Tafkir: Interdisciplinary Journal of Islamic Education
Vol 5, No. 1, March 2024,_DOI: https://doi.org/10.31538/tijie.v5i1.717
E-ISSN 2527-8177 pp. 136-152

Development of STEAM-Based Video Learning Media for Early Childhood Education with the Inclusion of Religious and Moral Values

Khasanah[1], Agita Violy[2], Eka Yunita Yustantina[3], Moh. Fahri Yasin[4],

[1] Universitas Islam As-Syafi'iyah, Bekasi Indonesia; khasanahrcl.mtp@uia.ac.id
[2] Universitas Esa Unggul, Jakarta Indonesia; agita.violy@esaunggul.ac.id
[3] Universitas Islam As-Syafi'iyah, Bekasi Indonesia; ekayunita.mtp@uia.ac.id
[4] Universitas Islam As-Syafi'iyah, Bekasi Indonesia; mohfachri59@gmail.com

Keywords:
Moral Values;
Video Learning Media;
STEAM;
Early Childhood Education.

Abstract

This article aims to develop video learning media specifically crafted to assist educators in presenting learning materials more tangibly and understandably, particularly within early childhood education. Guided by the Research and Development (R&D) process, the study focuses on two primary objectives: (1) elucidating the intricacies of developing STEAM-based video learning media for Early Childhood Education, incorporating Religious and Moral Values, and (2) evaluating the appropriateness and effectiveness of such media in the educational context. Adopting the ADDIE development model, the research encompasses five pivotal stages: Analysis, Design, Development, Implementation, and Evaluation. The validation process for the developed product entails collaboration with media, material, and design experts, complemented by feedback from colleagues. One-to-one tests, Small Group Tests, and Field Test methods are employed to assess the effectiveness of the media. Validation results from these experts affirm that the developed media aligns seamlessly with the criteria for successful application in educational settings. During the product implementation phase involving 15 students, it became evident that this development was an effective learning tool. The post-test scores surpassing the pre-test scores indicate the product's efficacy in enhancing the understanding of morning phenomena, instilling religious and moral values, and fostering STEAM creativity in early childhood education.

Kata kunci:
Nilai Moral;
Media Pembelajaran Video;
STEAM;
Pendidikan Anak Usia dini (PAUD).

Abstrak

Artikel ini bertujuan untuk mengembangkan media pembelajaran video yang dirancang untuk membantu pendidik dalam menyajikan materi pembelajaran secara lebih konkret dan dapat dimengerti untuk pendidikan anak usia dini. Proses Penelitian dan Pengembangan (R&D) ini memiliki dua tujuan utama: (1) menjelaskan rincian pengembangan media pembelajaran video berbasis STEAM untuk Pendidikan Anak Usia Dini dengan inklusi Nilai-Nilai Keagamaan dan Moral, dan (2) menjelaskan kesesuaian dan efektivitas media pembelajaran video berbasis STEAM untuk Pendidikan Anak Usia Dini dengan Nilai Agama dan Moral. Penelitian ini menggunakan model pengembangan ADDIE yang mencakup lima langkah utama: Analisis, Desain, Pengembangan, Implementasi, dan Evaluasi. Validasi produk pengembangan melibatkan ahli media, materi, dan desain, serta masukan dari rekan-rekan sejawat. Uji Satu-satu, Kelompok Kecil, dan Uji Lapangan digunakan untuk menilai efektivitas media tersebut. Hasil validasi dari para ahli menunjukkan bahwa media yang dikembangkan sesuai dengan kriteria yang dapat diterapkan dengan baik di lingkungan pendidikan. Selama tahap implementasi produk dengan 15 siswa, terlihat bahwa pengembangan ini efektif sebagai alat pembelajaran. Skor Post-Test yang melebihi Pre-Test menunjukkan efektivitas produk dalam meningkatkan pemahaman tentang fenomena di pagi hari, meningkatkan nilai-nilai agama dan moral, serta meningkatkan kreativitas STEAM untuk pendidikan anak usia dini.

