JURNAL KEPEMIMPINAN & PENGURUSAN SEKOLAH
Homepage : https://ejurnal.stkip-pessel.ac.id/index.php/jp
Email : jkps.stkippessel@gmail.com

p-ISSN : 2502-6445 ; e-ISSN : 2502-6437
Vol. 10, No. 2, June 2025
Page 698-711

Jurnal Kepemimpinan & Pengurusan Sekolah

ELECTRONIC MODULE BASED ON PROBLEM BASED LEARNING TO IMPROVE THE LIFE SKILLS OF GRADE V STUDENTS OF MADRASAH IBTIDAIYAH

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DOI: https://doi.org/10.34125/jkps.v10i2.630

Sections Info

Article history:
Submitted: 23 May 2025
Final Revised: 11 May 2025
Accepted: 16 June 2025
Published: 27 June 2025

Keywords:
Electronic Module
Problem Based Learning
Life Skills
Learning Model

ABSTRAK

This study aims to develop an electronic module based on Problem Based Learning (PBL) to improve the life skills of fifth-grade Madrasah Ibtidaiyah students. This study uses the Research and Development (R&D) method with 34 students from MIN 1 and MIN 4 Pringsewu as subjects. The research model developed uses ADDIE (Analysis, Design, Development, Implementation, and Evaluation). Data collection was conducted through observation, questionnaires, and documentation. Data analysis was performed to determine the product's score or validity based on expert validation from media experts, language experts, and subject matter experts, as well as student responses using a Likert scale. The research results showed that based on subject matter expert validation, the module achieved a percentage of 96.67%, media expert validation achieved a percentage of 92%, and language expert validation achieved a percentage of 84.67%. Thus, based on the validation of these three experts, the electronic module was categorised as 'Highly Feasible.' In the small-scale trial, the average percentage was 90.57%, while in the large-scale trial, the percentage achieved increased to 90.83%, so the electronic module was categorised as 'Very Interesting'.

ABSTRAK

Penelitian ini bertujuan untuk mengembangkan modul elektronik berbasis Problem Based Learning (PBL) untuk meningkatkan life skills siswa kelas V Madrasah Ibtidaiyah. Penelitian ini menggunakan metode Research and Development (R&D) dengan subjek 34 siswa dari MIN 1 dan MIN 4 Pringsewu. Model penelitian yang dikembangkan menggunakan ADDIE (Analisis, Desain, Development, Implementation, and Evaluation). Pengumpulan data dilakukan dengan observasi, angket, dan dokumentasi. Analisis data untuk mengetahui skor atau kelayakan produk dari validasi ahli media, ahli bahasa, dan ahli materi serta respon peserta didik menggunakan skala likert. Hasil penelitian menunjukkan berdasarkan validasi ahli materi memperoleh persentase 96.67%, pada ahli media memperoleh persentase 92%, dan ahli bahasa memperoleh persentase 84.67%, sehingga dari validasi ketiga ahli tersebut modul elektronik mendapatkan kategori "Sangat Layak". Pada uji coba skala kecil rata-rata persentase 90.57%, sementara pada uji coba skala besar persentase yang dicapai meningkat menjadi 90.83% sehingga modul elektronik dikategorikan "Sangat Menarik".

Kata kunci: *Modul Elektronik, Problem Based Learning, Life Skills, Model Pembelajaran*

PENDAHULUAN

Education in general is a nation's primary means of improving the quality of its people and adapting to the rapid changes and advancements in science and technology (Halimurosid, 2022). Education has one of its main goals, namely preparing students to enter a wider scope. In today's era, technology has become an inseparable part of everyday life (Safitri et al., 2023). Electronic products are more attractive to students than printed books. Learning media in schools have developed from printed modules to electronic modules (e-modules) using electronic-based systems (Cahyadi et al., 2025). In the opinion of (Nugraha et al., 2023) learning through e-modules, it is more effective and easier for students to understand. For this reason, the use of electronic modules (e-modules) can be used to increase students' motivation and thinking skills because the presentation of the material is more interactive and dynamic (Rahmani & Hikmawan, 2025). E-modules can also be developed using different approaches as interactive learning resources for students (Muhaimin et al., 2023).

