Development of Smart Apps Creator (SAC)-Based Android Application Learning Media to Improve Students' Understanding of Islamic Education Materials in Elementary Schools

Ani Nur Aeni*
*Elementary School Teacher Education Study Program, Sumedang Campus,
Universitas Pendidikan Indonesia
E-mail: aninuraeni@upi.edu

Nurdinah Hanifah**
**Elementary School Teacher Education Study Program, Sumedang Campus,
Universitas Pendidikan Indonesia
E-mail: nurdinahhanifah@upi.edu

Rahimah***
***Arabic Literature Study Program, Faculty of Cultural Sciences,
Universitas Sumatera Utara, Indonesia
E-mail: rahimah1@usu.ac.id

Ahmad Arifuddin***
****Department of Madrasah Ibtidaiyah Teacher Education, Faculty of Tarbiyah and Teacher Training,
Universitas Islam Negeri Siber Syekh Nurjati Cirebon, Indonesia
E-mail: arifuddin@uinssc.ac.id

Abstract

This research is motivated by the importance of creating digital learning media, considering that the learning that is currently carried out is in the digital era. SAC is software to create applications without having to go through programming code. This research aims to create a SAC-based Android application learning media product to improve students' understanding of Islamic education materials in elementary schools. The research method used is R&D, with 4D design (define, design, development, and disseminate). The findings are: The learning media for the andorid application with SCA is called the SAHIH application, an abbreviation for "Sahabat Fikih" (Friends of Fiqh). The SAHIH application is a SAC-based android learning media made for materials to welcome puberty in grade IV of elementary school. The SAHIH application is made based on the analysis of needs and analysis of independent curriculum documents. This app has been validated by media experts and material experts with very decent grades. The SAHIH application has gone through a limited, extensive trial stage and has received a very good and very feasible assessment, it has also been tested for its effectiveness. Thus, it can be concluded that the SAHIH application can be applied to Islamic education.

Abstrak

Penelitian ini dilatarbelakangi oleh pentingnya membuat media pembelajaran digital, mengingat pembelajaran yang dilakukan saat ini berada di era digital. SAC adalah perangkat lunak untuk membuat aplikasi tanpa harus melalui kode pemrograman. Penelitian ini bertujuan untuk menghasilkan produk media pembelajaran aplikasi android berbasis SAC untuk meningkatkan pemahaman siswa tentang materi PAI di sekolah dasar. Metode penelitian yang digunakan adalah R&D, dengan desain 4D (define, design, develop, dan diseminasikan). Temuannya adalah: Media pembelajaran untuk aplikasi andorid berbasis SCA ini diberi nama aplikasi SAHIH, singkatan dari "Sahabat Fikih". Aplikasi SAHIH merupakan media pembelajaran android berbasis SAC yang dibuat untuk materi menyambut pubertas di kelas IV SD. Aplikasi SAHIH dibuat berdasarkan analisis kebutuhan dan analisis dokumen kurikulum merdeka. Aplikasi ini telah divalidasi oleh pakar media dan ahli materi dengan nilai yang sangat layak. Aplikasi SAHIH telah melalui tahap uji coba terbatas dan luas, dan telah mendapatkan penilaian yang sangat baik dan sangat layak, aplikasi ini juga telah diuji efektivitasnya. Dengan demikian, dapat disimpulkan bahwa aplikasi SAHIH dapat diterapkan pada pembelajaran PAI.

Kata kunci: *smart apps creator, aplikasi andorid, media pembelajaran, PAI, sekolah dasar.*

INTRODUCTION

Teachers as professionals must be able to adapt to the times (Almoeather 2020), where learning is currently carried out based on ICT (Binti Mohd et al. 2024). ICT is an important part of the learning process (Benitez et al. 2020), so that the lag of teachers in ICT will backfire, which will affect their professionalism (Ngongo, Verdinandus Lelu, Hidayat, and Wijayanto, 2019). Teachers must always innovate in learning (Gresinta & Tukiran, 2024), so that they are not left behind by the times. Innovation in learning can be done by implementing various innovative learning models that are in accordance with the characteristics of students. Among the innovative teaching models that can be applied are blended learning, distance learning (distance education), mobile learning (M-learning), and virtual learning environments (Azis, 2019). In addition to implementing these learning models, innovative learning can be supported by using various digital platforms, such as Google Sites, TeamViewer, Remote Utilities, AeroAdmin, Google Drive, Linktree, and others. Similarly, the learning innovation can be seen from the learning tools used, which are devices based on digital technology, both learning media, teaching materials, evaluation tools, and student worksheets. There have been many research results that state that innovation in learning media and the use of innovative learning media have a positive influence on improving student learning outcomes (Cahyani et al., 2022; Damayanti et al., 2020; Purwandari, 2019; Widiasih, Widodo, & Kartini, 2018).