Article history:
Received: 24-08-2023
Revised 13-12-2023
Accepted 27-02-2023

Corresponding Author: Agita Violy
Universitas Esa Unggul, Jakarta Indonesia; agita.violy@esaunggul.ac.id

INTRODUCTION

Education, from early childhood to one's lifetime, is a lifelong program aiming to nurture knowledge, skills, and experiences. It is recommended that teachers re-evaluate assessment plans tailored to students' age groups (Fitri, Saparahayuningsih, & Agustriana, 2017). Islamic principles underscore the significance of education throughout one's life, emphasizing the need for a robust educational foundation for children to develop strong character (Adwiah, Tantia, & Rantikasari, 2023; Aqodiah, Hasanah, & Humaira, 2023). This article delves into integrating religious and moral values in early childhood education, particularly in Islamic kindergartens, to guide children in respecting and praying for their parents, teachers, elders, and society.

According to Howard (Gardner, 2008), early childhood is a highly critical period due to significant brain development, accounting for approximately 80% of overall brain growth. By the age of four, a person's brain has already developed by 50%, and this development continues until the age of eight, reaching 80%. This developmental phase continues until the age of 18 also highlights that from birth to six years of age, children are in a golden period where they absorb various knowledge and skills (Asher, 1972; Dorji et al., 2020). The first three years are focused on interacting with the surrounding world with the help of caregivers, followed by the development of knowledge and skills to foster independence (Heiskanen, Alasuutari, & Vehkakoski, 2018). The golden period of childhood is a crucial time for children to absorb knowledge and skills, similar to a sponge absorbing water (Rusydi, Saepudin, & Murodi, 2023). It is essential to instill various character values in children as early as possible to positively influence their abilities and potential during this critical period. The learning process should provide meaningful benefits to children, allowing educational goals to be achieved effectively and efficiently (Artobatama, 2018).

In Raudhatul Athfal Muslimat Kota Bekasi, conventional teaching methods persist, utilizing textbooks and oral narration. However, this approach lacks engagement, especially in understanding the phenomena of the universe. This study aims to develop STEAM-based video learning media to address this gap, incorporating religious and moral values. The morning, significant in Islamic teachings, serves as a thematic focus, emphasizing the divine decree regarding the morning, night, sun, and moon, and their roles in creation. The morning holds virtues, encouraging early waking habits and offering opportunities for seeking goodness and blessings through supplications. Animals and plants also seek sustenance in the morning, illustrating the importance of trusting in Allah's provision (Al-Quran, 41:18-19). Implementing STEAM-based learning, which equips learners with Science, Technology, Engineering, Art, and Math skills, requires appropriate learning media. Video learning media, efficient in capturing children's interest, serves as a foundation for the research study titled "Development of STEAM-Based Video Learning Media for Early Childhood Education with the Inclusion of Religious and Moral Values on the Theme of the Universe in RA Muslimat Bekasi City."

This article addresses an existing literature gap, emphasizing the importance of integrating STEAM-based learning with religious and moral values in early childhood education. The demands of 21st century learning require people to have technology and information management skills, learn and innovate, have a career and have global awareness, and have character. Learning containing STEAM (Science, Technology, Engineering, Arts, Mathematics) is a new breakthrough in overcoming real world situations (Nurdiana, Hasiyati, & Marsono, 2020; Prahani et al., 2023). Interactive videos are needed in the learning process in STEAM-based PAUD. Research that was developed by Purwanti (Purwanti, 2015) regarding the development of learning video media using the ASSURE model in Mathematics subjects can make learning more effective, but there are still several video elements that need to be perfected to facilitate continuity of learning. Perceptions of learning become more positive with the attractiveness of using learning video media with the ASSURE model to motivate students in learning Mathematics as evidenced by the average score of class XI TEI 1 students from 69.19 to 81.48 while class which was originally 69.58 to 81.55 after using learning video media. The use of learning videos was very effective in Purwanti's research, showing an increase in student scores from 69.58 to 81.

Other research by (Sudarman & Ardian, 2021), the results show that the interactive module economy as a support for Student Centered Learning is very good and feasible to use. Development of Android-based media Smart Apps Creator (SAC) using Al-Quran material as a guide to life (Khasanah & Rusman, 2021). The product of this study is a learning media that is adjusted to the implementation of motion pattern-based learning activities for pre-school children (Yusmawati & Lubis, 2019). The various research results above require further research regarding learning resources from interactive audio media and implemented at the PAUD level. The lack of research at the PAUD level in developing learning video media requires researchers to develop this video product. This research complements various other products that have been developed such as learning modules, textbooks for early childhood education.

