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# DEVELOPMENT OF ISLAMIC INTERACTIVE MULTIMEDIA MATERIAL ON ENERGY SOURCES TO IMPROVE MOTIVATION AND LEARNING OUTCOMES OF CLASS III STUDENTS OF MI ISLAMIYAH MALANG CITY

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## Abstract

This study explores the development of Islamic interactive multimedia to enhance motivation and students learning outcomes in science classes. The media was developed using the Lee and Owens model, which consists of five systematic stages: analysis, design, development, implementation, and evaluation. The research employed a Research and Development (R&D) method, involving 20 grade 3 students of MI Islamiyah Malang City as research subjects. Data were collected through teacher interviews, classroom observations, expert validation, student motivation questionnaires, and pre- and post-tests. Findings reveal that the media significantly improves intrinsic motivation by fostering curiosity, interest, learning satisfaction, and spiritual values, as well as extrinsic motivation through immediate feedback, symbolic rewards, and progressive challenges. Learning outcomes also improved significantly from the pre-test to the post-test ($p < 0.05$). The integration of Islamic values, such as environmental responsibility and energy conservation inspired by the Prophet Muhammad, fosters both affective and spiritual reinforcement. The study concludes that Islamic interactive multimedia is an effective and relevant tool for creating innovative and engaging learning environment in the madrasah.

**Keywords:** Energy Sources, Interactive Multimedia, Islamic Values Learning Motivation; Learning Outcomes, Madrasah.

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## INTRODUCTION | مقدمة

Basic education plays a crucial role in shaping the foundation of students' knowledge, skills, and character to face the challenges of the 21st century. Law Number 20 of 2003 concerning the National Education System emphasizes that basic education aims to optimally develop students' potential in the cognitive, affective, and psychomotor domains (Law Number 20 of 2003; Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi, 2022). In the Independent Curriculum, learning is designed to be more contextual and student-centered. The subject of Natural and Social Sciences (IPAS) integrates natural and social sciences to help students comprehensively understand various life phenomena (Kemdikbudristek, 2022). One of the essential topics in grade III science is energy sources, which introduces students to the types of energy, their uses, and their impact on the environment and society. However, studies have shown that students often face difficulties understanding the concept of energy because it is presented abstractly and lacks connection to daily life (Wijayanti, Prasetyo, & Rahmawati, 2022). The predominance of lecture-based teaching has also been linked to low student engagement and motivation to learn (Rahmawati & Syafitri, 2023). In fact, Arifin (2021) noted that the average

completion rate of science learning remains below 50%, highlighting the urgency of adopting more interactive and engaging teaching methods.

The use of interactive multimedia is considered an effective solution to present learning in a more appealing and meaningful way. According to Mayer (2021), media that integrates text, images, audio, and animation can enhance students' information retention by activating multiple sensory channels simultaneously. This aligns with Piaget's theory, which states that elementary school students are at the concrete operational stage, where they learn best through direct experiences and visualizations (Piaget, 1972; Munir, 2022). From the perspective of learning motivation, the Temporal Motivation Theory (Steel & König, 2006) suggests that motivation is influenced by the interaction between expectancy (belief in success), value (perceived importance), impulsiveness, and delay. When learning tasks are designed with clear goals, meaningful rewards, and timely feedback, students' motivation can increase significantly—especially when combined with engaging deadlines or progressive milestones. This is in line with the Self-Determination Theory (Deci & Ryan, 1985), which emphasizes that fulfilling students' needs for autonomy, competence, and relatedness fosters intrinsic motivation. Furthermore, Keller's ARCS model (Keller, 2010) emphasizes that motivation can be strengthened through strategies that capture Attention, ensure Relevance, build Confidence, and provide Satisfaction. Damayanti and Lestari (2023) further confirmed that interactive multimedia-based learning can improve student outcomes by up to 30% compared to conventional methods.

In the context of madrasah, embedding Islamic values into learning media provides not only academic benefits but also moral and spiritual enrichment. These values include the characteristics and habits of Prophet Muhammad (peace be upon him), such as energy conservation and environmental stewardship. The concept of khalifah fil ard (steward of the earth) and the Prophet's example in conserving resources are directly relevant to the topic of energy, fostering ecological awareness from an early age. Research by Nabila and Yuliani (2021) indicates that integrating Islamic values into learning can significantly enhance students' intrinsic motivation, which aligns with the principles of both Self-Determination Theory and Temporal Motivation Theory (Deci & Ryan, 1985; Steel & König, 2006). Therefore, developing interactive multimedia that incorporates educational animations and Islamic content—particularly the Prophet's exemplary conduct in caring for the environment—is expected to positively impact both the motivation and learning outcomes of madrasah ibtidaiyah students.

