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Systematic Review of Development Methods and Effectiveness of Digital PAI Learning Media

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ABSTRACT

This research uses the SLR (Systematic Literature Review) method using a prism diagram. In the prism diagram there are four stages, namely 1) identification of journals related to the problem raised, 2) screening or selecting journals using inclusion and exclusion criteria, 3) eligibility to see the suitability of the journal, 4) inclusion of the final results of the selected journal after passing the three stages at the beginning and analyzed thoroughly. synthesis using narrative methods. Journal search using the digital library Google Scholar, Doaj, Garuda, One Search. The final results of the journal search were 28 journals discussing digital media and development models used in learning today. The analytical and synthesis results of 28 journals in the most widely used digital media are animation media with an effectiveness level of 97% because the appearance is attractive and not boring. Meanwhile, the development models most widely used today are the ADDIE and Lee & Owens models with effectiveness of 90% and 97%. Based on the research results, it shows that the use of animation-based digital media and the ADDIE and Lee & Owens development models quickly increases students' enthusiasm for learning because the learning process becomes interesting and not boring.

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1. INTRODUCTION

The swift advancement of technology has brought about a noteworthy influence on the realm of education during the age of progress and globalization [1]. Modernity and technical progress go hand in hand with the emergence of new, freer ideas [2] [3]. Current advances in science and technology have an important influence on every aspect of life, including education [4]. Educators must consistently enhance their knowledge and skills to align with the evolving technological advancements in the field of education [5]. The utilization of information technology plays a crucial role in shaping how individuals acquire knowledge and engage in self-education [6]. Consequently, technology exerts a significant influence on the process of teaching and learning [7].

Education not only determines the course of civilization but is also a means for human life [8]. All actions taken to direct the improvement process fall within education. The foundation of education is knowledge [9]. Everyone acquires knowledge through instruction, tutoring, schooling, acquiring, and direct encounters through educational procedures [10]. Education in Islam means something important as explained in the hadith, "Tolabul ilmi faridhatun 'ala kulli muslim", seeking knowledge is an obligation for every Muslim [11].

Islamic Religious Education is a deliberate, systematic, and lasting effort to improve the ability to experience faith-centered encounters that instill Islamic traits and abilities (faith-related competencies) [12]. Religious studies are intended to increase students' understanding of their faith and equip them to become ethical individuals who believe in and care about the Almighty [13] [14]. To ensure that lessons are easy to understand, it is very important to align teaching strategies and methodologies with the subject matter being taught and students' abilities[15]. To achieve the desired learning goals, educational approaches, techniques and models are adapted [16].

Digital-based learning media is media used to create audio-visual media [17] [18]. Learning resources that are based on digital platforms can take various forms, such as interactive multimedia CDs, websites, electronic

modules, flash content, and e-books. Learning on digital platforms marks a new revolution in instructional design [19]. Outside the classroom, digital-based learning is also possible. Educators and lecturers can use online learning tools such as blogs and moodle [20]. Educational resources facilitate the learning process for students and enhance their educational experience [21]. Educational resources are usually presented in innovative formats [22]. Media functions as a link that connects the sender of the message with the recipient [23] [24]. In order for this to be widely known, the media must be tailored to a specific target audience [25].

In this study, researchers will discuss various types of digital media that are relevant to use in learning activities. Not only does the medium matter, but also the development model, as well as the effectiveness and efficiency of the media employed in the learning process. This is because in this modern era many educators want to improve the learning outcomes of their students. Therefore, interesting learning media is needed that is adapted to current technological developments. Apart from media, learning development models are also needed to produce appropriate learning media. So, the researcher made a study entitled "Systematic Review of Development Methods and Effectiveness of Digital-Based PAI Learning Media".

2. METHOD

In this study, a Systematic Literature Review (SLR) is employed, utilizing meta-evaluation and meta-synthesis methods to amalgamate insights from key research, aiming to offer a more comprehensive and impartial understanding of the subject. One method for combining statistical results (quantitative technique) is through meta-evaluation with narrative methods (qualitative technique). In accordance with Wiley (2019), a scientific literature review seeks to offer an up-to-date overview of a cutting-edge field of study and a thorough literature review also addresses key issues that frequently arise in research [26].

Systematic Literature Review (SLR) to complete all applicable articles that have been found, checked, researched, and understood. Researchers compare and interpret journals, in this way based on established procedures [27][28]. To accomplish this research, the researcher gathered journal articles from databases such as Google Scholar, Doaj, Garuda, and One Search, utilizing pre-defined keywords aligned with the researcher's objectives. Searching with Google Schoolar, researchers use Publish or Peris. The keywords for this research include "PAI learning methods" and "digital PAI learning media." The collected articles were limited to those published between 2018 and 2023 [29].

The examination of the systematic literature review process in this study followed the PRISMA guidelines (Preferred Reporting Items for Systematic Literature Reviews and Meta-Analyses). The PRISMA tool and guidebook were utilized to ensure a systematic and standardized approach to the review. This can assist researchers in assessing and investigating data systematically so that valuable and reliable conclusions can be derived. Identification, screening, eligibility, and inclusion are all covered in PRISMA procedures. The PRISMA diagram was used in this examination to show the transparency of the flow of information from data collection to article screening [30].

3. RESULTS AND DISCUSSION

The search for topics in this research was based on observations made by researchers of journals that discussed the development of learning methods and digital media in learning that are more effective and most widely used in PAI learning today. This research aims to identify novel learning methods that enhance the effectiveness of the learning process and discover digital media suitable for contemporary educational settings in today's modern era. The search for articles in this research was carried out in June 2023. To find articles that were relevant to the title and questions to be answered, the search was carried out using keywords searched in the Google Scholar database with the help of publish or peris, Doaj, One Search and Garuda. The results of the article data found from digital library sources, namely:

Table 1. Data Results Found from Digital Library Sources

Keywords	Google schoolar	Garuda	Doaj	One search
Development of learning media for Islamic religious education	1	33	0	62
Digital media learning model for Islamic religious education.	39	0	0	18
Development of animation media in Islamic religious learning	58	0	0	20
Methods for developing Islamic religious education learning	13	9	0	53
Total journals found	111	42	0	153
Amount	306			

3.1. Data Analysis

Following the data search stage, the subsequent step involves conducting data analysis to acquire valid information for the review. The analysis aims to align with the researcher's objectives and address the problem formulation initially posed by the researcher. The method used to find the results of the problem formulation in this research uses the PRISMA diagram method which consists of 4 stages, namely: identification, screening, eligibility and inclusion. The research steps carried out are explained as follows:

