tailored to the student's needs.

The process and steps for designing Android-based learning media for early reading were carried out at this stage. Media was used to help kindergarten teachers introduce letters to students. The material was adjusted to the needs of kindergarten children with a predetermined mastery.

b. *Designing Aspect*

An Android-based learning media for early reading was designed at this stage. The media designed were tailored to the needs of the material in kindergarten, simplifying teachers and students in the learning process.

c. *Development Stage*

In this view, the user was provided with some material related to early reading. There were six menu options: alphabet letters, vowels, one-syllable letters, two-syllable letters, animal names, and colors.

The display of learning media is as follows:



Figure 2. Menu Display

In this view, the user was provided with some material related to reading its beginning. There were six menu options: alphabet letters, vowels, one-syllable letters, two-syllable letters, animal names, and colors. The menu display is as follows:

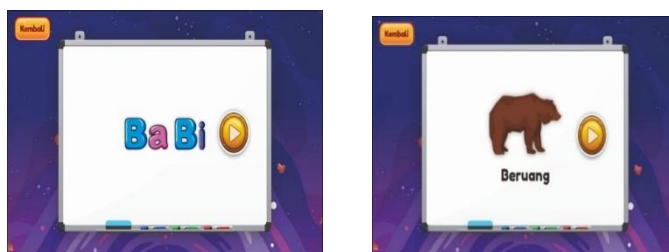


Figure 3. Material Display Menu

On the menu, kindergarten students only listened to the sound of the written words followed by supporting images. The display was intended to facilitate children to imitate and recognize the sound of syllables. In the learning media, a quiz menu was also added. The menu was used as an exercise and measured the children's ability from the material that had been studied. The quiz menu display is as follows:

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Figure 4. Quiz Display Menu

The quiz menu contained simple exercises based on the age development of Kindergarten B children. Students were only asked to guess the words that had been compiled, mentioned the color elements, and then wrote them down.

The material design at this stage was obtained from various sources: teachers, books, and the internet. Design validation consisted of media and material validation. Design revisions, based on all the appearance of the material in the learning media, were made more interesting if the correct and incorrect answers were notified. Revisions from material experts were expected to be given a supporting display that facilitates students to learn, for instance, sound according to the product images. Product trials were conducted on two material experts and two media experts. The product revision was carried out after the product trial, and the Android-based learning media for early reading was included in the excellent category. The use trial was carried out on the Golan Kindergarten students, totaling 36. The trial resulted in scores being presented before and after using the media and a questionnaire distributed via Google Form.

The Implementation of Early Reading Learning Media in Golan Kindergarten

The learning media that had been designed then carried out several validations. The types of validation are as follows:

a. Learning Media Validation

Validation of expert learning media was carried out by two validators. Based on the validation results, revisions were made to obtain the validity and feasibility of small- and large-scale tests. The expert validation got positive results with the following average scores:

Table 2. Validation of Learning Media by Media Experts

No.	Assessed Aspects	Expert 1	Expert 2
1	Material suitability	4	3
2	Material concept with purpose	4	3
3	Conformity of the matter with the material	4	3
4	Ease of operation	3	3
5	Interface design	3	4
6	Responsive display	3	4
7	Response speed	3	3
8	Menu layout	3	3
9	Sentence usage	3	3
10	Grammar	3	3
Total		33	32
Score		83	80
Average percentage %		81.5	
Category		Valid	

The validation of the development of learning media obtained results of 81.5. These results indicated that the learning media was declared valid to be used.

b. Learning Media Practicality Test

The development results were in the form of an Android-based early reading learning media. Material and media experts validated the media. Practicality test questionnaires were conducted to measure the practicality of the developed media. The media was expected to support student learning. The practicality test was carried out after the learning media was valid. The practicality test was carried out after students applied the media and did exercises on the quizzes. The number of students who did the practicality test was 17, with the following results.

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Table 3. Practicality Test Results

No.	Assessed Aspect	Score				Percentage %
		4	3	2	1	
1	Learning media was easy to use and simple to operation	36	21	8	0	81.25
2	The language in the material was easy to understand	36	21	8	0	81.25
3	The layout of the menu was correct and according to its function	60	9	4	0	91.25
4	The material presented was under the applicable curriculum in the Informatics Engineering Study Program	52	6	10	0	85
5	The concept of the material presented was clear and easy to understand	36	15	10	1	76.25
6	The material could help users understand the material	40	21	6	0	83.75
7	The system was free from <i>errors</i> when it ran	40	6	14	1	75
8	The system responded in the form of a warning if an error occurred	60	12	2	0	92.5
9	The whole interface was attractive and user-friendly	40	18	6	1	81.25
10	The use of the website as a learning medium could increase the spirit of learning	44	9	8	2	78.75
Total		11	46	38	5	826.25
Average percentage %						8,262
Description						Valid

Based on the table above, the percentage of practicality was 8,262% with valid criteria. Based on the results obtained, it was concluded that the Android-based learning media for early reading was easy to use and could attract the attention of kindergarten students to want to recognize and pronounce letters.

