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Needs Analysis for E-Module Development in the Microteaching Course to Enhance Pedagogical Competence

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Abstract

This research focused on performing a comprehensive needs analysis to guide the creation of an e-module aimed at bolstering pedagogical skills within the Microteaching course. The study particularly explored the educational hurdles faced by students, their preferred learning materials, and their expectations for digital learning within the Educational Technology program at Universitas Negeri Makassar. Data collection was facilitated through multiple methodologies, including questionnaires, interviews, and observations, involving a cohort of 20 undergraduate students. The questionnaire was meticulously designed with ten key indicators focusing on various aspects such as learning content, accessibility, interactive elements, and visual attractiveness. Findings indicated that a significant majority of students perceived existing instructional materials as inadequate and unengaging, signifying a critical need for improvements. The highest needs were related to the inclusion of clear learning objectives (93%) and offline usability (92%). These findings indicate that an e-module for the Microteaching course is needed to support flexible, independent, and engaging learning. The results of this analysis serve as a foundation for the subsequent development phase using the 4D model to improve the quality of pedagogical learning.

Keywords: Need analysis, E-module, Microteaching, Pedagogical Competence

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INTRODUCTION

Microteaching has long been acknowledged as an effective pedagogical strategy for cultivating the instructional competencies of preservice teachers. It provides an authentic yet controlled environment in which prospective educators can experiment with, apply, and refine their teaching techniques. Empirical studies have consistently indicated that participation in microteaching courses enhances preservice teachers' perceptions of their professional efficacy and instructional preparedness, as the experience serves to operationalize theoretical constructs through practical enactment (Pangaribuan et al., 2023; Ma, 2024). Consequently, microteaching has become an indispensable component of teacher education curricula, recognized for its capacity to mediate the interface between theoretical understanding and classroom-based practice, thereby fostering comprehensive teaching competence.

As a systematically structured teacher education approach, microteaching engages preservice teachers in simulated teaching encounters of reduced complexity and duration. Within these sessions, participants concentrate on mastering discrete pedagogical skills, including lesson initiation, content exposition, questioning strategies, and reinforcement techniques. The process is embedded in iterative cycles of observation, feedback, and reflection, which collectively underpin the reflective teaching paradigm. The strength of microteaching lies in its cyclical and evidence-informed nature, enabling participants to diagnose instructional challenges, implement targeted modifications, and evaluate the impact of their pedagogical decisions (Ariff et al., 2023; Wulandari & Wirdati, 2024). In doing so, microteaching effectively functions as a transitional scaffold that bridges the gap between abstract pedagogical theory and authentic teaching contexts, while concurrently cultivating instructional confidence and professional identity among emerging educators.

Nevertheless, the efficacy of microteaching is contingent upon a robust grounding in pedagogical theory, which provides the conceptual lens through which preservice teachers interpret, adapt, and reconstruct teaching practices. A theoretically informed perspective equips students to translate educational principles into coherent instructional designs, thereby reinforcing the linkage between pedagogical reasoning and classroom implementation (Hsu, et al., 2023). Moreover, it is imperative to make implicit pedagogical assumptions explicit during simulated instruction, as this process facilitates the transformation of theoretical understanding into pedagogical content knowledge (PCK)—the capability to recontextualize disciplinary knowledge into forms that are accessible and meaningful to learners (Stewart et al., 2013). Hence, the sophistication of a microteaching course must be anchored in a solid theoretical foundation,

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ensuring that preservice teachers develop both conceptual acuity and practical proficiency through integrative, reflective, and research-informed pedagogical engagement.

