MANAZHIM
Jurnal Manajemen dan Ilmu Pendidikan

p-ISSN : 2656-5374
e-ISSN : 2656-0216

Terindeks : SINTA 4, DOAJ, Dimensions, Scilit, Lens Crossref, Garuda, Google, etc.

https://doi.org/10.36088/manazhim.v6i2.5279

DEVELOPMENT OF AN ENCYCLOPEDIA BASED ON THE INTEGRATION OF ISLAM AND SCIENCE TO IMPROVE UNDERSTANDING OF THE MOTION SYSTEM IN HUMANS FOR GRADE V STUDENTS OF SDIT AL-IRSYAD PAMEKASAN

Qurrotul A'yun Sufyan[1], Wahidmurni[2], Rini Nafsiati Astuti[3]
UIN Maulana Malik Ibrahim Malang, Indonesia
qurotulayun5@gmail.com; wahidmurni@pips.uin-malang-ac.id

Abstract

Encyclopedia teaching materials can enhance the learning process by being clearly and attractively packaged, which helps prevent boredom and engages both students and teachers. This is particularly beneficial for grade V science teachers at SDIT Al-Irsyad Pamekasan, who have observed that many students' achievements fall below the KKM (Minimum Completeness Criteria). By integrating Islam and science into these encyclopedia teaching materials, teachers can better support students' understanding of human motion systems and strengthen their confidence in Allah SWT. This research aims to evaluate (1) the feasibility and (2) the effectiveness of these integrated encyclopedia materials at SDIT Al-Irsyad Pamekasan. Using the Research and Development (R&D) approach with the ADDIE model, which includes Analysis, Design, Development, Implementation, and Evaluation, the study involved fifth-grade students as subjects. Results indicate that the encyclopedia is highly valid, effective, and attractive, meeting user needs. Validation results show that material experts rated the encyclopedia at 96%, design experts at 87.5%, language validation at 80%, and science learning experts at 92%, all in the "very decent" category. The encyclopedia's attractiveness was rated at 88.4%. The effectiveness of these teaching materials is further demonstrated by pre-test and post-test scores: the average pre-test score was 68.48, and the post-test score was 87.59. Manual t-test calculations showed tcount (5.145) was greater than ttable (1.703) at a significance level of 0.05, leading to the rejection of the null hypothesis (Ho) and acceptance of the alternative hypothesis (Ha). This signifies significant improvement, confirming that the developed encyclopedia teaching materials are highly effective and suitable for teaching human motion systems.

Keywords: Encyclopedia, Integration of Islam and Science, Student Understanding

INTRODUCTION

Education is the most important thing in human life, which means that every Indonesian person has the right to obtain it and is expected to always develop in it (Nafisah & Indriani, 2024). Education is an effort made to develop individual abilities and personality through certain processes or activities (teaching, guidance or training) as well as individual interaction with their environment to achieve a complete human being (Arifin Z, 2012). The development and progress of a nation is influenced by the quality of education. Education has a very important role in developing the whole human being (Lumban, 2022). Therefore, education is a very important thing in improving human resources. Teachers are one of the most important components in the implementation of education because teachers come face-to-face with students in the learning process in which in the process of their activities there is a transfer of knowledge and the cultivation of moral values through the guidance of an educator. The development of teaching materials is an activity that begins with research to get an overview of the language and learning material documents as well as the needs of students, and continues with the development of teaching materials through acceptable and objective trials (Mulyana, 2003). Education essentially functions to help students in their self-development, which includes the development of all their potentials, skills, and personal characteristics in a positive direction, both for themselves and their environment. The educational process seems inseparable from several activities, including learning and teaching (Silviana Nur Faizah, 2017)

The integration of Islam and science is crucial knowledge for every human being to understand. In contemporary society, there has been a dichotomy between general knowledge and religious knowledge, primarily because society often separates the two. However, these types of knowledge are interconnected and should not be viewed in isolation. In educational contexts, scientific disciplines can be combined with religious values by integrating and interconnecting them at the level of lesson content. Success in integrating Islam and science in education aligns with overall success in teaching and learning, which depends significantly on the learning resources and media used during the educational process (Permadi, 2018).