Based on observations and interviews with the grade III-C homeroom teacher at MI Islamiyah, Malang City, on January 13, 2025, it was found that students had difficulty understanding energy source materials due to abstract and monotonous delivery (Sugiyono, 2021). Therefore, this study aims to develop interactive multimedia based on educational animation integrated with Islamic values to enhance motivation and learning outcomes. The development follows the Lee and Owens (2020) model, which provides a systematic approach to designing, developing, and evaluating technology-based learning media. Through this model, it is expected that the developed media will increase student engagement, foster stronger learning motivation, and improve the overall effectiveness of science learning (Damayanti & Lestari, 2023; Rahmawati & Syafitri, 2023).

## METHOD | منهج

The development of this media used the Research and Development (R&D) method, adapting the Lee and Owens model with five stages: analysis, design, development, implementation, and evaluation (Lee & Owens, 2020). The study was conducted in class III-C at

MI Islamiyah, Malang City, involving 20 students selected through purposive sampling, based on grade level, prior exposure to energy topics, and willingness to participate (Sugiyono, 2021). This sampling ensured that participants represented the learning context and reflected the need for more engaging multimedia to improve motivation and understanding of abstract energy concepts (Damayanti & Lestari, 2023).

Ethical considerations were observed throughout the study. Informed consent was obtained from the school principal, class teacher, and parents, and students participated voluntarily. The confidentiality of student data was strictly maintained, and the research activities were designed to ensure no physical or psychological harm. All participants were treated fairly, and the results were reported transparently and responsibly (Sugiyono, 2021).

Data were collected through teacher interviews, classroom observations, media validation by experts, and student questionnaires (Lee & Owens, 2020; Rahmawati & Syafitri, 2023). Normality tests were conducted before analyzing learning outcomes with a paired sample t-test to determine statistically significant differences (Sugiyono, 2021). Descriptive statistics summarized student responses, while qualitative data from interviews and observations were thematically analyzed to assess engagement, motivation, and participation (Damayanti & Lestari, 2023; Rahmawati & Syafitri, 2023).

## RESULT | نتائج

### Results of the Islamic Interactive Multimedia Media Development Procedure

The development of Islamic interactive multimedia began with a needs analysis, involving interviews and observations of third-grade students at MI Islamiyah Malang. The analysis revealed a gap between actual and ideal learning conditions, with dominant use of lectures, unengaging media, and an unconducive learning environment, all contributing to low student motivation and understanding of energy source materials.

