

Needs Analysis for Developing SDGs-Based Digital Teaching Materials in the Productive Written Language Skills Course

Khairunnisa Br. Batubara¹, Maya Oktor², Yeni Erlita³, Karunia Devi Frida⁴, Zulfidar⁵,
Christine Helena Natalia⁶, Yuni Khairina⁷

{ khaibara@unimed.ac.id¹, mayaoktora@unimed.ac.id², mrs.yenierlita@gmail.com³,
krndvyfrd@unimed.ac.id⁴, zulfidarhazidar@unimed.ac.id⁵, christinehelena@unimed.ac.id⁶,
yuni_khairina@unimed.ac.id⁷ }

English and Literature Department, Faculty of Language and Art, Universitas Negeri Medan, Jalan
Willem Iskandar Pasar V, Medan, Indonesia¹²³⁴⁵⁶⁷

Abstract. This study investigates the learning needs of second-semester students in the Productive Written Language Skills (PWLS) course at Universitas Negeri Medan, focusing on developing SDG-based digital teaching materials. Using a descriptive quantitative design, data were collected from 35 students via a questionnaire. Findings reveal that while students value writing argumentative texts and critical thinking, they face challenges in idea development, coherence, and structure. Many also reported low self-efficacy in expressing opinions on contemporary issues. Students showed strong interest in SDG topics—particularly education, poverty, and climate change—delivered through interactive, digital formats with multimedia support and clear writing models. These insights emphasize the need to redesign PWLS materials to meet learners' expectations, integrate digital teaching trends, and address global issues. The study underscores the importance of student-centered pedagogy in fostering critical writing skills and global citizenship, offering practical guidance for teachers and material developers.

Keywords: *Needs Analysis, SDGs (Sustainable Development Goals), Digital Learning Materials, PWLS*

1 Introduction

The enhancement of 21st century competencies accompanied with Sustainable Development Goals (SDGs) integration in higher and tertiary education is a matter of concern all over the globe. The university education is anticipated to equip learners with skills that transcend the boundaries of a single discipline, such as mastery over critical and analytical thinking, problem resolution techniques and in-depth evaluation skills [1]. The fostering of such competencies is achievable via effective and analytical writing.

The majority EFL contexts focus on the mechanical aspect of the language, thus leaving instruction writing instruction devoid of connection to global issues [2]. As a result, students struggle to come up with coherent, logical, and well-formulated ideas to express on real-life

topics. This highlights the urgent need of the development of new instructional materials designed to extend integration of writing prompt to global issues.

The PWLS course aims to equip students with the skills and competencies of writing coherent and well-structured texts. Considering the global significance of the 17 SDGs, their integration into writing instruction not only augments learning, but also encourages social responsibility and enhances learner motivation [3]. The development of digital instructional materials such as interactive modules and tasks that are supported with multimedia texts, offer great potential to contextualize writing activities to SDG-related topics while meeting different learning needs and styles [4].

Regardless of these opportunities, the degree to which learners desire and require SDG-based digital resources is still insufficiently investigated, especially within the context of English as a Foreign Language (EFL) in Indonesia. Addressing this gap, the study conducts a needs analysis to explore learners' PWLS perceptions, issues, and anticipations. The results are intended to inform the creation of aligned resources and documents that are centered on the learner and the SDGs, and that are integrated within the framework of contemporary digital learning.

1.1 Needs Analysis in Language Teaching

Needs analysis is the methodical procedure of defining the learners' contexts and precisely their linguistic requirements so that materials and syllabi can be appropriately crafted [5]. It is acknowledged as the primary basis in formulating learner-centered curricula in ESP and skill-centered courses [6].

1.2 Writing Skills in Higher Education

Inadequate and unskilled expression in a second language stems from challenges in formulating and adopting a logical structure to present ideas, as well as conforming to disciplinary norms [7]. Instructors of writing courses in higher education should focus on the appropriately guided practice and presentation of the authentic models, as well as the argumentative and expository in a productive discourse.