Learning is a process carried out to obtain a knowledge, both existing knowledge, new knowledge and the development of a knowledge in achieving better life goals (Febriandi, 2020). Meanwhile, Sunhaji argues that learning is a learning process of an effort

to make students learn, so that the situation is an event of learning, which is an effort to change the behavior of students(Sunhaji, 2014). Behavioral changes can occur due to interaction between students and their environment (Susanto, 2018).

The Ministry of Education and Culture publishes a thematic learning series book for teachers and students. The book is published for each theme, not each subject. Thus, for class V books consists of nine books, each book covers seven subjects except for religious education and ethics subjects (Hidayah, N., Pgmi, J., Tarbiyah, F. & Keguruan, 2015). Each theme consists of three subthemes that are broken down into six lessons. Each learning is carried out to achieve more than one basic competency that is interrelated from one or several subjects.

Teaching materials are one of the components of the learning system that plays an important role in achieving competency standards and basic competencies (Hasanah, 2012). Without understanding this, a teacher will experience difficulties in designing teaching materials that meet their needs, namely all components are derived based on core competencies, basic competencies, subject matter in the curriculum and knowledge support materials. In the development of thematic teaching materials, it is necessary to not only adjust to the needs of students but also to the demands of the curriculum (Susilawati et al., 2020). The availability of learning resources in schools, particularly in madrasah tsanawiyah, that facilitate the integration and interconnection of Islam and science is still very limited, making it difficult for teachers to instill Islamic values effectively (Adawiyah & Kartika, 2021)

Based on observations and interviews with science teachers at SDIT Al-Irsyad Pamekasan, namely Mrs. Rizqika Imami Astiana, S.Pd., that the books published by the Ministry of Education and Culture are not in accordance with children's understanding, because the discussion materials in the student books are not extensive. So teachers in delivering material find it difficult. Teachers also find it difficult to apply all competencies, especially in the number one core competency, which is regarding children's spiritual knowledge. In the textbooks that have been available, there is no combination of subjects with Islamic religious values, but only discusses general knowledge. As a result, teachers only provide very little understanding of Islam, sometimes even do not discuss or apply the core competency of one which is the spiritual competence of children.

From the conditions of the use of these teaching materials, this study chose the topic of development of science teaching materials that already exist and are used in learning by SDIT Al-Irsyad Pamekasan, especially class V. This development research was chosen because after analyzing the textbook used as a learning guideline for grade V students of SDIT Al-Irsyad Pamekasan material on the motion system in humans, the researcher identified the advantages, shortcomings, and effectiveness of the book. Then try to improve the shortcomings of the textbook by providing new solutions and innovations to support science teaching in higher quality basic education.

An encyclopedia is a number of writings that contain explanations that store information comprehensively and quickly understood and understood about the entire branch of science or specifically in a particular branch of science which are arranged in sections of articles with one topic of discussion in each article which is arranged alphabetically, category or volume of publications and is generally printed in the form of a series of books depending on the number of materials included. In providing information, encyclopedias are easier to understand than textbooks(Febriandi, 2020) . This is because the encyclopedia only discusses one discussion on one object and the discussion is quite informative. In addition, the arrangement of encyclopedias is usually adjusted alphabetically or based on specific groupings, making encyclopedias easier to use. An encyclopedia is a reference collection with fundamental and comprehensive information about knowledge (Nafisah & Indriani, 2024). The researcher chose to develop teaching materials in the form of an encyclopedia based on Islamic integration to improve student understanding, because based on several research results, it is stated that encyclopedia teaching materials can be used as a learning resource because they are packaged clearly and attractively so that it is expected to increase students' interest in learning (Ayuhanna, 2015). In addition, encyclopedia teaching materials can help students and teachers in the learning process so that it is not boring(Yonathan Tantriadi, 2013). Theris previous research highlights recent developments in the field of Islam and science, including the emergence of a 'new generation' of Muslim scientists striving to harmonize modern science with Islam, as well as the increasing popularity of the I'jaz 'Ilmiy theory concerning the miraculous scientific content of the Qur'an. This article also addresses the challenges faced by this new generation, such as integrating methodological naturalism and evolution into the Islamic worldview, as well as educational and social issues at the intersection of Islam and science (Guessoum, 2015)

This study aims to develop an encyclopedia-based science learning material that integrates Islamic values to enhance the understanding of fifth-grade students at SDIT Al-Irsyad Pamekasan about the human musculoskeletal system, and to overcome the limitations of existing textbooks.

