International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 7 Issue 25 (June 2025) PP. 962-971
DOI: 10.35631/IJMOE.725063

INTERNATIONAL JOURNAL OF MODERN EDUCATION (IJMOE)
www.ijmoe.com

THE EFFECTIVENESS OF E-MODULE AS A TEACHING AID AMONG THE PRIMARY SCHOOL STUDENTS FOR DESIGN AND TECHNOLOGY SUBJECT: SYSTEMATIC LITERATURE REVIEW

Nurqurratu Aqilah Mohd Jefry[1], Nor Asimah Zakaria[1*], Mohd Yusof Kamaruzaman[1]

[1] Department of Hospitality and Consumer Science, Faculty Technical and Vocational, Universiti Pendidikan Sultan Idris
Email: aqilah2863@gmail.com, zsyimah@ftv.upsi.edu.my, yusof.kamar@ftv.upsi.edu.my
* Corresponding Author

Article Info:

Article history:
Received date: 30.04.2025
Revised date: 15.05.2025
Accepted date: 18.06.2025
Published date: 30.06.2025

To cite this document:

Jefry, N. A. M., Zakaria, N. A., & Kamaruzaman, M. Y. (2025). The Effectiveness Of E-Module As A Teaching Aid Among The Primary School Students For Design And Technology Subject: Systematic Literature Review. *International Journal of Modern Education, 7* (25), 962-971.

DOI: 10.35631/IJMOE.725063

Abstract:

E-module is a teaching aid that is complete, organized and timesaving tool for teacher with limited time in the classroom teaching and learning sessions. Students need to learn effectively and efficiently without having to carry printed teaching materials and also students still do recall thinking and basic thinking. From these problems, the development of teaching materials based on electronic modules has been carried out. ADDIE model are used for the development of e-module for this research. This systematic literature review aims to review the effectiveness of e-module as a teaching aid among the primary school students for the Design and Technology subject. The review used the PRISMA framework to perform systematic research. The authors examined 5 research articles published between 2021 to 2025 from Google Scholar database. The literatures highlight positive effects of e-module as a teaching aid in diverse educational setting. The interactivity of e-module encourages interest in learning among students. From the analysis conducted, it can be concluded that every e-module or web-based module development needs appropriate model references and interactive elements to ensure students interests in using it even without instruction. As educators, teachers need to be creative in various ways to attract student's interest in topic that they need to understand and ensure no student left behind in their studies.

Keywords:

E-Module, Teaching and Learning, Educational Technology

International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 7 Issue 25 (June 2025) PP. 962-971
DOI: 10.35631/IJMOE.725063

Introduction

The use of Information and Communication Technology (ICT) is not a new mean in the delivery of education system in Malaysia. The need of ICT in education has been clearly outlined in the Malaysian Education Development Plan (PPPM) (2013-2025) but the response reported is instead not encouraging when teachers in Malaysia's educational institutions still practicing conventional methods rather than utilizing current technology in Teaching and Learning (T&L). The United Nations Educational, Scientific and Cultural Organization (UNESCO) reports that the use of ICT among teachers is mostly limited to the use of Microsoft PowerPoint in T&L and this limits the development of creativity, problem solving, communications skills and critical thinking among students. The education system is the heart of a country and most countries are competed to improve the quality of the education system locally thus collectively aiming to improve the world entirely. Technology is a very important element in the era of Technical and Vocational Education and Training (TVET) to help the economic growth towards IR 4.0 especially in the field of education. This is in line with the planning at the basic level and implementation with TVET agencies to produce highly skilled, efficient, and effective personnel in technology skills. Next, the Design and Technology subject was introduced to replace the Living Skill subject for lower secondary students and various new sub-topics were introduced to students.

As a result, educators and students also face the challenge with the proliferation of knowledge, the development of ideas, and knowledge in ICT. The monotonous teaching style practiced so far had affected the student's eagerness to learn in the process. Thus, this warrants the needs for innovations to create interactive learning means or media. This approach is deemed to enhance the T&L to be more flexible, easily adapted, and could also be self-initiated by the students. While the students are still guided by teachers during T&L sessions, online means in the sessions for example can help in encouraging them to communicate and be creative through problem solving activities. This allows the students to explore and connect through their own experiences or from other sources. The aim of this study is to identify the effectiveness of e-module as a teaching aid among primary school students for the Design and Technology subject.