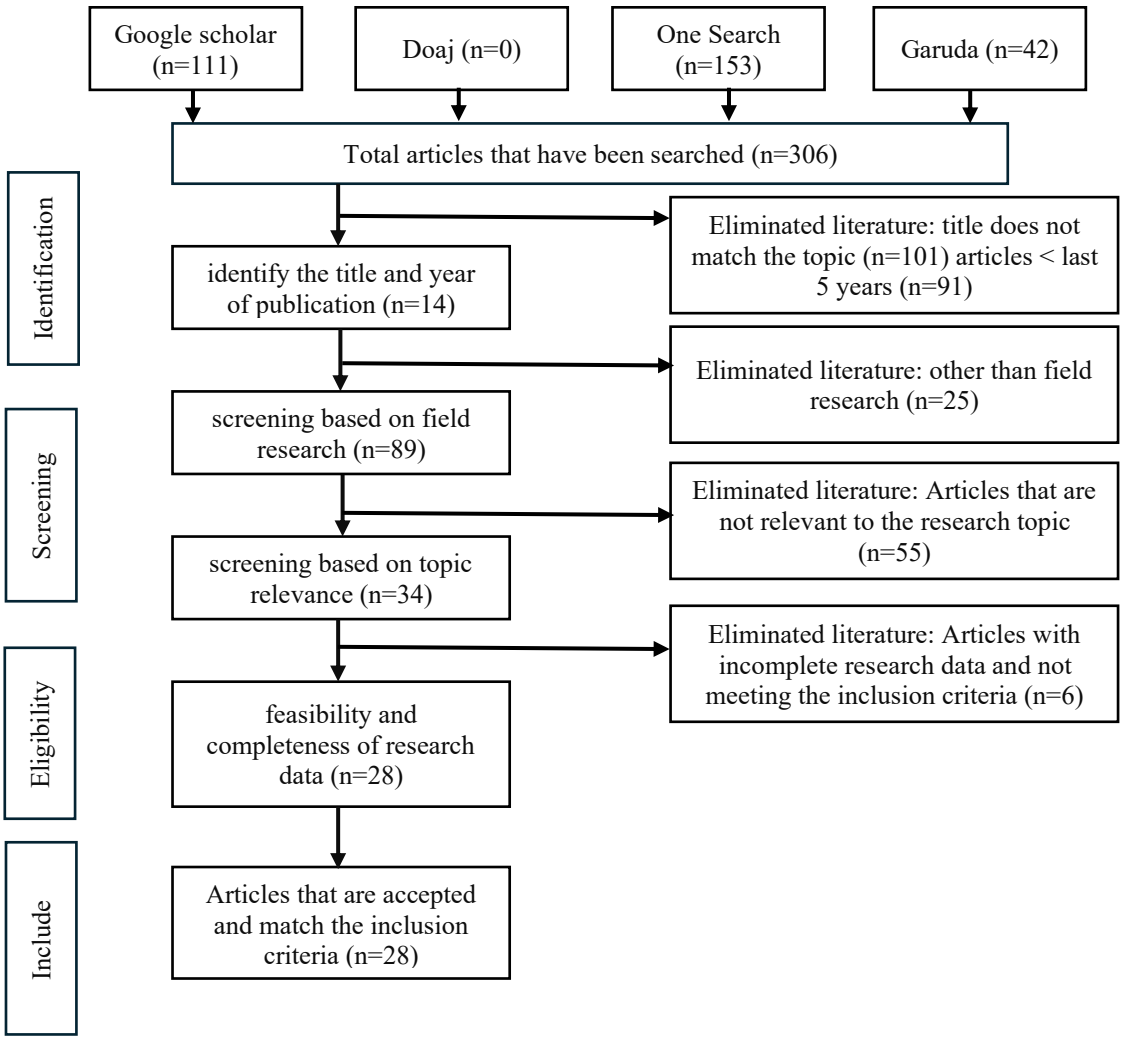

Figure 1. Prism Diagram Results

3.1.1. Identification

The literature search results that have been obtained are then identified by looking at the title and year of publication. The articles used were with titles related to digital media and learning development methods with a publication year < 2018. From the article identification, the remaining results were 114 findings. At this stage, the researcher first determined the research for the last 5 years from 306 to 215 with 91 journals excluded on the grounds that the publication year was <2018. After that, from 215 to 114 with 101 journals excluded due to identification of titles that did not match the researchers' criteria.

3.1.2. Screening

In the process of identifying 306 journals, only 114 remained, the next stage was the screening stage where the remaining 114 journals were filtered again based on predetermined criteria, from 114 journals to 89 journals with 25 journals excluded for the reason that they were not field research. Out of the initial 89 journals, a screening process based on inclusion criteria was performed, resulting in 34 journals that met the criteria. Fifty-five journals were excluded as they did not address the research focus on media and learning methods for Islamic religious education.

3.1.3. Eligibility

The eligibility stage in this research is an assessment of the quality of articles in full text with inclusion and exclusion criteria that can cancel articles that have been screened for further analysis. In other words, eligibility in this research is an assessment of the quality of articles that are worthy or not worthy of being appointed or included in the research. This. In this process, there were 34 articles assessed in full text. This process was carried out by reading the articles one by one to be assessed and then assessing their quality whether they were appropriate to the research topic raised or not.

After carrying out the full text article assessment process, 6 articles were found that were not relevant to be used to answer the problem formulation in this research on the grounds that they did not comply with the

inclusion criteria so that the remaining articles were 28 which would be included for further analysis so that further analysis could be taken. conclusions that can answer questions in the research problem formulation.

3.1.4. Included

After carrying out the eligibility process or full text quality assessment stage, the next stage is to carry out an analysis of the collected articles. At this stage there are 28 articles to be analyzed.

3.2. Discussion

3.2.1. Digital media used in PAI learning.

After synthesizing the data, we found regarding the use of digital media in PAI learning, you can see the table below.

Table 2. Data on Types of Digital Media Used in PAI Learning

Digital Media	Related Studies	Amount
Animation	(Said Nur Alim 2021), (M. Ikhwanul Hakim, H. Muzakkir Walad, Muh.Zulkifli 2020), (Djian Ariska, Ninik Indrawati, Ammar Zainuddin 2022), (Eliwatis dan sabarullah 2021), (Nurul Fadhila, Mutiara Sari Dewi, Moh Muslim 2022), (Muh. Alif Kurniawan 2020), (Ahmad Fajri Lutf, Asep Usamah 2019), (Hilyatun Nadawiyyah ,Dewi Anggraeni 2021), (Saiful Rizal, Anselmus J.E. Toenlioe, Sulthoni 2019), (Lefriza Yati, Miftahur Rahmah 2023),(Ani Nur Aeni, Mita Dewi Handari ,Wira Sakti Sutiana 2022), (Mia Aprillia, Pritha Rahmawati Subagio, Sekar Pembayun, Ani Nur Aeni 2023), (Rida'ul Maghfiroh, Aditya Dwi Saputro, Adhi Setiyawan, Asniyah Nailasariy2023),(Dechika Nuhasetia H, Rizka Agustina, Syifa Khoerunnisa, Ani Nuraeni2022), (Wardani Rahwan Ach. Zukin2022)	14
Explanatory video	(Latifa Hanum, Supriadi, Zulfani Sesmiarni, Supratman Zakir 2022), (Anna Primadoniati 2020),	2
Web	(Muh. Aqil Akbar, Anwar Sa'dullah, Imam Syafi'I 2022), (Nasir 2020), (Riza Faishol, Al Muftiyah, Alvin Dwiki Bastiar 2022)	3
Android	(Khasanah, Rusman 2021), (Agus purwanto 2019), (Syafrimen Syafril, Rizky Faris Surenda, Heru Juabdin Sada, Mukti 2021), (Hilyatun Nadawiyyah, Dewi Anggraeni 2021)	4
Comic storyboard	(Satrio Mohammad Fajar Arif Yudianto 2023)	1

The table above explains who uses digital media in PAI learning and what media are used in the learning. For more details, you can see the percentage table on the use of digital media in PAI learning.