METHODS

This research uses a type of Research and Development research, which is the type of research used in developing and producing products in the form of teaching materials, media, and others. The development model used is the ADDIE model. The researcher uses the ADDIE research model because the product developed is teaching materials in the form of an encyclopedia based on Islam and science. To obtain valid data, there are several techniques used in the research, namely observation, interviews, and documentation (Akbar, 2013). In the research on the development of teaching materials in the form of an encyclopedia based on the integration of Islam in the material of the human movement system in class V of SDIT Al-Irsyad Pamekasan, the researcher used a descriptive development model with the ADDIE development model. Research and development is an effort to develop and produce a product in the form of materials, media, tools, and/or learning strategies, used to address classroom/laboratory learning, and not to test theory (Tegeh, 2013). The ADDIE development model is one of the development models that is often used in research to develop a product. The ADDIE development model consists of five stages as the name implies, which stands for Analysis, Design, Development, Implementation, and Evaluation (Nafisah & Indriani, 2024) The ADDIE model can be used as a model in developing teaching materials and learning methods (Pribadi, 2009). The development and implementation of the teaching materials spanned the entire semester, allowing sufficient time to observe and evaluate the effectiveness of the materials in real classroom settings. This teaching material was tested on 27 fifth-grade students of SDIT Al-Irsyad Pamekasan from Wednesday, May 17, 2023, to Wednesday, May 31, 2023. In analyzing the data, the following formula is needed:

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

Information:

P = Percentage eligibility

$\sum x$ = Total number of answer scores (real values)

$\sum Xi$ = Maximum number of answer scores

100% = Constant Number

The level of validity of teaching materials is determined based on the results of validation from the expert team and the table of assessment criteria (Suharsimi Arikunto, 2003)

Table 1 : Qualification Validity Level

Percentage (%)	**Validity Level**
80-100	Valid/ unrevised
60-79	Valid/unrevised ukup
40-59	Less valid/ partially revised
0-39	Invalid /revised

The level of attractiveness of teaching materials is determined based on the results of student responses to teaching materials and a table of assessment criteria (Sugiyono, 2014)

Table 2 : Criteria for the Attractiveness of Teaching Materials

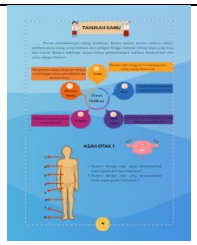
Criterion (%)	**Qualification**	**Validity Level**
80%-100%	Very interesting	Can be used without revision
60%-79%	Quite interesting	Can be used with Minor revisions
50%-59%	Less interesting	Unusable
>49%	Not interesting	Prohibited use

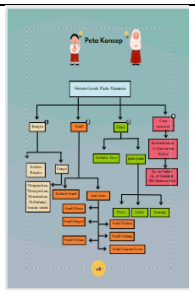
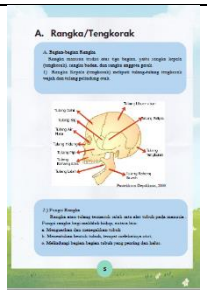
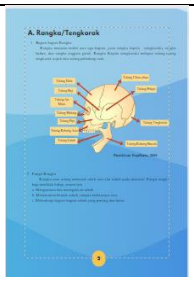
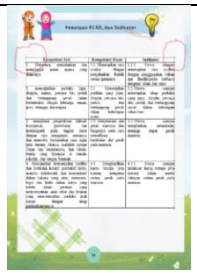
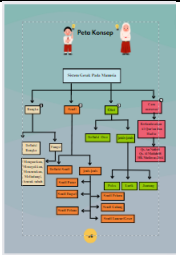
RESULTS