Innovative learning not only has a good influence on students, but also has a positive impact on teachers, that teachers become more creative (Santiana et al. 2023). Teachers' creativity arises by finding new ideas to make changes and products used in learning, for example learning media. One of the innovative learning media is learning media in the form of an android application based on Smart APPS Creator (SAC). Smart APPS Creator (SAC) is a desktop application used to create applications and iOS without programming code (Azizah, 2020). This SAC has been widely used for the creation of interactive learning media because

it is easy to use and easy to combine with back sound or animation (Andriani & Suratman, 2021).

Innovative learning media such as SAC-based android applications are needed to make it easier for students to understand the material and to increase student motivation in learning so that students are not bored and not lazy when participating in the learning process, especially needed in Islamic Education subjects, because so far Islamic Education seems to be a complementary subject that is not important. Islamic Education material is delivered in the form of mere doctrine and memorization, finally boring students and far from meaning. There is innovation with a touch of technology in Islamic Education, the learning process can be developed and the quality can be improved (Aisyah & Mulyani, 2020), For this reason, a SAC-based android learning media was developed for Islamic Education materials in elementary schools.

METHODS

The method used is research and development (R&D) with the development model used as the basis for this research is the one stated by Trianto (2011). The device development model suggested by Thiagarajan, Semmel and Semmel in 1974 was the 4-D model, which consisted of 4 stages of development, namely define, design, develop, and disseminate (4-D). This development model was chosen because it is in accordance with the purpose of this development model, which is to design and develop Android application learning media based on Smart APPS Creator. Through the 4-D development model in this study, a SAC-based android application will be developed as a learning medium for Islamic Education materials in elementary schools.

The approach used in this study is a mixed method approach, which is a combination of qualitative and quantitative methods. Mixed research is a research that combines qualitative and quantitative research (Creswell, 2013), used together in an activity so that more comprehensive, valid, reliable, and objective data are obtained (Sugiyono, 2019).

The use of the mixed method approach in this study is based on the type of instrument and collection technique carried out. The qualitative approach is used for observation, interview and documentation techniques, while the quantitative approach is used for questionnaire/questionnaire techniques. Data analysis was carried out qualitatively and quantitatively according to the type of data obtained.

The instruments used in this study are adjusted to the data collection techniques carried out and approaches.

Table 1. Types of Research Instruments and Data Analysis

No.	Approaches	Data collection techniques	Instruments	Data Analysis
1.	Qualitative	Observation	Observation Guidelines	Miles and Huberman Data Analysis Model
		Interview	Interview Guidelines	Miles and Huberman Data Analysis Model
		Documentation	Document Analysis Guidelines	Miles and Huberman Data Analysis Model
2.	Quantitative	Questionnaire	Questionnaire	Percentages and

		Categorization
Test	Test questions	SPSS

The research procedure is carried out in three stages, namely: Pre-research, implementation and data processing and analysis stage.

This research was carried out in four State Elementary Schools in the North Sumedang area, Sumedang Regency, West Java, namely: Public Elementary School (SD Negeri) Sukamaju, SD Negeri Panyingkiran 2, SD Negeri Panyingkiran 3 and SD Negeri Cilengkrang with the research subjects of grade 4 students who participated in Islamic Education learning in 2024.

RESULTS AND DISCUSSION

Definition Stage of SAC-Based Andorid Application Learning Media for Islamic Education Materials in Elementary Schools

At this stage, an analysis of the:

Curriculum Documents

The documents analyzed are independent curriculum documents for Islamic education and ethics subjects in Phase B. Analysis is carried out on the general achievement of the government (CU), learning outcomes (CP), and elements for the Phase B phase. Other differences lie in the CP, TP-ATP, and KI-KD, as well as the syllabus (Aulia, Sarinah, & Juanda, 2023). Based on the results of the analysis conducted by Almarisi (2023), it is stated that the advantages of the independent curriculum are: simpler, focus on essential knowledge and the development of students based on the stages of progress, more meaningful, not rushed, learning is more fun, students are more independent, and teaching according to the assessment of the level of achievement and development of students.