E-module is an electronic version of the module where access and use are done through electronic devices such as computers, laptops, tablets, or even smartphones (Agung et al., 2022; Amini & Okra, 2021; Kharomah & Marsuki, 2023; Kosasih, 2024; Supriyadi & Iqbal, 2025). Text on e-modules can be created using Microsoft Word. But to display interactive media, e-modules must be created using special e-book programs such as Flipbook Maker, ibooks Author, Calibre, and so on (Agung et al., 2022; Arianda et al., 2023; Ayu et al., 2021; Ekawati et al., 2022; Nasution & Mubarok, 2024; Supriyadi & Iqbal, 2025). The advantages of e-modules over printed teaching materials are that e-modules are complete with interactive media such as video, audio, animation and other interactive features that can be played and replayed by students when using e-modules (Ekawati et al., 2022; Maris & Setiawan, 2023; Ramadhan, 2024; Widiastutik & Rudyatmi, 2021). E-modules are considered innovative because they can display complete, interesting, interactive teaching materials and carry good cognitive functions. Modules are used to make it easier for students to understand the material presented independently or through the guidance of educators with interesting module material content (Butar-Butar et al., 2023; Islahiyah et al., 2021; Istiqoma et al., 2023; Qotimah, 2022; Yuliana et al., 2023). In order for the module to be more interesting, innovation is needed in developing the module, namely a module based on an approach, method or model. Problems related to the 21st century learning model and integrated with the popular and widely implemented 2013 curriculum, including the problem based learning model.

Problem-based learning model problem based learning (PBL) or Problem-Based Learning (PBM) is a teaching model characterized by the presence of real problems as a context for students to learn critical thinking and problem-solving skills and gain knowledge (Ismail et al., 2023; Mudrikah, 2021; Rahmah, 2024; Rohmiyati & Tuhuteru, 2024; Simatupang & Ritonga, 2023; Waldohuakbar et al., 2024). The Problem Based Learning (PBL) model is effective in improving life skills because this approach encourages students to face real challenges, think critically, and collaborate, so that they can develop practical skills needed in everyday life.

The development of life skills in education is very important, especially in the era of globalization and rapid technological advances. Life skills include personal, social, and professional skills that help individuals adapt to various situations and roles in everyday life (Gustriani & Kholis, 2024; Hayani et al., 2023; Mubarak, 2022). According to the definition of the World Health Organization (WHO), life skills are the ability to behave adaptively and positively that allows a person to solve everyday needs and challenges effectively (Ningrum & Fakhruddin, 2025; Saidatunnisa, 2023; P. N. Sari et al., 2023; Sawitri & Purnamasari, 2024).

These skills, such as critical thinking, communication, collaboration, and self-

management, not only support academic achievement but also prepare students to face real-world challenges. Education that focuses on developing life skills helps students become independent, confident individuals who are able to make the right decisions. Thus, the integration of life skills into the education curriculum is the key to creating a generation that is not only academically intelligent but also ready to face social and professional dynamics in the future. The development of life skills is one of the crucial aspects of education that aims to prepare individuals to face the challenges of everyday life effectively (Syahrendi et al., 2024; Waluyan et al., 2024). The era of globalization demands flexibility, innovation, and good interpersonal skills to achieve success in various fields.

In today's digital era, Problem Based Learning (PBL)-based e-modules not only increase student engagement but also facilitate the development of crucial life skills. Researchers believe that by adapting interactive and contextual learning materials, students will be more motivated to learn and able to relate the knowledge gained to their real experiences. This is in line with the need to prepare the younger generation to face complex challenges in an ever-changing world.