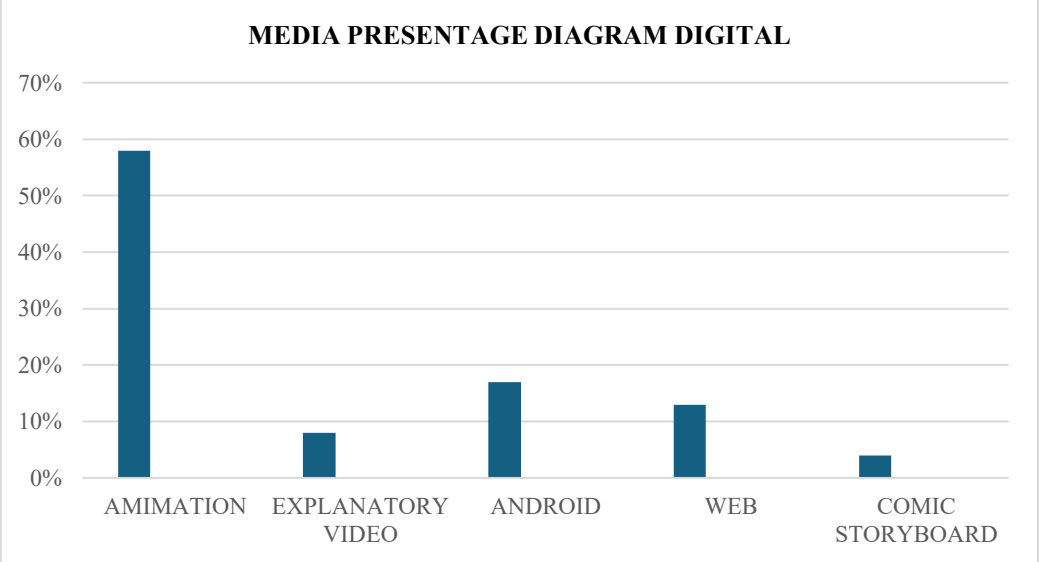

Figure 2. Percentage Diagram of Data Analysis Results

The percentage diagram presented above illustrates that the most frequently used types of learning media are as follows: Animation Media = 58%, Explanatory Video = 8%, Web = 13%, Android = 17%, and Comic Storyboard = 4%. Based on the picture above, it can be found that the percentage of digital media used most and least used in the development of PAI learning media. You can also see tables and diagrams of the effectiveness of digital media in learning Islamic religious education.

Table 3. Tables of Digital Media Effectiveness

Digital Media	Minimum	Maximum	Average
Animation	70%	98%	87%
Explanatory Video	75%	82%	82%
Android	77%	90%	84%
Web	79%	85%	83%
Comic Storyboard	86%	86%	86%

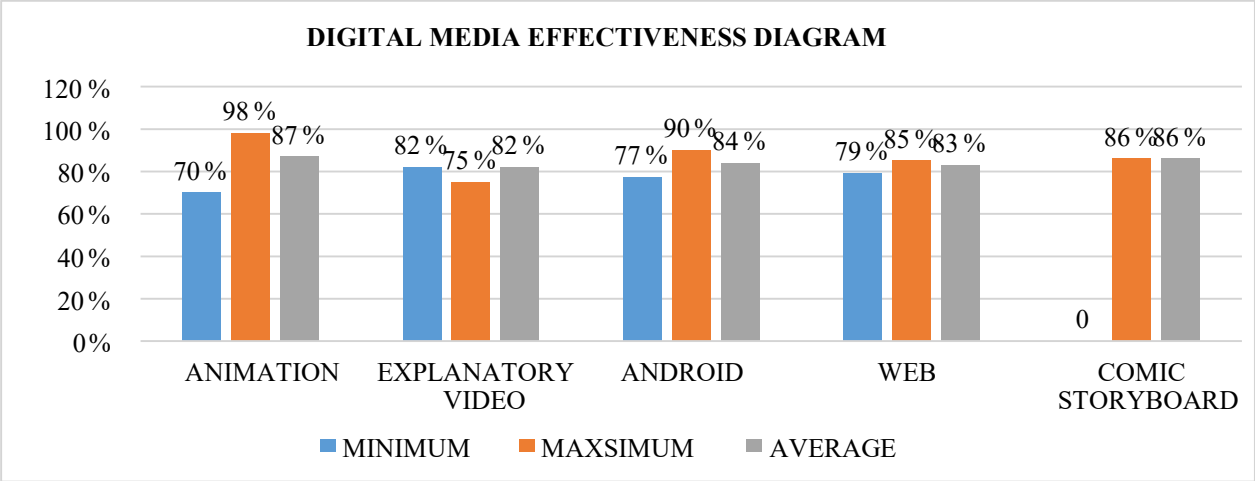

Figure 3. Digital Media Effectiveness Diagram

Information:

a. Animation Media

Animated digital media is a development of learning media in which there is a presentation of learning material which is packaged in the form of moving images with a combination of background colors, writing, animated characters with interesting musical soundtracks in the form of videos so that students are interested in watching the material provided [31]. Animation media in learning can encourage student activity in learning because the delivery of material is fun and not boring [32], [33]. Engaging animation content to facilitate students in comprehending the presented material more easily [34].

The creation of animated media necessitates the use of tools or applications to integrate content with the evolving media [35][36]. The first step in making it is to include material, example questions, pictures and package it as attractively as possible so that students are interested when watching. Apart from using Macromedia Flash tools, Poowton animation is used to organize the flow of the animation so that it suits the material to be taught [37]. Using stopmotion animation tools, wondeshare Filmora can support the success and feasibility of the media [38].

Utilizing animated media enhances students' engagement in learning compared to traditional methods, leading to more effective and efficient learning outcomes [39][38]. The advantages and disadvantages of animation media are that the delivery of material is more practical and can create an interactive and interesting learning atmosphere [35]. The drawback is that the resulting video cannot be played and if the video is uploaded via a social media account such as the web or YouTube it will use up a lot of internet quota [40].