The tool in the independent curriculum is called Learning Outcomes (CP). Learning Outcomes (CP) are an important part of the curriculum. The curriculum is the most important tool in the education system and learning process (Akrim et al. 2022; Lewin et al. 2023). Ayunissa, Nurul Ikhsan, and Puspita Sari (n.d.) refer to CP as an expression of educational objectives that convey a statement of what is expected of students to be known, understandable, and can be done by all students after completing a learning period process. CP Islamic Education and ethics for phase B in the fiqh element is that students can carry out fasting, Friday prayers and sunnah prayers well, understand the concept of puberty and the responsibilities that come with it (taklīf). From the CP, material was chosen about understanding the concept of puberty and the responsibilities that accompany it (taklif). The selection of this material is adjusted to the needs of students regarding the understanding of the age of puberty. At this age, students must understand their responsibilities (Wahidah, 2020).

Student Needs

Grade 4 is a high class, where most of the students have entered puberty and it is very important to get a good understanding of puberty according to what they need at their age. Puberty for women is marked by the arrival of menstruation while for men it is marked by wet dreams (Amalia, 2021).

Based on the results of interviews with several 4th grade students who have entered puberty and have experienced menstruation, they feel embarrassed When menstruation comes, confused when they first get their period, do not know what puberty means, what to do if they have experienced menstruation, and what are the consequences if they have experienced menstruation. Their anxiety about puberty and menstruation is experienced because of their minimal knowledge about puberty and menstruation, because these two problems seem taboo to be explained and conveyed to children because it is a matter of sex and is included in sex education (Oktora, Muslihin, & Elan, 2023), Likewise, teachers lack skills in delivering sex education (Noh & Bakar, 2023). Meanwhile, in Indonesia, sex education is still a controversy (Haryono et al., 2018). In fact, when viewed from the perspective of Islam, sex education is related to fiqh issues that are very important to convey to students because it will be very related to the implementation of *mahdhah* worship. According to Effendi and Fitriani (2023) the foundation of sex education in an Islamic perspective is the Quran and Hadith, because sex education is an important part of teaching piety, faith and values.

Teacher Needs

To find out the needs of teachers for android application learning media, a survey was conducted through google form to 246 elementary school teachers in West Java, Central Java and Banten Provinces. Google form is a cloud-based data management tool used to design and develop web-based questionnaires (Raju & Harinarayana, 2018). The results of the survey can be classified into 2 parts, namely the results that measure the knowledge of elementary school teachers about learning media in the form of android applications and the results that measure the knowledge of elementary school teachers about Smart Apps Creator (SAC).

Based on these results, it can be concluded that 1) more than half of elementary school teachers have known learning media in the form of an Android application but less than half have never made an android application, so it is necessary to improve the technological capabilities of teachers, 2) A small number of elementary school teachers already know and have used the Smart Apps Creator (SAC) application, meaning that most of them do not know and have never used SAC. Based on research conducted by Pebriani, Heliawati and Ardianto (2022), it is stated that learning media in the form of applications has never been used by teachers. This indicates that SAC has never been used or created by teachers, whereas SAC is one of the approaches to address current or future learning. This is in line with what was stated by Heliawati, Pebriani, and Ardianto (2022). In the current technology era, interactive multimedia created by Smart Apps Creator (SAC) will be advantageous to the country's future leaders. Learning models need to be improved for the 21st century's educational process.

Although based on the results of this survey, there are still many teachers who have not used SAC, but there have been several studies on the development of SAC, such as those that have been carried out by (Efendi & Muhammadi, 2023).

Literature study of previous research results

It was found that the results of research on SAC that had been carried out by Ardiansyah and Wicaksono (2022) with the title "Development of Android-Based Learning Applications Using Smart App Creator (SAC) on Absolute Value Equation Material". The results of the research state that this SAC product can be in the form of an android application and can also

be in the form of a desktop (computer) application. Furthermore, what was done by Oktaviani and Amini (2022) with the research title "Development of Integrated Thematic Learning Media Using Smart Apps Creator Based on a Scientific Approach in Grade III Elementary School". Based on the results of his research, it is stated that the development of integrated thematic learning media using Smart Apps Creator has created an alternative for teachers to improve the teaching and learning process in the classroom.

Another research was conducted by Nasir et al. (2022) with the research title "Smart Apps Creator-Based Craft Learning Media Design". From his research, it was stated that this media was declared feasible and could be implemented in schools.

