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Integrating Ethnopedagogy-Based E-Learning to Enhance Creativity of Prospective Elementary School Teachers: Student and Lecturer Perceptions

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Abstract: In the digital era, integrating local cultural knowledge through ethnopedagogy makes science learning more contextual and engaging. This study examines the practicality of an ethnopedagogy-based e-learning tool for prospective elementary school teachers using the develop phase of the 4-D model. Practicality was assessed through classroom observations and questionnaires administered to both lecturers and students. Observation showed excellent implementation (average score 99.67%). Lecturers' responses using a 1–5 Likert scale also showed high averages: 4.57 for the Semester Learning Plan, 4.64 for the Student Assignment Plan, 4.41 for the Student Worksheet, 4.35 for Teaching Materials, and 4.55 for the e-learning aspect. Student responses further confirmed the tool's practicality, with scores of 4.35 for understanding ethnopedagogy, 4.75 for LMS engagement, 4.80 for ease of access and use, 4.46 for facilitating creativity, 4.85 for feedback and evaluation, and 5.00 for learning quality. The use of structured questionnaires provided comprehensive insights into the tool's usability, cultural relevance, and effectiveness in facilitating interactive learning. Although minor loading issues occurred, they did not hinder learning. These findings indicate that the ethnopedagogy-based e-learning tool is highly practical and supports effective, culturally responsive science education at the elementary level.

Keywords: Creativity; E-learning; Ethnopedagogy; Prospective teachers; Science learning

Introduction

Education in the era of the Industrial Revolution 4.0 is expected to enhance quality to achieve the Sustainable Development Goals (SDGs). These global changes have transformed not only teaching methods but also the structure of learning processes to suit the preferences of today's generation better (Dunwill, 2016; Morrar et al., 2017; Hussin, 2018). In this context, the integration of technology into education is no longer optional; it is essential. However, responding to these transformations requires more than just adopting new technologies; it demands innovative and sustainable systemic solutions (González-Salamanca et al., 2020). One such innovation is the Learning Management System (LMS), which plays a crucial role in reshaping educational mechanisms (Gunawan et al., 2019). LMS platforms provide an essential framework for delivering, managing, and tracking e-learning content in a structured and accessible manner. They support course management, interactive learning, assessments, feedback, and progress monitoring, making them the backbone of modern e-learning (Bradley, 2021; Veluvali & Surisetti,

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2022). To effectively respond to the demands of this era, education must not only leverage technology such as LMS but also cultivate essential 21st-century competencies, particularly creativity, as a critical skill for innovation and problem-solving in a rapidly evolving world.

In the 21st century, one of the most essential skills that education must cultivate is creativity, which enables learners to solve problems, generate innovative ideas, and adapt to complex environments. Creativity is increasingly seen as a vital component in global competitiveness and is closely linked to knowledge generation and technological advancement (Wu et al., 2014; Henriksen et al., 2016). LMS can provide learning content and information media to facilitate interaction between lecturers and students. Many students reported that accessing various resources through the LMS in a blended learning environment was very useful in understanding the material (Pektas & Gurel, 2014). Online learning platforms, such as Learning Management Systems (LMS), serve as facilitators and media for delivering content, administering assessments, and collecting assignments (Gunawan et al., 2019). LMS helps students practice using virtual classes well and optimizes learning outcomes (Cavus, 2015). LMS facilitates the provision of feedback on tasks, encourages active user involvement, and enables more accessible communication (Rubin et al., 2010). Moodle LMS can increase student activity, independence, and achievement (Juwita et al., 2012) and train creativity (Gunawan et al., 2019).