1.3 SDGs and Language Education

The Sustainable Development Goals (SDGs) are 17 goals set in a critical global agenda to tackle fundamental issues of the world such as poverty, inequality, education, and climate change [8]. In the context of education, the integration of SDG issues into the teaching of languages fosters content-based instruction and nurtures global citizenship [9].

1.4 Digital Materials for Writing Instruction

The flexibility, interactive nature, and provision of authentic resources that digital learning materials offer is invaluable. Enhanced motivation and comprehension are benefits of well-designed multimedia modules [10]. In the context of writing, digital materials can offer models, collaborative spaces, and immediate feedback.

2 Method

This investigation adopted a descriptive quantitative approach to evaluate the requirements of students relating to the SDG-based PWLS digital teaching materials. Participants included 35 students in their second semester from the English Department of Universitas Negeri Medan. Data collection was conducted through a structured form consisting of three focal points; writing challenges, perception of SDG integration, and digital material preferences. This was completed through a questionnaire that was disseminated via Google Forms. The results were analyzed descriptively in terms of frequency and percentage to uncover the underlying patterns in students' responses.

3 Result and Discussion

This part shows the outcome of the needs analysis carried out on 35 students from the second semester English Department of Universitas Negeri Medan. The information was collected using a structured questionnaire concentrated on three primary issues: (1) students' identified problems with developing productive written language skills, (2) the level of interest regarding the integration of Sustainable Development Goals (SDGs) into writing activities, and (3) the preferred design features of SDG-based digital teaching materials.

3.1 Result

3.1.1 Current Challenges in Writing

Based on the analysis, students encounter a number of problems with developing their productive writing skills. As shown in Table 1, the majority of students struggled with the grammatical and sentence construction level issues (more than 50% of the respondents), followed in order by attempting to formulate and think through arguments and critical thinking, logically sequencing of ideas, and vocabulary and word choices. Further, a significant number of students indicated difficulties in avoiding plagiarism and citing relevant sources as well as working with genres of texts.

Table 1. Current Challenges in Writing

Writing Challenge	Frequency	Percentage
Grammar and sentence structure	16	45.7%
Developing arguments & critical thinking	11	31.4%
Organizing ideas logically	7	20.0%
Vocabulary and word choice	6	17.1%
Citing sources & avoiding plagiarism	5	14.3%
Writing different text genres	4	11.4%

As evidenced in the table above, the greatest challenges for students lie in the grammatical and mechanical aspects of writing. This, however, is accompanied by more complex difficulties, such as the development of arguments and the organization of ideas.

3.1.2 Interest in SDG Integration

Students expressed the greatest interest in writing materials centered on the integration of SDG-related issues. As illustrated in Table 2, they mostly preferred tasks dealing with the exploration of real-world issues like poverty, climate change, and gender equality, as well as the problem-

solving tasks based on the SDGs and the study of SDG initiatives. Some students also expressed interest in the writing of projects aimed at offering viable solutions to world problems.

Table 2. Interest in SDG Integration

SDG Writing Task Preference	Frequency	Percentage
Real-world problems (climate change, poverty, etc.)	12	34.3%
Problem-solving writing tasks	10	28.6%
Case studies on SDG initiatives	8	22.9%
Writing projects proposing SDG solutions	5	14.3%

Students noted that applying the SDG framework to writing tasks would foster critical thinking, address global problems, and enhance the relevance of writing.

3.1.3 The Preferred Elements of the Digital Materials

Students' preferences regarding the creation of SDG-based digital teaching materials are outlined in Table 3. Most participants showed interest in interactive components such as quizzes, peer review, and discussions as well as sample writings and model texts and multimedia materials including infographics and video explanations. Also, many students emphasized the necessity of guided writing and research tasks with clear, step-by-step frameworks to guide their learning.