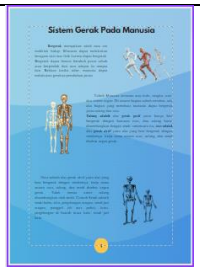
1. Validation Result Data/validity

After validation. Teaching materials for an encyclopedia based on the integration of Islam and science with suggestions and inputs from validators. The suggestions from the validators are as follows:

Table 3 : Table of Suggestions from Validators

Revised	Before it is revised	After revision
Adding feedback on questions contained in the material	None yet	
Cover view Removing excessive objects, placing writing and choosing the color of the character's clothes on the cover	None yet	
Cover view Removing excessive objects, placing writing and choosing the color of the character's clothes on the cover		
Choosing characters with the same theme		

Changing the character of the character and turning the word of meaning into a definition		
Remove the backroud on an image		
On the back cover add a photo of the author		
Capitalization		
Margin position		
Word selection		

The location of the background so as not to interfere with the writing		
Adding points to terms that are difficult to understand (Glossary)	None yet	

At this stage, the products of the researcher are validated by material experts, namely Mr. Imam Sufiyanto, M.Pd. below are the results of the validation.

Table 4 : Results of Material Expert Validation

It	Assessment Criteria	Score
A. Content Eligibility		
1.	The material is in accordance with the applicable curriculum	4
2.	Conceptual correctness according to science	4
3.	The material covers contextual applications in real life	3
4.	Training materials or questions support the concept of	4
5.	Materials develop process skills	4
6.	The material presented in the encyclopedia is developed based on the Qur'an	4
7.	Compatibility between the Qur'an and the material presented	4
B. Presentation		
8.	Systematic and logical presentation of material	4
9.	The encyclopedia presents activities that develop process skills	4
10.	Images and graphics are presented clearly, attractively,	4

	and in color	
11.	Have a table of contents	4
12.	Transcripts, snippets, and citations clearly list the source	4
C. Linguistics		
13	The use of sentences in the encyclopedia is in accordance with good and correct Indonesian rules	4
14.	There is an explanation for difficult or uncommon terms	3
15.	The language used is simple, straightforward, and easy for students to understand	4
16.	Language according to the student's developmental stage	4
D. Graphics		
17	Encyclopedia size fit	4
18	Sentence layout and alenia make it easy for readers to learn the encyclopedia	4
19	The use of proportional and easy-to-read letters	4
20	Good printing	4
Total Score		77
Maximum Scott		80

Percentage $= \frac{\Sigma Xi}{\Sigma X}$x 100%

Percentage $= \frac{77}{80}$x 100% = 96%

The results of the calculation above show that the percentage of achievement rate of 96% is at the level of valid qualifications, so the encyclopedia based on the integration of Islam and science does not need to be revised

Mrs. Dr. Samsul Susilawati, M.Pd as a design expert. Below are the results of the validation.

Table 5 : Results of Media Expert Validation

It	Assessment Criteria	Score
A. Size of the Encyclopedia		
1.	Encyclopedia size conformity follows ISO standards	3
2.	Suitability of size with the content of the book	3
B. Encyclopedia Skin Design		
3.	Displays a good center of view	3
4.	The composition of the layout elements (title, author, illustrations, logos, etc.) is balanced and in tune with the layout of the content	4
5.	The color of the layout elements harmonizes and clarifies the function	4
C. Assessment Criteria		
6.	The letters used are attractive and easy to read	3
7.	Illustrations can illustrate the content/teaching material	4
D. Illustration of Contents		
8.	Real images, animated images, graphics and so on are clearly and attractive, and the colors support the clarity of the material	4
9.	Image fit with material	3
10.	Drafts, snippets and quotes clearly list the source	4
E. Book Content Design		
11.	Consistent placement of layout elements (headings, subheadings, illustrations)	3
12.	The distance between paragraphs is clear	4
13.	Spacing between text and illustration	4
14.	Space between text and illustrations	4
15.	Fill in the look in an attractive, harmonious, and	3

	proportional manner	
16.	Doesn't use too many typefaces	3
17.	The typeface used is simple	3
18.	Text layout width according to education level	4
F. Graphics		
19.	The contents of the encyclopedia are not easily torn	3
20.	Good printing	4
Total Score		70
Maximum Scott		80