In addition, researchers observed that the implementation of PBL in electronic modules can create a more dynamic learning environment. Students are expected not only to be consumers of information, but also to actively participate in the learning process through collaboration and discussion. In this way, they can develop critical and creative thinking skills that are very much needed in the 21st century. Researchers are committed to continuing to explore and develop this module to be more relevant and effective in improving students' life skills, so that education does not only focus on cognitive aspects, but also on character development and social skills needed in everyday life.

Based on previous research that was studied by (Mella et al., 2022)that digital teaching materials based on *problem based learning* of cultural diversity material in social studies learning for grade IV elementary school students are suitable for use. Then the research (Yuliani et al., 2023) that students need teaching materials which can improve students' understanding of the digestive system material independently so that it can improve students' critical thinking skills and the teaching materials that are suitable for use are interactive problem-based E-module teaching materials, which can contains text, images and videos, which are created more interesting, unlike the general textbooks. Furthermore, the research on (Nurkhasanah & Rohaeti, 2024) electronic LKS based on PBL on electrochemistry material was declared feasible. The electronic LKS based on PBL on electrochemistry material developed in this study, among others, has a page size equivalent to A4 paper and consists of 62 pages. The LKS consists of four learning activities with the syntax of the PBL learning model and is equipped with images, videos, and audio, as well as evaluation questions that test all learning activities carried out by students.

Although there are many studies supporting the effectiveness of PBL and the use of e-modules, there are still gaps in the focus of existing research. Most previous studies have focused more on specific materials, such as cultural diversity or digestive systems, and have placed less emphasis on the development of life skills as a whole. In addition, some studies have not examined the application of PBL in different educational contexts, such as in Madrasah Ibtidaiyah, which have unique characteristics and challenges.

In previous studies, many have studied PBL and e-modules, this study is different because its main focus is on the development of life skills as the main goal of learning, not just on understanding specific materials. In addition, this study introduces a more contextual and applicable approach, which considers the unique characteristics of students in Madrasah

Ibtidaiyah. Another novelty lies in the use of interactive media in e-modules, which are designed to create a more interesting and dynamic learning experience. By utilizing the latest technology, this module not only presents information, but also increases student involvement in the process of solving real problems. The focus of this study is on the development and implementation of electronic modules based on Problem Based Learning (PBL) to improve the life skills of fifth grade students in Madrasah Ibtidaiyah. So the purpose of this study is to develop electronic modules based on PBL to improve the life skills of fifth grade students in Madrasah Ibtidaiyah.

METODE PENELITIAN

The type of research used Research and Development (R&D). While the design used is ADDIE (Analysis, Design, Development, Implementation, and Evaluation). The subjects of the study were 34 students of grade V of Madrasah Ibtidaiyah. In this study, the sampling technique used was purposive sampling. Purposive sampling was chosen because the researcher wanted to focus on grade V students at Madrasah Ibtidaiyah, who have special characteristics and needs related to technology-based learning. The research location was at MIN 1 Pringsewu and MIN 4 Pringsewu. The reason for taking these schools as research is because these schools are equipped with adequate facilities to support technology-based learning, including access to the necessary electronic devices. MIN 1 and MIN 4 Pringsewu have good relationships with the surrounding community, which can contribute to the context of problems that are relevant to the development of students' life skills.

The research instruments used in this study include several tools to collect the necessary data, namely a questionnaire used to measure the effectiveness of the electronic module based on Problem Based Learning, with question items using a Likert scale to assess aspects such as feasibility, readability, and student engagement. In addition, observations were made during the learning process to observe student interactions, module implementation, and life skills development, so as to obtain qualitative data on class dynamics and student responses to learning. Documentation was also collected to obtain supporting data, such as learning activity records, student evaluation results, and teacher feedback, which provided additional context for data analysis.

