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Utilization of Indonesian E-Modules Based on The ICARE Approach as An Innovation in Learning for Students

Milya Febrirurahmy Asri*, Isah Cahyani, Khaerudin Kurniawan
Indonesian Language Education Master Study Program,
Faculty of Language and Literature Education, Universitas Pendidikan Indonesia.
*Corresponding Author. Email: milyafebriru8@upi.edu

Abstract: This research aims to design and implement an Indonesian e-module based on the ICARE approach, which includes the stages of Introduction, Connection, Application, Reflection, and Extension. The method in this study was research and development (R&D) with the ADDIE model. The stages conducted in this study were (1) needs analysis, (2) design, (3) product development, (4) implementation or trial, and (5) evaluation. The validity of the product was assessed by three experts in the fields of material, language, and media. The calculation of the data in this study was analyzed using a questionnaire with a Likert scale method. The response trial was conducted with junior high school students in grade VIII from 3 schools in Batam City. Based on the test results, it was obtained a score of 4.58 with a validity level of 89%. It provides evidence that the implementation of e-modules based on the ICARE approach in an educational environment can increase the effectiveness of Indonesian learning. Students can learn independently and collaboratively, and develop critical skills such as problem-solving, analysis, and synthesis of information.

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Introduction

The success of the educational process is significantly influenced by the quality of learning resources, which are essential for achieving pre-established learning objectives. These resources serve as tools and catalysts that enhance effective and ongoing interactions during teaching and learning activities within the classroom environment. This perspective is supported by the Standards for the Implementation of Education as stipulated in Permendikbud Number 23 of 2021. Sundari (2024) emphasized that sufficient learning resources are crucial for supporting educators and learners in fulfilling their academic goals. This regulation stipulates that various high-quality learning resources, such as textbooks, modules, interactive multimedia, learning software, and other pertinent digital resources, are essential to enhance learning. The issue at hand, as identified by Salahudin (2022), is the need for more diversity and appeal in the learning resources utilized by educators. This deficiency hampers the effective implementation of learning models and leads to poor student academic achievement. Furthermore, a global study conducted by Gomis, M. K.S., et al. (2023) has highlighted a notable decline in student satisfaction concerning the accessibility of adequate learning resources.

In the modern age, characterized by a swift evolution in information technology within the global context, various technologies have emerged that facilitate the creation of digital educational tools. Students, increasingly adept with technological interfaces, are integrating these tools into their educational experiences. A study conducted by Sugiyanto,

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S., and Sarwono, S. (2023) demonstrated that multimedia-enriched learning activities substantially enhance student academic performance. Further insights were gleaned from dialogues with junior high school teachers teaching eighth-grade classes. They indicated that digital platforms significantly streamline the achievement of educational objectives, enabling students to access and understand the materials available online easily.

Moreover, these digital resources have been found to boost student motivation, offering a marked improvement over traditional teaching methods. Therefore, the challenge for teachers is how they can utilize technology to innovate and create learning media that is fun and exciting for students. One solution is to use digital teaching modules or e-modules. In addition, research conducted (An, Y., 2021) states that computers and digital technologies in the 21st century have significantly impacted how we communicate and learn. However, ID models and practices have yet to show much change.

In Indonesia's digital education context, numerous investigations have been conducted into using electronic modules. A study by Putri et al. (2022) revealed that an electronic module they developed was classified as highly practical with a 92.39% effectiveness rating. The module is designed attractively, incorporating multimedia elements such as images and videos alongside clear and accessible content that facilitates learning from any location. Marital (2022) noted that an electronic module, when supplemented with the Flipping Book PDF Professional application, significantly enhanced students' abilities to compose explanatory texts, evidencing an 86.38% improvement in learning outcomes. Amril and Thahar (2022) disclosed that students increasingly utilize the Internet to obtain supplementary materials and fulfill their academic assignments. This trend has led to noticeable uniformity in student assignments and frequent deviations from linguistic norms, including standardized vocabulary and spelling errors. Wulandari and colleagues (2022) developed a digital teaching module in response to these challenges. They reported that interactive e-modules simplify the learning process by featuring tools that facilitate students' material exploration, contrasting sharply with traditional modules that consist merely of paper printouts. These e-modules are structured digitally and accessible through various electronic devices such as computers, laptops, and cell phones.

