

# Validity of an Interactive Multidisciplinary-Based E-Module in the General Indonesian Language Course to Improve Students' Scientific Writing Competence

Salmah Naelofaria<sup>1</sup>, Frinawaty Lestarina Barus<sup>2</sup>, Tri Indah Prasasti<sup>3</sup>, Lasenna Siallagan<sup>4</sup>,  
Izuddinsyah Siregar<sup>5</sup>

[snaelofaria@gmail.com](mailto:snaelofaria@gmail.com)<sup>1</sup>, [frinabarus@unimed.ac.id](mailto:frinabarus@unimed.ac.id)<sup>2</sup>, [triindahprasasti@unimed.ac.id](mailto:triindahprasasti@unimed.ac.id)<sup>3</sup>  
[siallaganlasenna@unimed.ac](mailto:siallaganlasenna@unimed.ac)<sup>4</sup>, [izzuregar@gmail.com](mailto:izzuregar@gmail.com)<sup>5</sup>

<sup>1, 2, 3, 4, 5</sup> Universitas Negeri Medan, Indonesia

**Abstract.** This study aims to develop and examine the validity of an interactive multidisciplinary-based e-module for the General Indonesian Language course, focusing on scientific writing instruction at the university level. The study was motivated by students' low competence in scientific writing and the limited availability of instructional materials that accommodate disciplinary diversity. This research employed a Research and Development (R&D) approach using the 4D model (Define, Design, Develop, Disseminate). However, this article reports findings limited to the first research problem, namely the validity of the developed e-module. The subjects involved 55 undergraduate students from the English Education and English Literature study programs at Universitas Negeri Medan. Data were collected through needs analysis, classroom observations, and expert validation sheets. The validation results showed that material expert validation reached 77.5% and media expert validation reached 73.8%, both categorized as valid. These findings indicate that the interactive multidisciplinary-based e-module meets academic and technical standards and is suitable for use as a scientific writing learning resource across disciplines.

**Keywords:** E-Module Validity, Multidisciplinary Approach, Scientific Writing, Indonesian Language

## 1. Introduction

Scientific writing competence is an essential academic skill that university students must master in order to communicate ideas logically, systematically, and ethically within academic communities. In Indonesian higher education, the General Indonesian Language course functions as a compulsory subject aimed at developing students' academic literacy, particularly scientific writing competence

[1],[2]. Nevertheless, various empirical studies have shown that many undergraduate students still experience difficulties in writing scientific articles that meet academic standards, especially in terms of structure, language accuracy, and argument development [3].

One of the main factors contributing to this condition is the limited availability of instructional materials that are interactive, contextual, and responsive to students' disciplinary backgrounds. Conventional learning materials used in Indonesian language courses tend to be theoretical, text-heavy, and generic, making them less relevant to students from different academic programs. As a result, students often perceive the General Indonesian Language course as detached from their disciplinary needs, which negatively affects learning motivation and engagement [4].

The rapid development of information and communication technology in higher education provides opportunities to address these challenges through the integration of digital learning media. Interactive e-modules represent one form of digital instructional material that allows flexibility, multimedia integration, and learner-centered instruction [5],[6]. In addition, incorporating a multidisciplinary approach into e-module design enables learning materials to be contextualized across academic fields, thereby enhancing relevance and facilitating knowledge transfer [7].

Based on these considerations, this study focuses on developing and validating an interactive multidisciplinary-based e-module for the General Indonesian Language course. This article is limited to addressing the first research problem, namely the validity of the developed e-module, without discussing its practicality or effectiveness.

## **2. Research Methods**

This study employed a Research and Development (R&D) approach using the 4D model proposed by Thiagarajan, Semmel, and Semmel, which consists of four stages: Define, Design, Develop, and Disseminate [8]. The implementation of this model aimed to produce a valid instructional product through systematic development procedures. In accordance with the focus of this article, only the Define, Design, and Develop stages related to product validity are reported.

The research subjects consisted of 55 undergraduate students from the English Education (29 students) and English Literature (26 students) study programs at Universitas Negeri Medan. These students were involved in the needs analysis stage. Product validation was conducted by two material experts and one media expert who evaluated the e-module in terms of content relevance, linguistic accuracy, instructional design, visual appearance, and usability.

Data were collected using expert validation sheets. The validation data were analyzed descriptively using percentage-based feasibility criteria. Products with validation scores above 70% were categorized as valid and feasible for use in learning [8].

### 3. Results

The results of this study are presented based on the stages of development, particularly focusing on needs analysis and expert validation results. The needs analysis conducted during the Define stage revealed that students experienced considerable difficulties in writing scientific articles. Approximately 69% of students reported difficulty in organizing ideas, while 72% expressed the need for discipline-specific examples in scientific writing instruction. These findings indicate the importance of developing contextual and interactive learning materials that address students' disciplinary needs.

#### 3.1 Material Expert Validation Results

**Table 1.** Material Expert Validation

Aspect	Percentage (%)	Category
Content feasibility	77.5	Valid
Language accuracy	78.0	Valid
Presentation structure	76.5	Valid
Multidisciplinary relevance	78.0	Valid

Table 1 shows that the overall material expert validation score reached 77.5%, which falls within the valid category. Material experts indicated that the content of the e-module was relevant to the learning objectives of the General Indonesian Language course and adequately represented multidisciplinary scientific writing contexts. Minor revisions were suggested, particularly in enriching examples from non-language disciplines.

#### 3.2 Media Expert Validation Results

**Table 2.** Media Expert Validation

Aspect	Percentage (%)	Category
Layout and design	74.0	Valid
Navigation and interactivity	73.5	Valid
Visual clarity	73.0	Valid

As presented in Table 2, the media expert validation score reached 73.8%, categorized as valid. The media expert highlighted that the e-module interface was user-friendly and supported independent learning. Suggestions focused on improving navigation consistency and visual balance to enhance user experience.

### 4. Discussion

The validation results indicate that the interactive multidisciplinary-based e-module meets academic and technical standards required for instructional media. The content validation score confirms that the e-module aligns with scientific writing competencies mandated in the General Indonesian

Language course [1],[10]. The integration of multidisciplinary examples supports interdisciplinary learning theory, which emphasizes contextual relevance and knowledge transfer across disciplines [7].

Furthermore, the media validation results demonstrate that the e-module design supports learner engagement and independent learning. This finding is consistent with digital instructional design principles, which stress the importance of usability, clarity, and interactivity in digital learning resources [5],[9]. Therefore, the developed e-module can be considered valid and feasible for implementation in higher education contexts.

## 5. Conclusion

This study concludes that the interactive multidisciplinary-based e-module developed for the General Indonesian Language course is valid and feasible for use in scientific writing instruction. Expert validation results from both material and media experts confirm that the e-module meets academic content and technical design standards. Accordingly, the e-module is suitable as a learning resource to support students' scientific writing competence across disciplines. Further research is recommended to investigate the practicality and effectiveness of the e-module through experimental implementation.

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