LMS continues to develop to facilitate students' learning experiences by offering flexible, accessible, and interactive environments. However, for these digital platforms to be more meaningful and contextually relevant, their integration with pedagogical approaches rooted in local wisdom is essential. One such approach is ethnopedagogy, which emphasizes understanding and appreciating diverse cultural backgrounds and learning contexts (Selasih & Sudarsana, 2018). Integrating LMS with ethnopedagogy enables educators to design culturally responsive digital learning experiences that align with students' values and identities. Moreover, ethnopedagogy can be instilled to build identity through cultural potential and serve as an alternative solution to educational problems that often arise from uniform, decontextualized instruction (Putra, 2017). However, local wisdom-based science learning in Indonesia faces several challenges, including the implementation of the curriculum, teacher quality, student motivation, and limited facilities. Strengthening teacher training, engaging students, and improving infrastructure are key to supporting its success (Hikmawati et al., 2021).

This integration offers a dual advantage: while the LMS provides structure, accessibility, and technological innovation, ethnopedagogy enriches the content with relevance and cultural depth. The synergy between the two supports the development of prospective teachers who are not only technologically literate but also culturally aware and sensitive. Importantly, ethnopedagogy offers a unique perspective that can foster creativity, a key attribute for educators in the 21st century. The integration of LMS tools and ethnopedagogy not only promotes a more inclusive and culturally responsive educational environment but also empowers future educators with the skills and knowledge necessary to nurture creativity in their students.

Based on the background that has been described, it is necessary to implement LMS tools based on ethnopedagogy to improve learning quality and provide meaningful learning experiences for prospective teacher students. This study aims to determine the practicality of ethnopedagogy-based e-learning tools in elementary science learning courses. In addition, it seeks to assess the potential for broader and more sustainable implementation of these tools within the context of teacher education. The focus is on exploring how the integration of technology and local cultural values can support future educators in delivering contextually relevant and culturally responsive instruction.

Method

This study is a continuation of a previous Research and Development (R&D) project that adopted the 4-D model (Define, Design, Develop, Disseminate) developed by Thiagarajan et al. (1974). The earlier phase of the research focused on designing and developing ethnopedagogy-based Learning Management System (LMS) tools for the "Elementary Science Learning" course. The products generated in the previous phase included teaching materials, a semester learning plan (RPS), assignment designs, student worksheets, and a creativity test. The current study is in the Development phase and focuses specifically on a limited trial, aiming to test the practicality of implementing LMS tools in real classroom settings. The activity flow at the limited trial stage is illustrated in Figure 1.

The limited trial was conducted with participants from the Primary School Teacher Education Program (PGSD) at the Faculty of Teacher Training and Education, University of Mataram. The research subjects were prospective teachers enrolled in the "Elementary Science Learning" course. During this phase, the ethnopedagogy-based LMS tools were implemented during course sessions. Data collection focused on two key aspects: the implementation of the learning process

and the practicality of the LMS tools. The instruments used were developed during the initial stages of the research and consisted of a lesson implementation observation sheet and a lecturer response questionnaire.

Trained observers used the observation sheet to monitor the implementation of LMS tools during the learning process. At the same time, the lecturer's response questionnaire employed a Likert scale to gather feedback on the practicality and usability of the tools from instructors. Data from the lesson implementation observation were analyzed using descriptive quantitative methods, calculating the average percentage of implementation across all indicators. These percentages were then categorized into four levels: very well implemented (76–100%), well implemented (56–75%), fairly implemented (40–55%), and poorly implemented (below 40%). Meanwhile, data from the lecturer response questionnaire were analyzed using descriptive statistics, specifically the mean score of each item and dimension. The practicality level was interpreted based on a five-point Likert scale, with categories ranging from very practical (4.21–5.00), practical (3.41–4.20), fairly practical (2.61–3.40), less practical (1.81–2.60), to not practical (1.00–1.80). These analyses provided the basis for determining the practicality of the ethnopedagogy-based LMS tools during the limited implementation phase.