In the context of contemporary teacher education, the availability of a well-designed instructional module constitutes a fundamental component for ensuring the coherence and continuity of learning experiences. A module serves as a structured learning resource that guides preservice teachers through systematic stages of knowledge acquisition, skill development, and reflective practice, thereby reinforcing the learning objectives of a microteaching course. However, the rapid digitalization of education and the evolving expectations of twenty-first-century learners underscore the urgency of transforming traditional print-based modules into interactive electronic formats. The shift from conventional modules to e-modules is no longer merely a technological enhancement but a pedagogical imperative that responds to the increasing demand for flexible, accessible, and learner-centered instructional resources (Patriot et al., 2023; Suyatna et al., 2018; Yulando et al., 2019).

The integration of e-modules in microteaching courses offers multiple pedagogical advantages. E-modules facilitate self-regulated learning, enabling preservice teachers to access content asynchronously, revisit complex materials, and engage in individualized learning trajectories (Denha et al., 2023; Gondwe, 2022). Moreover, the incorporation of multimedia elements, formative assessments, and interactive simulations enhances engagement and deepens conceptual understanding needs (Nazifah & Asrizal, 2022; Tolmachev et al., 2022). From a pedagogical perspective, e-modules promote active learning and reflective inquiry, encouraging learners to connect theoretical principles with experiential teaching practices (Krivova et al., 2021; Barrera et al., 2024). The transition to e-modules not only aligns with global trends in digital pedagogy but also strengthens the effectiveness, sustainability, and scalability of microteaching courses in preparing competent, adaptive, and technologically literate future educators.

As the initial step to develop the e-module, this research focused on the needs analysis stage as the pivotal starting point for creating e-modules for the Microteaching course. While the framework aligns with Thiagarajan's Four-D Model, which includes the stages of Define, Design, Develop, and Disseminate (Arochman et al., 2024), this investigation centers specifically on the Define stage. This stage encompasses the identification and assessment of the instructional needs of students, which is essential for setting appropriate learning objectives, curating relevant content, and selecting effective digital formats that meet students' preferences and educational goals (Pattaufi et al., 2023; Sulaeman et al., 2025). The insights gained from the needs analysis will furnish critical information to inform the subsequent stages of design and development, ensuring

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that the resulting e-module not only enhances pedagogical skills but also supports students in microteaching course (Misnawati et al., 2023). Thus, the study seeks to address a fundamental research question: What are the students' requirements for the development of an e-module in the Microteaching course? The findings are anticipated to underpin future development phases of the e-module and contribute meaningfully to the digital advancement of teacher education.

RESEARCH METHOD

This research employed a descriptive quantitative method with a survey approach to identify students' requirements for the development of an e-module in the Microteaching course. The study was conducted during the Define stage of the Four-D (4D) development model proposed by Thiagarajan et al. (1974), which focuses on defining and analyzing instructional needs as the foundation for subsequent design and development processes.

The participants of this study were 20 students enrolled in the Microteaching course of the Technology Education Study Program, Faculty of Education, Universitas Negeri Makassar. The data collection technique used in this research was a questionnaire consisting of 9 items designed to identify students' perceptions and needs regarding the development of an e-module for Microteaching. The questionnaire covered aspects such as accessibility, interactivity, content clarity, visual design, and learning support. The data obtained were analyzed using descriptive statistical techniques, namely score and percentage, to determine the level of students' needs for the e-module. The results of this analysis served as the foundation for determining the core materials and features to be included in the e-module development.

RESULTS AND DISCUSSION

The analysis of instructional material needs for the e-module in this study was conducted to enhance the quality of learning. The initial needs analysis aimed to collect data and information related to the learning requirements of students in the Educational Technology Study Program. A total of 20 students participated in the analysis to identify their needs regarding the development of an e-module for the Microteaching course through ten structured questionnaire items. The questionnaire was designed to explore students' perceptions regarding accessibility, interactivity, visual design, learning guidance, and independent learning support. The collected data were analyzed using descriptive statistics to calculate scores and percentages, as presented in Table 1.