This article aims to develop learning video media designed to help educators present learning material in a more concrete and understandable way for early childhood education. This Development Research (R&D) has two main objectives: (1) to explain the details of the development of STEAM-based video learning media for Early Childhood Education with the inclusion of Religious and Moral Values, and (2) to explain the suitability and effectiveness of STEAM video-based learning media for Early Childhood Education with Religious and Moral Values. This research uses the ADDIE development model which includes five main steps: Analysis, Design, Development, Implementation and Evaluation. Research in the initial stages of product creation was carried out using a qualitative approach and the product effectiveness testing stage used a quantitative approach. The hypothesis that will be tested at the product effectiveness stage after development is that there are differences in student learning outcomes who use STEAM-based video learning media for Early Childhood Education (PAUD) with the inclusion of religious and moral values.

RESEARCH METHOD

This research utilizes the Research and Development (R&D) method to produce and evaluate video learning products. The study aims to develop video learning materials and assess the effectiveness and feasibility of these products. The target participants are 15 students, aged 5-6 years, in Class B at RA Muslimat Mustikajaya, Bekasi City.

The study adopts the ADDIE model, which consists of five stages: 1) Analysis, involving needs analysis, problem identification, and task analysis; 2) Design, where learning objectives are formulated, tests are developed, and appropriate teaching strategies are determined; 3) Development, which focuses on creating and producing the video learning product; 4) Implementation, where the video learning materials are applied to the theme of the universe, specifically natural phenomena in the morning, in Class B (5-6 years old); 5) Evaluation, the final stage of the ADDIE model. Evaluation is a systematic and structured process that includes setting goals, designing and developing assessment instruments, collecting data, and analyzing and interpreting data to determine a value based on predetermined assessment standards (Budiningsih & Lubis, 2018, p. 4). The evaluation aims to determine if there are significant differences between the desired or planned learning outcomes and the actual field conditions.

Before implementing the developed product, it is necessary to assess its feasibility through validation by experts. Validation aims to test the validity of the developed product by inviting experts or experienced individuals to evaluate the newly designed product (Sugiyono, 2008, p. 414). Expert validation is essential to determine whether the produced product meets the criteria for effective learning media. In this research, expert validation is conducted by four experts, including: 1) Material expert, 2) Design expert, 3) Media expert, and 4) Teacher colleagues.

The validation and feasibility assessment of the product by the aforementioned experts are carried out using a questionnaire instrument. The Likert Scale, ranging from 1 to 5, is used for measurement. The Likert Scale, according to (Sugiyono, 2008), is used to measure respondents' perceptions and opinions regarding the developed learning media product.

The testing and implementation of the product involve three stages: 1) One-to-one test, conducted individually by the researcher with three students. Students are selected based on their developmental abilities, categorized as high, medium, and low. Evaluation aims to obtain student assessments of the feasibility of the video learning product using an evaluation sheet administered through interviews conducted by teachers. Teachers also assess students' knowledge development to measure the effectiveness of the product. 2) Small group test, conducted with a planned number of five students, to further validate the feasibility and effectiveness of the product. 3) Field test, where the product is implemented with a group of 15 students in Class B, aged 5-6 years, at RA Muslimat. Students use the video learning materials, and their understanding and learning outcomes are observed and assessed by the teacher using prepared evaluation sheets. Evaluation is used to test the effectiveness of the product.

RESULT AND DISCUSSION

Result

This research has resulted in the creation of two learning media for early childhood education in the form of audio-visual materials, commonly referred to as videos. These videos were developed using the Adobe Premiere application and saved as .mp4 files. The developed products encompass STEAM-based video learning materials that not only convey knowledge about the morning from both a spiritual and natural perspective but also engage students in creative activities using loose parts. The lesson materials incorporate the Quran as a guide for life, with subtopics covering the morning process, dawn and sunrise times, and the virtues of the morning. With the availability of these video learning materials, it is anticipated that students' religious values and morals will be enhanced, expediting the completion of the learning process related to the universe.