Percentage $= \frac{\Sigma Xi}{\Sigma X} x\ 100\%$

Percentage $= \frac{70}{80} x\ 100\% = 87{,}5\ \%$

The results of the calculation above show that the percentage of achievement rate of 87.5% is at the level of valid qualification so that the encyclopedia based on the integration of Islam and science does not need to be revised

Mr. Dr. Mohammad Zubad Nurul Yaqin, M.Pd as a linguist. Below are the results of its validation:

Table 6 : Results of Language Expert Validation

It	Assessment Criteria	Score
A. Content Eligibility		
1.	The material is in accordance with the applicable curriculum	4
2.	Conceptual correctness according to science	3
3.	The material covers contextual applications in real life	3
4.	Practice materials or questions support the concept of	3
5.	Materials develop process skills	4
6.	The material presented in the encyclopedia is developed based on the Qur'an	4

7.	Compatibility between the Qur'an and the material presented	4
B. Presentation		
8.	Systematic and logical presentation of material	3
9.	The encyclopedia presents activities that develop process skills	4
10.	Images and graphics are presented clearly, attractively, and in color	3
11.	Have a table of contents	4
12.	Transcripts, snippets, and citations clearly list the source	4
C. Linguistics		
13	The use of sentences in the encyclopedia is in accordance with good and correct Indonesian rules	3
14.	There is an explanation for difficult or uncommon terms	2
15.	The language used is simple, straightforward, and easy for students to understand	3
16.	Language according to the student's developmental stage	3
D. Graphics		
17	Encyclopedia size fit	3
18	Sentence layout and alenia make it easy for readers to learn the encyclopedia	3
19	The use of proportional and easy-to-read letters	2
20	Good printing	2
Total Score		64
Maximum Scott		80

$$\text{Persentage} = \frac{\Sigma \text{Xi}}{\Sigma \text{X}} \text{x } 100\%$$

$$\text{Persentage} = \frac{64}{80} \text{x } 100\% = 80\%$$

The results of the calculation above show that the percentage of achievement rate of 80% is at the qualification level is quite valid so that the encyclopedia based on the integration of Islam and science does not need to be revised

Mrs. Rizkiqa Imami Astiana, S.Pd, a science learning expert. Below are the results of the validation:

Table 7: Results of Science Learning Expert Validation

It	Assessment Criteria	Score
A. Content Eligibility		
1.	The material is in accordance with the applicable curriculum	4
2.	Conceptual correctness according to science	3
3.	The material covers contextual applications in real life	4
4.	Training materials or questions support the concept of	4
5.	Materials develop process skills	4
6.	The material presented in the encyclopedia is developed based on the Qur'an	4
7.	Compatibility between the Qur'an and the material presented	4
B. Presentation		
8.	Systematic and logical presentation of material	3
9.	The encyclopedia presents activities that develop process skills	4
10.	Images and graphics are presented clearly, attractively, and in color	4
11.	Have a table of contents	4
12.	Transcripts, snippets, and citations clearly list the	2

	source	
C. Linguistics		
13	The use of sentences in the encyclopedia is in accordance with good and correct Indonesian rules	4
14.	There is an explanation for difficult or uncommon terms	2
15.	The language used is simple, straightforward, and easy for students to understand	3
16.	Language according to the student's developmental stage	3
D. Graphics		
17	Encyclopedia size fit	4
18	Sentence layout and alenia make it easy for readers to learn the encyclopedia	4
19	The use of proportional and easy-to-read letters	4
20	Good printing	4
Total Score		74
Maximum Scott		80

Percentage $= \frac{\Sigma Xi}{\Sigma X} x\ 100\%$

Percentage $= \frac{74}{80} x\ 100\% = 92\%$

The results of the calculation above show a percentage of 92% achievement rate. be at a valid qualification level. Comments and suggestions from class V learning experts in open-ended questions are used as consideration to improve teaching materials in order to enrich the exposure of material in the media and improve it.