Design Stage of SAC-Based Android Application Learning Media for Islamic Education Materials in Elementary Schools

At the design stage, the things that are done are:

Preparation of the required software

The software used in making the SAHIH (Sahabat Fikih) application is:

a) Smart Apps Creator, is the main software in making this SAHIH application. SAC is used to create applications from designs that have been created as well as produce application outputs. This SAC can be used to create interactive multimedia media (Heliawati, Pebriani, & Ardianto, 2022; Puspitasari et al., 2022).

b) Canva, used to design logos, compose materials, create additional components, and create learning videos and animated videos that are inserted into the SAHIH application. Canva is a website graphic design tool; Visual technology media with drag-and-drop format and provides access to over a million photos, graphics, and fonts. It provides millions of free images, photo filters, icons, and shapes, and hundreds of fonts (Fauziyah, Priyanto Widodo, & Yappi, 2022).

c) Capcut, is a video editing application used in the creation of this SAHIH application. Capcut is used to create intros and outro of learning videos that are within the application. CapCut is an application that can be used as a special application for editing video, audio and images (Pahmi & Syafwin, 2022).

d) Voice Recorder, used to record voices that fill in the material, fill in the content of learning videos and animations, and fill in the audio of the pronunciation of the letter on the SAHIH application. Voice recorders can be done on computer or mobile applications and even on whatshapp (Maldonado & Dack, 2024).

e) Adobe Podcast website, is a web-based platform used to improve the audio quality of the SAHIH application. This website is used to reduce noise and improve the clarity of the sound used in the SAHIH application so that the audio in the SAHIH application sounds more professional. In this case, the Podcast website is used for the world of education (Ramirez, 2024).

Story boards creation

Story boards are media plans that will be made. This story board is needed so that when creating directed media. Story board is needed to create a multimedia project design (Solar et al., 2000). The story board for the SAHIH application is created in the form of a

table that contains columns. The following are some of the contents of the SAHIH application story board.

Table 1. Part of the Story Board Contents of the SAHIH Application

No.	Slide	Content Outline	Element
1	Cover	App name logo SAHIH (Sahabat fikih)	App logo image
2	Greeting/Welcoming	Hello Sahabat Fiqih!! Are you ready to join the excitement of seeking knowledge about puberty? Click the button below to start the fun	Image of the start now button
3	Menu list	The menu consists of: Developer profile Let's learn Let's play Let's watch	The appropriate image for each menu
4	Introduction	بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ Assalaamu 'alaikum Wr. Wb. Praise and Gratitude for the presence of Allah SWT because thanks to His grace We can create a Smart Apps Creator (SAC) based learning media in the form of an android application called SAHIH (Sahabat Fikih), hopefully this learning media can be useful for the achievement of much better learning outcomes for the achievement of the quality of Education that is not hampered by any form. Amen.	Image of home, next, back buttons

Development stage of SAC-Based Android Application Learning Media for Islamic Education Materials in Elementary Schools

At the development stage, the following things are done:

Making the initial product

The creation of the product is based on a story board that has been created using software that has been prepared at the design stage. Product creation goes through two stages, namely: creating content design before being input into the SCA application and product design in the SAC application. This SAC is widely used in the world of Education (Hasrullah, Jabu, & Muhayyang, 2024). In content design, the things that are done are: determining the material, theme, name, logo layout and application content, material design, making additional components and finally input to the SAC application. At the SAC application input stage, what is done is 2) the application content design stage before going to SAC, 3). After entering into the SAC application, the things that are done are: Determining one of the layouts, inserting images on the Loading Screen/Start Page, inserting material using PDF, Creating buttons and Navigation, Creating Navigation for All Buttons, Creating Navigation for All Buttons (more than one on one page), Creating buttons before and Next, Creating a multiple-choice game, Creating a Drag and Drop game. This SAHIH application is included in multimedia media, which is an interactive tool because it is equipped with a controller that can be operated to select the next process (Fauyan, 2019).

Expert Validation

Expert validation is carried out by media experts and material experts. The material expert gives an assessment score of 77 or 96% with very decent criteria. Similarly, media experts provide assessments with the same scores and ratings with very feasible criteria. The validation of the SAHIH application product indicates that the level of validity has been measured (Puspitasari & Febrinita 2024).

Product Revision

Product revisions are carried out based on notes provided at the validation stage by media experts and material experts. This product revision is carried out to improve the product so that the weaknesses in the original product can be avoided (Purnama 2013). Revised matters from material experts: 1) Quiz questions should not end with a question mark because it is not a question sentence but should end with three dots, 2) In the prohibition material for menstruating women, add an explanation that in some people there are those who hold firmly to the opinion that it is permissible to touch and read the Qur'an, 3) In the material of the big bath, there is a recitation of intention; it is better to add an explanation that in some people there are those who firmly hold the opinion that the intention does not need to be recited/pronounced, but it is enough in the heart, 4) In each publication of the name of the letter, also include the number of the letter, for example: Q.S. An-Nur [24]: 23

The revision notes from media experts are: 1) Add case study menu, 2) Add a reference menu, 3) Add audio for each text sound of the Qur'an verse, 4) Add an animated video to the Let's Watch menu. 5) Add a back sound to each slide.