Based on the results of the validity of the learning media, followed by a test of student learning outcomes, reading test scores were obtained from processing test or quiz results in the learning media. The test results are presented as follows:

Table 4. Learning Outcomes Test with Learning Media

Score	Frequency	Sum
71	1	71
72	1	72
73	2	146
74	2	148
75	1	75
76	1	76
77	1	77
78	1	78
80	1	80
81	5	405
82	1	82
Total		1310
Mean		77.05
Category		Valid

The results of the student learning test met the standard of completeness, ≤ 71 . Of the 17 students with a completeness score of 77, it showed 100% completeness. Purwita & Sumbawati (2016) explain that mobile learning-based learning media can improve student learning outcomes.

*name of corresponding author



DISCUSSION

Based on the results of interviews and observations made, learning media were produced. Learning media was developed by completing images, animations, audio, and video. Android-based learning media for early reading presented material from the basics according to the age level of kindergarten children. The material started by introducing letters, vowels, syllables, and words.

The resulting learning media has undergone material expert trials, practical tests, and results. Based on the results obtained, it was known that the learning media was feasible. Learning media could improve students' achievement in reading. It was due to an attractive presentation and information technology so that students were interested and not bored.

The difference with the previous learning media development research is the appearance of learning media. The resulting media is given supporting information in the form of images, animations, audio, and video. The media is also equipped with a final test to measure the level of students' understanding of the material studied.

Android-based learning media for early reading can be used as an alternative learning media for parents in introducing letters and words to children. The presentation of images, animations, and audio can make a playing impression on kindergarten-aged children. The existence of a quiz feature can also be used to measure the level of students' understanding of the material provided. Thus, the material could be appropriately conveyed and can improve children's early reading skills.

CONCLUSION

The development of Android-based learning media for early reading was a medium that was quite helpful for teachers and parents. The media development has gone through media expert and practicality tests. Based on the media expert test results, a score of 81.5 was obtained, which stated that the media was suitable for use. The results of the practicality test showed the number 8,262, which indicated that the media produced was easy to use and understand by users. Based on the two tests, it was followed by a test on understanding the material using learning media. The mean scores of 77 students were obtained and met the standard of completeness. Early reading learning media during a pandemic could improve students' reading skills. Based on the research results, it was found that students were more enthusiastic and active in the learning process. The recommendation for further research was that it could be implemented and developed according to student needs.

REFERENCES

- Afriyanti, masfufa. (2016). Peningkatan Kemampuan Membaca Cepat dengan Menggunakan Teknik Quick On The Draw Pada Siswa Kelas VIII di SMPN 4 Malang. *KEMBARA: Jurnal Keilmuan Bahasa, Sastra, Dan Pengajarannya*, 2(2), 203–211.
- Aji, R. H. S. (2020). Dampak Covid-19 pada Pendidikan di Indonesia: Sekolah, Keterampilan, dan Proses Pembelajaran. *SALAM: Jurnal Sosial Dan Budaya Syar-i*, 7(5), 395–402. <https://doi.org/10.15408/sjsbs.v7i5.15314>
- Arikunto, S. (2013). *Prosedur Penelitian Suatu Pendekatan Praktik*. Rineka Cipta.
- Ariyanti, T. (2014). Peningkatan Kemampuan Membaca Permulaan Melalui Penggunaan Media Gambar. *Jurnal Pendidikan Usia Dini*, 8(1), 47–54.
- Arsyad, A. (2014). *Media Pembelajaran*. PT. Raja Grafindo Persada.
- Asmonah, S. (2019). Meningkatkan kemampuan membaca permulaan menggunakan model direct instruction berbantuan media kartu kata bergambar. *Jurnal Pendidikan Anak*, 8(1), 29–37. <https://doi.org/10.21831/jpa.v8i1.26682>
- Bahrin, M. (2020). Pengembangan Media Pembelajaran Membaca Awal Dengan Menggunakan Kartu Suku Kata Kelas I Sekolah Dasar. *Pendas Mahakam: Jurnal Pendidikan Dasar*, 5(2), 134–139. <https://doi.org/10.24903/pm.v5i2.650>
- Borg, W. , & Gall, M. (1983). *Educational research: An introduction 4th edition*. Longman.
- Darwadi. (2020). *Langkah-langkah Keterampilan Proses*. Gramedia.
- Diana, A. D. (2011). *Peningkatan Kemampuan Membaca Permulaan Dengan Menggunakan Media Gambar Dalam Pembelajaran Bahasa Indonesia Kelas I SD Negeri 2 Ngaran Kecamatan Polanharjo Kabupaten Klaten Tahun Pelajaran 2010/2011*. Universitas Sebelas Maret.
- Dick, W., & Carey, L. (1996). *The systematic design of instruction. In Instructional Design: International Perspectives: Theory, Research, and Models (4th ed.)...* Pearson Education.
- Friston, K. J., Sajid, N., Quiroga-Martinez, D. R., Parr, T., Price, C. J., & Holmes, E. (2021). Active listening. *Hearing Research*, 399(1), 1–28. <https://doi.org/10.1016/j.heares.2020.107998>