***Initial Design***


**Figure 1.** *Initial display of interactive multimedia*

***Hyperlink Integration***

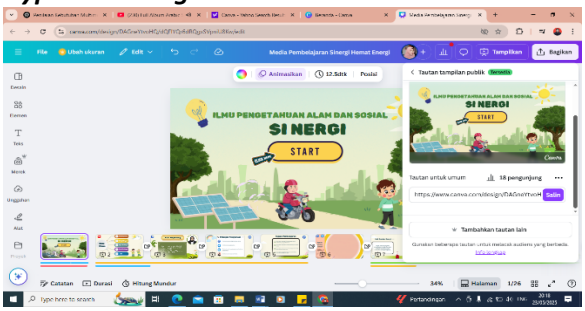

**Figure 2.** *Hyperlink feature integration*

**Download and Convert**

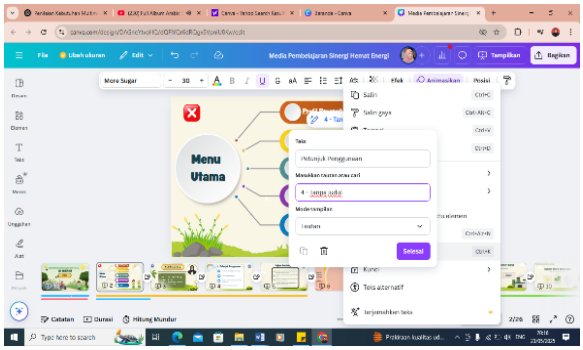


**Figure 3.** *Public view link format download*

**Link creation in bitly**

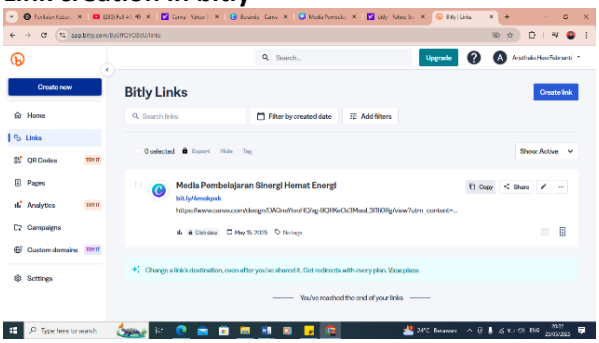


**Figure 4.** *Bitly platform*

**Interactive Multimedia Media Eligibility**

In the field test stage, interactive multimedia media undergoes a validation process by media experts, material experts and learning practitioners who have been appointed because they have the expertise to assess the product. The validation score results are processed using the following table and percentage formula:

**Table 1.** *Media Expert Validation Results*

| *No* | *Aspect* | *Number of questions* | *∑x* | *∑xi* |
|---|---|---|---|---|
| *1* | Appearance | 15 | 74 | 75 |
| *2* | Programming | 5 | 24 | 25 |
| | Total | | 98 | 100 |
| | Average | | | 98% |

$P = \frac{\sum x}{\sum xi} \times 100\%$

$= \frac{98}{100} \times 100\%$

$= 98\%$

Based on Recapitulation table from expert media validators, interactive multimedia media integrated with Islamic values received a percentage score of 98% with a category that is very suitable for use.

**Table 2**. *Results of Material Expert Validation*

| *No* | *Aspect* | *Number of questions* | *∑x* | *∑xi* |
|---|---|---|---|---|
| *1* | Contents | 6 | 29 | 30 |
| *2* | Learning | 5 | 67 | 70 |
| | Total | | 96 | 100 |
| | Average | | | 96% |

$P = \frac{\sum x}{\sum xi} \times 100\%$

$= \frac{96}{100} \times 100\%$

$= 96\%$

Based on recapitulation table from expert media validators, interactive multimedia media integrated with Islamic values gets a percentage score of 96% with a very suitable category for use. This shows that the product is very suitable for use and will provide great benefits for schools.

**Table 3.** *Results of learning expert validation*

| *No* | *Aspect* | *Number of questions* | *∑x* | *∑xi* |
|---|---|---|---|---|
| *1* | Use | 4 | 18 | 20 |
| *2* | Material | 8 | 37 | 40 |
| *3* | Design | 6 | 24 | 30 |
| *4* | Language | 2 | 8 | 10 |
| | Total | | 87 | 100 |
| | Average | | | 87% |

$P = \frac{\sum x}{\sum xi} \times 100\%$

$= \frac{87}{100} \times 100\%$

$= 87\%$

Based on summary table from expert validators of learning, interactive multimedia media integrated with Islamic values got a percentage score of 87% with a category that is very suitable

for use. This shows that the product is in accordance with the development of the times, characteristics, learning styles and Learning Objectives

**Table 4.** *Results of Student Motivation Questionnaire*

| *No* | *Aspect* | *Number of questions* | *∑x* | *∑xi* |
|---|---|---|---|---|
| *1* | Attitude | 8 | 20 | 40 |
| *2* | Attraction | 6 | 30 | 30 |
| *3* | Motivation of Will | 6 | 30 | 30 |
| | Total | | 80 | 100 |
| | Average | | | 80% |

$P = \frac{\sum x}{\sum xi} \times 100\%$

$= \frac{80}{100} \times 100\%$

$= 80\%$

Based on recapitulation table of student motivation questionnaire, interactive multimedia media integrated with Islamic values got a percentage score of 80% with a positive category. This shows that students are helped by the existence of the learning media, so they are motivated to learn and improve learning outcomes.