Making the Final Product

The final product is a revised product based on notes from experts.

Figure 1. SAHIH Application Final Product

The final product of the SAHIH application consists of the main menu, namely the developer profile, let's learn, let's play, and let's watch. The developer profile menu contains the names of application developers, the Let's Learn menu contains material to welcome puberty, the Let's Play menu contains quizzes in the form of multiple choice and drag and drop, and the Let's Watch menu contains learning videos about puberty welcome material and animated videos in the form of video illustrations to concretize the material that is basically

about welcoming puberty. The basic menus on this application are almost the same as the Sunny Dental application that was previously created by Aeni et al. (2023).

Limited trial

A limited trial was carried out at SDN Panyingkiran 3. In a limited trial, it was measured by tests to students and assessment questionnaires on products by students. Based on the product assessment from the fourth-grade students of SDN Panyingkiran 3, it was stated that the product was very good, which included aspects of color, image, layout, language, material and audio. Meanwhile, based on the test, the results were obtained.

Table 2. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
NGain_Score	20	.20	1.00	.6173	.21901
NGain_Persen	20	20.00	100.00	61.7262	21.90126
Valid N (listwise)	20				

Based on table 2, it was obtained that the Mean N-Gain Score value of 0.6173 is included in the category of "Moderate" effectiveness and the Mean N-Gain Percent value of 61.7262, so the use of the SAHIH (Sahabat Fikih) application is "quite effective" in increasing students' understanding of the material welcoming puberty.

Extensive trial

Extensive trials were carried out in two schools, namely SDN Panyingkiran 2 and SDN Cilengkrang which included product assessments by students and tests to measure effectiveness. At SDN Panyingkiran 2, very good results were obtained for the product, while for the test results, the results were obtained

Table 3. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
NGain_Score	25	-1.00	1.00	.5873	.43419
NGain_Persen	25	-100.00	100.00	58.7286	43.41903
Valid N (listwise)	25				

Based on table 3, it was obtained that the Mean N-Gain Score value of 0.5873 is included in the category of "Moderate" effectiveness and the Mean N-Gain Percent value of 58.7286, so the use of the SAHIH (Sahabat Fikih) application is "quite effective" in increasing students' understanding of the material welcoming puberty. The results of this study are in line with the results of research conducted by (Puspitasari et al. 2022; Putra, Maasawet, & Masruhim 2021) that SAC-based learning media is effective and can improve student learning outcomes. Based on the results of the study, it is proven that learning using technology is able to have a good impact on learning outcomes. In the twenty-first century, technological advancements are altering how educational activities are planned and carried out (Salas-Rueda et al. 2021).

From SDN Cilengkrang, very good results were obtained for the product and based on the test results were stated as follows.

Table 4. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
NGain_Score	22	.00	1.00	.6110	.32637
NGain_Persen	22	.00	100.00	61.1039	32.63692
Valid N (listwise)	22				

Based on table 4, it was obtained that the Mean N-Gain Score value of 0.6110 was included in the category of "Moderate" effectiveness and the Mean N-Gain Percent value of 61.1039, so the use of the SAHIH (Sahabat Fikih) application was "quite effective" in increasing students' understanding of the material welcoming puberty. This is in accordance with the results of research conducted by Silfiyana, Sugianto, and Nurbaiti (2024) that SAC is effectively used in learning, especially in improving critical thinking skills.

Dissemination Stage of SAC-Based Android Application Learning Media for Islamic Education Materials in Elementary Schools

The dissemination stage was carried out by disseminating the product to users, namely to 36 elementary school Islamic Education teachers in the Sumedang area, and the implementation of the product to grade IV elementary school students. they provide an excellent rating for SAHIH application products which include the feasibility of presentation, color, images, videos and materials.

At the implementation stage, it was carried out at SDN Sukamaju. This stage is a product assessment by students and tests to measure effectiveness. The students' assessment of the SAHIH application product is very good, while the test results are stated as follows:

Table 5. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
NGain_Score	12	-.67	1.00	.4410	.58346
NGain_Persen	12	-66.67	100.00	44.0972	58.34573
Valid N (listwise)	12				

Based on table 5. It was obtained that the Mean N-Gain Score value of 0.4410 is included in the category of "Moderate" effectiveness and the Mean N-Gain Percent value of 44.0972 so the use of the SAHIH (Sahabat Fikih) application is "Less Effective" in increasing students' understanding of the material welcoming puberty. This is different from the results of previous research conducted by several researchers, including those that have been carried out by (Sholihah & Hidayati, 2023)

CONCLUSION

The SAHIH application is a SAC-based android learning media made for materials to welcome puberty in grade IV of elementary school. This application was made based on the needs analysis and analysis of independent curriculum documents. The creation of the SAHIH application product uses the Smart Apps Creator (SAC) application. This app has been validated by media experts and material experts with very decent grades. In the trial stage, it was limited, extensive and received a very good and very feasible assessment.