Results of the Product Feasibility Test

The video learning media developed underwent a feasibility evaluation conducted by field experts. In this phase, the product received assessments and validations from professionals with expertise in curriculum development, design, learning materials, and media. Validation data from design, material, and media experts were gathered by presenting learning strategies, video media, and assessment instruments. The experts then offered evaluations, suggestions, and feedback on the feasibility of the media, considering aspects such as the appropriateness of media development strategies and student learning evaluation. This process was facilitated through a Google Form link where experts completed a questionnaire. The feasibility categories for the development product were determined based on criteria outlined by ***(Ernawati, 2017)***, covering aspects such as:

Table 1.
Development Product Feasibility Category Table

No	Score in per cent (%)	Feasibility Category
1	81 – 100 %	Very Decent
2	61 – 80 %	Decent
3	41 – 60 %	Decent Enough
4	21 – 40 %	Not Feasible
5	< 21%	Very Inappropriate

(Ernawati, 2017, p. 207)

Feasibility Test Results for STEAM-Based Early Childhood Education Video Learning Product with the Integration of Religious and Moral Values on the Theme of the Universe, specifically focusing on morning phenomena, received a highly positive response, as indicated by the assessment results below

Table 2.
Product Development Assessment Results by Validators

No	Validator	Respondents	Average Score	Category
1	Design Expert	3 Experts	84,33%	Very Decent
2	Material Expert	8 Experts	87,88%	Very Decent

3	Media Expert	5 Experts	88,71%	Very Decent
4	Teacher colleagues	10 Fello Teachers	95,40%	Very Decent
	AVERAGE		**89,08%**	**Very Decent**

Source: Researcher's Data Processing

Referring to the validity category table, it can be concluded that the learning material in the video obtained an average score of **89.08%** and falls under the category of being highly suitable to be provided and tested with the students.

Effectiveness Test Results

One-to-One Test

The one-to-one test phase is conducted to assess the suitability and effectiveness of the developed product. It involves testing the product individually with three selected students, representing those with high, medium, and low developmental abilities. The one-to-one test is conducted to gather feedback from students regarding the suitability of the video learning media. The assessment is carried out through interviews conducted by the teacher. The results of the individual testing on the students are presented in the table below:

Table 3.
One-to-One Test Suitability Validation Results

Respondents	Indicators										Total	Maximum Score	Percentage
	1	2	3	4	5	6	7	8	9	10			
Student 1	5	5	4	4	5	5	4	5	5	4	46	50	92%
Student 2	4	5	4	4	5	4	5	4	5	5	45	50	90%
Student 3	5	5	5	4	5	4	4	4	4	4	44	50	88%
Average											45	50	90%

Source: Researcher's Data Processing

Referring to the validity category table, it can be concluded that the developed video learning media obtained an average score of 90.0% and falls under the category of highly suitable to be provided and tested with the students. Additionally, the teacher also assesses the students' knowledge development using a provided rubric to measure the effectiveness of the product. The effectiveness of the product is measured based on the scale of children's developmental achievements referenced from the Guidelines for Assessment of Early Childhood Education Directorate of Early Childhood Education in 2018, as shown in the following table:

Table 4.
Scale of Developmental Achievements for Early Childhood Education Students

Number of Scare	Assessment Category
4	Developing Very Well (BSB)
3	Developing as expected (BSH)
2	Starting to Develop (MB)
1	Uderdeveloped (BB)

Source: Pedoman Penilaian Paud 2018

After watching the learning video, the teacher conducted a question-and-answer session with the students to assess their understanding of the presented material. The results of the individual testing with the students are shown in the following table:

Table 5.
One-to-One Effectiveness Test Results

Respondents	Indicators										Total	Maximum Score	Percentage
	1	2	3	4	5	6	7	8	9	10			
Student 1	4	4	4	3	4	3	3	3	3	3	34	40	85%
Student 2	4	4	4	3	4	4	3	3	3	3	35	40	88%
Student 3	4	4	3	3	3	3	3	3	3	3	32	40	80%
Average											**33,7**	**40**	**84%**

Source: Researcher's Data Processing

Referring to the validity category table, it can be concluded that the developed learning video media obtained an average score of 84.0% and falls under the highly effective category for implementation and testing with the students.