Based on research conducted by previous researchers, animation media has a minimum feasibility value of 70% and a maximum value of 98% with an average of 87%. Student responses in receiving animation media can be categorized as very good [37] and students are interested in learning [32] [41]. Through video presentations, students can directly observe the flow of the material, preventing boredom and fostering enthusiasm for learning. Using animation media can raise students' enthusiasm to ask each other questions about the material being shown [39]. The content in animation media is tailored to student needs, such as using language that can be easily understood by students so that students do not have difficulty understanding the material provided [42].

b. Explanatory Video

Video media stands as an effective learning tool, supporting the educational process for both individual and group learning, whether on a large scale or in smaller settings [43]. Videos are effective as learning media because they can be reproduced, watched and presented repeatedly. The advantages of using video media are

that it can invite students to be actively involved so that the information obtained is easy for users to understand, provide an individual affectionate climate and increase learning motivation because it can accommodate students' needs [44].

The use of video media can make learning material more interesting by making the presentation to students flexible because the material is packaged in the form of videos that can be played on cellphones and laptops without using an internet connection [31]. The disadvantage of video media is that in the creation process you have to choose a format that can be accessed, such as uploading on YouTube, because if it is made and presented in CD form, it can only be run on a computer and is easily damaged [45].

The effectiveness of the use of learning media in the form of videos from data found from previous research can be seen from the average effectiveness of 82% with a minimum value of 75% and a maximum of 82%. Incorporating video media into the learning process aids teachers and students in both delivering and receiving instructional material [43]. In his research, learning videos were made using the Kinmaster application. The students' response to the explanatory video was very good and they were able to understand the material presented easily and the material was relevant. Video media can improve communication between teachers and students and students with students [46].

c. Web

One of the learning media that stimulates the minds, interests and enthusiasm of students is web-based which is a network of networks that makes it possible to access, view and store documents which can include text, data, sound and video [42] [47]. The advantage of web-based media is that the presentation of the media is practical because it is a web that can be accessed using Android, computer, laptop and learning is not limited by time and can follow the development of students [47]. The outcomes of the conducted research, having undergone various testing phases, indicate high effectiveness, practicality, and feasibility, with an average score surpassing 80%. In essence, it is deemed suitable for use as the media successfully captures students' interest and enthusiasm for learning, thanks to its innovative and non-monotonous educational elements.

Using web-based media in learning, researchers found the media's effectiveness to be an average of 83% with a minimum value of 79% and a maximum of 85%. This standard is considered appropriate for utilization, as research indicates that employing web-based media can enhance student engagement by encouraging them to focus on the material and engage in discussions with one another regarding the provided content [47]. Learning outcomes after using web media improve better because the learning material that students receive is in web form and can be accessed via Android or laptop anytime and anywhere [48].

d. Android

Leveraging Android as an inventive and resourceful learning tool can contribute to the achievement of engaging and successful learning experiences [49] [50]. Android is a Linux-based operating system designed for touch screen mobile devices which contains interesting features for learning and can be a medium for transmitting messages or information [51]. The results of research using Android media were said to be successful because students' interest increased through learning that was interesting and not boring [52].

The advantages of Android are that it is more practical to use anywhere and anytime as long as there is an internet network and the affordable price is one of the advantages of this media [50] [40] [53]. The disadvantage of Android media is that teachers' lack of ability to utilize ICT-based media makes delivering material boring for students.

Designing media must pay attention to the source of the material to be taught and look for interesting images to combine and run using Android [52]. The researchers' evaluation of the efficiency of Android media yielded an average score of 84%, ranging from a minimum of 77% to a maximum of 90%. This demonstrates the viability and effectiveness of incorporating Android media into learning. The utilization of Android media impacts student engagement positively due to its appealing interface and accessibility from any location [53]. Interestingly, the display on Android can increase students' motivation in learning and achieve learning goals [40]. After using Android media, student learning outcomes are superior compared to ordinary or conventional learning [50].

e. Comic storyboard

A storyboard is a series of sketches (cartoon images) that illustrate a sequence (storyline) of elements proposed for a multimedia application [54]. Or usually, this media is called digital comic media which is an effective and practical teaching aid, creative and innovative learning media and popular among students. Employing digital comic media is anticipated to foster active, creative, and innovative learning, facilitating a more accessible understanding of the presented material for students [55].

The effectiveness result of this media is 86%, in other words, it is suitable for use. Because students can learn whenever and wherever they are because learning media is very diverse and easily accessible to students. The disadvantage of this media is that the media will not be interesting in the eyes of students who do not like reading [55].

3.3. Development methods used in PAI learning.

After carrying out data synthesis, data was obtained regarding the use of learning development models in Islamic religious education. For more details, see the following table:

Table 4. PAI Learning Development Model Data

Development Model	Related Studies	Amount
Model ADDIE	Muh. Aqil Akbar, Anwar Sa'dullah, Imam Syafi'I 2022, Nurul Fadhila, Mutiara Sari Dewi, Moh Muslim 2022, Khasanah, Rusman 2021, Hilyatun Nadawiyyah, Dewi Anggraeni 2021, (Mia Aprillia, Pritha Rahmawati Subagio, Sekar Pembayun, Ani Nur Aeni 2023), (Rida'ul Maghfiroh, Aditya Dwi Saputro, Adhi Setiyawan, Asniyah Nailasariy2023), (Dechika Nuhasetia H, Rizka Agustina, Syifa Khoerunnisa, Ani Nuraeni2022)	7
Model Borg and Gall	Djian Ariska, Ninik Indrawati, Ammar Zainuddin 2022, Muh. Alif Kurniawan 2020, Syafrimen Syafril, Rizky Faris Surenda, Heru Juabdin Sada, Mukti 2021, Agus purwanto 2019, Riza Faishol, Al Muftiyah, Alvin Dwiki Bastiar 2022)	5
Model 4 D	Eliwatis dan sabarullah 2021, M. Ikhwanul Hakim, H. Muzakkir Walad, Muh.Zulkifli 2020, Latifa Hanum, Supriadi, Zulfani Sesmiarni, Supratman Zakir 2022, Nasir 2020, Lefriza Yati, Miftahur Rahmah 2023	5
R and D	Ahmad Fajri Lutf, Asep Usamah 2019, Satrio Mohammad Fajar Arif Yudianto 2023, Wardani Rahwan Ach. Zukin2022	3
Model Lee and Owens	Saiful Rizal, Anselmus J.E. Toenlioe, Sulthoni 2019	1
Model The DDD-E	Said Nur Alim 2021	1

From table 4, it is known the development model used and the development model that is most widely used. It can be seen in the diagram about the percentage of use of development models in learning Islamic religious education.