ACKNOWLEDGEMENTS

REFERENCES

Aeni, A. N., Maulana, M., Akbar, K. A., & Hafidz, A. N. (2023). Penggunaan Aplikasi CERAH DENTAL (Cerdas Beribadah dengan Digital) Dalam Pembelajaran Pendidikan Agama Islam di Sekolah Dasar. *Jurnal Inovasi Pendidikan Dan Pembelajaran Sekolah Dasar*, *7*(1), 222-236.

Aisyah, S., Mulyani, M. (2020). Guru Zaman Now Dan CAra Belajar Peserta Didik Di Era Revolusi Industri 4.0. in *Pengembangan Pembelajaran PAI di Era Digital*, edited by Herdiana, Aam,; Roli, Tegar. Banyumas: Amerta Media.

Akrim, A., Setiawan, H. R., Selamat, S., & Ginting, N. (2022). Transformation of Islamic Education Curriculum Development Policy in the National Education System. *Cypriot Journal of Educational Sciences*, *17*(7), 2538-2552. doi: 10.18844/cjes.v17i7.7685.

Almarisi, A. (2023). Kelebihan Dan Kekurangan Kurikulum Merdeka Pada Pembelajaran Sejarah Dalam Perspektif Historis. *MUKADIMAH: Jurnal Pendidikan, Sejarah, Dan Ilmu-Ilmu Sosial*, *7*(1): 111–17. doi: 10.30743/mkd.v7i1.6291.

Almoeather, R. (2020). Effectiveness of blackboard and edmodo in self-regulated learning and educational satisfaction. *Turkish Online Journal of Distance Education*, *21*(2), 126-140.

Amalia, N. (2021). Konsep Baligh Dalam Alquran Dan Implikasinya Pada Penentuan Usia Nikah Menurut Uu Perkawinan. *Jurnal Al-Qadau: Peradilan dan Hukum Keluarga Islam*, *8*(1), 77-86.

Andriani, R., & Suratman, A. (2021). Media pembelajaran berbasis andrioid untuk meningkatkan motivasi dan hasil belajar siswa. *Jurnal Analisa*, *7*(1), 56-65.

Ardiansyah, Y., & Wicaksono, A. (2022). Pengembangan Aplikasi Pembelajaran Berbasis Android Dengan Menggunakan Smart App Creator (SAC) Pada Materi Persamaan Nilai Mutlak. *Koordinat Jurnal MIPA*, *3*(2), 33-42.

Aulia, N., Sarinah, S., & Juanda, J. (2023). Analisis kurikulum merdeka dan kurikulum 2013. *Jurnal Literasi Dan Pembelajaran Indonesia*, *3*(1), 14-20.

Ayunissa, R., Ikhsan, M.N. & Sari, D.P. n.d. Analisis Tantangan Guru PAI Dalam Mengembangkan Perangkat Pembelajaran Pada Kurikulum Merdeka Di SMP Negeri 3 Godean.

Azis, T. N. (2019). Strategi Pembelajaran Era Digital. *Annual Conference on Islamic Education and Social Sains (ACIEDSS 2019)* 1(2):308–18.

Azizah, A. R. (2020). Penggunaan Smart Apps Creator (SAC) Untuk Mengajarkan Global Warming. *Prosiding Seminar Nasional Fisika (SNF) Unesa* 4(2):72–80.

Benıtez, C., Quınones, A., Gonzalez, P., Ochoa, C., & Vargas, A. (2020). The impact of online annotation tools on students' academic performance in a distance university program. *Turkish Online Journal of Distance Education*, *21*(2), 167-177.

Binti Mohd, R. F., Zulkifli, H., & Hamzah, M. I. (2024). Systematic Literature Review of ICT Integration in Teaching and Learning. *TEM Journal*, *13*(4), 3146. doi: 10.18421/TEM134-49.

Cahyani, E. D., Puspitasari, S., Fauziyah, S., & Mujazi, M. (2022). Pengaruh Penggunaan Inovasi Media Pembelajaran Terhadap Peningkatan Hasil Belajar Siswa Kelas 5 SD Negeri Cukanggalih 1. In *Seminar Nasional Ilmu Pendidikan dan Multi Disiplin* (Vol. 5, No. 01).

Creswell, J.W. (2013). Qualitative, Quantitative, and Mixed Methods Approaches. in *Research design*.