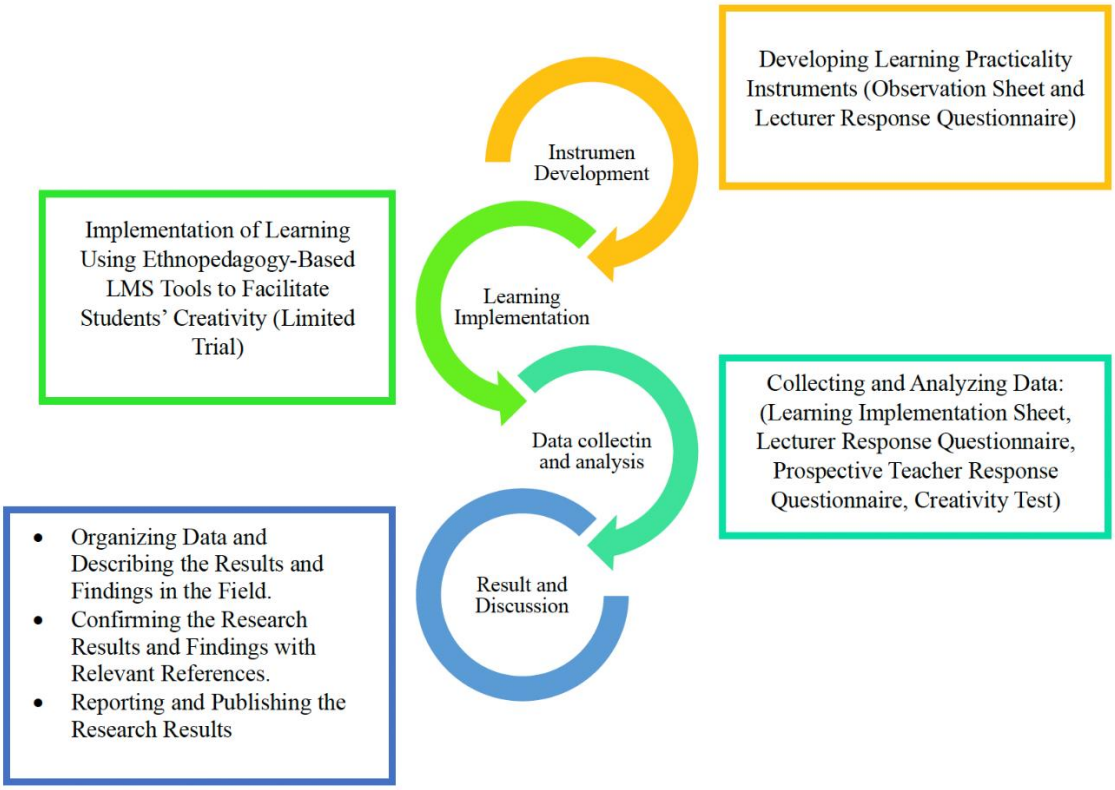

Figure 1. Activity flow at the limited trial stage

Result and Discussion

In the era of modern education, using LMS for e-learning has become essential in improving the quality of learning, especially in the context of teacher education. Ethnopedagogy-based e-learning offers a unique approach by integrating local cultural values into the learning process, enabling prospective teachers to understand academic material concepts and develop creativity relevant to the local community context. In elementary science learning courses, this e-learning device is expected to be an effective facilitator that encourages the creativity of prospective teachers through more contextual, interactive, and innovative learning activities.

This research aims to determine the practicality of ethnopedagogy-based e-learning tools in elementary science learning courses. With specially designed tools, this research focuses on how an ethnopedagogy-based e-learning can facilitate aspects of creativity, such as fluency, flexibility, originality, and elaboration, through implementation in science learning. The results of this research can contribute to the development of more effective and contextually relevant learning tools in education. Data on the practicality of ethnopedagogy-based e-learning tools consists of learning

implementation, lecturer response questionnaires, and student response questionnaires.

This research is devoted to integrating ethnopedagogy in science learning for prospective elementary school teachers. Students can access teaching tools through the online learning platform. Lecture activities using e-learning are conducted both offline and virtually in elementary science learning courses. Through this online learning platform, students can access teaching materials in the form of materials that include the nature of science and ethnopedagogy-based science learning, ethnopedagogy-based science learning, elementary science learning models, media and teaching aids for ethnopedagogy-based science learning, ethnopedagogy-based science process skills, as well as evaluation of elementary science learning which is integrated with creativity tests.