Previous research conducted by Nining Setyowati said that teaching aids or teaching materials have a considerable influence on students' understanding and interest in the material being taught. Teaching aids also greatly affect teachers' ability to develop teaching materials, making teachers more creative and innovative in developing teaching materials (Setyowati, 2016). Likewise, research conducted by Agustin Nalar said that it is necessary to

develop teaching materials that can help students understand material that is in accordance with the characteristics of elementary school students, namely still happy to play (Arrumsari, 2018). Based on this, teaching materials are able to make students more interested in following the learning process so that they can increase their understanding of the concept of a material.

2. Effectiveness of Encyclopedia Teaching Materials

From the data of *pre-test* and *post-test* scores, the average pre-test score was 68.48 and the average post-test score was 87.59. This shows that *the Post-test* score is better than the *Pre-test* score. So there is a significant difference to the use of this encyclopedia based on the integration of Islam and science that has been developed. The following are the steps taken to determine the effectiveness of the teaching materials developed

Step 1. Making Ha and Ho in Sentence Form

Ha = An encyclopedia based on the integration of Islam and science can improve the understanding of the concept of grade V students of SDIT Al-Irsyad Pamekasa on the material of Motion Systems in Humans

Ho = An encyclopedia based on the integration of Islam and science cannot improve the understanding of the concept of grade V students of SDIT Al-Irsyad Pamekasan on the material of Motion Systems in Humans

Step 2. Making Ha and Ho in statistical form

Ha : $\mu a \neq \mu_b$

Ho: $\mu a = \mu_b$

Step 3: Determine the normality of the data distribution

$Md = \frac{\sum d}{n} = \frac{516}{27} = 19{,}111$

Information:

Md = average of the gain between post test and pre test

d = gain (difference) of the post-test score against the pre-test of each subject

n = number of subjects

Step 4. Calculating the average

$$t = \frac{md}{\sqrt{\frac{\sum d2 - \frac{(\sum d)2}{n}}{n(n-1)}}}$$

From this formula, it is obtained that $t_{calculates}$ = 5.145

Step 5. Determining testing rules (Subana, 2005)

For degrees of freedom (db) = N-1

= 27-1=26

Significant level (α) = 0.05

Then ttable =1.703

If the tcount > t the table or the tcount < t the table, then there is a significant difference (Ho is rejected and Ha is accepted)

Step 6. Comparing t_{tables} with t_{counts}

It turns out : t count > ttable

Or : 5,145 > 1,703

So: Ho is rejected and Ha is accepted

Step 7. Interesting Conclusion

Ha = An encyclopedia based on the integration of Islam and science can improve the understanding of the motion system in humans of grade V students of SDIT Al-Irsyad Pamekasan. **ACCEPTED**

Ho = An encyclopedia based on the integration of Islam and science cannot improve the understanding of the motion system in humans of grade V students of SDIT Al-Irsyad Pamekasan. **REJECTED**

Based on the results of the t-test, it shows that there is a difference in the average score of students before and after the provision of development products. This shows that the use of an Encyclopedia based on the integration of Islam and science can increase the understanding of grade V students of SDIT Al-Irsyad Pamekasan on the material of human motion systems.

DISCUSSION

1. Validity of an Encyclopedia Based on the Integration of Islam and Science

Islamic development from the perspective of Kuntowijoyo's prophetic social science can inform the development of an encyclopedia integrating Islam and science. By utilizing qualitative data and intellectual thought methods, this research highlights Kuntowijoyo's shift from Islamic politics to prophetic social literature. The three principles of his prophetic Islamic paradigm-humanization, liberation, and transcendence—can guide the creation of an encyclopedia aimed at enhancing understanding of motion systems within an Islamic framework. This approach ensures that Islamic teachings contribute to equitable development and the realization of the vision of rahmatan lil alamin (Fahrur Rozi dan Ahmad Fauzi, 2023). Al-Zarnūjī's concept of knowledge in Islam, as described in *Ta'lim Al-Muta'allim*, which divides knowledge into farḍu kifāyah and fardu 'ayn, can serve as a foundation for developing an encyclopedia that integrates Islam and science. These principles emphasize the importance of knowledge that is beneficial to society and knowledge that is individually required, both of which should be based on Islamic values. By applying these principles in the development of the encyclopedia, we can ensure that the educational material not only enhances scientific understanding but also aligns with Islamic ethical values, thus improving the understanding of motion systems in a holistic context consistent with Islamic teachings (Bagus Novianto, Abd. Haris, 2023)

