

DEVELOPMENT OF AI-BASED E-MODULES IN THE SUBJECT OF MORAL BELIEFS MADRASAH ALIYAH

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ABSTRACT

This study aims to develop and evaluate the effectiveness of an Artificial Intelligence (AI)-based e-module for the Akidah Akhlak subject at Madrasah Aliyah, focusing on the topic of commendable morals, namely Hikmah, Iffah, Syajaah, and A'dalah. The research employed a Research and Development (R&D) approach using the ADDIE model, which consists of Analysis, Design, Development, Implementation, and Evaluation stages. The study was conducted at MAN 2 Deli Serdang involving Grade X students. Data were collected through observations, interviews, questionnaires, expert validations, and pre-test and post-test assessments. The e-module was developed using Google Sites, Canva AI, and Google Gemini to provide interactive, adaptive, and student-centered learning experiences. Validation results indicated that the material expert assessment reached 88.6%, while the media expert assessment reached 77.5%, both categorized as highly feasible. Field testing showed positive student responses, with individual trials achieving 85.84% and group trials reaching 92.5%, indicating a very feasible product. Effectiveness testing demonstrated a significant improvement in learning outcomes, where the experimental class average increased from 52.91 in the pre-test to 83.54 in the post-test, outperforming the control class. Statistical analysis using a paired sample t-test showed a significant difference ($p < 0.001$). These findings indicate that the AI-based e-module is highly feasible and effective in improving student engagement, motivation, and learning outcomes in Akidah Akhlak learning.

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INTRODUCTION

The era of Society 5.0 is characterized by the use of technologies such as Artificial Intelligence (AI), Internet of Things (IoT), Big Data, and robotics to solve various social problems and improve the quality of human life

(Fukuyama, 2018). In the field of education, technology no longer functions only as an aid, but has become an integral part of supporting the achievement of national education goals as mandated in the Law of the Republic of Indonesia Number 20 of 2003, which is to form human beings who have faith, noble character, knowledge, independence, and responsibility for society and the nation (UURI, 2003).

The development of the times encourages curriculum changes that are tailored to the needs of students in each generation (Salminawati et al., 2023). Education is the main foundation in realizing Society 5.0, but there are still obstacles in the form of low mastery of information and communication technology by most teachers in Indonesia so that the transformation of technology-based learning has not run optimally (Makdori, 2021). In the context of the Moral Faith subject, the implementation of the Love-Based Curriculum emphasizes strengthening religious, humane, and national values through an educational paradigm based on compassion and empathy (KMA No. 1503 of 2025).

Learning in Islam emphasizes the use of wise and wise methods as stated in Q.S. An-Nahl verse 125 which commands the delivery of teachings in a good way. The challenges of learning Akidah Akhlak in the digital era are increasingly complex because Generation Z and Alpha students tend to have visual, interactive, and independent learning characteristics (Zaharah & Susilowati, 2020). Meanwhile, learning methods that are still one-way are often less able to increase student learning motivation and less accommodating to the diversity of abilities in the classroom (Ariswanto & Nurnaningsih, 2021).

To answer the differences in students' learning needs, the differentiated learning approach is very important because it allows teachers to adjust the content, processes, products, and learning environment according to the individual characteristics of students (Ministry of Education and Culture, 2024). However, the implementation of manual differentiation faces various obstacles, such as limited time, energy, and teacher resources. This condition is exacerbated by the lack of AI-based adaptive Islamic learning modules that are specifically designed and systematically tested for Akidah Akhlak subjects.

Differentiated learning is based on the recognition that each student has different learning styles, both visual, auditory, and kinesthetic (Masganti, 2012). In addition, the evaluation system that still focuses on cognitive aspects has not been able to measure affective and psychomotor development as a whole. Therefore, the use of AI has the potential to support a more comprehensive evaluation through dynamic monitoring of learning progress and providing more personalized learning recommendations according to the needs of students (KMA No. 184 of 2019).