Data collection was done by observation, questionnaires, and documentation. Data analysis consisted of two stages, namely performance analysis and needs analysis. Data analysis to determine the effectiveness and feasibility of PBL-based electronic modules to improve life skills using a Likert scale with criteria of 1 to 5. This score is then calculated as a percentage using the formula:

$$P = \frac{f}{N} \text{ x } 100\%$$

Information:

P : Percentage number
f : Score obtained
N : Maximum Score

The eligibility criteria and life skills categories are also determined based on the established value intervals, so that researchers can classify the results into:

Table 1. Assessment Score

Score	Category
5	Very good
4	Good
3	Enough
2	Not enough
1	Very less

Table 2. Eligibility Criteria

Quality Score	Eligibility Criteria
5	Very Worth It
4	Worthy
3	Quite Decent
2	Less Worthy
1	Very Less Worthy

Table 3. Life Skills Category Scale

Mark (%)	Category
80-100	Very good
66-79	Good
56-65	Enough
40-55	Not enough
0-39	Very less

This research was conducted over a period of three months, starting from January 10, 2024 to April 30, 2024. The initial stages of the research, namely needs analysis and module design, were carried out in the first month. Furthermore, the product development and testing stage took place in the second month, where the electronic module based on Problem Based Learning was designed and tested. In the third month, the research entered the implementation stage, where the module was implemented at MIN 1 and MIN 4 Pringsewu, as well as data collection through questionnaires, observations, and documentation.

HASIL DAN PEMBAHASAN

Hasil

In this research and development, the resulting product is an electronic module based on Problem Based Learning to improve students' life skills designed using the ADDIE development model, namely: (1) Analysis: The analysis stage in this study was carried out with two types of stages, namely work analysis and needs analysis. Work analysis was carried out to find out what problems existed in MIN 1 Pringsewu and MIN 4 Pringsewu related to the use of teaching materials that had been used by educators to help the teaching and learning

process. Needs analysis is used to find solutions and determine what teaching materials are needed by students at MIN 1 Pringsewu and MIN 4 Pringsewu to improve the process of understanding the material, as well as improve students' life skills. This analysis is useful for minimizing learning problems in the classroom, namely the teaching materials used are still not varied, the teaching materials used are printed books or textbooks. On the other hand, in the teaching and learning process, teaching materials such as electronic modules based on problem based learning have never been used.

The second stage is design by designing the initial product or designing electronic teaching materials based on problem-based learning modules. This arrangement is in the form of a teaching material display design that includes the intro (opening), content (material), and closing. The third stage is development, after the process of making the electronic teaching material product design module is complete, the next step is to make the module based on the design at the design stage. Then the e-module that has been made will be validated by several experts. Validation is carried out with the aim of obtaining input, suggestions for improvement in order to perfect the product being developed so that the product has reached a category that is worthy of being tested by respondents. Table 4. Explains the validation results from material experts, language experts, and media experts, as follows.

Table 4. Expert Validation Results

Validation	**Percentage**	**Criteria**
Subject Matter Expert	96.67%	Very Worth It
Media Expert	92%	Very Worth It
Linguist	84.67%	Very Worth It

The results of expert validation of the electronic module based on Problem Based Learning (PBL) designed to improve the life skills of grade V students of Madrasah Ibtidaiyah include three aspects, namely material, media, and language, with different percentages. Material experts gave a very high percentage of 96.67%, indicating that the module content is very appropriate to the curriculum and learning objectives, and is effective in developing students' understanding of electronic concepts and life skills. Media experts, with a percentage of 92%, assessed that the media used in the module was quite good, supporting an interactive and interesting learning process, although slightly lower than material experts. Meanwhile, language experts gave a percentage of 84.67%, which although lower, is still in the "Very Decent" category. This shows that the language used is quite good, although there is room for simplification to make it easier for students to understand

The fourth stage is implementation, where after the product has gone through the validation stage by material experts, media experts and language experts, and the e-module has been improved, the product is then tested. The implementation stage carried out in this study went through two stages, namely small-scale trials and large-scale trials. This trial was conducted on grade V students at MIN 1 Pringsewu and MIN 4 Pringsewu. This trial aims to determine the response of students and test the attractiveness of the electronic teaching material product developed. The following is an explanation of the results of the trial of the developed electronic module in Table 5.