Small Group Test

Before conducting the field test, the second phase involved testing the product with a small group of students, consisting of five children as planned. This small group test was conducted to validate the suitability and effectiveness of the product in the next phase.

The validity testing of the learning video media was carried out using assessment sheets through teacher interviews. The results of the small group test obtained an average score of 86.0% and fall under the highly suitable category for implementation and testing with the students.

Furthermore, the teacher also assessed the students' knowledge development through an assessment rubric to measure the effectiveness of the product, which obtained an average score of 88.0% and falls under the highly effective category for implementation and testing with the students.

Field Test

In this phase, the product was evaluated by a group of students (Field Test) consisting of fifteen participants who used the product in the feasibility test. The evaluation was conducted through teacher interviews with the students using a Likert Scale. Sugiyono (2012, p.93) defines the Likert Scale as a scale used to measure the attitudes, opinions, and perceptions of an individual or a group of people towards social phenomena. Each answer choice is given a score, and respondents are required to indicate whether they support the statement (positive) or do not support the statement (negative). For further clarification, please refer to the following table.

Table 6.
Alternative Answers and Weighted Scores

Alternative Answer	Score
Strongly Agree (SS)	5
Agree (S)	4
Moderately Agree (CS)	3

Disagree (KS)	2
Strongly Disagree (SKS)	1

Source: Sugiyono (2012)

The assessment results of students towards the learning video media that has been used indicate that, based on the validity category table, the developed learning video media obtained an average score of 89.0% and falls under the highly valid category for implementation and testing with students.

To measure the effectiveness of the product, a pre-test, product utilization, and post-test were conducted. The pre-test is a test administered before the learning process to assess the students' initial abilities. The post-test is a test given after the learning process using the developed media. Students engage in a question-and-answer session or interview with the teacher to evaluate their understanding of morning phenomena. The learning video is then used to measure the improvement in comprehension. The learning outcomes are observed by the teacher using an assessment sheet that aligns with the learning achievement indicators to be targeted.

Table 7.

Pre-test and *Post-test* Values of Student

Student	***Pre-test***	***Post test***
1	28	41
2	29	41
3	23	37
4	29	41
5	23	37
6	26	38
7	27	39
8	26	39
9	26	38
10	26	39
11	25	39
12	26	39
13	20	34
14	21	35
15	22	36
Total	**377**	**573**
Average	**25,13333**	**38,2**
Presentase	**57,12%**	**86,82%**

Source: Researcher's Data Processing

From the table and recapitulation of the pre-test, the validation results indicate that the obtained score is 377 out of a maximum score of 660, with a validation percentage of 57.12%. The post-test results show an improvement in the students' knowledge after using the learning video media. From the table and recapitulation of the post-test, the validation results indicate that the obtained score is 573 out of a maximum score of 660, with a validation percentage of 86.82%. This indicates an increase in the students' knowledge after watching the learning video.

After using the learning video media product on the theme of the universe with a focus on morning phenomena, the average score of the students has increased by 29.69%. Therefore, it can be concluded that the developed learning video media product

is highly suitable for use as a learning media and effective in improving the religious and moral values of early childhood students.

Gain Normality Test (N-Gain Test)

The N-Gain Normality Test is the normalization of the gain obtained from the pre-test and post-test results. The calculation of the average N-Gain value is conducted to assess the effectiveness of using the developed learning video media in improving students' knowledge and skills. The formula used to calculate the N-Gain Normality, according to Meltzer & Hake (in Anggawati, 2013, p. 44), is as follows:

$$< g >= \frac{T_2 - T_1}{T_3 - T_1}$$

Description:

g : Gain
T1 : *Pre-test* Score
T2 : *Post-test* Score
T3 : Maximum Score

The effectiveness criteria interpreted from the Gain Normality value can be seen in the table below.