The integration of technology through e-modules is one of the solutions to improve the quality of learning of Akidah Akhlak because it offers interactive and easily accessible material (Widiana & Rosy, 2021). The use of AI in e-modules allows the creation of adaptive learning that can adjust materials and evaluations based on students' abilities and learning styles (Wildan, n.d.). Through adaptive algorithms, the system is able to analyze student responses, identify learning difficulties, and provide relevant feedback so that learning becomes more effective and independent (Mutmainnah et al., 2021).

Various previous studies have shown that a variety of learning methods are needed to improve students' understanding and achievement, including in learning Akidah Akhlak (Sitorus et al.). Other research proves that interactive e-modules are able to significantly improve student learning outcomes because they present a more interesting and participatory learning process (Hutahaean et al., 2019). Similar findings show that the use of e-modules in Islamic Religious Education produces higher learning outcomes than learning without e-modules (Pebriansyah, 2023).

The urgency of implementing AI in Islamic Religious Education is further strengthened by research showing that AI is able to produce personalized learning content, help analyze student development, and provide feedback in real time (Owi & Ritonga, 2024). In addition, AI technology has been proven to improve learning efficiency, student involvement, and accessibility of religious education more broadly, potentially strengthening the understanding of religious values in daily life (Amalia, 2024). Nonetheless, AI integration must still maintain a balance between technological advances and humanist values in religious education (Owi & Ritonga, 2024).

Based on various studies and observation results at MAN 2 Deli Serdang, learning Akidah Akhlak still faces challenges in the form of conventional methods, limited use of technology, and lack of ability of educators to develop

digital media (Fauziah, 2020). In fact, facilities such as projectors, computer labs, gadgets, and smartphones are available and can be used to support more interactive and flexible learning (Mardianto et al., 2022). Therefore, research on the development of AI-based e-modules in the subject of Akidah Akhlak is relevant to produce adaptive learning media that is able to adapt to student needs, integrate cognitive and affective aspects, and support the implementation of the Love-Based Curriculum more effectively (KMA No. 1503 Tahun 2025).

METHODS

This research was carried out in an even semester at MAN 2 Deli Serdang with a focus on the development and testing of the e-module of Akidah Akhlak commendable moral material which includes wisdom, iffah, syajaah, and 'is for grade X students (Sugiyono, 2019). Data collection was carried out through interviews and observations to obtain information about the effectiveness of the use of e-modules in improving the quality of learning Akidah Akhlak. The results of the research are expected to contribute to the development of learning methods that are more effective, adaptive, and in accordance with the needs of students in the digital era.

The data sources used in this study are primary data obtained directly from the main source without going through intermediaries (Indriantoro & Supomo, 2013). Primary data was obtained through interviews with teachers and students of class X MAN 2 Deli Serdang to identify the need for teaching materials for Moral Faith, especially in commendable moral material. In addition, data was also obtained through the results of pre-test and post-test which were used to measure changes in student learning outcomes before and after the use of e-modules in the learning process.

This research uses the Research and Development (R&D) method which aims to design, develop, produce, and test the effectiveness of an educational product systematically (Sugiyono, 2019). The research approach used is a mixed method that combines quantitative and qualitative methods so that it is able to produce more complete, valid, and objective data (Sugiyono, 2019). Quantitative data was obtained through questionnaires and pre-test and post-test results, while qualitative data was obtained through interviews with research respondents.

The development model used is ADDIE which consists of five stages, namely Analysis, Design, Development, Implementation, and Evaluation, which is developed to design a systematic learning system (Dick & Carey, 1996). The application of the ADDIE model in the development of the Akidah Akhlak e-module allows for a more structured, interactive, and oriented learning arrangement that is oriented towards achieving learning goals (Hidayat & Nizar, 2021). This model also provides guidance for teachers in determining learning strategies, methods, and procedures that suit the needs of students (Hidayat & Nizar, 2021).

The analysis stage is carried out to identify learning problems, student needs, and student characteristics through the use of AI technology to support more targeted learning (Benny, 2009). The design stage focuses on designing differentiated learning-based e-modules that are tailored to the learning characteristics of students and supported by AI technology. Furthermore, the development stage is carried out through the creation of Google Sites-based e-modules combined with Canva AI and tested to a number of students to obtain feedback before being used more widely.