Table 5. Electronic Module Trial

Number of Students	Information	Average Percentage	Criteria
10 Students	Small Scale Trial	94.76%	Very interesting
24 Students	Large Scale Trial	94.91%	Very interesting

The results of the electronic module trial followed by students with the number of participants in the small-scale trial involving 10 students, obtained an average percentage of 90.57%, while in the large-scale trial with 24 students, the percentage achieved increased to 90.83%. Both results are categorized as "Very Interesting". These results are considered very interesting because both trials show a high level of understanding of the students towards the electronic module material, although the number of participants in each trial is different. The percentage approaching 91% indicates that the module is effective in conveying information and helping students understand the concepts taught.

The final stage in the development of the ADDIE model is evaluation. This evaluation stage is carried out to revise the electronic module product that has been developed if there are improvements based on suggestions and responses from experts, teachers, and students.

Pembahasan

The success of this research can be seen in the electronic module that uses the Problem Based Learning (PBL) model to improve the life skills of grade V students of Madrasah Ibtidaiyah according to student needs, allowing them to learn optimally. In other words, both in small and large groups, students are able to absorb the material well, and this is a positive indication of the quality of the module being tested. The PBL module in this module allows students to be actively involved in learning by solving real problems that are relevant to everyday life. The excellent results indicate that students not only understand the concept of electronics, but also develop critical thinking, collaboration, and problem-solving skills. Thus, they are able to apply the knowledge gained in practical situations, which is an important part of life skills.

The high percentages in both trials indicate the effectiveness of the module in facilitating in-depth and relevant learning. This shows that the module designed with the PBL approach successfully increased students' motivation and engagement, so that they could learn optimally. These results indicate that the use of this module in learning at Madrasah Ibtidaiyah can be a very effective strategy to improve the quality of education and students' life skills.

The results of the analysis of students' life skills aim to determine whether or not there is an increase in students' life skills during the learning process using e-modules based on problem based learning. The students' life skills that are observed and assessed are (1) thinking skills which include the ability to explore and find information, the ability to process information, and the ability to solve problems; (2) social skills which include oral communication skills and the ability to work together (Abas & Susetiyo, 2022; Arsanti et al., 2021; Maha & Fatiya, 2024). Evaluation based on the Small Scale and Large Scale of the results of the description above, it can be concluded that the design developed in the form of electronic

teaching materials for problem based learning modules for class V MI has a very interesting standard and learning can take place.

Digital teaching materials such as electronic modules are qualified as good and very good because there are several things that make students interested in reading digital teaching materials, namely the material is presented with images, interesting videos and interactive quizzes that motivate students to learn using digital teaching materials that are developed and make learning not boring (Asfirah et al., 2024; Diantari et al., 2024; Hariyati & Rachmadyanti, 2022; Millati & Setyasto, 2023; Widiastuti, 2021). Digital teaching materials can be designed attractively containing interactive videos and quizzes. This makes students more interested in learning (Agapau et al., 2024; Mella et al., 2022b; Sahrina et al., 2023).

Problem solving using PBL will run effectively if its implementation is centered on students. Problem based learning generally emphasizes the development of students' knowledge through their involvement in the learning process (Hutami et al., 2023; Rahmadani & Taufina, 2020; S. M. Sari & Ganing, 2021). PBL learning can help develop new knowledge gained and encourage students to evaluate their own learning process and results through problem solving (Dewi, 2020; Novellia, 2018; Sunarmi, 2021). The advantages of Problem Based Learning are that students can apply their knowledge to the real world by solving problems and students can develop continuous learning interests through problem solving, even though they have completed their formal education.