The module is one type of learning media packaged as a whole and systematically, containing a set of learning experiences planned and designed to help students master specific learning objectives (Jusuf, 2021). The use of modules causes students to be more active in the learning process (student center). The concept of Teaching Modules, namely (1) teaching modules as several media tools or means, methods, instructions, and guidelines that are systematically designed and attractive, (2) teaching modules are considered as an implementation of the flow of learning objectives developed from learning outcomes with the profile of Pancasila students as targets, (3) teaching modules are equipped with components that are the basis for the preparation process, (4) teaching module components in the guide are needed as a complete learning preparation, and (5) teaching module components can be added according to subjects and needs (Wijayanti et al., 2022).

Additionally, research on electronic modules in education spans multiple countries, including Belgium. Everaert, P., & Safari, M. (2021) observed that digital modules serve as supplementary learning aids for students. These modules are crafted to facilitate students in showcasing their real-world competencies and mastering the art of writing professional reports. In Australia, a study by Henrickson, L., Hall, B., and Procter, T. (2024) demonstrated that specialized materials are effectively employed to bolster the development of digital data and skills. Such materials also broaden students' comprehension of digital contexts and media. Concurrently, in Spain, Hervás et al. (2024) conducted research showing that digital

e-learning platforms are founded on the E-Learning-Service methodology. This approach trains students in digital skills and supports the adaptation of interactive educational video animations for use in early childhood education centers.

Most students need help understanding Indonesian text writing material. The observation report text is one of the texts taught in Indonesian language subjects in class VIII Junior High School (SMP). According to Kosasih (2014), an observation report text is an informative text that aims to provide the reader with knowledge or information as clearly as possible. Kosasih (2014) also adds that the text of the observation report belongs to a factual type of text that describes information or facts about particular objects. Ideally, learners can write observation report texts with appropriate structures, writing styles, and language styles from observation report texts. Using electronic teaching materials or e-modules based on the ICARE approach can be one solution when teachers and students carry out learning.

The study utilizes a digital education module constructed using the ICARE method. The ICARE method, devised by Bob Hoffman and Donn Ritchie in 1997 at San Diego State University, comprises five distinct phases: Introduction, Connection, Application, Reflection, and Extension. In Indonesia, the implementation of the ICARE method was initiated in 2006 by the United States Agency for International Development via the Decentralized Basic Education Three (DBE3) program, focusing on training teachers and learners. Developed by the Ministry of Education, the ICARE Learning Steps (2010: 100-102) consist of five distinct phases: (1) The Introduction phase involves educators motivating students, preparing them to engage more attentively in the lesson by linking everyday challenges to the lesson's objectives and the material being presented. (2) In the Connection phase, educators endeavor to relate new instructional content to knowledge previously acquired by students through past learning experiences. (3) The Application phase is designed to allow learners to exercise and implement the skills and knowledge they have acquired. (4) Reflection, the subsequent phase, serves as a time for learners to contemplate the insights gained from the educational process. (5) The Extension phase is intended to enhance students' comprehension of the material beyond classroom hours, often through assignments. As outlined in the ICARE model, each phase is instrumental in significantly enhancing the students' problem-solving abilities, as noted by Dwijayani (2018). The study by Irawan and Hidayat (2022) indicates that the implementation of the ICARE method has been relatively successful in enhancing the critical thinking abilities of eleventh-grade social science students at SMA Negeri 1 Tamansari, explicitly concerning the topic of the origins of democracy in Indonesia.