The implementation stage is carried out by applying e-modules in learning through cognitive and non-cognitive diagnostic assessments to identify students' initial abilities, interests, needs, and learning characteristics. The results of the assessment are the basis for developing a differentiation of content, processes, and learning products that are more personalized and according to the needs of students. The evaluation stage is carried out through formative and summative evaluation to measure the effectiveness of the e-module, by utilizing data obtained from interviews, observations, questionnaires, and comparison of pre-test and post-test results as a basis for product improvement in the next stage (Benny, 2009).

This study uses data collection techniques in the form of interviews, observations, and questionnaires to obtain comprehensive information about the effectiveness of AI-based e-modules in learning Akidah Akhlak. Unstructured interviews were conducted with teachers and students of class X to explore information about the suitability of the e-module with the curriculum, ease of use, its impact on learning motivation, and students' experiences in participating

in differentiated learning. Observation was carried out in a non-participatory manner by observing the use of e-modules, the use of AI technology, students' level of understanding of the Commendable Morals material, and their involvement during the learning process. In addition, questionnaires were distributed to media experts, subject matter experts, and students to assess the quality of content, AI implementation, linguistic aspects, visual display, suitability of the material with the curriculum, and improvement of student understanding through pre-test and post-test.

Data analysis was carried out using descriptive statistics to describe the results of respondents' assessment of e-modules by calculating the percentage of scores based on the eligibility criteria proposed by Sudjana (2005). The improvement in learning outcomes was analyzed through a comparison of pre-test and post-test scores by calculating the class average, percentage of completeness, and the level of improvement in student learning outcomes. Furthermore, the t-test was used to determine the significance of differences in learning outcomes before and after the use of e-modules with a significance level of 0.05. The product developed in the form of a learning e-module first goes through the validation stage by material experts and design experts, then is tested through individual, small group, large group, and field trials to assess the feasibility, effectiveness, and efficiency of the developed learning products (Sudjana, 2005).

RESULTS AND DISCUSSION

The findings of the study show that the process of developing Artificial Intelligence (AI)-based e-modules is carried out systematically through the stages of analysis, design, development, implementation, and evaluation to produce effective learning products that meet the needs of students. Based on the results of observations at MAN 2 Deli Serdang, learning Akidah Akhlak is still dominated by the lecture method which begins with questions and answers and short discussions to create a more interactive classroom atmosphere and connect the material with students' real experiences. Teachers try to relate the results of the discussion to the moral concepts learned, so that learning becomes more meaningful, increases students' attention, and helps them apply learning outcomes in daily life. The findings also show that there is a desire for teachers to integrate technologies, such as infocus and artificial intelligence, to create more engaging learning through audio-visual support and more dynamic interactions, although implementation still faces limitations in structured facilities and support. This condition opens up opportunities for the use of mobile phones and laptops as learning media that allow students to actively participate through AI-based e-modules that can be accessed independently to understand the material of Akidah Akhlak in more depth. The use of e-modules that combine text, images, videos, and AI features has been proven to have the potential to increase student understanding, motivation, and involvement in the learning process so that the learning experience becomes more effective, engaging, and relevant to the needs of today's learners.

The stages of developing the AI-based Akidah Akhlak e-module began with a needs analysis through observation and interviews at MAN 2 Deli Serdang to identify student characteristics, learning conditions, infrastructure, and the need for more interactive and technology-based learning innovations. The results of observation show that students have a polite and active character when participating in varied learning, while the limitations of technological facilities in most classrooms still cause the dominance of lecture methods so that more interesting and participatory learning media is needed. Based on these findings, the researcher chose MAN 2 Deli Serdang as the research location and determined the material for Commendable Morals which includes Hikmah, Iffah, Syajaah, and A'dalah because it is relevant to the developmental needs of class X students and has applicative value in daily life. In the planning and development stage, the e-module is designed using Google Sites, Canva, and Google Gemini by combining materials, multimedia, interactive assignments, and AI-based activities that allow students to learn independently and actively before being validated by material experts and media experts to ensure product quality. Once valid, the e-module is implemented in learning to observe student engagement and the effectiveness of its use as the main learning medium in the classroom. The evaluation stage is then carried out through the analysis of pre-test and post-test results as well as the collection of student responses through questionnaires and interviews to assess the improvement of material understanding, the effectiveness of AI-based e-modules, and aspects that still need to be refined in further development.