Table 8.
Gain Normality Value Interpretation

Gain Score	Criteria
g > 0,7	High
0,3 < g > 0,7	Medium
g < 0,3	Low

Source: (Meltzer & Hake in Anggawati, 2013, p. 45)

Based on this formula, using SPSS, the average N-Gain score was obtained as follows::

Descriptive Statistics

	N	Mean
NGain_Persen	15	70,1130
Valid N (listwise)	15	

Figure 1. Descriptive Statistics
Source: Researcher's Data Processing

Based on the normalization of gain obtained from the pre-test and post-test results, the calculation of the average N-Gain value shows a figure of 70.11%, which falls into the category of moderate effectiveness. These results indicate descriptively, statistically, that the development of PAUD learning video media on the theme of the universe with a focus on morning phenomena is effective for implementation among students in Group B, aged 5-6 years, at Raudhatul Athfal Muslimat in Bekasi City.

Hypothesis Testing using Paired Sample t-Test

The paired sample t-Test is a test for comparing two paired samples. Paired samples refer to the same subjects that have undergone different treatments. This test model is

used to analyze research models before and after an intervention. According to Widiyanto (2013, p.35), a paired sample t-test is one of the testing methods used to assess the effectiveness of a treatment, indicated by the difference in averages before and after the treatment.

The basic assumption for using this test is that the observations or research for each pair should be under the same conditions. The difference in averages should follow a normal distribution. The variances of each variable may be equal or unequal. To perform this test, data on an interval or ratio scale is required. The term "paired samples" refers to using the same sample, but conducting the test on that sample twice at different times or with a specific time interval. The test is conducted using a significance level of 0.05 (α=5%) between the independent variable and the dependent variable.

Table 9. Paired Samples Test

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	PreTest - PostTest	-13,067	,884	,228	-13,556	-12,577	-57,266	14	,000

Source: Researcher's Data Processing

Based on the SPSS output, it was found that the t-value is -57.266, which is less than -1.761. Therefore, the decision is to reject H0. Thus, it can be concluded that on average, the presentation is effective in improving the students' abilities.

STEAM Learning Outcomes

The learning video was developed as an introduction before the learning activities took place, intending to instill religious and moral values to enhance the student's knowledge of morning phenomena and their significance. At the end of the video, the teacher encourages the students to actively collaborate in engage in hands-on activities that highlight science, technology, engineering, arts, and mathematics. The activities are divided into four groups, allowing the students to take turns participating in play and experimenting with the natural materials provided.

As for the results of the STEAM learning, assessments were made on six indicators, including 1) The child is accustomed to taking pride in showing their creative work, 2) The child can stick cotton balls to create clouds, 3) The child can create a sun using removable materials, 4) The child can make a wall clock, 5) The child can create dewdrops on leaves, and 6) The child can arrange letters, numbers, and words using removable materials.

If we refer to the validity category table, it can be concluded that STEAM-based learning results obtained an average score of 97.0% and are classified as highly effective in improving Science, Technology, Engineering, Art, and Math (STEAM) skills.

Discussion

Based on the validation results from media experts, subject matter experts, design experts, peers, and user testing, the instructional video media was deemed suitable for development and effective in improving students' knowledge of phenomena and virtues in the morning, enhancing students' religious and moral values, as well as improving their skills in science, technology, engineering, art, and mathematics (STEAM) among class B students aged 5-6 years at Raudhatul Athfal Muslimat in Bekasi. This is consistent with the findings of a study conducted by Riyanto and Yunani (2020) titled "The Effectiveness of Video as a Tutorial Learning Media in Muhadhoroh Subject," which concluded that video as a tutorial learning media is considered effective for complementing learning resources as discussion materials, practice, and can enhance students' abilities. The feasibility and effectiveness test results of this research also support a previous study conducted by (Setiawan & Budiningsih, 2015) titled "*The Effect of Video Tutorial Learning Strategy and Student Creativity on Learning Outcomes*," which showed that the use of video tutorial learning strategies was rated superior compared to conventional media, as video tutorials can provide audiovisual presentations that are dynamic and sequential compared to conventional media, which rely solely on text. The video tutorial learning strategy is concluded to attract students' attention, which has a positive impact on student learning outcomes.

One advantage of the universe-themed instructional video for early childhood education is not only presenting phenomena in the morning but also focusing on the cultivation of religious and moral values. In addition, students actively participate in STEAM-based learning activities and the instructional video serves as an example of enjoyable learning activities that can be implemented in other schools or as a play activity with parents at home.