E-Module

E-module are one of the most commonly utilised technology-based learning tools nowadays. E-module also known as electronic textbooks, are usually meant for teachers to allow the independence learning among students together with their guidance (Hunaidah, Erniwati & Mahdiannur, 2022). E-modules can help student to better understand the material in the T&L sessions. The multimedia elements in e-modules which include texts, graphics, musics and videos can enhance learning and improve comprehension (Qotimah & Mulyadi, 2021). E-modules are self-instructed, self-contained, stand-alone, adaptive and user-friendly.

As a teaching aids or learning material, e-module can be in forms of texts, audios, videos or other electronic formats that lend itself the label of dynamic interactive multimedia due to varying elements within it. E-modules are often used in the teaching and learning process and also systematically arranged in languages that are easily understood by users. In addition, e-module can also be accessed and used by users at any time and in any situation. Conceptually, there is no significant difference between print-based modules and e-module of their purpose. All components in traditional print-based modules are integrated into the electronic e-module whether it is the formulation of objectives, instruction for use, materials, worksheets,

International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 7 Issue 25 (June 2025) PP. 962-971
DOI: 10.35631/IJMOE.725063
assessments, and more. The possible differences between the two could be the interactivity that is included in the e-module due to the flexibility of it to easily adapt various multimedia to enhance the T&L sessions.

Research Problem

According to Johan Eka Wijaya and Ade Vidianti (2019), one of the factors is the need to apply a technology-based learning model that allows students to learn effectively and efficiently without having to carry printed teaching materials. From these problems, the development of teaching materials based on electronic modules has been carried out.

Next, According to Vina Serevina, Drajat Agung Nugroho and Hilary Fridolin Lipikuni (2022), there are several obstacles when teachers deliver materials, namely students still do recall thinking, do basic thinking, only 50% do critical thinking and creative thinking. Learning is still teacher-centered so that the teacher dominates the learning process, sometimes the materials are still conventional because the materials are only changed from previous prints, only delivering limited material in package books or handouts.

The focus of the study is on the effectiveness of teaching materials based on electronic modules used to study in educational innovation courses. Smartphone use among students is more common in their daily lives. As a result, technology like Android apps are simple to use. The e-module Android application is one that students can utilise at any time and from any location. The goal of this diagnostic e-module is to guide students' efforts towards a conceptual knowledge of the Law of Gauss and symmetry (Mittal, 2011).

Students can therefore better grasp the idea of the content being taught, evaluate arguments, or respond to a question by modifying pertinent sources to the e-module. With the use of effective Android technology, the e-module application may facilitate students' study at any time and from any location. The primary goal of this research to identify the effectiveness of e-modul as a teaching aid among primary school students for the Design and Technology subject. 5 articles are chosen from Google Scholar database to generate a systematic literature review. Therefore, the research questions is as follows:

1. Is the e-module effective in helping teachers and students in T&L sessions?

Research Methodology

The articles used for this literature review were selected between the year 2021-2025 with keywords suggesting the e-module to be an effective, useful application and method of delivering T&L and creating a conducive and user-friendly atmosphere among educators and students. Having said that, this Systematic Literature Review (SLR) follows four phases suggested by Khalid, Regina, Kleijne, and Gred (2003) as per shown below:

International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 7 Issue 25 (June 2025) PP. 962-971
DOI: 10.35631/IJMOE.725063

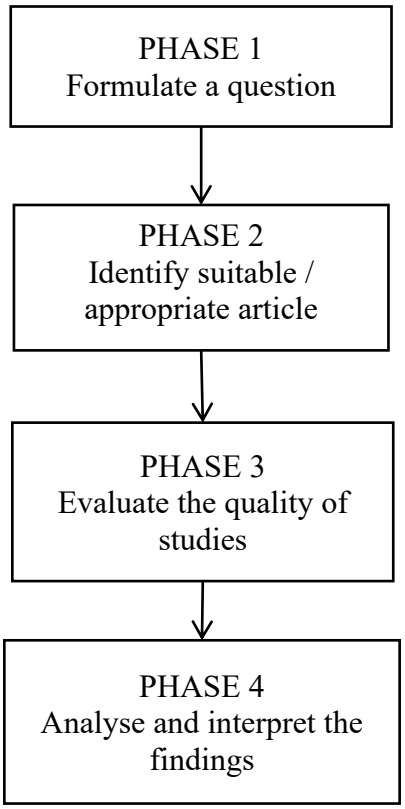

Figure 1: Systematic Literature Review Phase

Phase 1: Formulate A Question
The research question must be formulated before conducting a systematic literature review. In order to extract data from the database, the main keyword used in this study is e-module in the field of education. As a result, the articles chosen are based on the impact of e-modules in the T&L process.