Product Development

After analyzing the needs of students, the next step is to develop products according to their needs, the first step carried out by the researcher is to select appropriate teaching materials, then prepare a cover design, then the next is to prepare an initial draft of the teaching material products developed, in the form of AI-based e-modules in the subject of madrasah aliyah moral beliefs is compiled systematically, Starting from textbooks, teacher manuals and manuals. For this initial product, it will later be validated by experts to find out the weaknesses in the e-module which will later be revised to produce a product that is feasible and effective for use by students. Cover of Teaching Modules, Teacher Handbooks, and Manuals.



Figure 1 Cover of the Teaching Module



Figure 2 Cover of the Teacher's Handbook



Figure 3 Manual Book Cover

1. Tampilan pada desain e-modul

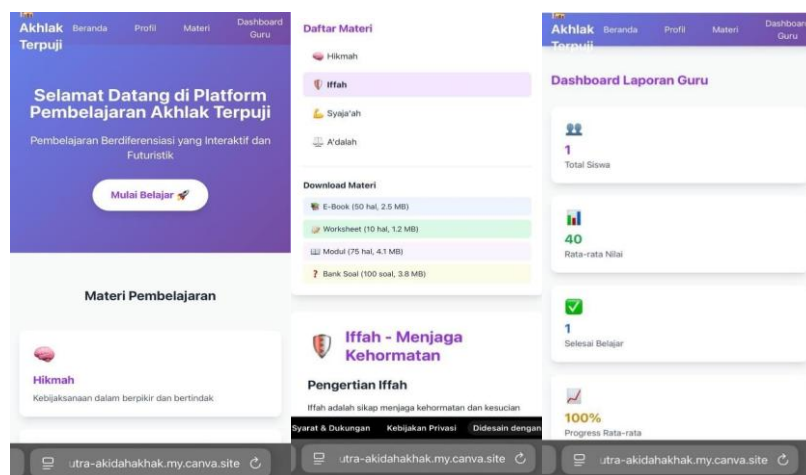


Figure 4 E-Module Website Display

The results of the feasibility test show that the AI-based Akidah Akhlak e-module has met good quality standards based on the assessment of material experts and media experts. Subject matter experts provide input related to the importance of adding concrete examples and implementing commendable moral values so that the material is not only understood theoretically, while media experts suggest the addition of audio features and font display adjustments to improve the quality of learning media. Based on the results of the validation of material experts, the e-module obtained a score of 39 out of a maximum score of 44 with a feasibility percentage of 88.6%, which is included in the category of very feasible to be used in learning. Meanwhile, the results of the validation of media experts obtained a score of 31 out of a maximum score of 40 with a percentage of 77.5%, which shows that learning media is suitable for use without requiring major revisions. This finding indicates that both in terms of content and media, e-modules have met the eligibility criteria as a learning resource that supports the learning of Moral Faith in Madrasah Aliyah. In addition, the results of validation are an important basis in improving the product before it is implemented to students.

The field trial was carried out through three learning stages which included material introduction, interactive use of AI-based e-modules, and evaluation through post-tests to measure student understanding. In the individual trial stage involving three students, the e-module obtained an average score of 34.4 with a percentage of 85.84%, so it was in the very feasible category. Furthermore, small-group trials involving five students produced an average percentage of 92.4%, while large-group trials involving twenty-seven students obtained an average percentage of 92.6%. The accumulation of both groups showed an average score of 37.15 with a feasibility percentage of 92.5%, which confirms that the e-module is very feasible to use in the learning process. The positive response of students shows that the use of interactive media, equipped with AI features, is able to increase student involvement, motivation, and understanding of the Commendable Morals material. Overall, the results of expert and student assessments resulted in an average eligibility of 86.11% which is included in the very feasible category.