Through various stages, such as analysis, the creation of activity design, the development of evaluative resources, and expert validation, the e-module featuring the ICARE method within the Learning Media course was constructed. Experts have deemed the product suitable for implementation, categorizing it as "Very Good" (as per Suartama et al., 2022). This e-module, supported by an LMS-based ICARE flow, represents a significant advancement in digital education and learning innovation. Research by Ambarwati and Wijayanti (2021) found that the ICARE learning model significantly enhances the mathematical problem-solving skills of vocational students, particularly in the subjects of sequences and series, with an improvement of approximately 79%, classified as substantial. Furthermore, Harahap (2022) identified increased teacher motivation in Medan City to develop mathematics learning materials incorporating local wisdom facilitated by the ICARE method. Traditionally, teachers have relied on school-provided thematic books rather than creating personalized teaching materials tailored to their students' unique characteristics and needs. Consequently, teachers need to design engaging learning modules, including those based on the ICARE model for science education (Darius et al., 2021). This investigation is

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anticipated to herald a novel advancement in the autonomous acquisition of the Indonesian language, particularly concerning proficiency in composing texts of observational reports. It aims to elucidate how e-modules, employing the ICARE method, are utilized within junior high schools. Moreover, the merits of employing these e-modules based on the ICARE method in junior high educational settings will be explored.

Research Method

This research used the development research method (R&D) with the ADDIE model. The development research method is a research method whose final result is a product, then the product was tested for effectiveness or feasibility of the product (Sugiyono, 2019). This research would produce a digital module of observation report text based on iCare approach. Branch (2009) explained that ADDIE is an acronym for Analysis, Design, Development, Implementation, and Evaluation.

Analysis is the initial stage in research and development. This stage includes three scopes, namely problem analysis, needs analysis, and learning objectives analysis. Design or design of this digital teaching module refers to the previous stage. This product design contains a comprehensive description of a teaching material product that will be presented. This product design is organized systematically. Next, the product development stage. This stage consists of making digital teaching modules for observation report texts with local wisdom content and validation from experts. Then, implement (trial), namely the stage of the digital teaching module of the text of the observation report with local wisdom that has been valid and declared feasible by experts can be distributed to class VIII junior high school students from SMPN 4, SMPN 29, SMPN 31 in Batam City. Evaluation stage is the analysis of product assessment and product development feedback.

The data collection instrument in this study is in the form of a questionnaire consisting of a student needs questionnaire instrument, a linguist validation questionnaire instrument, a material expert validation questionnaire instrument, a media expert validation questionnaire instrument, and a student assessment questionnaire instrument. The calculation of the data in this study was analyzed using a questionnaire with a Likert scale method. The following formula is how to calculate the score based on the results of the expert team's research:

$$\bar{x} = \frac{\sum \text{scores obtained from research}}{\sum \text{ideal score of all items}} \text{ x } 100\%$$

Likert scale is used to calculate the percentage of product feasibility (Riduwan & Sunarto, 2012).

Results and Discussion

Analyzing documents and questionnaires distributed among students revealed several challenges faced during their educational activities. It was observed that students frequently need help to grasp the material effectively. A growing preference exists among students for incorporating technology into teaching materials, attributed to their increasing familiarity with technological tools in educational contexts. The reliance on textbooks as the sole source of information often hinders their ability to locate additional references. Consequently, students desire to integrate technology into their learning processes, as it renders the experience more varied.

Research (Siska, 2023) has demonstrated that employing e-modules within the ICARE framework elevates students' understanding and renders the educational experience more engaging and less monotonous. Implementing e-modules using the ICARE method is

highly beneficial as these instructional materials comprehensively leverage technology. Within the scope of this investigation, the ADDIE methodology was employed, encompassing five critical stages: Analysis, Design, Development, Implementation, and Evaluation. The results, expressed in percentages, indicate that the deployment of e-modules has been effective. This aligns with the broader objectives of learning innovation in digital education, where technology-integrated teaching materials are tailored to enhance the educational process.