Phase 2: Identify Suitable / Appropriate Article
This research is carried out in two steps which is collecting all of the articles found in the initial search and focused on the impact parameters that are relevant to the search. The search is carried out with Google Scholar database and the chosen articles are from publication between the year 2021-2025. In addition, the articles gathered are all in English.

Phase 3: Evaluate The Quality Of Studies
In order to determine the validity of a systematic literature review, this step goes through two key processes, inclusion and exclusion. Inclusion is a method of evaluating which studies should be included in the literature review. As a result, the search process considers the year of publication, which must be within the last five years, as well as the language used. Although the article selection criteria did not include action search or articles from outside the field of education, the article exclusion process did. The inclusion and exclusion process are used to ensure that the articles chosen can address the research question and explain the study's findings more explicitly and thoroughly.

International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 7 Issue 25 (June 2025) PP. 962-971
DOI: 10.35631/IJMOE.725063

Phase 4: Analyse And Interpret The Findings

This phase involves the results of a study consisting 5 articles. All these articles are analyzed in depth according to the set criteria and keywords and the article search.

PRISMA Guideline

Besides SLR, the PRISMA guidelines provide a systematic framework for identifying, screening and selecting papers for review, improving both the quality and transparency of the analysis. Using this filter combination method highlight the importance of randomised research for detecting bias and providing high-quality data for review. The PRISMA technique contains four stages namely identification, screening, eligibility, and data abstraction. The procedure involves searching databases for relevant studies.

During the screening phase, all studies are reviewed against pre-extracted criteria and elimination of irrelevant or low-quality articles is performed. During the eligibility stage, remaining articles are thoroughly reviewed to ensure that they must meet the inclusion requirements. Data abstraction involves collecting, analysing, and synthesising data from reviewed articles to draw meaningful and reproducible results. This approach ensures a systematic and accurate evaluation, generating dependable results that can inform future research and practice. Figure 2 shows the phases that this article went through the PRISMA guideline and the following Table 1 elucidates the list of articles used in this SLR based on their appropriateness to this current research question