Table 3. Preferred Features of Digital Materials

Preferred Feature	Frequency	Percentage
Interactive activities (quizzes, peer review)	13	37.1%
Sample essays/model writings	11	31.4%
Video explanations of SDG concepts	8	22.9%
Infographics and SDG-related data	7	20.0%
Research-based writing tasks	6	17.1%
Peer review & feedback forums	5	14.3%

From the writing activities, it was observed that students prefer a balance between individual step-wise guided writing and group writing projects. Some students were drawn towards case-study and problem-solving work, demonstrating a preference for writing that connects with real-life applications.

Additionally, the analysis findings suggest that instructional materials should address the following: (1) Assist with the technical and cognitive challenges of writing (e.g., grammar, vocabulary, and conceptual relations); (2) Support the integration of SDG themes for heightened global awareness and critical thinking; (3) Integrate interactivity and multimedia elements with appropriate instructional scaffolding to enhance relevance and engagement.

These findings strongly indicate the need for the construction of SDG-based digital flip books. Such resources would address the need for students to develop productive skills through the integration of interactive design modules, model texts, and problem-solving writing activities.

The findings reveal an urgent need to reorient writing instruction toward integrating SDG themes through digital formats. This aligns with previous studies emphasizing the role of contextualized, issue-based content in promoting critical thinking [8], as well as the benefits of technology-enhanced learning for engagement and autonomy [10].

3.2 Discussion

This needs analysis reveals that learners face challenges not only with the mechanics of writing, such as grammar, coherence, and idea sequencing, but also with content that is relevant and meaningful at a global scale, as well as with content that is provided through interactive digital means. The results also show that students are provided with the means to construct social responsibility and global awareness while improving writing skills by integrating the themes of SDG in the PWLS course materials.

The implications of these findings are, in some ways, quite educational. First, it is recommended that teachers use SDG concern issues as writing prompts so that the context of the writing task is based around real-life issues as it enhances the authenticity of the learning. Secondly, there is a need for the development of interactive digital materials that are rich in multiple forms, as there is a strong demand among students for materials such as model texts, infographics, videos, and online discussion forums. Lastly, there is a need to examine the impact of SDG-embedded digital materials on writing skills to answer the question of whether they assist in achieving accuracy in the use of language and, further, in the development of critical thinking, creativity, and global citizenship.

4 Conclusion

The study highlights the urgent need to integrate SDG-based digital materials into the Productive Written Language Skills (PWLS) course. Students struggle with grammar, coherence, and idea development but show strong interest in writing tasks connected to real-world issues like poverty, education, and climate change. They prefer interactive, multimedia-supported, and guided digital resources. Therefore, teaching materials should not only address writing challenges but also foster global awareness, critical thinking, and social responsibility. Teachers and material designers are encouraged to create innovative digital tools that combine SDG themes with writing instruction to enhance student engagement, critical writing skills, and global citizenship.

References

- [1] Trilling, B., & Fadel, C. *21st century skills: Learning for life in our times*. Jossey-Bass. (2009)
- [2] Hyland, K. *Second language writing*. Cambridge University Press. (2019)
- [3] United Nations. *Transforming our world: The 2030 Agenda for Sustainable Development*. (2015).
- [4] Bates, T. *Teaching in a digital age: Guidelines for designing teaching and learning*. Tony Bates Associates Ltd. (2015).
- [5] Hutchinson, T., & Waters, A. *English for specific purposes: A learning-centred approach*. Cambridge University Press. (1987).
- [6] Richards, J. C. *Curriculum development in language teaching*. Cambridge University Press. (2001).
- [7] Ferris, D., & Hedgcock, J. *Teaching L2 composition: Purpose, process, and practice*. Routledge. (2014)
- [8] Cates, K. A. Global education and language learning. *The Language Teacher*, 37(4), 41–44. (2013)
- [9] UNESCO. *Education for sustainable development goals: Learning objectives*.

[10] Tomlinson, B., & Masuhara, H. (2018). *The complete guide to the theory and practice of materials development for language learning*. Wiley-Blackwell. (2017).