Analysis Stage

The investigation into E-Modules' efficacy encompasses assessing the model's effectiveness and the educational resources deployed. This research engages in a comprehensive needs analysis involving instructors, learners, and their educational goals. This phase of analysis utilizes questionnaires and interviews to discern the requirements of teachers and students. After defining the educational aims, which incorporate initial competencies, elements, and the Pancasila student profiles, these objectives serve as a foundation for the initial design phase of the E-Module. The distribution of the questionnaires yields results, which are displayed in the table below**.**

Table 1. Recapitulation Of Student Needs Analysis Results

Difficulty in Understanding the Material of Writing Observation Report Text.	64.84%
Difficulties in Developing Writing While Writing Observation Report Text.	70.65%
Difficulties in Getting References While Writing Observation Report Texts.	67.74%
Difficulties in Structuring Sentences in Writing Observation Report Texts	62.10%
I use conventional teaching materials when studying the material for writing observation report texts (such as textbooks, PPT, YouTube, etc).	66.45%
I want the material to be engaging, interactive, and innovative.	82.58%
I want the teaching materials for writing observation report text to be presented in a language that is easy to understand.	87.90%
I want the teaching materials to make it easier for me to learn independently.	89.68%

Design Stage

During the developmental phase, the selection and organization of educational material for inclusion in the flipbook were undertaken. This process was influenced by the educational level of the participants and adhered strictly to the ICARE principles, which necessitated precise grammar and an appropriate writing style. Researchers used Flipbook PDF Professional software to create the learning media, and the development of E-Modules was based on the ICARE method (Introduction, Connection, Application, Reflection, Extension). The aesthetic aspects of the flipbook were meticulously crafted to captivate the students' interest, incorporating multimedia elements such as audio, video, and animations. The selected fonts were chosen for their readability to enhance student engagement. Furthermore, the material's content was aligned with prevailing curriculum standards, including the Merdeka Curriculum.

Development Stage

In the current phase of educational material organization, the content was structured according to the ICARE model, which encompasses the following stages:

a) Introduction: The preliminary phase was characterized by an initial presentation wherein educators utilize video demonstrations to elucidate fundamental concepts, inviting student inquiries about the displayed content. Responses to these inquiries were provided by researchers, who also offer encouragement to enhance student engagement. This segment must delineate the educational goals and the anticipated outcomes by the session's conclusion.

b) Connection: Predominantly, this phase involves a progression of competencies that augment previously established knowledge. It is essential to commence from the learners' existing knowledge base and expand upon it. During the Connection phase, the objective is to integrate new material with the knowledge previously acquired through past educational experiences. This can be done through light brainstorming activities to evaluate students' understanding of the previous material, inviting students to share what they remember from the previous session, or designing independent activities that allow students to practice the knowledge they have acquired. Subsequently, the new content is presented to the students either via a brief lecture or a succinct explanation. Such presentations must not be at most ten minutes, a strategy to preserve the students' concentration and active participation in the educational process. This approach also aligns with enhancing the production of scientific papers. Effective knowledge dissemination necessitates that students possess foundational skills in reasoning and argumentation (Kulgemeyer, 2018).

c) Application: Recognized as a pivotal phase in the educational journey, the Application stage is where learners are expected to employ the newly acquired information and skills. Following the assimilation of new knowledge during the Connection phase, students should be afforded opportunities to implement this learning practically. The focus here is on independent or collaborative efforts to undertake hands-on activities or address actual challenges using the newly learned skills. Instructions are given for students to collaborate in groups of three or four to produce a miniature magazine centered on a theme specified by the instructor.

d) Reflection: This segment serves as the culmination of the learning session, where students can contemplate their newly acquired knowledge. The educator's role is to assess the degree to which the learning objectives have been achieved. Reflection or closing activities may include group discussions wherein students are encouraged to articulate or demonstrate their understanding of the material. Alternatively, learners may engage in solitary writing tasks, such as composing summaries of the learning outcomes they have garnered. The reflection phase may also incorporate a brief quiz, where the teacher poses questions about the lesson material. It is crucial in these reflective activities that students are given ample opportunities to express their learning achievements. Following the presentation, instructions are provided for students to disseminate their created small magazine through school media or social platforms.

e) Extension: In this stage, educators offer supplementary activities to solidify and broaden students' comprehension post-learning. Commonly in educational settings, these Extension activities equate to homework assignments. They might involve assigning extra reading materials, research projects, or additional exercises. Notably, the utilization of E-Module Flipbooks under the ICARE approach is highlighted. These teaching materials, presented in an engaging format, facilitate teaching and learning by making the content visually appealing and accessible.