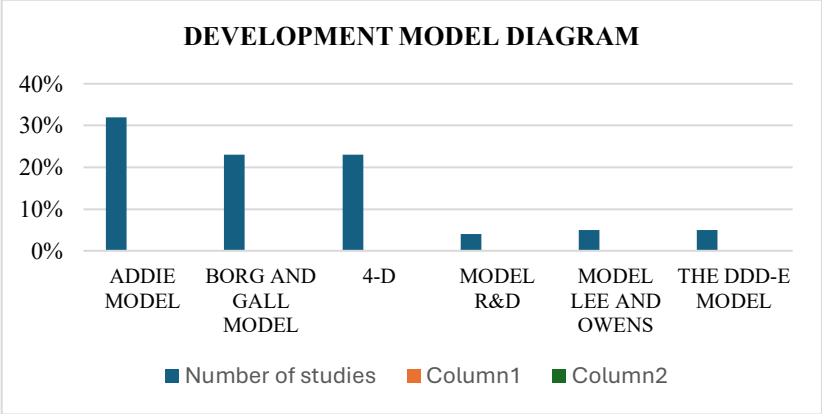

Figure 4. Development Model Percentage Diagram

From the provided image, it is evident which development models enjoy the highest and lowest levels of utilization. The model used in developing Islamic religious education learning. You can also see tables and diagrams of the effectiveness of Islamic religious education learning development models.

Table 5. Tables of Effectiveness of Learning Development Models

Development Model	Minimum	Maximum	Average
Addie Model	78%	100%	90%
Borg And Gall Model	71%	100%	84%
4 D Model	75%	94%	85%
R And D	70%	97%	86%
Lee And Owens Model	97%	97%	97&
The Ddd-E Model	66%	66%	66%

Information:

a. ADDIE Model

One development model that can be used in IT-based media development is the ADDIE development model [40]. ADDIE is an abbreviation for (Analysis, Design, Development, Implementation, and Evaluation) [38] [33]. In development there are five, namely: analysis containing needs analysis, design containing the

design stage of goal formulation, develop product planning stage, implementation stage this is real action and evaluation stage contains the assessment stage of the results developed [50].

This development is used to test and produce products that are quality, innovative, creative, productive and of course useful in any aspect [38] [33] [50] [41]. Analysis is the first action that must be taken by researchers, namely material analysis, problem analysis, analysis of student characteristics and student needs. Meanwhile, the design is to identify problems according to the analysis of student needs, teaching objectives, basic competencies and teaching strategies. The structure of the study materials is derived from the findings of the student and needs analysis. During the developmental phase, experts in both content and media validate the materials to assess their appropriateness. This is followed by the implementation stage, where the design and methods developed are applied in the classroom with students and the final stage is evaluation which can take place in all four stages mentioned above. These steps have simple and clear procedural steps for developing teaching aids [45].

Based on research conducted by previous researchers, the ADDIE development model has a minimum feasibility value of 70% and a maximum of 100% with an average of 90%. In using the ADDIE model to develop animation media, as was done by Aeni (2022), Aprillia (2023), Fadhila (2022), and Maghfiroh (2023), after carrying out various tests, it was proven that the media developed was effective in use after looking at the appropriate material content and quality. Attractive sound and display images. Nadawiyyah's (2021) research on Android media development using the ADDIE model stated that the media was suitable for use after going through several expert and media tests. Supported by the opinion of Akbar (2022), K. Khasanah and Rusman (2021) that the content of the material in the media is in accordance with learning objectives with an average test score of 90%.

b. Borg and Gall model

In media development models, there are several development models, one of which is the Borg and Gall model. There are ten steps in this development research, namely: potential problems, analysis, design, validation, revision, trial, revision, mass production [56] [34]. However, in this development model, researchers usually simplify the procedural stages depending on the researcher's goals and needs [53]. This media development model goes through many stages to produce a final product that is suitable for use [31].

The advantage of this model is that it can produce old or new products that are developed to be more effective and interesting to use, because each step of the borg and gall model procedure prepares thoroughly for the success of the final product developed through various tests and revisions. The development of product learning media obtained the desired results by assessing each test carried out with an average score above 80% in the feasible and effective use category.

After the data regarding the use of the borg and gall model was found, the researchers found that the average effectiveness of using this development model to develop media in learning obtained a minimum score of 71% and a maximum of 100% with an average effectiveness of 84%. This proves that this development model is suitable for developing learning media [31]. In its development, researchers carried out expert tests on the media and materials to see whether the content matched the existing materials at school and whether the appearance of the media was attractive in terms of appearance to attract students' interest.

c. 4-D Model

Thiagarajan, Semmel, and Semmel are credited with the development of the 4-D development model [32]. This development model is commonly employed in research and development methodologies, often referred to as Research and Development (R&D) [43]. The selection of the 4D development model is based on its endorsement for crafting learning media. The design of this learning media development model encompasses four distinct stages: Define, Design, Develop, and Disseminate [32] [42] [43].

The definition stage is used to understand students' needs or analysis [43]. Design includes the organization of the product being developed [47]. Development is related to improving digital teaching materials with research by product experts and the spread of focus on how to present content in an interesting way in a virtual environment. The advantage of this model is that at each stage of the development process it ensures a holistic and comprehensive learning approach. This model places emphasis on clear and specific learning outcomes so that it can help teachers or instructors in planning learning activities effectively [32] [42] [43]. The disadvantage of this model is that it is not flexible if there is an urgent need to change the learning plan suddenly because the development stage takes a long time in each process.

The media that is prepared must be based on school material content standards and pay attention to student characteristics so that the media developed can get an appropriate category [43]. So expert testing of the media used is needed. The results of the data regarding the use of the 4-D model by researchers have shown that the effectiveness of this development model is evenly distributed with a minimum value of 75% and a maximum of 94% and an average of 85%. This average proves that the use of the model for the media developed is feasible and effective in use. As was done by Eliwatis (2021) in his research on video lessons resulting from media validation and material regarding the suitability of the video content, suitability of the material, presentation and suitability of the language to get a valid category. Likewise in the research of Hakim (2020), Nasir (2020), Yati and Rahmah.

d. R and D development

The R&D (Research and Development) development model involves integrating diverse approaches and methods to create novel products or services. The goal is to achieve optimal results through the right combination of research, experimentation, and innovation [39]. The features of Research and Development (R&D) manifest as a cyclical process, commencing with the identification of a need or a problem that necessitates the development of a specific product to address it [57]. This development encompasses several stages, including identifying potential and issues, collecting data, designing the product, validating the design, revising the design as needed, conducting product trials, making necessary revisions, performing use/field trials, making further product revisions, and eventually moving on to mass production. This type of development model aims to develop learning tools such as developing products in the form of macro-based learning media, Flash media, Adobe Flash digital comics [58]. The research and development process in the R&D model can help improve the quality of existing products or services. By making continuous improvements, organizations can deliver better solutions to customers. However, the research and development process in this model usually takes a long time before real results can be obtained.