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Table 1. Identification of Needs

No	Statement	Score	Percentage
1	The materials used in the current learning resources are incomplete or less interesting.	100	100%
2	I need learning materials that can be accessed through digital devices (mobile phone/laptop).	87	87%
3	Learning will be easier if using an interactive and illustrated e-module.	88	88%
4	The e-module helps me understand the material more quickly compared to printed materials.	86	86%
5	I need learning materials that can be used anytime without relying on an internet connection.	86	92%
6	Visual elements (color, images, video) in the e-module are very important to attract learning interest.	85	85%
7	I want the e-module to include clear learning objectives and usage instructions.	93	93%
8	I need learning materials that can help me study independently.	89	89%
9	I am interested if classroom learning uses an e-module as the main learning resource.	80	80%

The data analysis indicates that the development of an e-module for the Microteaching course has achieved a total score of 898 points and an average percentage of 89.8%, categorizing it as “needed.” This assertion is supported by contemporary educational research, which highlights the essential role of engaging and comprehensive learning resources in enhancing educational effectiveness (Nurhayati et al., 2022). The use of e-modules significantly increases student motivation through various learning dynamics (Asrizal et al., 2022). An interactive and visually appealing e-module can augment the overall learning experience, reinforcing the importance of an engaging educational format. The results reveal that the statement regarding the completeness of current learning materials garnered a perfect score of 100%. The feedback from students in data analysis indicates a strong recognition of the limitations of existing materials.

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However, it is noteworthy that the lowest score of 80% was assigned to students' interest in using e-modules as the primary learning material, indicating a potential aversion to completely substituting traditional methods with digital formats. While students recognize the value of digital learning resources, they may also place a high value on conventional classroom interactions, which enhances their learning stability and retention (Bai et al., 2016). Thus, integrating e-modules into the curriculum, perhaps as supplements rather than replacements for traditional resources, may foster a more comprehensive learning environment that values both digital innovation and conventional pedagogical methods. The results further reveal several key aspects of students' needs.

Accessibility and Flexibility

The findings concerning students' needs in relation to e-modules for the Microteaching course reflect a significant demand for accessibility and flexibility in learning resources. A considerable percentage of respondents indicated a preference for materials that can be accessed via mobile devices, with a percentage of 87% (Item 2) expressing a desire for online resources accessible via smartphone while a significant portion of students preferred offline resources (92%, Item 5). These statistics underscore the necessity of designing an e-module that is not only mobile-friendly but also capable of operating without an active internet connection. Integrating both online and offline components in learning materials can enhance student engagement and outcomes, making blended learning a viable framework for modern education (Purwanty et al., 2024). Studies show that today's learners, as digital natives, have evolving educational experiences and preferences, necessitating that institutions adapt to these changes by increasing the flexibility of learning environments (Yang et al., 2018). This highlights the importance of developing a learning module that is focused on compatibility with a range of devices and offline functionalities, ensuring that students can learn anytime and anywhere without technical constraints.

Interactivity and Visual Design

The significance of interactivity and visual design in e-learning environments is underscored by findings reflecting students' preferences for multimedia-enriched content. Specifically, the evaluation reveals that 88% of students emphasized the need for interactive features, while 85% highlighted the value of visually engaging design elements (Items 3 and 6). This strong inclination toward interactive and visually stimulating materials underscores a critical

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aspect of modern educational practices, particularly in the development of e-modules for the Microteaching course. Research has consistently shown that interactive e-learning environments significantly enhance student engagement and motivation. Well-designed multimedia elements not only capture learners' attention but also foster deeper understanding by stimulating cognitive processing across multiple sensory modalities (Moreno and Mayer, 2000).

Furthermore, instructional design elements, specifically those that incorporate interactivity and visual aids, have a substantial impact on learning outcomes. learning environments that engage students through various forms of multimedia—such as images, videos, and animations—can facilitate greater retention and comprehension. The findings indicate that the incorporation of interactive elements enables students to construct knowledge actively rather than passively absorbing information (Hattie, 2009; Lepp et al, 2019). This aligns with the demands of contemporary learners who are accustomed to interacting with dynamic digital media. By incorporating multimedia elements, educational developers can create an immersive learning experience that aligns with students' preferences and enhances both motivation and understanding.