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Figure 2. E-Module Snippet

To substantiate the Flipbook E-Module they had constructed, researchers engaged experts in material, language, and media to appraise it using a questionnaire scaled from 1 to 5. The validation by a linguist was intended to ascertain the suitability of the language employed throughout the E-Module. Conversely, the appraisal by material experts was directed toward assessing the appropriateness of the content within the E-Module. Similarly, the evaluation by media experts was aimed at determining the efficacy of media integration within the E-Module. The assessments conducted by experts in material, language, and media are summarized in the subsequent table.

Table 2. Recapitulation of Expert Assessment Results

Material	4,82
Linguist	4,91
Media	4,60

Following the revision and assessment, the E-Module is ready for publication, and a pilot test can be conducted on eighth-grade students in junior high schools across Batam City.

1) **Implementation Stage**

In this phase, the product, deemed valid and feasible by expert evaluation, undergoes testing on E-Modules targeted at eighth-grade students attending SMPN 4, SMP N 29, and SMP N 31 in Batam. The primary purpose of the product trial is to ascertain the students' perceptions regarding the instructional materials that have been developed. Aspects of the E-Module, the students' evaluations, were collected through directly distributing questionnaires. A total of 120 students participated as respondents. The outcomes of the product trial are presented in the table below.

Table 3. Recapitulation Of Student Assessment Result

The Material in the Digital Teaching Module is Presented Structurally and Coherently.	4.62
I Can Easily Understand the Material Using the Digital Teaching Module	4.50
I Feel the Language Used in the Digital Teaching Module is Communicative	4.52
I Feel the Language Presented in the Digital Teaching Module is Easy to Understand	4.58
Presentation of Digital Teaching Modules Can Provide Opportunities for Me to Work on Tasks Independently	4.56
Presentation of Audio and Video Features Makes It Easier for Me to Understand the Material	4.68

Presentation of Examples in the Module Makes it Easy to Understand the Material	4.59
Color, Size, and Shape of Images Can Attract My Attention in Understanding the Material	4.61
Average	4.58

2) **Evaluation Stage (Evaluate)**

The process of evaluation is characterized as one aimed at enhancement. The investigation followed the ADDIE model's sequence, initiating the analysis phase and culminating with evaluation. The data derived revealed that the E-Modules employing the ICARE methodology fall into the category of exceptionally effective. It is discerned from the details above that the E-Module, which utilizes the ICARE technique, is appropriate for educational purposes with students. That is because it encompasses valid and effective classifications under the ICARE method (Introduction, Connection, Application, Reflection, Extension), facilitating the educational process.

ICARE Approach-Based E-Modules

E-modules, which integrate multimedia elements such as audio, video, and text, cater effectively to diverse learning styles. These digital education tools facilitate students' interactive comprehension of the material. As stated by Islami and colleagues (2021), using e-modules supports students who encounter learning challenges and streamlines the educational process, organizing the subject matter systematically and structurally. Furthermore, the structured content presentation within the e-modules enhances learning innovation, making it a suitable medium for education (Darmayasa et al., 2018). Mahmudah, S. (2022) found that E-Modules grounded in problem-based learning significantly enhance students' critical thinking abilities. Complementarily, Syahrial A. et al. (2020) demonstrated that experimental classes employing ethnoconstructivism-based e-modules outperformed control classes using conventional methods. This superiority was quantified with test scores of 19.542 in motivation and 20.342 in learning style, highlighting a considerable discrepancy between the motivational levels and attitudes of the two groups.