Damayanti, E., Santosa, A. B., Zuhrie, M. S., & Rusimamto, P. W. (2020). Pengaruh Penggunaan Media Pembelajaran Berbasis Multimedia Interaktif Terhadap Hasil Belajar Siswa Berdasarkan Gaya Belajar. *Jurnal Pendidikan Teknik Elektro*, *9*(3), 639-645.

Efendi, U. P., & Muhammadi, M. (2023). Development of smart apps creator learning media on pancasila material as life value in the fifth-grade of elementary school. *Journal Of Teaching And Learning In Elementary Education*, *6*(2), 210-220. doi: 10.33578/jtlee.v6i2.8050.

Effendi, M. N., & Fitriani, F. (2023). Sex Education dalam Perspektif Pendidikan Islam. *ADDABANA: Jurnal Pendidikan Agama Islam*, *6*(1), 31-49. doi: 10.47732/adb.v6i1.236.

Fauyan, M. (2019). Developing Interactive Multimedia Through Ispring on Indonesian Language Learning with The Insights of Islamic Values in Madrasah Ibtidaiyah. *Al Ibtida: Jurnal Pendidikan Guru MI*, 6(2): 177. doi: 10.24235/al.ibtida.snj.v6i2.4173.

Fauziyah, N. L., Widodo, J. P., & Yappi, S. N. (2022). The use of 'Canva for Education'and the students' perceptions of its effectiveness in the writing procedure text. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal)*, *5*(1). doi: 10.33258/birci.v5i1.4359.

Gresinta, E., & Tukiran, M. (2024). Literature Review: Teacher Innovativeness in Learning in the Digital Era. *International Journal of Social and Management Studies*, *5*(3), 9-15.

Haryono, S. E., Anggareni, H., Muntomimah, S., & Iswahyudi, D. (2018). Impelementasi pendididkan sex pada anak usia dini di sekolah. *JAPI (Jurnal Akses Pengabdian Indonesia)*, *3*(1), 24-34.

Hasrullah, H., Jabu, B., & Muhayyang, M. (2024). Using Smart Apps Creator (SAC) as an Android-Based Learning Multimedia in Improving the Students' Vocabulary Achievement. *EduLine: Journal of Education and Learning Innovation*, *4*(2), 273-279. doi: 10.35877/454ri.eduline2619.

Heliawati, L., Pebriani, F., & Ardianto, D. (2022). Smart Apps Creator 3 Interactive Multimedia Based on Stream to Improve Students' Scientific Literacy During the Covid-19 Pandemic. *Journal of Innovation in Educational and Cultural Research*, *3*(4), 617-624. doi: 10.46843/jiecr.v3i4.277.

Lewin, D., Orchard, J., Christopher, K., & Brown, A. (2023). Reframing curriculum for religious education. *Journal of Curriculum Studies*, *55*(4), 369-387. doi: 10.1080/00220272.2023.2226696.

Maldonado, N. B. I. & Dack, T.F. (2024). The Effect of Voice Recording as a Tool to Improve Speaking Skills. *Runas. Journal of Education and Culture* 5(10):e240161. doi: 10.46652/runas.v5i10.161.

Nasir, N., Nurindah, N., Rauf, A., Ayu, S., & Hambali, U. (2022). Desain media pembelajaran prakarya berbasis Smart Apps Creator. *Jurnal Studi Guru dan Pembelajaran*, *5*(3), 226-232. doi: 10.30605/jsgp.5.3.2022.1884.

Ngongo, V. L., Hidayat, T., & Wiyanto, W. (2019, July). Pendidikan di era digital. In *Prosiding Seminar Nasional Program Pascasarjana Universitas PGRI Palembang*.

Noh, N., & Bakar, K. A. (2023). Implementation of sexuality education in preschool: challenges and obstacles. International Journal of Academic Research in Progressive Education and Development, 12(1), 927-943.doi: 10.6007/ijarped/v12-i1/15997.

Oktaviani, D., & Amini, R. (2022). Pengembangan Media Pembelajaran Tematik Terpadu Menggunakan Smart Apps Creator Berbasis Pendekatan Saintifik di Kelas III SD. *Jurnal Basicedu*, *6*(6), 10298-10306. doi: 10.31004/basicedu.v6i6.4883.

Oktora, S. D., Muslihin, H. Y., & Elan, E. (2023). Analysis of Sexual Education Knowledge in Children of Elementary School. *Jurnal Pendidikan Ips*, *13*(1), 39-43. doi: 10.37630/jpi.v13i1.969.

Pahmi, L. D., & Syafwin, M. (2022). Using the capcut application as a learning media. *Journal International Inspire Education Technology*, *1*(1), 40-51.