After data regarding the use of R and D development was found, researchers found that the average effectiveness of using this development model to develop media in learning was obtained with a minimum score of 70% and a maximum of 97% with an average effectiveness of 86%. The media results developed using the R and D model can be categorized as suitable for use as after going through expert test results, they obtained an average score of 86%. The evaluation criteria employed by an examiner align with the parameters outlined in Wardani's (2022) research. These criteria encompass considerations related to content appropriateness, visual appeal, and the use of language that facilitates comprehension for students. In research conducted by Satrio Mohamaf Fajar (2023) said that the suitability of the media must meet these aspects.

e. Lee and Owens Model

The Lee and Owens development model is one of the approaches in R&D developed by Yongwook Lee and David L. Owens. This model emphasizes collaboration between researchers, project managers, and other stakeholders to create successful innovations. The developmental stages according to the Lee and Owens model encompass a sequence of steps, specifically analysis, design, development, implementation, and evaluation [44]. The results of research carried out by Rizal (2019) on media development obtained an average of 97% of media and material expert tests so that the media results developed were suitable for use. In the expert test, the criteria were valid and appropriate because the media met the appropriate aspects of content, language and media attractiveness. The advantage of Lee and Owens' development model is that it encourages collaboration between multidisciplinary team members, allowing for increased creativity and diverse perspectives. The disadvantages of the Lee and Owens development model are the time and cost of the development process which involves many stages and trials as well as difficulties in evaluation due to changes in the learning process.

f. The DDD-E model

The DDD-E (Domain-Driven Design for Evolution) development model is an approach to software development that combines Domain-Driven Design (DDD) principles with evolutionary methods. The stages of this model are making decisions, making designs, developing products, and evaluating [35]. The advantages of the DDD-E development model are that it is compatible with changes in the current educational process and can improve the quality of the media produced. Disadvantages of the development model The DDD-E development speed is limited to an evolutionary process involving several testing stages [35]. The results of research conducted by Alim (2021) show that developing multimedia-based learning media using Macromedia Flash requires several stages, namely: making a decision, making a design, developing a product, evaluating. Following the research validity assessment conducted to evaluate the developed products, those subjected to media and material testing attained an average score of 66%, falling within the "good" category. The media developed received an average score of 75%, indicating effectiveness and suitability for use.

4. CONCLUSION

After carrying out the stages in the Systematic Literature Review (SLR) research using PRISMA theory. The results of the data found regarding the discussion about digital media and the development model that is most widely used and effective is animation media with an effectiveness level of 87%. Meanwhile, the most widely used development model is seen from two aspects, namely the most widely used and the level of effectiveness. The development models that meet these criteria are the ADDIE and Lee & Owens models with percentages of 90% and 97%. In the development model, there were two development models that were finally chosen, namely ADDIE and Lee & Owens. The two models are actually almost the same, but what is different is that at the media testing stage in the Lee & Owens model there is more diversity in collaboration with experts or multidisciplinarity. So, this model has very high effectiveness of the media produced. Meanwhile, the ADDIE model was chosen because its use is simpler, but the level of effectiveness of the media produced is also at a high level.

REFERENCES

[1] D. W. Sari, M. S. Putri, and N. Nurlaili, "Relevansi Pendidikan Islam Di Era Digital Dalam Menavigasi Tantangan Modern," *Science and Education Journal (SICEDU)*, vol. 2, no. 2, pp. 372–380, 2023.
[2] N. Annisa and N. Simbolon, "Pengembangan media pembelajaran interaktif ipa berbasis model pembelajaran guided inquiry pada materi gaya di kelas IV SD Negeri 101776 Sampali," *School Education Journal Pgsd Fip Unimed*, vol. 8, no. 2, pp. 217–229, 2018.
[3] N. Nuraliyah, B. Komalasari, and K. Indrawari, "Kreativitas Guru Pendidikan Agama Islam Dalam Pembelajaran Dan Implikasinya Terhadap Sikap Dan Hasil Belajar Siswa Di Sekolah Luar Biasa Negeri Lubuklinggau," 2023.
[4] A. Maritsa, U. H. Salsabila, M. Wafiq, P. R. Anindya, and M. A. Ma'shum, "Pengaruh teknologi dalam dunia pendidikan," *Al-Mutharahah: Jurnal Penelitian Dan Kajian Sosial Keagamaan*, vol. 18, no. 2, pp. 91–100, 2021.
[5] N. Sari and P. J. Yastri, "Keterkaitan Media Animasi Plotagon terhadap Minat Belajar Siswa dalam Pembelajaran PAI," *Murabby: Jurnal Pendidikan Islam*, vol. 5, no. 2, pp. 191–201, 2022.
[6] A. Sudrajat and A. P. Ompusunggu, "Pemanfaatan teknologi informasi, sosialisasi pajak, pengetahuan perpajakan, dan kepatuhan pajak," *Jurnal Riset Akuntansi & Perpajakan (JRAP)*, vol. 2, no. 02, pp. 193–202, 2015.
[7] B. A. Pribadi, *Media & teknologi dalam pembelajaran*. Prenada Media, 2017.
[8] R. Martin and M. M. Simanjorang, "Pentingnya peranan kurikulum yang sesuai dalam pendidikan di indonesia," *Prosiding Pendidikan Dasar*, vol. 1, no. 1, pp. 125–134, 2022.
[9] A. Mustadi, *Landasan pendidikan sekolah dasar*, vol. 174. UNY Press, 2020.
[10] D. Samitra, Y. Krisnawati, and N. Malasari, "Pengaruh model guided note taking terhadap hasil belajar biologi siswa kelas XI SMA Negeri 6 Kota Lubuklinggau," *BIOEDUSAINS: Jurnal Pendidikan Biologi Dan Sains*, vol. 1, no. 1, pp. 1–10, 2018.
[11] S. Ariani, "Pengembangan Media Video Pada Materi Perkoperasian Dalam Perekonomian Indonesia Di Kelas X SMA PGRI Pekanbaru," 2022.
[12] N. Hamidi, "Pengembangan Media Pembelajaran Interaktif Pendidikan Agama Islam Berbasis Adobe Flash Professional Cs6 Untuk Mendukung Implementasi Kurikulum 2013," *Jurnal Pendidikan Agama Islam*, vol. 14, no. 1, pp. 109–130, 2017.
[13] A. Dharin, "Pendidikan Karakter Berbasis Komunikasi Edukatif Religius (KER) di Madrasah Ibtida'iyah," 2021.
[14] R. S. P. Utarianti, "PENGARUH PENERAPAN MODEL PEMBELAJARAN COOPERATIVE TIPE GUIDED NOTE TAKING TERHADAP MOTIVASI BELAJAR PENDIDIKAN AGAMA ISLAM SISWA DI KELAS VII SEKOLAH MENENGAH PERTAMA NEGERI 14 KOTA BENGKULU," 2020.
[15] H. Sufyan, M. Mariyati, S. R. Manalu, and S. Halimah, "Kemampuan Guru PAI dalam Pengembangan Materi Ajar Pendidikan Agama Islam di MAS Nurul Furqoon Binjai," *Tarbiatuna: Journal of Islamic Education Studies*, vol. 4, no. 1, pp. 37–51, 2024.
[16] M. Yaumi, *Prinsip-prinsip desain pembelajaran: Disesuaikan dengan kurikulum 2013 edisi Kedua*. Kencana, 2017.
[17] Y. Mariyah, A. Budiman, H. Rohayani, and W. Audina, "Meningkatkan Motivasi Belajar Siswa Melalui Pemanfaatan Media Audio Visual: Studi Eksperimen Dalam Pembelajaran Tari," *Journal of Education, Humaniora and Social Sciences (JEHSS)*, vol. 4, no. 2, pp. 959–967, 2021.
[18] F. N. Farhah, "Penggunaan media pembelajaran audio visual untuk membentuk motivasi belajar siswa kelas viii pada mata pelajaran ips di SMP Negeri 1 Karangan Trenggalek," 2023.
[19] F. Anwar *et al.*, *Pengembangan Media Pembelajaran "Telaah Perspektif Pada Era Society 5.0."* Tohar Media, 2022.
[20] Y. Ruhiat, "Media Pembelajaran Booklet Berbasis Flipbook pada Materi Aircraft Instrument System," *Jurnal Ilmiah Pendidikan Profesi Guru*, vol. 6, no. 2, pp. 399–409, 2023.
[21] I. Sunandi, J. Juliati, W. Hermawan, and G. Ramadhan, "Dampak Integrasi Teknologi pada Pengalaman Belajar Mahasiswa Perguruan Tinggi," *Jurnal Pendidikan Tambusai*, vol. 7, no. 1, pp. 3046–3054, 2023.
[22] E. Yulanda, A. Andrizal, and Z. Zulhaini, "UPAYA GURU DALAM MENGGUNAKAN MEDIA VIDEO ANIMASI UNTUK MENINGKATKAN MOTIVASI BELAJAR SISWA PADA BIDANG STUDI PENDIDIKAN AGAMA ISLAM DAN BUDI PEKERTI KELAS VII DI SMP NEGERI 4 KECAMATAN PANGEAN KABUPATEN KUANTAN SINGINGI," *JOM FTK UNIKS (Jurnal Online Mahasiswa FTK UNIKS)*, vol. 2, no. 2, pp. 80–86, 2021.
[23] T. Nurrita, "Pengembangan media pembelajaran untuk meningkatkan hasil belajar siswa," *Jurnal misykat*, vol. 3, no. 1, pp. 171–187, 2018.
[24] A. M. Wijaya, I. F. Arifin, and M. I. Badri, "Media pembelajaran digital sebagai sarana belajar mandiri di masa pandemi dalam mata pelajaran sejarah," *SANDHYAKALA Jurnal Pendidikan Sejarah, Sosial Dan Budaya*, vol. 2, no. 2, pp. 1–10, 2021.
[25] S. Nurfadhillah, *Media Pembelajaran di Jenjang SD*. CV Jejak (Jejak Publisher), 2021.