Clarity of Learning Guidance and Self-directed Learning

The data reveal a strong preference among students for clarity in learning guidance and support for self-directed learning, with 93% expressing a desire for clear learning objectives and usage instructions (Item 7) and 89% valuing the ability to study independently (Item 8). Such findings underscore the need for the e-module to incorporate explicit learning goals, systematic navigation, and self-assessment features, thereby effectively guiding students throughout the learning process. The emphasis on clear learning objectives aligns with research indicating that structured learning paths significantly enhance student comprehension and motivation. E-modules contribute to student independence and foster a sense of control over the learning process, thereby enhancing self-directed learning (Kumar et al., 2023; Singh & Ishrat, 2025). Clear guidance in educational materials allows learners to understand what is expected of them and helps streamline their academic endeavors, which is crucial in fostering autonomy.

In addition, the majority of students agreed that e-modules help them understand the material more quickly compared to printed resources (Item 4, 86%). This result affirms the role of digital resources in improving learning efficiency. E-learning resources enhanced the learning experience of students, allowing them to grasp complex subjects more quickly due to the diverse tools offered for various learning modalities (Hakami, 2021). The advantage of e-modules lies in

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their ability to integrate multimedia elements, allowing students to engage with content dynamically, which facilitates quicker understanding and retention of information. Developing an e-module that clearly articulates learning objectives and fosters self-directed study through systematic navigation and self-assessment is paramount. By doing so, educators can ensure that learners are equipped to engage with materials efficiently and independently, thereby enhancing overall educational effectiveness.

Overall, the results of the needs analysis confirm that students require an e-module that is accessible, interactive, visually appealing, and supportive of independent learning. The high overall percentage (89.8%) underscores the strong demand for integrating digital-based learning materials in the Microteaching course. These findings serve as a foundation for the subsequent Design stage of the 4D model, particularly in determining the content structure and digital features of the e-module to be developed.

CONCLUSION

The results of this study indicate that the development of an e-module for the Microteaching course is highly needed, as reflected by the overall average percentage of 89.8% from the needs analysis. Students expressed strong agreement that the e-module should be accessible via digital devices, interactive, visually appealing, and supportive of independent learning. These findings highlight that digital-based instructional materials can improve learning flexibility, engagement, and comprehension in microteaching practice. Therefore, the e-module to be developed should emphasize clear learning objectives, multimedia integration, and offline accessibility. The results of this needs analysis will serve as the basis for the next stage of the 4D development model, namely the *Design* phase, where the structure, content, and learning features of the e-module will be formulated to meet students' learning needs effectively.

FUTURE DIRECTIONS

Future research should continue with the subsequent stages of the 4D model, particularly the *Design*, *Develop*, and *Disseminate* phases, to produce a fully validated and implementable e-module. The next phase should involve expert validation of content and media design, followed by limited and broader field trials to assess usability, effectiveness, and student engagement. In addition, future studies may explore integrating advanced features such as interactive simulations, video-based microteaching demonstrations, and formative assessments to enhance practical teaching skills. Comparative studies could also be conducted to evaluate learning

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outcomes between students using the e-module and those relying on conventional materials. Ultimately, expanding this research to include a larger and more diverse participant group will strengthen the generalizability of the findings and support the wider adoption of e-modules in teacher education programs.