***Table 5.*** *Validation of Pretest and Posttest questions*

| *No* | *Aspect* | *Number of questions* | *∑x* | *∑xi* |
|---|---|---|---|---|
| *1* | Material | 4 | 13 | 20 |
| *2* | Language | 4 | 17 | 20 |
| | Total | | 30 | 40 |
| | Average | | | 75% |

$P = \frac{\sum x}{\sum xi} \times 100\%$

$= \frac{30}{40} \times 100\%$

$= 75\%$

Based on recapitulation table of pretest and posttest question validation, the questions used as initial and final evaluation of learning received a percentage score of 75% with a feasible category. This shows that the questions are feasible to be used to evaluate student learning and are in accordance with Learning Achievements and Learning Objectives.

**Effectiveness of Interactive Multimedia Media**

The effectiveness of interactive multimedia media integrated with Islamic values can be seen based on the Paired Sample T-test value used to calculate the average value to measure the difference in learning outcomes before and after the application of interactive multimedia media. The following are the results of the effectiveness of interactive multimedia media:

**Statistics Description**

This table shows a summary of basic statistics of the pre-test and post-test scores of all students.

***Table 6.*** *Statistics Description*

| Statistics | *Pre-test* | *Post-test* |
|---|---|---|
| *N* | 20 | 20 |
| *Mean* | 77.25 | 89.25 |
| *Std. Deviation* | 7.19 | 6.90 |
| *Minimum* | 65 | 80 |
| *Maximum* | 95 | 100 |

Information:

| | |
|---|---|
| N | : Number of students analyzed. |
| Mean | : Average value. |
| Std. Deviation | : Standard deviation, shows the spread of data from its mean. |
| Minimum & Maximum | : The lowest and highest scores of each test. |

**Normality Test (Shapiro-Wilk)**

This test is used to determine whether the data on the difference between pre- and post-test values follows a normal distribution.

**Table 7.** Normality Test

| *Variables* | *Statistics* | *df* | *Sig. (p)* |
|---|---|---|---|
| *Difference* | 0.939 | 20 | 0.159 |

Information:

| | |
|---|---|
| Statistics | : Shapiro-Wilk test statistical value. |
| Df | : Degrees of freedom (number of students). |
| Sig. (p) | : Significance value (If more than 0.05 then the data is considered normal) |

Interpretation: Since the significance value (p) = 0.159 > 0.05, the data is normally distributed. Therefore, the analysis can be continued using the paired sample t-test.

**Paired Sample t-Test**

Used to compare pre-test and post-test means of the same students.

**Table 8.** Paired Sample t-Test

| Partner | *Mean* | *T* | *Df* | *Sig. (2-tailed)* |
|---|---|---|---|---|
| *Post - Pre-test* | 12.00 | 6.17 | 19 | 0,000 |

Information:

| | |
|---|---|
| Partner | : Comparison of two variables. |
| Mean | : Average difference between post - pre values. |
| T | : The t-test value. |
| Df | : Degrees of freedom (number of students - 1). |
| Sig. (2-tailed) | : Significance value. If < 0.05 means there is a significant difference. |

Based on the results of the paired sample t-test, in the pretest and posttest sections sig. (2-tailed) the following formula is used:

a. If the significance value sig (2-tailed) > 0.05 then H0 is accepted and Ha is rejected, which means there is no difference in student learning outcomes before and after using Islamic interactive multimedia learning media.
b. If the significance value sig (2-tailed) < 0.05 then H0 is rejected and Ha is accepted, which means there is a significant difference in student learning outcomes before and after using Islamic interactive multimedia media.

The results of the paired sample t-test are known to have a sig. (2-tailed) <0.05, then as the basis for decision making in the paired sample t-test, it can be concluded that H0 is rejected and Ha is accepted, which means that there is a significant difference between the pre-test and post-test values. This means that the treatment/intervention given is effective in improving student learning outcomes.

## DISCUSSION | مناقشة

This study aims to develop Islamic interactive multimedia on the material of energy sources for grade III MI and evaluate its feasibility and effectiveness in improving student

motivation and learning outcomes. The results of the validation test by media experts, material experts, and learning experts showed a percentage of feasibility of 98%, 96%, and 87% respectively, which are in the "very feasible" category. This shows that the multimedia products developed are appropriate in terms of appearance, content, and application of learning.

**Figure 5.** media validation to validator

At the implementation stage, the use of interactive multimedia showed a positive impact on students' learning motivation. Based on the motivation questionnaire, a score of 80% was obtained, indicating a positive response to the media developed. This finding supports the research results of Nabila and Yuliani (2021), which stated that Islamic value-based learning can increase students' intrinsic motivation because of the attachment to meaningful spiritual values and experiences.