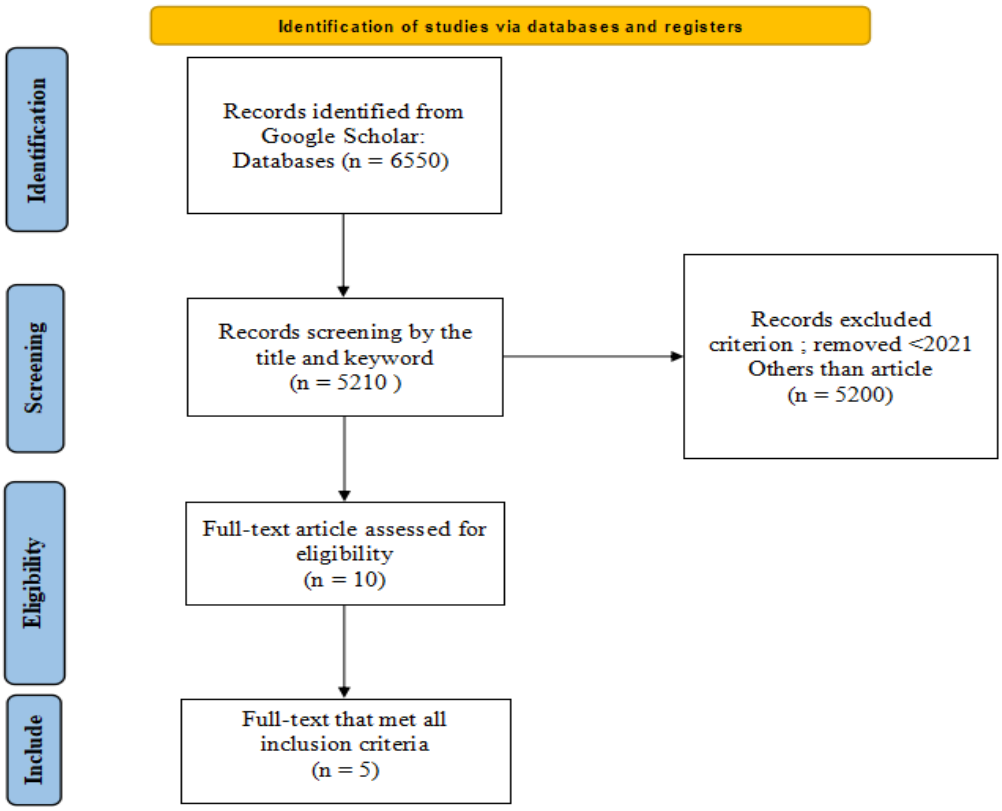

Figure 2: PRISMA Diagram of Exclusion and Inclusion

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 7 Issue 25 (June 2025) PP. 962-971
DOI: 10.35631/IJMOE.725063

Table 1: Effect of E-Modules on Student's Learning Outcomes

Author	Article Title	Year	Journal	Result
Tri Putri Apriani et al.	The use of physical condition e-module on the shooting accuracy of petanque athletes: A literature review	2025	Journal of Education Teaching and Learning	E-modules can be an effective alternative in learning and training the physical condition of petanque athletes to improve shooting accuracy.
Rizkykah Aulia and Agung Wijaya Subiantoro	Narrative Literature Review: Analysis of E-Module Development of Biodiversity Material as a Student Learning Resource	2024	Jurnal Tadris Biologi	The E-module from various bases is categorized as adequate and excellent in terms of effectiveness and can be developed based on student learning outcomes.
Ni Nengah Sri Swathi et al.	Model Coaching Supported by LMS in E-Module Development: A Systematic Literature Review on Enhancing Teacher Competence	2024	International Journal of Contextual Science Education	The study identifies emerging technologies, including artificial intelligence and adaptive LMS, as promising solutions for advancing teacher training.
Dendi Agustian et al.	The Role of E-Module in the Teaching and Learning Process in Vocational Secondary School (SMK): a Literature Review	2024	Journal of Education	The analysis results indicate that e-modules can improve the quality of learning at SMKs, but specific strategies are needed to overcome existing barriers to optimize their use.
Ahmad Shukur Arifen et al.	Comprehensive Literature Review: Use of E-Modules Based on Artificial Intelligence in Science Subjects and its Implications on Teaching and Learning	2024	Jurnal Pendidikan Bitara UPSI	The application of KB in teaching and learning helps students improve their achievement in science. This is because the use of KB can personalize learning, provide automated guidance and create interactive educational content, which directly increases student interest and understanding.

Source: Compiled By Author (2025)

Result

Based on the research data collected, 5 articles were obtained to be further examined. The articles selected are using Google Scholar database. The following is the distribution of journals used in this study:

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 7 Issue 25 (June 2025) PP. 962-971
DOI: 10.35631/IJMOE.725063

Table 2: Selected Journals for Review

Name of Journals	Databases
Journal of Education Teaching and Learning	Google Scholar
Jurnal Tadris Biologi	Google Scholar
International Journal of Contextual Science Education	Google Scholar
Journal of Education	Google Scholar
Jurnal Pendidikan Bitara UPSI	Google Scholar

Based on the Table 2 above, it reveals that there are five different journal sources affected that the articles been taken from. These journals were found through the Google Scholar database search while searching for the articles to be reviewed. Following the inclusion and exclusion criteria, the articles are published mostly in Indonesian journals. Therefore, the articles reviewed in this study are of quality articles and can be accounted for.

In addition, the representation of research according to the characteristics of publication year used is articles published in the last five years starting 2021 until 2025. The articles reviewed are of the the use of e-module and can be concluded that the results of these studies directly convey the reality and facts that the use of e-module will affect student learning outcomes.

ADDIE as Emodule Development Model

The e-module development process was analysed to often use the ADDIE model which consists of five phases namely analysis phase, design phase, development phase, implementation phase and evaluation phase. It was found that the ADDIE model has more in-depth and detailed work step than other development models for e-module. Therefore, the ADDIE model is the chosen model. In addition, this model is an excellent choice for providing accurate and clear information and it also has the potential to produce systematic and high-quality digital modules for those who develop them.

Analysis Phase

The analysis phase is the first phase in the ADDIE concept. This phase is an important step in the development of the module to ensure that the end product cater the needs and the benefits to the students. There are several main constructs namely, self-instructional, self-contained, stand alone, adaptive and user-friendly. For this phase, the researcher used an instrument which is the need analysis questionnaire and compiled the data using SPSS statistics adapting the quantitative research data analysis. The findings from the analysis phase are used as elements or guidance in designing and developing the e-module.