*name of corresponding author



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- Gustiawati, R., Arief, D., & Zikri, A. (2020). Pengembangan Bahan Ajar Membaca Permulaan dengan Menggunakan Cerita Fabel pada Siswa Sekolah Dasar. *Jurnal Basicedu*, 4(2), 355–360. <https://doi.org/10.31004/basicedu.v4i2.339>
- Hapsari, E. D. (2019b). Penerapan Membaca Permulaan untuk Meningkatkan Kemampuan Membaca Siswa. *AKSARA: Jurnal Bahasa Dan Sastra*, 20(1), 10–24.
- Iskandarwassid, & D. Suhendar. (2008). *Strategi Pembelajaran Bahasa dan Sastra*. PT Remaja Rosdakarya.
- Jamuri, -Kosim, & Doyan, A. (2015). Pengaruh Model Pembelajaran Kooperatif Stad Berbasis Multi Media Interaktif Terhadap Penguasaan Konsep Siswa Pada Materi Termodinamika. *Jurnal Penelitian Pendidikan IPA*, 1(1), 123–133. <https://doi.org/10.29303/jppipa.v1i1.11>
- Jayanti, R., & Rosita, Y. D. (2019). Pengembangan Kompetensi Kebahasaan Dalam Menulis Teks Cerpen Sejarah Di Man 7 Jombang. *Kembara Journal of Scientific Language Literature and Teaching*, 5(2), 245. <https://doi.org/10.22219/KEMBARA.Vol5.No2.245-253>
- khairani, majidah, & Febrinal, D. (2016). Pengembangan Media Pembelajaran Dalam Bentuk Macromedia Flash Materi Tabung Untuk Smp Kelas IX. *Jurnal Iptek Terapan*, 10(2), 95–102. <https://doi.org/10.22216/jit.2016.v10i2.422>
- Kozma, R. B. (1991). Learning with Media. *Review of Educational Research*, 61(2), 179–211. <https://doi.org/10.3102/00346543061002179>
- Lestariyanti, E. (2020). Mini-Review Pembelajaran Daring Selama Pandemi Covid-19: Keuntungan Dan Tantangan. *Jurnal Prakarsa Paedagogia*, 3(1), 89–96. <https://doi.org/10.24176/jpp.v3i1.4989>
- Ornellas, A., Falkner, K., & Edman Stålbrandt, E. (2019). Enhancing graduates' employability skills through authentic learning approaches. *Higher Education, Skills and Work-Based Learning*, 9(1), 107–120. <https://doi.org/10.1108/HESWBL-04-2018-0049>
- Prianto, C. , A.-R. H. , & E. S. N. (2020). *Rancang bangun sistem pergudangan semudah menyeduh secangkir kopi*.
- Purwita, A. W., & Sumbawati, M. S. (2016). Pengembangan Media Pembelajaran Berbasis Mobile Learning (M-Learning) Pada Mata Pelajaran Sistem Komputer Kelas X Multimedia SMK Negeri 1 Cerme. *IT-Edu*, 1(1), 71–79.
- Rogers, E. M. (2003). *Diffusion of Innovations*. Free Press.
- Sugiyono. (2015). *Metode Penelitian Pendidikan : Pendekatan Kuantitatif Kualitatif dan R&D*. CV.Afabeta .
- Suryaputra, A. & Eva. M. A. (2016). *Let's Build Your Android Apps with Android Studio*. PT Elex Media Komputindo.
- Tafonao, T. (2018). Peranan Media Pembelajaran Dalam Meningkatkan Minat Belajar Mahasiswa. *Jurnal Komunikasi Pendidikan*, 2(2), 103. <https://doi.org/10.32585/jkp.v2i2.113>
- Taseman, Akhmad, Aulia, P., & Della, P. S. (2021). Meningkatkan Kemampuan Membaca Permulaan Siswa Kelas I SD Bahrul Ulum Surabaya. *BADA 'A: Jurnal Ilmiah Pendidikan Dasar*, 3(2), 138–147.
- Widyowati, F. T., Rahmawati, I., & Priyanto, W. (2020). Pengembangan Media Pembelajaran Membaca Mengeja Berbasis Aplikasi Untuk Kelas 1 Sekolah Dasar. *International Journal of Community Service Learning*, 4(4), 355–360. <https://doi.org/10.23887/ijcs.v4i4.29714>
- Yaumi, M. (2017). Media Pembelajaran: Pengertian, Fungsi, dan Urgensinya bagi Anak Milenial. . *Pemanfaatan Media Bagi Anak Milenial* , 1–21.

*name of corresponding author



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