**Figure 6.** media tasting

From the cognitive aspect, the effectiveness of the media is also proven through the results of the paired sample t-test which shows a significance value of 0.000 ($p < 0.05$), with an increase in the average score from 77.25 to 89.25. This increase shows a significant difference between learning outcomes before and after the use of interactive multimedia. These results are in line with the research of Damayanti and Lestari (2023), which found that interactive multimedia can significantly improve student learning outcomes compared to conventional methods.

**Figure 7.** implementation of pre-test and post-test

Theoretically, this effectiveness is also supported by Mayer's multimedia learning theory (2021), which states that presenting information through a combination of text, images, audio, and animation facilitates students' cognitive processes in understanding the material. Interactive media provides opportunities for students to learn through various sensory channels, so that abstract concepts such as energy sources become more concrete and easier to understand. This is also in accordance with Piaget's theory, which states that elementary school-aged children are at the concrete operational stage, where learning that involves visualization will be more easily absorbed (Munir, 2022).

In addition to being visual and interactive, the advantage of this media lies in the integration of Islamic values in its content. Materials such as environmental conservation are associated with the principle of khalifah fil ard (preserver of the earth), which provides a moral and religious context to the content of the lesson. This integration is important in learning in madrasas, because it is in line with the vision of Islamic education to develop noble character from an early age (Nabila & Yuliani, 2021). This shows that the media not only improves cognitive aspects but also supports the strengthening of students' affective and spiritual values.

Media development was carried out using the Lee and Owens (2020) model which includes five systematic stages: analysis, design, development, implementation, and evaluation. This model has proven effective because it is able to map learning needs, design content according to student characteristics, and conduct comprehensive evaluations. The use of this model is in accordance with the recommendations of Hasanah and Prasetyo (2023), which emphasize the importance of a systematic design approach in developing digital learning media to answer the challenges of the 21st century.

From a technical aspect, the use of the Canva and Bitly platforms also simplifies the process of distributing and accessing media. Files are downloaded in public display format and shared via Bitly links, so students can access the material at any time via digital devices. This flexibility supports the principles of the Independent Curriculum which prioritizes student-centered, contextual, and adaptive learning to the needs of students (Kemdikbudristek, 2022). Thus, this media is not only pedagogically relevant but also in accordance with the direction of national education policy.

By considering all these aspects, it can be concluded that the interactive Islamic multimedia developed in this study has met the aspects of feasibility, effectiveness, and relevance. This media is able to answer the challenges of abstract science learning, increase student motivation and learning outcomes, and strengthen the integration of Islamic values in the learning process. This study provides an important contribution to learning innovation in elementary madrasahs, especially in developing technology-based media that contains character.

## CONCLUSSION | خاتمة

Islamic interactive multimedia on the material of energy sources for grade III MI was developed using the Lee and Owens development model which includes five stages, namely analysis, design, development, implementation, and evaluation. The development process begins with a needs analysis through interviews and observations of teachers and students, followed by an initial design using the Canva platform, integration of interactive elements such as hyperlinks, and conversion to a public link format uploaded via Bitly for easy student access.

Each stage is carried out systematically to produce media that is in accordance with the characteristics and needs of students.

The validation results show that this media is in the category of very feasible to use. Validation from media experts obtained a score of 98%, material experts 96%, and learning experts 87%. In addition, the learning evaluation instrument in the form of pre-test and post-test questions was also declared feasible to use with a percentage of 75%, while the student motivation questionnaire reached a score of 80%, indicating that students felt helped and more motivated when learning using the media. All validation results show that this media meets the feasibility aspects in terms of content, appearance, technical use, and integration with Islamic values.

In terms of effectiveness, the results of the paired sample t-test showed a significant increase in student learning outcomes after using Islamic interactive multimedia. The average pre-test score of students was 77.25 and increased to 89.25 in the post-test, with a significance value of 0.000 ($p < 0.05$), which means there is a significant difference between before and after treatment. This proves that the media developed is not only feasible, but also effective in improving the understanding of energy concepts and learning motivation of grade III students of MI Islamiyah Malang City. This media can be an innovative learning solution in the context of madrasahs, especially in delivering abstract material with a visual, interactive, and religious approach.

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