It can be said that the problem based learning (PBL) process is part of learning to manage oneself as a life skill which is both self-management skills to be responsible for performance, including awareness of the development and application of certain skills. We can recognize and overcome various obstacles that exist around us. The use of electronic modules to improve life skills with the problem based learning model has an effect on learning motivation. Through the application of this innovative learning model, it can facilitate students to actively think, act and be creative in learning so that their life skills can develop. This is in accordance with the opinion (Wijayanti & Ernawati, 2021) that the four domains in the 21st century are literacy in the digital era, inventive thinking, interpersonal and social skills and productivity in producing work/products. Analysis of life skills shows that there are a series of core skills that are the core of skills-based initiatives to support the future generation, including skills in decision making, problem solving, creative thinking, critical thinking, effective communication, interpersonal relationship skills, self-awareness, empathy, coping with emotions and coping with stress (Kustiarini et al., 2024).

Previous research findings also stated that Problem Based Learning learning can help develop new knowledge gained and encourage students to evaluate their own learning process and results through problem solving (Phungsuk et al., 2017; Pramana et al., 2020). Other research findings also stated that digital teaching will make it easier for students to understand learning materials (Kimianti & Prasetyo, 2019). Then the findings (Mustika & Ain, 2020) states the effectiveness of e-modules with the Project Based Learning model integrated with STEM is categorized as moderate so that it is effective for use in learning. Research on (Herzegovina et al., 2023) E-Module based on Problem Based Learning in thematic learning for class V Theme 9 Sub-theme 3 can be used in the learning process in elementary schools.

The results of this study have several important implications for educational practice, especially in the context of learning in Madrasah Ibtidaiyah. First, the development of electronic modules based on Problem Based Learning (PBL) shows that the use of technology in learning can increase student engagement and motivation. With materials presented interactively through images, videos, and quizzes, students are more interested in learning,

which has a positive impact on their understanding of the concepts taught.

Second, the implementation of PBL allows students to be actively involved in the learning process, which not only improves academic understanding but also life skills, such as critical thinking, collaboration, and problem solving. The evaluation results show that students are able to apply the knowledge gained in real situations, which is an important part of life skills. Third, the module that has been validated by experts shows that collaboration between educators and material, media, and language experts is very important in producing quality teaching materials. This encourages the importance of cooperation in developing relevant and effective curriculum. Fourth, this study also emphasizes the need for innovation in teaching materials in schools, especially in the context of education that still relies on conventional teaching materials. The use of electronic modules can be an interesting and effective alternative to improve the quality of education.

This study has several limitations that need to be considered, namely the sample used is limited to two schools, namely MIN 1 and MIN 4 Pringsewu, so that the results of the study may not be generalized to other schools that have different characteristics. Although the module has been validated by experts, the assessment of the effectiveness of this module still depends on student responses that may be influenced by external factors, such as personal motivation and parental support, which cannot be fully controlled in this study. The module is designed interactively, it is possible that students with different levels of technological ability will have varying learning experiences. This can affect the effectiveness of the module, especially for students who are less familiar with technology.

KESIMPULAN

Problem Based Learning (PBL) based electronic modules have been proven effective in improving the life skills of fifth grade students of Madrasah Ibtidaiyah. This study shows that the use of interactive e-modules can encourage students to think critically, collaborate, and solve problems in real contexts. Based on the validation of material experts, the percentage was 96.67%, media experts obtained a percentage of 92%, and language experts obtained a percentage of 84.67%, so that from the validation of the three experts, the electronic module received the category "Very Eligible". In small-scale trials, the average percentage was 90.57%, while in large-scale trials the percentage achieved increased to 90.83% so that the electronic module was categorized as "Very Interesting". With excellent validation results from material, media, and language experts, as well as positive responses from students, this module has met the eligibility criteria for use in learning. The contribution of this research to science lies in the development of innovative learning methods that integrate technology with the PBL approach, which not only improves academic learning outcomes but also students' life skills. This study provides evidence that the use of digital teaching materials can increase student motivation and involvement in the learning process. For further research, it is suggested that researchers explore the development of e-modules with more diverse topics and involve more variables in measuring effectiveness, as well as paying attention to the ever-evolving technological aspects. This is expected to provide broader insights into the application of PBL in a broader educational context.

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