Modules based on information and communication technology, termed e-modules, offer enhanced interactivity and ease of navigation. These modules facilitate the incorporation of multimedia elements such as images, audio, video, and animations and are enhanced by the inclusion of formative assessments or quizzes that provide instantaneous feedback (Prasetya, A., 2021). Furthermore, a study (Novia, Y. et al., 2022) has indicated a rise in using e-modules tailored for mobile learning as interactive tools. The findings from this research will likely serve as suggestions for educators aiming to augment the efficacy of educational practices in academic institutions. The methodologies employed in teaching significantly impact the development of students' critical thinking and writing capabilities. Research findings presented by Tikollah M. R. et al. (2019) indicate that the application of the ICARE method significantly enhances student engagement in various learning activities. It was observed that students engaged attentively in listening to explanations provided by teachers and peers' viewpoints, alongside reading texts silently, encompassing listening, visual, and emotional involvement.

Moreover, it was noted that students meticulously recorded notes on the discussed topics and participated in problem-solving exercises, primarily writing activities. Additionally, students exhibited confidence in querying, articulating their thoughts, responding to inquiries, and synthesizing conclusions, which involve oral, mental, and emotional processes. The research conducted by Ponidi (2021) has revealed that the ICARE learning model is highly effective in offering students the chance to implement the knowledge acquired during educational sessions. Additionally, a study by Simamora A.H. et

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al. (2024) has demonstrated that the ICARE model receives high praise from experts across the design, media, and content dimensions, categorizing each as "very good." Evaluations conducted individually and in small groups revealed that student reactions consistently fell within the "excellent" range. Consequently, the appeal and usability of e-modules in digital education are classified as "excellent," attributing this success to the fundamental application of the ICARE learning model as a guiding design principle.

Based on the distribution of questionnaires to students, it was found that 64.84% of students had difficulty understanding the material for writing observation report texts, 70.65% of students had difficulty developing writing when writing observation report texts, 67.74% of students had difficulty finding references when writing observation report texts, 62.10% of students had difficulty in compiling sentence structures for writing observation report texts, 66. 45% of students have difficulty finding examples of observation report texts used as guidelines in learning to write observation report texts, 82.58% of students use conventional teaching materials such as textbooks, PPT, YouTube, etc., 87.90% of students want to carry out learning to write observation report texts presented in a dance, interactive, and innovative way, 89.68% of students find it easier to understand observation report text material by using teaching materials (audio, video, illustrations, graphics, and images).

The learning approach must be adjusted to various aspects, such as the characteristics of learning materials, student profiles, availability of facilities and infrastructure, and other supporting factors (Dewi & Agustika, 2020). ICARE is an approach that makes it easy to apply students' real-world knowledge to teaching and learning activities in the classroom (Maulana, 2022). The ICARE learning approach emphasizes student-centered learning with five main stages: Introduction, Connect, Apply, Reflect, and Extend. The essential components of the ICARE model were developed by Hoffman and Ritchie (1998). Each stage in the ICARE approach significantly impacts the student learning process (Dwijayani, 2018). By applying the ICARE approach in e-modules, students are encouraged to actively construct their knowledge and relate it to deepen their understanding of the material (Sri Jayanti et al., 2019). In Table 2, the total overall average score regarding student assessment of the e-module is 4.58 in the outstanding category. Students assessed aspects of content feasibility, language readability, material presentation, and graphics. This is reinforced by research (Zinnurain, 2021), which shows that flipbook teaching materials can affect student learning outcomes because they attract presentations that create fun learning. This meaningful learning process increases students' confidence in communicating their findings in scientific writing and knowledge presentation (Buxton et al., 2018).

Conclusion

Based on the research findings, a score of 4.58 with a validity level of 89% was obtained. It provides evidence that implementing e-modules based on the ICARE approach in an educational environment can increase the effectiveness of Indonesian learning. Students can learn independently and collaboratively and develop critical skills such as problem-solving, analysis, and synthesis of information.

Recommendation

Based on the results, researchers should continue developing digital teaching modules with the ICARE approach with different subjects. It aims to improve the teaching materials developed to be more attractive to students. Digital teaching modules with the ICARE approach still need to improve in terms of both manufacture and application. Therefore, it

needs to be developed to be better to increase motivation and enthusiasm in carrying out learning.

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