The results of the effectiveness test showed that the use of AI-based e-modules had a positive impact on improving student learning outcomes in the Commendable Morals material. Before the use of e-modules, the average pre-test score of the experimental class was 52.91 lower than the control class which reached 67.44, with a difference of 21.54 points. After the implementation of the e-module, the average post-test score of the experimental class increased to 83.54 and surpassed the control class which obtained an average of 74.44, so that there was an advantage of 12.22 points in the experimental class. Students also reported that technology-based learning made them more

interested, active, creative, and able to think critically in understanding and applying commendable moral values. These findings are in line with the cybernetics theories of Norbert Wiener, Gordon Pask, and Bernard Scott who emphasize the importance of feedback, interaction, and adaptive learning in improving the effectiveness of the learning process. Thus, AI-based e-modules have proven to be effective in improving learning outcomes, student involvement, and learning quality that are more relevant to the demands of technological developments in the digital era (Faisal et al., 2022).

Analysis and Results of the T Test

This T test was performed on both samples. Paired samples were assigned in the same sample of subjects, and subjects were aware of two other treatments or measurements that were given to subjects at MAN 2 Deli serdang (control class evaluation and those receiving treatment II (experimental class evaluation).

The effectiveness of AI-based and non-e-module e-modules on student learning outcomes.

And the results of the students' evaluation scores are as follows:

1) Descriptive Analysis

	N	Minimum	Maximum	Mean	Std. Deviation
Experimental Class Pretest	35	12	96	52.91	25.13
Experimental Class PostTest	35	32	96	83.54	13.91
Pretest Kelas Kontrol	36	8	96	67.44	20.08
PostTest Kelas Kontrol	36	16	96	74.44	18.06
Valid N (listwise)	35				

Tabel 1 Hasil Analisis Deskriptif

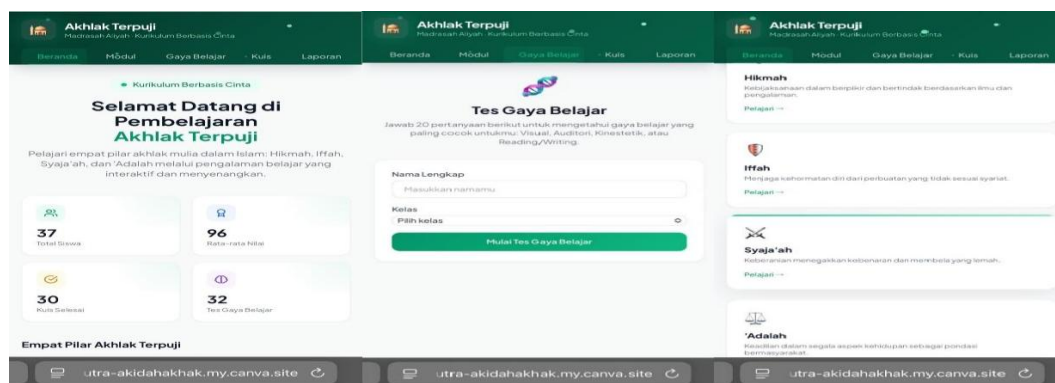
2) Uji Paired T test

Paired Samples Test

	Paired Differences							Significance
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		T	df	Sig. (2-tailed)
				Lower	Upper			
Pair 1 Pretest Class Experiment-Post Test class Experiments	-30.63	21.65	3.66	-38.07	-23.19	-8.37	34	< 0.001

Tabel 2 Hasil Paired Samples Test

Average Comparison of Experimental Classes: There was a very significant increase in the average from 52.91 to 83.54 (difference +30.63). Control Class: There has been an increase from 67.44 to 74.44 (difference of +7.00). Conclusions: The increase in scores in the experimental class was much higher than in the control class.



Based on the results of the calculation above: Significance Value (p-value): The result shows $p < 0.001$ (bidirectional). Because this value is much smaller than 0.05.