Referring to the results of this development research, compared to a study conducted by (Margaretha & Pura, 2019) titled "*The Development of Audio-Visual Media Model to Improve Religious and Moral Values of Early Childhood in Bengkulu City*," it can be concluded that audiovisual media serves as a means in learning and teaching activities that can explain various aspects of religious and moral values in a concrete and captivating manner to enhance religious and moral values. The development research by Margaretha and Pura explained the design and stages of video development and used pre-tests and post-tests to measure the effectiveness of the resulting product. The difference with this research is that the development study did not mention the validation percentage or feasibility from media experts, design experts, and subject matter experts. The research conducted by Margaretha and Pura was limited to teaching materials on moral values, specifically on the competence that describes discipline and responsibility. The difference with this research lies in the specific theme explanation, where this research specifies the universe theme with a focus on discussing phenomena in the morning. Another advantage of this research is the inclusion of STEAM-based activities, making it more varied and not solely focused on delivering content.

The other research on the development of learning video media was also conducted by (Wisada & Sudarma, 2019) with the title "*Development of Character Education-Oriented Learning Video Media*" which designed learning videos using the ADDIE development model, namely Analysis, Design, Development, Implementation, and Evaluation, showing that the learning videos produced valid learning outcomes based on the expertise of subject matter experts, instructional design experts, learning media experts, and product testing (individual, small group, and field) with an excellent rating. The effectiveness of developing such media demonstrates that character education-oriented learning media have a positive impact on improving learning outcomes (Chowdhury, 2018; Nieuważny et al., 2021). This research is in line with the present study. The difference lies in the educational level and subject matter of the research, where the previous study was conducted with vocational high school students and the subject of Digital Simulation with a focus on character education.

Both this research on the development of learning video media and the two aforementioned studies were conducted to improve learning outcomes. Learning outcomes refer to statements indicating what students can achieve as a result of their learning activities (Khasanah & Heryanti, 2017). Consistent with the study conducted by Khasanah and Nita Heryanti titled "*The Influence of Audiovisual Teaching Materials and Learning Creativity on Natural Science Learning Outcomes*," which showed that the learning outcomes of students using audiovisual teaching materials differed from those using module-based teaching materials. The students taught with audiovisual teaching materials achieved higher learning outcomes compared to those taught with module-based teaching materials.

From the perspective of benefits, both previous studies were considered appropriate and effective in facilitating teaching, improving learning outcomes, and facilitating mastery of learning materials. Therefore, these findings reinforce the results of the present research. Teaching and introducing children to the universe is usually done through direct learning outside the classroom. Teachers can also use educational aids such as pictures and posters depicting the theme of the universe (Alkouatli, 2018; Boyle, Petriwskyj, Grieshaber, & Jones, 2021). In this research, the learning video was created not only to visualize the process of sunrise but also to present the virtues and rewards that can be attained by Muslims in the morning.

The aim of this research is to develop learning videos. Through the developed learning videos, children gain an understanding of the transition from night to morning, the animals that interact at sunrise, and the worship practices that can be performed from waking up to noon. These aspects can be instilled from an early age with the goal of enhancing the religious and moral development of children. According to the theory of multiple intelligences, this research is considered capable of developing natural, visual-spatial, and spiritual intelligences. After gaining understanding through the video, children work on a scientific project in groups, stimulating their thinking and communication skills. The Science, Technology, Engineering, Art, and Math (STEAM) skills are utilized in this learning activity, which also enhances interpersonal

intelligence—the ability to observe, understand, and empathize with others' intentions, emotions, views, and attitudes.

By watching a video, students can reason and imitate actions. According to Edgar Dale's cone of experience theory, students have a 30% retention rate when learning is presented through videos/films. Apart from capturing interest, attention, and concentration during learning, a learning video can also provide an enjoyable experience that fulfills the needs of each student (Fikriyati, Katoningsih, & Hasan, 2023).

After watching the learning video, students are directed to engage in simulations or role plays conducted through STEAM-based learning to assess the extent of their understanding, with the aim of increasing early childhood memory retention to 90%. Through STEAM activities, children are given the opportunity to interact directly with their immediate environment. When children play with loose and open-ended materials, their thinking aligns with problem-solving skills and theoretical reasoning (Sholihah, Fauzi, & Agustyarini, 2022).