[26] E. Eryc, "Systematic Literature Review of Critical Success Factors in Online Advertising," *Journal of Informatics and Telecommunication Engineering*, vol. 5, no. 2, pp. 551–561, 2022.
[27] E. Triandini, S. Jayanatha, A. Indrawan, G. W. Putra, and B. Iswara, "Metode systematic literature review untuk identifikasi platform dan metode pengembangan sistem informasi di Indonesia," *Indonesian Journal of Information Systems*, vol. 1, no. 2, pp. 63–77, 2019.
[28] M. D. Ulhaq, "Systematic Literature Review: Penggunaan Conceptual Change untuk Mengatasi Miskonsepsi Siswa dalam Pembelajaran Fisika".
[29] A. Putra and K. Afrilia, "Systematic literature review: penggunaan kahoot pada pembelajaran matematika," *Jurnal Ilmiah Pendidikan Matematika Al Qalasadi*, vol. 4, no. 2, pp. 110–122, 2020.
[30] H. Purbanto and B. Hidayat, "Systematic Literature Review: Penyalahgunaan Narkoba di Kalangan Remaja dalam Perspektif Psikologi dan Islam," *Al-Hikmah: Jurnal Agama dan Ilmu Pengetahuan*, vol. 20, no. 1, pp. 1–13, 2023.
[31] D. Ariska, N. Indrawati, and A. Zainuddin, "Development of Stopmotion Video Animation Media in Qawa'Id Learning for Class XI Madrasah'Aliyah Students| Pengembangan Media Animasi Stopmotion Video dalam Pembelajaran Qawa'Id pada Siswa Kelas XI Madrasah 'Aliyah," *Mantiqu Tayr: Journal of Arabic Language*, vol. 2, no. 1, pp. 1–12, 2022.
[32] E. Eliwatis and S. Sabarullah, "Pengembangan Video Pembelajaran Pendidikan Agama Islam Berbasis Aplikasi Wondershare Filmora," *At-Tarbiyah Al-Mustamirrah: Jurnal Pendidikan Islam*, vol. 2, no. 1, pp. 25–39, 2021.
[33] N. Fadhila, M. S. Dewi, and M. Muslim, "PENGEMBANGAN MEDIA PEMBELAJARAN AUDIO VISUAL BERBASIS ANIMASI POWTOON MATERI DAKWAH RASULULLAH DI MAKKAH," *Vicratina: Jurnal Ilmiah Keagamaan*, vol. 7, no. 7, pp. 148–160, 2022.
[34] M. A. Kurniawan, "Pengembangan Media Pembelajaran PAI Berbasis Macromedia Flash sebagai Sumber Belajar," *Al-Misbah (Jurnal Islamic Studies)*, vol. 8, no. 2, pp. 47–51, 2020.
[35] S. N. Alim, "Pengembangan Media Pembelajaran Berbasis Multimedia Menggunakan Macromedia Flash dalam Fiqih Islam Materi Pokok Sholat dan Zakat," *Munaddhomah: Jurnal Manajemen Pendidikan Islam*, vol. 2, no. 1, pp. 38–59, 2021.
[36] W. Wardani, R. Rahwan, and A. Zukin, "Pengembangan Media Pembelajaran Berbasis Macromedia Flash Pada Mata Pelajaran PAI Kelas 5 SD Tema Mari Mengenal Rasul-Rasul Allah SWT," *Edupedia: Jurnal Studi Pendidikan dan Pedagogi Islam*, vol. 6, no. 2, pp. 186–193, 2022.
[37] M. Aprillia, P. R. Subagio, S. Pembayun, and A. N. Aeni, "Penggunaan Video Animasi Powtoon Untuk Menteladani SHATAFAT (sidiq, amanah, tabligh, fathonah) Bagi Peserta didik SD," *Jurnal Pendidikan dan Teknologi Indonesia*, vol. 3, no. 4, pp. 141–149, 2023.
[38] A. N. Aeni, M. D. Handari, S. Wijayanti, and W. S. Sutiana, "Pengembangan Video Animasi Light Pedia Sebagai Media Dakwah Dalam Pembelajaran di SD," *Al-Madrasah: Jurnal Pendidikan Madrasah Ibtidaiyah*, vol. 6, no. 3, pp. 721–730, 2022.
[39] A. F. Lutfi and A. Usamah, "Pengembangan media pembelajaran berbasis adobe flash untuk mata pelajaran fikih dalam upaya meningkatkan hasil belajar siswa," *Edukasi Islami: Jurnal Pendidikan Islam*, vol. 8, no. 02, pp. 219–232, 2019.
[40] H. Nadawiyyah and D. Anggraeni, "Pengembangan media pembelajaran tajwid berbasis aplikasi Android," *Jurnal Inovasi Teknologi Pendidikan*, vol. 8, no. 1, pp. 26–40, 2021.
[41] R. Maghfiroh, A. D. Saputro, A. Setiyawan, and A. Nailasariy, "Pengembangan Media Pembelajaran PAI dan Budi Pekerti Berbasis Powtoon Materi Kejujuran Kelas 2 SD," *Al-Ishlah: Jurnal Pendidikan Islam*, vol. 21, no. 1, pp. 23–35, 2023.
[42] M. I. Hakim, H. M. Walad, and M. Zulkifli, "Pengembangan Media Pembelajaran Berbasis Macromedia Flash 8 Pada Mata Pelajaran Pendidikan Agama Islam Kelas VII Madrasah Tsanawiyah," *al-Hikmah: Jurnal Studi Islam*, vol. 1, no. 3, pp. 80–95, 2020.
[43] L. Hanum, S. Supriadi, S. Sesmiarni, and S. Zakir, "Pengembangan Media Pembelajaran Pendidikan Agama Islam Berbasis Video di SMP N 1 Sitiung Kabupaten Dharmasraya Provinsi Sumatera Barat," *Jurnal Pendidikan dan Konseling (JPDK)*, vol. 4, no. 4, pp. 4456–4465, 2022.
[44] S. Rizal, A. J. Toenlioe, and S. Sulthoni, "Pengembangan multimedia interaktif pendidikan agama Islam materi pergaulan bebas dan zina untuk kelas X SMAN 1 Dringu Kabupaten Probolinggo," *JINOTEP (Jurnal Inovasi dan Teknologi Pembelajaran): Kajian dan Riset Dalam Teknologi Pembelajaran*, vol. 6, no. 1, pp. 1–7, 2019.
[45] F. N. Jannah and M. D. H. Al Ghozali, "Pengembangan Media Pembelajaran Berbasis Flash Mx Pada Mata Pelajaran Muhadatsah," *An Nabighoh*, vol. 22, no. 01, pp. 87–100, 2020.
[46] A. Primadoniati, "Pengaruh Metode Pembelajaran Problem Based Learning Terhadap Peningkatan Hasil Belajar Pendidikan Agama Islam," *Didaktika: Jurnal Kependidikan*, vol. 9, no. 1, pp. 77–97, 2020.
[47] N. Nasir, "THE DEVELOPMENT OF WEB-BASED ISLAMIC EDUCATION LEARNING MEDIA (PAI) IN VIII CLASS OF UNISMUH SMP MAKASSAR," *Akademika: Jurnal Teknologi Pendidikan*, vol. 9, no. 01, pp. 127–138, 2020.