Design Phase

The design phase is the second phase in designing e-module in the ADDIE model. This phase aims to plot the methods that are suitable to develop the e-module, module or model. In this phase, the researcher also plans on the materials that will be used in the e-module. In other words, this builds a planning strategy before the development process afterwards.

Development Phase

The development phase is the actual phase where the researcher begins the process of developing T&L product which in this context is the e-module. The purpose of this phase is to develop or to materialize the designed e-module from previous phase. The researcher will begin

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 7 Issue 25 (June 2025) PP. 962-971
DOI: 10.35631/IJMOE.725063
to identify T&L resources for the contents and the selection of multimedia and development of software application begin to take shape.

Implementation Phase
According to Nurkaliza et al. (2023), the implementation phase refers to the process of delivering materials to users in the classroom, laboratory or through devices. In this phase, there will be collaboration between teachers and students to use the application-based module that has been developed. Next, in this phase, the researcher will test the usability of the e-module by distributing questionnaire and involves the evaluation of validity and reliability testing for the questionnaire for the e-module.

Evaluation Phase
This phase is the phase to determine whether the product developed is effective and the evaluation has to go through experiential usage by the students. The researcher will assess the level of usability of the module by using a questionnaire to test the usability of the e-module.

Discussion
The study examined five articles on the effects of e-module on students that met the inclusion and exclusion criteria. Learning outcomes are abilities and skills acquired by students during the learning process. Bloom's Taxonomy classifies student learning outcomes into three categories namely cognitive, affective and psychomotor. Cognitive (understanding concept) refers to student's intellectual learning outcomes, which include knowledge, understanding, application, analysis, synthesis, and assessment. Affective (attitude) learning outcomes on the other hand encompasses both mental and physical reactions, and Psychomotor (processing) skills revolves around the basic mental and physical movements and activities. Cognitive, affective, and psychomotor combined promote balanced social growth thus drive to the increased capacities in individuals (Ulfah & Arifudin, 2021).

Improvements in media presentation and delivery for education are undoubtedly essential to improve student learning result aligned with current advancements. The SLR of five papers highlight the effects of e-module as a capable modern innovation to add value and encourage effective education. Besides that, using e-module ensures guided inquiry learning models to improve student motivation and cognitive skills (Dini et al.,2023). In addition, increased student motivation leads to improve understanding of learning contents effectively especially in enhancing students' learning outcomes (cognitive skills). This result became an important and valuable finding of this SLR considering that the most extensive articles most reviewed were published in 2024.

Triutami et al. (2021) define visual-spatial intelligence as the ability to learn through visual imagery. This intelligence also skilled at imagining and reproducing visual forms, preferring to interact with visual object over abstract symbol and capable of absorbing information well when supplied with visual aids. additionally, student's cognitive abilities researched to include visual-spatial intelligence. Hunaidah et al. (2022) found that e-module significantly improves cognitive skills and student learning outcomes. Linda et al., (2021) in their previous research suggests that using interactive e-module can enhance student's cognitive skills while the student's independent attitude increased showing a medium-high level of learning outcomes.

International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 7 Issue 25 (June 2025) PP. 962-971
DOI: 10.35631/IJMOE.725063

Conclusion

The five articles analysed indicate that e-module can improve student learning results. E-modules can improve cognitive, affective and psychomotor skills. Dominant learning outcomes also proven to be achieved by the use of e-module. E-module have an impact on student's cognitive skills when learning using e-module and enhances student motivation and independence in learning. This study aims is to find out the effect of using e-modules.

Acknowledgement

We sincerely thank the supports provided by the organizations and any associated parties that helped ensure the success of this study.

References

Ahmad Shukur Arifen, Suriani Abu Bakar, Wong Kung Teck, Noorul Aliya, Adli Mohamad, Azzam Abu Bakar, Mohamad Hafiz Mamat, & Mohd Khairul Ahmad. (2024). Comprehensive Literature Review: Use of E-Modules Based on Artificial Intelligence in Science Subjects and its Implications on Teaching and Learning [Review of *Comprehensive Literature Review: Use of E-Modules Based on Artificial Intelligence in Science Subjects and its Implications on Teaching and Learning*]. *Jurnal Pendidikan Bitara UPSI*, *17*(2). https://doi.org/10.37134/bitara.vol17.2.7.2024

Dini, A., Rahmatan, H., Muhibbudin, Nurmaliah, C., & Safrida. (2023). Application of the E-module combined with the Guided Inquiry Learning Model to Increase Student Motivation and Learning Outcomes on the Structure and Function of Plant Tissues. *Jurnal Penelitian Pendidikan IPA*, *9*(6), 4768–4776.