a. Validity as a Fundamental Concept

1) Validity is a crucial aspect of evaluating educational instruments. According to (Arikunto, 2010), validity refers to the extent to which an instrument measures what it is intended to measure and accurately reflects the data from the variables being studied. This ensures that educational materials, such as textbooks or encyclopedias, are appropriate and effective for achieving learning goals.

2) In the context of educational research, the concept of validity is essential not only for ensuring the accuracy of the instruments used but also for maintaining the integrity of the educational process. Valid instruments provide reliable data, which in turn inform effective teaching strategies and learning outcomes.

b. Evaluation of the Encyclopedia

1) Validation by Teaching Material Experts: The encyclopedia received a 96% validation score from experts in teaching materials. This high percentage indicates that the content and structure of the encyclopedia are highly appropriate and meet the educational standards required for effective teaching and learning.

2) Design Validation: Design experts rated the encyclopedia at 87.5%. This rating suggests that the design of the encyclopedia, including its layout and visual presentation, is well-constructed and conducive to effective learning.

3) Language Validation: The language used in the encyclopedia received an 80% approval rating. Although this is slightly lower than the other validation scores, it is still considered very feasible. This indicates that the language is clear and understandable, with only minor areas for improvement.

4) Science Learning Expert Validation: The validation score from science learning experts was 92%. This indicates that the scientific content presented in the encyclopedia is accurate, relevant, and effectively communicated, aligning well with educational standards in science.

c. Implications of Validation Results

1) The validation results collectively suggest that the encyclopedia is a valid educational tool that successfully integrates Islamic values with scientific content. It provides a valuable resource for both teachers and students, ensuring the material is appropriate and effective for learning.

2) Additionally, the high validation scores across various aspects (teaching material, design, language, and scientific content) highlight the comprehensive quality of the encyclopedia. This indicates that it is not only well-rounded but also capable of addressing multiple facets of the educational experience, thereby enhancing both the teaching process and student engagement.

2. Effectiveness of an Encyclopedia Based on the Integration of Islam and Science

a. Assessment Methodology

To assess the effectiveness of the encyclopedia, a one-group pretest-posttest design was employed. This method involved testing the students' understanding before and after the implementation of the encyclopedia to measure its impact on learning.

1) Pretest and Posttest Design:

a) A pretest was conducted to establish students' baseline knowledge of the human motion system before using the encyclopedia. The pretest questions were validated to ensure their suitability.

b) After the pretest, students were exposed to the encyclopedia as a learning medium. Following this, a posttest was administered to evaluate any changes in students' understanding.

2) Results and Analysis:

a) The analysis of the pretest and posttest scores revealed a significant improvement. The average pretest score was 68.48, while the average posttest score increased to 87.59.

b) This substantial rise in scores indicates that the encyclopedia effectively enhanced students' comprehension of the human motion system.

3) Statistical Testing:

a) A t-test was conducted to statistically analyze the results. The t-count was 5.145, which was compared against the critical t-value (t-table) of 1.703 with a significance level of 0.05 and degrees of freedom (df = 26). Since the t-count exceeded the t-table value, the null hypothesis (Ho) was rejected, and the alternative hypothesis (Ha) was accepted. This result confirms that there was a statistically significant improvement in students' understanding after using the encyclopedia.

b) The effect size was calculated to determine the practical significance of the improvement. The effect size was found to be 0.85, indicating a large effect according to Cohen's guidelines. This suggests that the use of the encyclopedia had a substantial impact on students' learning outcomes.

b. Criteria for Good Learning Media

1) Suitability and Relevance

a) The media must be aligned with the lesson plan, learning needs, student characteristics, and educational objectives. This ensures that the content is appropriate for the intended educational context and meets the specific needs of the learners.

b) Relevance to the curriculum is essential. The content should not only align with the current curriculum but also enhance it by providing additional, contextually appropriate information that supports the learning objectives.