There is a very real (significant) difference between Pretest and Post-test scores in the experimental class. Final Conclusion: The use of methods or treatments in the Experimental Class was shown to be effective in improving student learning outcomes compared to the Control Class.

The test results concluded that there was a difference in the learning outcomes of students who learned using AI-based e-modules (Artificial Intelligence) and non-e-modules. Thus, AI-based e-modules for the subject of madrasah aliyah morals have an influence on student learning outcomes. Learning that uses e-modules is more effective in improving student learning outcomes compared to learning that does not use e-modules.

Revision of the Trial Model

At this stage, adjustments are made to make the appearance of the module more attractive, with the revision of this product will make the product better and can be useful for teachers or students who use it.

- a. Display of teaching module covers, teacher manuals, manuals The addition of the "Class X" element to the cover



Figure 5 Cover After Revision

- b. Design Display

Figure 6 E-module Website Display After Revision

Final Model (Product)

The final product is the final step in the process of developing an AI-based e-module in the Madrasah Aliyah Moral Faith Subject. At this stage, the development of e-modules has gone through various stages ranging from the validation of experts, namely material experts and learning media experts, to revisions of the suggestions received by

researchers, and it is confirmed that it is feasible to be tested, namely individual trials and group trials so that the effectiveness of the e-modules developed by researchers can be known.

After going through all these stages, the e-module can be completed and called the final product, meaning that the product has been revised and is ready to be used as a companion material for learning the moral beliefs of madrasah aliyah class X..

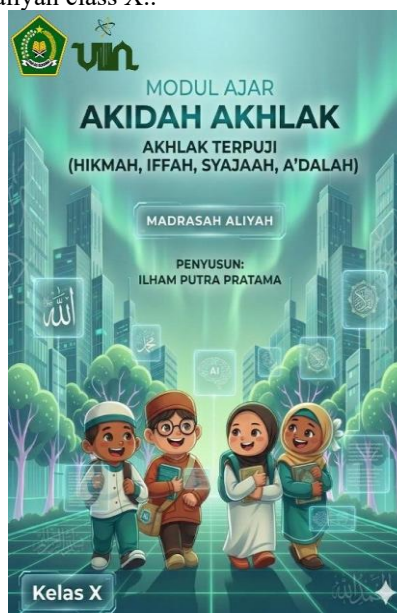


Figure 7 Front Cover of the Teaching Module

Daftar ISI	
KATA PENGANTAR.....	i
Daftar Isi.....	iii
A. IDENTITAS MODUL AJAR.....	1
B. LANDASAN PENYUSUNAN MODUL.....	2
C. PROFIL DAN KARAKTERISTIK UMUM SISWA.....	3
D. CAPAIAN PEMBELAJARAN.....	5
E. TUJUAN PEMBELAJARAN (TP) & ALUR TUJUAN PEMBELAJARAN (ATP).....	6
F. DIMENSI PROFIL LULUSAN (INTEGRASI KBC).....	7
G. MODEL, METODE, DAN PENDEKATAN.....	12
H. KEGIATAN PEMBELAJARAN.....	14
I. ASESMEN PEMBELAJARAN.....	17
J. RUBRIK PENILAIAN (PROSES & REFLEKSI).....	18
K. LEMBAR KERJA PESERTA DIDIK (LKPD).....	20
L. DIFFERENSIASI PEMBELAJARAN.....	21
M. PENGAYAAN DAN REMEDIAL.....	21
N. MEDIA DAN SUMBER BELAJAR.....	22
O. REFLEKSI GURU.....	23
AKHLAK TERPUJI: HIKMAH, IFFAH, SYAJA'AH, A'DALAH.....	24
A. MATERI PEMBELAJARAN.....	24
GLOSARIUM.....	31
DAFTAR PUSTAKA.....	32

Figure 8 Table of Contents of the Teaching Module



Figure 9 Back Cover of the Teaching Module

MADRASAH FUTURE LEARNING

Akhlak Terpuji

Media pembelajaran futuristik dan komprehensif

Profil
Gaya Belajar
Modul
Kuis HOTS
Diary
Laporan

Profil Siswa

Isi identitas terlebih dahulu agar hasil gaya belajar, kuis, diary, dan laporan tersusun rapi.