Dendi Agustian, Siswo Wardoyo, Amelda Amartha, Triska Adelia Anjani, Tari Wulansari, & Elisa Marsanda. (2024). The Role of E-Module in the Teaching and Learning Process in Vocational Secondary School (SMK): a Literature Review. *Journal of Education*, *5*(2). http://dx.doi.org/10.54168/ahje.v5i2.345

Hunaidah, M., Erniwati, E., & Mahdiannur, M. A. (2022). CinQASE E-module: Its Effectiveness to Improve Senior High School Students' Physics Learning Outcomes. *Jurnal Penelitian Pendidikan IPA*, *8*(2), 641–648.

Johan Eka Wijaya, & Ade Vidianti . (2019). The Effectiveness of Using Interactive Electronic Modules on Student Learning Outcomes in Education Innovation Course *Advances in Social Science, Education and Humanities Research*, *422*.

Khalid, N., Osman, N., Kasbun, R., & Alimin, S. R., (2023). *Meneroka Literasi Statistik Mahasiswa Prasiswazah dalam Mendepani Arus Digitalisasi* [Review of *Meneroka Literasi Statistik Mahasiswa Prasiswazah dalam Mendepani Arus Digitalisasi*]. *8*, 222–232.

Linda, R., Zulfarina, Z., Mas'ud, M., & Putra, T. P. (2021). Peningkatan kemandirian dan hasil belajar peserta didik melalui implementasi e-modul interaktif ipa terpadu tipe connected pada materi energi smp/mts. *Jurnal Pendidikan Sains Indonesia*, *9*(2), 191–200.

Mittal, A. K. (2011). A diagnostic e-module for testing conceptual understanding of Symmetry and Gauss's Law. http://arxiv.org/abs/1106.0441

Nengah, N. N. S. S., A.Wahab Jupri, AA Sukarso, I Putu Artayasa, & Joni Rokhmat. (2024). Model Coaching Supported by LMS in E-Module Development: A Systematic Literature Review on Enhancing Teacher Competence. *International Journal of Contextual Science Education*, *1*(4), 153–162. https://doi.org/10.29303/ijcse.v1i4.820

International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 7 Issue 25 (June 2025) PP. 962-971
DOI: 10.35631/IJMOE.725063

Qotimah, I., & Mulyadi, D. (2021). Kriteria Pengembangan E-Modul Interaktif dalam Pembelajaran Jarak Jauh Artikel info. *Indonesian Journal of Learning Education and Counseling*, *4*(2), 125–131.

Rizkykah Aulia, & Agung Wijaya Subiantoro. (2024). Narrative Literature Review: Analysis of E-Module Development of Biodiversity Material as a Student Learning Resource. *Biosfer Jurnal Tadris Biologi*, *15*(2), 279–279. https://doi.org/10.24042/biosfer.v15i2.22924

Triutami, T. W., Novitasari, D., Tyaningsih, R. Y., Elvierayani, R. R., & Lu'luilmaknun, U. (2021). The visual-spatial intelligence level of junior high school students: what difficulties are experienced by the students. *Journal of Physics: Conference Series*, *1776*(1), 012033.

Tri Putri Apriani, Zuberi , Kamal Firdaus, & Ardo Okilanda. (2025). The use of physical condition e-module on the shooting accuracy of petanque athletes: A literature review. *Journal of Education Teaching and Learning*, *10*(1), 252–259.

Ulfah, U., & Arifudin, O. (2021). Pengaruh Aspek Kognitif, Afektif, Dan Psikomotor Terhadap Hasil Belajar Peserta Didik. *Jurnal Al-Amar: Ekonomi Syariah, Perbankan Syariah, Agama Islam, Manajemen Dan Pendidikan*, *2*(1), 1–9.

Vina Serevina, Drajat Agung Nugroho, & Hilary Fridolin Lipikuni. (2022). Improving The Quality Of Education Through Effectiveness Of E-Module Based On Android For Improving The Critical Thinking Skills Of Students In Pandemic Era. *Malaysian Online Journal of Educational Management (MOJEM)*, *10*(1), 1–20.