2) Ease of Use

a) The content should be presented in a way that is easy for students to understand and use. The media should be straightforward in its operation, allowing students to engage with the material effectively without encountering unnecessary difficulties.

b) b. User-friendly interfaces and clear instructions are crucial for ensuring that students can navigate and utilize the learning materials without frustration. This includes intuitive design and accessible language.

3) Attractiveness

a) The teaching materials should be visually appealing and engaging. This includes the use of appropriate colors, graphics, and layout that capture students' attention and make the learning experience enjoyable.

b) b. Engaging content can also include multimedia elements such as videos, interactive diagrams, and animations that enrich the learning experience and help maintain student interest.

4) Usefulness

    a) The content should be valuable and beneficial to students' learning. It should contribute meaningfully to their understanding of the subject matter and provide relevant information that enhances their educational experience.

    b) Practical application of knowledge is important. The media should include examples, case studies, or practical exercises that help students apply what they have learned in real-world scenarios.

5) Interactivity

    a) Learning materials should include interactive elements that engage students and promote active learning. This can involve quizzes, interactive diagrams, or activities that encourage students to apply what they have learned.

    b) Interactivity fosters critical thinking and problem-solving skills, as students are required to engage with the content actively rather than passively consuming information.

6) Cultural Relevance

    a) The content should be culturally relevant and sensitive to the students' backgrounds. This ensures that all students can relate to and benefit from the material, fostering an inclusive learning environment.

    b) Incorporating culturally diverse examples and perspectives can enhance students' understanding and appreciation of different cultures, promoting a more inclusive and global outlook.

7) Feedback Mechanisms

    a) Effective learning media should provide opportunities for feedback. This can be through self-assessment tools, teacher evaluations, or peer reviews, helping students understand their progress and areas for improvement.

    b) Immediate feedback helps students correct misunderstandings quickly and reinforces learning, contributing to a more effective educational experience.

8) Adaptability

a) The learning materials should be adaptable to different learning styles and paces. This includes providing various formats (text, video, audio) and levels of difficulty to accommodate diverse student needs.

b) Flexibility in content delivery allows teachers to tailor the learning experience to individual student needs, enhancing overall effectiveness.

In summary, the encyclopedia developed for integrating Islamic values with scientific content meets the criteria for effective learning media. It has been validated as a high-quality resource and has demonstrated effectiveness in improving students' understanding of the human motion system. The development process followed the ADDIE model, ensuring that the encyclopedia aligns with educational competencies and objectives, thereby supporting its role as a valuable teaching tool. The additional considerations for effective learning media further enhance its utility, ensuring it is interactive, culturally relevant, feedback-oriented, and adaptable to various learning needs.

CONCLUSION

In This research produced a new product, namely an encyclopedia teaching material based on the integration of Islam and science for grade V students of SDIT Al-Irsyad Pamekasan. The results of the study concluded that the encyclopedia teaching materials for SDIT grade V students in the science materials developed were valid and suitable for use for teachers in teaching and for students in learning. Based on validation results, the material experts rated the encyclopedia at 96%, indicating it is highly feasible. Design experts rated it at 87.5%, also considered very feasible. Language validation showed a percentage of 80%, and science learning experts rated it at 92%, both falling into the very feasible category. The effectiveness of these teaching materials was assessed through pre-test and post-test results. The average pre-test score was 68.48, while the average post-test score was 87.59. Manual t-test calculations with a significance level of 0.05 yielded a t-value of 5.145, which is greater than the critical t-value of 1.703. This indicates the rejection of the null hypothesis (Ho) and acceptance of the alternative hypothesis (Ha), demonstrating significant differences in the developed teaching materials. These findings confirm that the developed encyclopedia has a high level of effectiveness, making it suitable for use in teaching, particularly for the material on human motion systems.

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