Nama siswa

ilham putra pratama

Kelas

X1

Figure 10 E- Module

Discussion

The development of AI-based e-modules in the subject of moral beliefs is carried out using the ADDIE (analysis, design, development, implement and evaluate) model approach. The development of this AI-based e-module is a learning module that uses the Canva application and googlesite which contains e-module materials equipped with

quizzes, practice questions, assignment collection, which are integrated into one learning web (Robert Maribe, 2009: 2).

This research is an R&D (Research and Development) type of research that aims to develop AI-based e-modules on the subject of moral beliefs. This development process is motivated by several significant problems faced in learning in schools. First, there is a lack of optimal use of learning media and the strategies applied, where most of the learning still relies on conventional methods. This often results in monotonous learning and a teacher-centered approach. In addition, there are still shortcomings in terms of teachers' willingness and ability to innovate and develop more effective and innovative learning methods. With this e-module, it is hoped that it can facilitate a more interactive learning process and increase the motivation of students' learning experience.

The findings of this research are in accordance with the statements of Fauzan and Fatkhul Arifin in their book which explained that in the 21st century era teachers must be able to utilize digital technology to design more creative learning. The ability of teachers to educate in the digital learning era needs to be prepared by strengthening cyber pedagogy in teachers. Teachers who play more of a facilitator role must be able to utilize existing digital technology to design creative learning that enables students to be active and think critically (Fauzan, 2022: 241).

The results of this research can also be attributed to cybernetics theory, which is the development of cognitive concepts combined with information technology. Although it is in a cognitive context, the school of cybernetics holds the view that human working memory capacity is limited. Therefore, to reduce the load on working memory, it is necessary to pay attention to learning capabilities, learning events, and the organization or order of learning materials. Cybernetics theory emphasizes the importance of feedback in learning systems. The use of AI allows students to receive immediate feedback through comments and interactions, which can help them understand the material better and correct errors.

In addition, cybernetics also emphasizes interactivity in the learning process. AI-based e-modules also provide an interactive platform where students can actively participate, a good learning system must be adaptive to the needs of students, and the use of AI allows learning materials to be adapted to different learning styles, so that the learning process becomes more personalized and effective. The use of AI can increase student motivation and engagement, in line with the principles of cybernetics theory which states that an effective system must be able to motivate participants to continue interacting and learning. Thus, the use of modern technology such as Canva AI not only improves learning outcomes, but is also in line with the principles of effective learning (Anwar, 2017: 40). The results of this study are also in line with the statement expressed by Kosasih that the use of software in learning is an effective teaching material for students (Kosasih, 2021: 45).

The final product study of the development of AI-based e-modules in the subject of moral beliefs, which specifically focuses on commendable moral material: Hikmah, Iffah, Syajaah, A'dalah. It is done comprehensively and in-depth by outlining several important aspects. First, the product description will include details about the features contained in the e-module, such as the use of interactive media, engaging content, and the ease of access offered by Canva and Googlesites.

In this study, there were findings that revealed that the learning outcomes of Akidah Akhlak students who used AI-based e-modules turned out to be higher than students who did not use the e-module. These findings show that AI-based e-modules are effective in improving the learning outcomes of moral beliefs in commendable moral materials: Hikmah, Iffah, Syajaah, a'dalah. In class (X) Ten MAN 2 Deli Serdang. The e-module intervention facilitates and provides opportunities for students to better understand, practice, and analyze the material. This can be seen from the assignments given, where most students have been able to achieve the expected abilities in the commendable moral material.