Edgar Dale's cone of experience theory also aligns with cognitive development theory. According to Piaget's cognitive development theory, cognitive development occurs through a series of processes: assimilation, accommodation, and equilibrium (Jamaris, 2013). The assimilation process involves incorporating new information into existing cognitive structures called schemas. The assimilation process in this research occurs when students observe the learning video on the topic they are about to study, resulting in the acquisition of new information or knowledge.

The second process of information assimilation is accommodation, in which children have the ability to use the information or knowledge they already possess to solve various problems they encounter. The accommodation process in this research takes place when students construct learning materials to create STEAM projects using the provided loose parts. The equilibrium process occurs when children encounter obstacles in adapting their knowledge and experiences to their surrounding environment through accommodation. In this process, teachers must continue to guide children to achieve the desired learning outcomes (Firdaus, Jamal, & Arifin, 2023; Wallace, Torres, & Zaccaro, 2021).

Using the STEAM method of learning, from a humanistic perspective, emphasizes the development of children's self-concept. According to Maslow's theory, if a child has a positive self-concept, they will exhibit good behavior (Wahba & Bridwell, 1976). Children learn not because they are forced to, but because they have a desire to achieve something in their environment. Self-actualization comes from within the child, driven by their own motivation to succeed in solving the problems they face. This theory is manifested in Ausubel's proposed approach, known as meaningful learning. The success of children in creating STEAM projects using the provided loose parts is a reward in itself. The STEAM method encourages children to become independent and free to be creative, thereby developing a positive sense of self.

By watching learning videos and directly engaging in projects, the process of information absorption can proceed effectively. The STEAM learning model stimulates

critical thinking and free creativity with the provided loose parts to construct the previously explained learning materials. Constructivism is defined as learning through the act of creating meaning from what is learned. According to Piaget's constructivist theory, cognitive development is viewed as a process in which children actively construct systems of meaning and understand reality through their experiences and interactions (Piaget, 2013). Vygotsky's sociocultural theory suggests that knowledge is constructed through social interaction. Social interaction can occur between two or more individuals, which means that aside from peer tutoring activities involving interaction between two students, group learning activities such as playing with loose parts through STEAM-based learning are highly beneficial in helping students construct their knowledge. Working in groups can also enhance children's language intelligence as they communicate directly with their peers to collaborate on projects (Rahmawati & Taylor, 2019).

Based on the above discussion, it can be concluded that this development research aligns with theories of cognitive, humanistic, and constructivist learning. Through the development of learning videos and STEAM-based activities for early childhood education focusing on morning phenomena, the research has proven capable of enhancing natural, visual-spatial, spiritual, language, and interpersonal intelligence in children. Therefore, this development research is considered theoretically and empirically sound.

CONCLUSION

Creating video learning media tailored for preschoolers, seamlessly incorporating STEAM principles with religious and moral values within the cosmic context, can provide a comprehensive and captivating educational experience. By fostering curiosity, critical thinking, creativity, and collaboration while instilling positive virtues, children can establish a robust foundation for their future academic pursuits and moral development. Through the deliberate design and implementation of such media, we can empower young learners to delve into the marvels of the universe, cultivating a sense of awe, gratitude, and responsibility towards themselves, others, and the world at large. A key revelation from this research lies in the affirmative reception and appropriateness of STEAM-based early childhood education learning media, seamlessly integrating religious and moral values with a focus on the morning phenomena within the universe. The media's efficacy in enhancing students' knowledge, values, and skills is noteworthy. This study significantly validates the effectiveness and suitability of integrating STEAM principles with religious and moral values in early childhood education. It furnishes empirical evidence supporting the positive impact of this approach on students' holistic development, underscoring the importance of morning phenomena in nurturing knowledge, religious and moral values, and STEAM skills.

While the research showcases promising results, it acknowledges limitations, such as the specific focus on Class B students aged 5-6 years at Raudhatul Athfal Muslimat in Bekasi. Further research is advocated to explore a more diverse range of cases, larger sample sizes, and various educational settings to gain a comprehensive understanding

of the impact and applicability of STEAM-based video learning media in early childhood education. Broadening the scope will yield more nuanced insights, paving the way for informed policy recommendations.

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