REFERENCES

Arochman, T., Imron, A., & Hantari, W. (2024). *Development of video-based digital content learning for teaching university students.* English Review Journal of English Education, 12(2), 675–684. https://doi.org/10.25134/erjee.v12i2.7617

Ariff, N., Hoon, T., Retnawati, H., & Koo, A. (2023). *Preservice teachers' preparedness and its influence on microteaching.* International Journal of Academic Research in Progressive Education and Development, 12(3). https://doi.org/10.6007/ijarped/v12-i3/19163

Asrizal, A., Zan, A. M., Mardian, V., & Festiyed, F. (2022). *The impact of static fluid e-module by integrating STEM on learning outcomes of students.* Journal of Education Technology, 6(1), 110–118. https://doi.org/10.23887/jet.v6i1.42458

Bai, H., Aman, A., Xu, Y., Orlovskaya, N., & Zhou, M. (2016). *Effects of web-based interactive modules on engineering students' learning motivations.* American Journal of Engineering Education (AJEE), 7(2), 83–96. https://doi.org/10.19030/ajee.v7i2.9840

Barrera, J., Megallon, S., & Patadlas, A. (2024). *Managing modular instruction and students' learning outcomes.*Eduline Journal of Education and Learning Innovation, 4(1), 110–121. https://doi.org/10.35877/454ri.eduline1883

Denha, N., Hudyma, U., Krupskyi, Y., Dumanska, T., Heseleva, K., & Povidaichyk, M. (2023). *Blended learning as a means of forming mathematical competence of future teachers of the new Ukrainian school: Neuropedagogical aspects.*

Gondwe, F. (2022). *Teacher educators' conceptualisation of technology in Malawi: A critical perspective.*International Journal of Educational Development in Africa, 7(1). https://doi.org/10.25159/2312-3540/11639

Hakami, Z. (2021). *Comparison between virtual and traditional learning methods for orthodontic knowledge and skills in dental students: A quasi-experimental study.* Healthcare, 9(9), 1092. https://doi.org/10.3390/healthcare9091092

Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses related to achievement.* London: Routledge.

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

Hsu, H., Cheah, Y. H., & Hughes, J. E. (2023). *A case study of a secondary biology teacher's pedagogical reasoning and action with augmented reality technology.* Education Sciences, 13(11), 1080. https://doi.org/10.3390/educsci13111080

Krivova, A., Kalliopin, A., Korotaeva, I., Shafazhinskaya, N., & Ермилова, Д. (2021). *Social networks as a means of monitoring students' progress.* Propósitos Y Representaciones, 9(SPE3). https://doi.org/10.20511/pyr2021.v9nspe3.1264

Kumar, A., Omprakash, A., Mani, P. K. C., Kuppusamy, M., Wael, D., Sathiyasekaran, B., … & Ramasamy, P. (2023). *E-learning and e-modules in medical education—a SOAR analysis using perception of undergraduate students.* PLOS ONE, 18(5), e0284882. https://doi.org/10.1371/journal.pone.0284882

Lepp, A., Barkley, J. E., Karpinski, A. C., & Singh, S. (2019). *College students' multitasking behavior in online versus face-to-face courses.* SAGE Open, 9(1). https://doi.org/10.1177/2158244018824505

Ma, L. (2024). *Research on the ways to improve the effectiveness of English microteaching.* Adult and Higher Education, 6(3). https://doi.org/10.23977/aduhe.2024.060304

Misnawati, M., Yusriadi, Y., & Bin-Tahir, S. Z. (2023). *QR code scanning system as a meaning-focused input approach in English textbook.* MEXTESOL Journal, 47(3), 1–11. https://doi.org/10.61871/mj.v47n3-21

Moreno, R., & Mayer, R. E. (2000). *A coherence effect in multimedia learning: The case for minimizing irrelevant sounds in the design of multimedia instructional messages.* Journal of Educational Psychology, 92(1), 117–125. https://doi.org/10.1037/0022-0663.92.1.117

Nazifah, N., & Asrizal, A. (2022). *The effect of STEM integrated modules on knowledge and students' 21st century skill in science and physics learning: A meta analysis.* International Journal of Progressive Sciences and Technologies, 34(1), 441. https://doi.org/10.52155/ijpsat.v34.1.4527