Pebriani, F., Heliawati, L., & Ardianto, D. (2022). The effect of STREAM-based teaching materials using smart apps creator 3 on students' scientific literacy. *International Journal of STEM Education for Sustainability*, *2*(1), 78-93. doi: 10.53889/ijses.v2i1.29.

Purwandari, S. (2019). Pengaruh Media Pembelajaran Inovatif Koper Edukasi Asean Terhadap Hasil Belajar Siswa. *Jurnal Didaktika Pendidikan Dasar*, *3*(1), 181-200.

Puspitasari, J., Juhadi, J., Suyahmo, S., Wijayanto, P. A., & Saadah, N. (2022). Smartphone Learning Media Prototype Model Based on SAC (Smart Apps Creator) For 4.0 Learning. *International Journal of Social Learning (IJSL)*, *3*(1), 31-47. doi: 10.47134/ijsl.v3i1.75.

Puspitasari, W. D., & Febrinita, F. (2021). Pengujian validasi isi (content validity) angket persepsi mahasiswa terhadap pembelajaran daring matakuliah matematika

komputasi. *Journal Focus Action of Research Mathematic (Factor M)*, *4*(1), 77-90. doi: 10.30762/factor-m.v4i1.3254.

Putra, H. P., Maasawet, E. T., & Masruhim, M. A. (2021). The Effectiveness Smart Apps Creator Learning Media Improving Student Learning Outcomes in The Era of The Covid-19 Pandemic. *Ijer-Indonesian Journal Of Educational Review*, *8*(2), 56-71.

Raju, N. N. S. H. V, & Harinarayana, N. S. (2016, January). Online survey tools: A case study of Google Forms. In *National conference on scientific, computational & information research trends in engineering, GSSS-IETW, Mysore*.

Ramirez, M. G. (2024). The Use of Podcasts for Language Learning: A Systematic Review of Literature. *International Journal of English Language Studies*, *6*(1), 47-53. doi: 10.32996/ijels.

Rohman, A. S., Sugianto, S., & Nurbaiti, U. (2024). Development of Learning Media Based on Smart Apps Creator to Improve Student's Critical Thinking Skills. *Physics Communication*, *8*(2), 60-65.

Salas-Rueda, R. A., De-La-Cruz-Martínez, G., Alvarado-Zamorano, C., & Prieto-Larios, E. (2021). Innovation in the Teaching-Learning Process of Global Climate Change through the Collaborative Wall. *LUMAT: International Journal on Math, Science and Technology Education*, *9*(1), 256-282. doi: 10.31129/LUMAT.9.1.1471.

Santiana, S., Silvani, D., Syakira, S., & Ruslan, R. (2023). Pelatihan Pembuatan Media Pembelajaran Inovatif Berbasis Digital Comic untuk Pembelajaran Bahasa. *Jurnal Inovasi Pengabdian Masyarakat Pendidikan*, *4*(1), 26-43. doi: 10.33369/jurnalinovasi.v4i1.27417.

Sholihah, L. L., & Hidayati, S. N. (2023). Penerapan Media Smart Apps Creator Dalam Pembelajaran Berbasis Inkuiri Untuk Meningkatkan Hasil Belajar Siswa. *EDUPROXIMA (Jurnal Ilmiah Pendidikan IPA)*, *5*(2), 116-122.

Solar, M., Verdugo, P., & Parada, V. (2000). Storyboard aided design to specify multimedia projects. *Computer Applications in Engineering Education*, *8*(3-4), 221-228. doi: 10.1002/1099-0542(2000)8:3/4.

Sugiyono. (2019). *Metode Penelitian Kuantitatif, Kualitatif, Dan R&D*. Bandung: Alfabeta.

Trianto. (2011). *Panduan Lengkap Penelitian Tindakan Kelas (Classroom Action Research): Teori & Praktik*. Jakarta: Prestasi Pustakarya.

Wahidah, W. (2020). Reaktualisasi Pendidikan Aqil Baligh di Sekolah. *At-Tarbawi: Jurnal Pendidikan, Sosial Dan Kebudayaan*, *7*(2), 214-231.

Widiasih, R., Widodo, J., & Kartini, T. (2018). Pengaruh penggunaan media bervariasi dan motivasi belajar terhadap hasil belajar mata pelajaran ekonomi siswa kelas XI IPS SMA Negeri 2 Jember Tahun Pelajaran 2016/2017. *JURNAL PENDIDIKAN EKONOMI: Jurnal Ilmiah Ilmu Pendidikan, Ilmu Ekonomi Dan Ilmu Sosial*, *11*(2), 103-107. doi: 10.19184/jpe.v11i2.6454.