[48] N. Hakim and R. Pebrina, "Pengembangan Multimedia Interaktif Menggunakan Aplikasi Articulate Storyline 3 pada Mata Pelajaran PAI dan Budi Pekerti di SMA 2 Padang Panjang," *at-Tarbiyah al-Mustamirrah: Jurnal Pendidikan Islam*, vol. 4, no. 2, pp. 83–96, 2023.
[49] A. S. Hafidz and N. W. Arini, "Pengembangan Media Noel Game Berbasis Android untuk Pembelajaran Noun di Kelas Rendah," *Jurnal Basicedu*, vol. 6, no. 5, pp. 9188–9204, 2022.
[50] K. Khasanah and R. Rusman, "Development of Learning Media Based on Smart Apps Creator," *Al-Ishlah: Jurnal Pendidikan*, vol. 13, no. 2, pp. 1006–1016, 2021.
[51] Z. A. Achmad, M. I. D. Fanani, G. Z. Wali, and R. Nadhifah, "Video Animasi Sebagai Media Pembelajaran Efektif bagi Siswa Sekolah Dasar di Masa Pandemi COVID-19," *JCommsci-Journal Of Media and Communication Science*, vol. 4, no. 2, pp. 54–67, 2021.
[52] S. Syafril, H. J. Sada, and S. Mukti, "APLIKASI INVENTOR SEBAGAI PENGEMBANGAN MEDIA PEMBELAJARAN PENDIDIKAN AGAMA ISLAM BERBASIS ANDROID DI SMAN," *Al-Tadzkiyyah: Jurnal Pendidikan Islam*, vol. 12, no. 1, pp. 107–127, 2021.
[53] A. Purwanto, "Pengembangan Aplikasi Mobile Learning Berbasis Android Sebagai Media Pembelajaran Pendidikan Agama Islam dan Budi Pekerti Pada Materi Iman Kepada Allah Untuk Peserta Didik Kelas X MIPA 3 SMA Negeri 1 Gemolong Tahun Pelajaran 2018/2019," *Jurnal Pendidikan*, vol. 28, no. 2, pp. 195–204, 2019.
[54] M. Fatchan, "Perancangan aplikasi media pembelajaran ilmu pengetahuan alam berbasis Adobe Flash Professional CS6," *Jurnal SIGMA*, vol. 8, no. 1, pp. 43–51, 2018.
[55] S. M. Fajar and A. Yudianto, "Pengembangan Media Komik Digital pada Mata Pelajaran PAI untuk Kelas VIII di SMP Negeri 3 Cibeber," *utile: Jurnal Kependidikan*, vol. 9, no. 1, pp. 38–46, 2023.
[56] R. Faishol, A. Muftiyah, and A. D. Bastiar, "Pengembangan Media Pembelajaran Berbasis Website Pada Mata Pelajaran Pai Dan Budi Pekerti Kelas X Di Smk Negeri 1 Tegalsari," *INCARE, International Journal of Educational Resources*, vol. 3, no. 2, pp. 144–156, 2022.
[57] V. O. Bano, "A. Kelompok Penelitian," *Metode Penelitian Pendidikan*, p. 26, 2023.
[58] D. Ningsiati and U. Nopriansyah, "Pengembangan Media Pembelajaran pada Mata Kuliah Pembelajaran Bahasa Indonesia Sekolah Dasar Berbasis Macromedia Flash," *Terampil: Jurnal Pendidikan dan Pembelajaran Dasar*, vol. 8, no. 1, pp. 19–26, 2021.