Nurhayati, N., Linda, R., & Anwar, L. (2022). *E-module using FlipHTML5 application on chemical bond material.* Jurnal Pendidikan Kimia Indonesia, 6(2), 133–141. https://doi.org/10.23887/jpki.v6i2.49542

Pangaribuan, Y. E. M., Sipayung, K. T., Manurung, L. W., & Situmorang, A. S. (2023). *Students' perception of micro teaching course to their teaching internship at the English Department of HKBP Nommensen University.* Journal on Education, 6(1), 2561–2575. https://doi.org/10.31004/joe.v6i1.3287

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Patriot, E., Wiyono, K., Sriyanti, I., Nazhifah, N., Fitonia, A., Nadia, H., … & Sari, N. (2023). *Enhancing the skills of physics MGMP teachers in making differentiated e-modules.* Transformasi Jurnal Pengabdian Masyarakat, 19(2), 272–282. https://doi.org/10.20414/transformasi.v19i2.8441

Pattaufi, P., Aswan, D., & Hakim, A. (2023). *The development of teaching material for blended learning: A strategy to improve students' creativity and innovation in the 21st century.* Journal of Educational Science and Technology (EST), 9(1), 19. https://doi.org/10.26858/est.v9i1.37916

Purwanty, R., Nirtha, E., Hurit, A. A., & Ismail, M. (2024). *Opportunities and challenges for the implementation of online and offline learning in social studies teaching material development courses.* Indonesian Journal of Instructional Media and Model, 6(1), 1–8. https://doi.org/10.32585/ijimm.v6i1.5255

Singh, A., & Ishrat, A. (2025). *The role of social support in enhancing self-efficacy and learning satisfaction in online education among secondary school students.* On the Horizon: The International Journal of Learning Futures, 33(3), 320–337. https://doi.org/10.1108/oth-03-2025-0033

Stewart, J., Antonenko, P., Robinson, S., & Mwavita, M. (2013). *Intrapersonal factors affecting technological pedagogical content knowledge of agricultural education teachers.* Journal of Agricultural Education, 54(3), 157–170. https://doi.org/10.5032/jae.2013.03157

Sulaeman, Y., Hikmat, A., & Tarmini, W. (2025). *Development of flipbook electronic teaching materials for implementing the scientific approach in Indonesian language learning for vocational high school students.* AL-ISHLAH: Jurnal Pendidikan, 17(3). https://doi.org/10.35445/alishlah.v17i3.5560

Suyatna, A., Distrik, I., Herlina, K., Suyanto, E., & Haryaningtias, D. (2018). *Developing interactive e-book of relativity theory to optimize self-directed learning and critical thinking skills.* 2011, 020065. https://doi.org/10.1063/1.5054469

Thiagarajan, S., Semmel, D. S., & Semmel, M. I. (1974). *Instructional development for training teachers of exceptional children: A sourcebook.* Minneapolis, MN: Leadership Training Institute/Special Education, University of Minnesota.

Tolmachev, M., Korotaeva, I., Zharov, A., & Белоглазова, Л. (2022). *Development of students' digital competence when using the "Oracle" electronic portal.* European Journal of Contemporary Education, 11(4). https://doi.org/10.13187/ejced.2022.4.1261

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Wulandari, V. D., & Wirdati, W. (2024). *The effect of microteaching lectures in improving nine basic teaching skills for university students.* Ahlussunnah: Journal of Islamic Education, 3(1), 20–31. https://doi.org/10.58485/jie.v3i1.223

Yang, J., Hui, P., Wei-ying, Z., & Huang, R. (2018). *Evaluation of smart classroom from the perspective of infusing technology into pedagogy.* Smart Learning Environments, 5(1). https://doi.org/10.1186/s40561-018-0070-1

Yulando, S., Sutopo, S., & Franklin, T. (2019). *Electronic module design and development: An interactive learning.* American Journal of Educational Research, 7(10), 694–698. https://doi.org/10.12691/education-7-10-4

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