In addition, the use of AI not only supports the online learning process, but is also effective in improving student engagement and learning outcomes. This is in accordance with the statement of Fauzan and Fatkhul Arifin in their book which explains that in the 21st century era, teachers must be able to utilize digital technology to design more creative learning. The ability of teachers to educate in the era of digitalization needs to be prepared by strengthening cyber pedagogy in teachers. As well as being able to develop creativity and innovation, because teachers

play the role of facilitators who are able to utilize digital technology. The results of the AI-based e-module test show that this e-module can be used according to the instructions that have been provided. Teaching materials in the form of modules meet several important characteristics, such as supporting independent learning, readiness for assessment, and suitability to student needs. The design of learning activities has reached the set criteria and facilitates its use in the learning process. e- This module has been adjusted to the conditions at MAN 2 Deli Serdang through a needs analysis. The results of the analysis show that even though schools are not equipped with complete technological facilities, students who bring mobile phones can meet the eligibility criteria in the learning process. The results of the calculation of the validity test of subject matter experts showed an average percentage of 88.6%. And media experts with an average percentage of 77.5%, it can be concluded that learning materials and media meet high standards. Also after field trials were carried out, the results reached 92.6%. All students give assessments with excellent criteria. And the learning outcomes of the students showed a very significant average increase from 52.91 to 83.54 (difference +30.63) and the control class increased from 67.44 to 74.44 (difference +7.00).

The increase in the value has also been carried out a significance test through the t-test, significant results were obtained between before and after using the e-module.

Therefore, it can be concluded that AI-based e-modules in the subject of moral beliefs with commendable moral material: Hikmah, iffah, syajaah, a'dalah, are very interesting and worthy of being used as a learning medium. The development of AI-based e-modules is in line with the Ministry of National Education, which explains that e-modules not only facilitate access to subject matter, but also provide a more interactive and interesting learning experience through the integration of various multimedia elements such as videos, animations, interactive quizzes, and simulations (Depdiknas, 2008: 3).

The students' response after learning Akhlak Ppuji through AI-based e-modules (Artificial Intelligence) showed high enthusiasm. They feel that this learning method provides a new and interesting experience, especially with the module integrated in Google Sites. Through modules accessible on google sites, students not only understand the material visually, but can also interact with Gemini AI. This opportunity to interact digitally makes learning feel more relevant to their daily lives. In addition, students feel more motivated because they can convey their understanding through familiar platforms, which also encourages them to actively participate in the learning process. This approach not only enhances their understanding of commendable moral values but also develops their creativity and communication skills in a digital environment.

Conclusion

Development of AI-based Akidah Akhlak (artificial Intelligent) e-module in the subject of madrasah aliyah moral beliefs carried out for tenth grade students

(X) MAN 2 Deli Serdang showed very positive results. This module is designed using the ADDIE model, which involves stages ranging from needs analysis, design, to product evaluation.

This e-module is integrated into the google web and canva media, a platform that is familiar to students, to make learning more interactive and fun. Each stage in the development of the module aims to improve students' learning outcomes, especially in understanding the concept of commendable morality: Hikmah, Iffah, Syajah, A'dalah. The application of this e-module has proven to be effective in improving learning outcomes. The pretest and post-test data showed a significant improvement in the classes using the e-module compared to the control classes. Students who use this module get a higher average post-test score, which is 83.54, while students in the control class only reach 74.44. This shows that technology-based learning approaches can have a positive impact on student understanding and engagement. Furthermore, students involved in the use of this e-module show high enthusiasm. They not only learn theory, but also actively interact with AI related to the Commendable Morals material. Thus, students feel more motivated and excited in following the lessons. Learning that was initially passive turned into interactive, where learners not only receive information, but also produce and share it.

The response from students was also very positive. Most students stated that the use of these e-modules made learning more engaging, flexible, and helped them understand the material better. They also feel more active in

learning and motivated to remember material for longer thanks to the visualizations and interactions offered by google sites, canva AI, and gemini AI.

However, the development of this e-module still has some shortcomings that need to be considered. One of the obstacles is how students can use AI wisely and appropriately, in order to cultivate a sense of criticism and not easily believe without re-verifying the results of the AI, and also for those who have limited access to devices and internet networks. In addition, not all students are allowed to bring mobile phones to school, and not all have laptops. This is an obstacle in itself, because the use of e-modules is highly dependent on these electronic devices. To overcome this problem, it is necessary to adjust the use of electronic devices and the availability of wifi networks in madrassas as well as the availability of adequate computer labs.

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