Overall, the learning steps in offline e-learning meetings have been implemented well. At the first meeting, in terms of introducing e-learning, some students were not yet able to log it login to the e-learning account, so the lecturer had to tell the steps that must be taken to enter the e-learning access via replacement password in the academic information system The next activity is browsing Ethnopedagogy-Based Elementary Science Learning courses in the collection of courses offered on e-learning. After the course is found, the student inputs their enrollment key, and students can explore various Ethnopedagogy-based learning tools already available in the e-learning platform.

In the second meeting regarding ethnopedagogy-integrated science learning, the implementation of learning activities was also carried out well, as indicated by the observation sheet. Students are given time to access teaching materials in the form of electronic books containing various ethnopedagogical materials related to science learning, as well as teaching materials used in elementary schools. Apart from being provided with teaching materials in the form of electronic books, students can also access videos that explore the relationship between ethnopedagogy, specifically the Sasak, Samawa, and Mbojo tribes, via the link provided in the e-learning platform.

Table 1. Recapitulation of observation results of learning implementation

Aspect	Percentage of meeting implementation (%)						Average (%)	Criteria
	Meeting 1	Meeting 2	Meeting 3	Meeting 4	Meeting 5	Meeting 6		
Introduction	100	100	100	100	100	100	100	Very good
Core activities	98	100	100	100	100	96	99	Very good
Closing activities	100	100	100	100	100	100	100	Very good
Average							99.67	Very good

Based on Table 1, the results of the observations on learning implementation show that the average implementation score is above 80, indicating that the ethnopedagogy elementary science learning lecture activities using e-learning have been carried out very well. Students can access and utilize both the tools and teaching materials available in e-learning.

Several obstacles to implementing the courses include an unstable campus internet connection, which affects the speed of access to teaching materials, especially those in the form of videos related to ethnopedagogy in ethnic groups, such as Sasak, Samawa, and Mbojo. Apart from that, the absence of an index checking feature for the similarity of student assignments is also impacted when the lecturer corrects the results of student assignments at the 2nd to sixth meetings. Practicality data is also based on lecturers' responses to ethnopedagogy-based e-learning tools; the following data on the results of the lecturers' responses are in Table 2.

Table 2. Data from lecturer responses to ethnopedagogy-based e-learning tools to increase the creativity of prospective elementary school teachers in elementary science learning subjects

	Aspects of semester learning plan	Aspects of student assignment plan	Aspects of student worksheet	Aspects of teaching materials	Aspects of e-learning
Lecturer 1	4.71	4.86	4.50	4.47	4.60
Lecturer 2	4.43	4.57	4.25	4.27	4.50
Lecturer 3	4.71	4.71	4.38	4.27	4.50
Lecturer 4	4.43	4.43	4.50	4.40	4.60
Average	4.57	4.62	4.41	4.35	4.55

The ethnopedagogy-based e-learning tool applied in elementary science learning courses has received various positive responses from the lecturers involved. This response was obtained from four science teaching lecturers from state and private universities in West Nusa Tenggara. The analysis results of five essential

aspects, namely the Semester Learning Plan, Student Assignment Plan, Student Worksheets, teaching materials, and e-learning, show that this tool is generally considered effective in achieving learning goals and supporting the creativity of prospective elementary school teachers.

Most lecturers stated that the learning achievement indicators and objectives were appropriate and clear in the Semester Learning Plan aspect. With a Likert Scale of 1-5, the average lecturer response regarding this aspect was 4.57, indicating that most lecturers rated this component as being in the "Very Good" to "Good" category. However, several lecturers suggested making the indicator formulation more specific and easier to understand. Learning steps are also assessed according to the blended learning approach applied, although there are proposals to increase flexibility in the allocation of learning time. Using straightforward and easy-to-understand language has received appreciation from almost all lecturers.

For the Student Assignment Plan aspect, the average lecturer response reached 4.64, placing it in the "Very Good" category. The lecturer assesses that the assignments given are based on the learning outcomes and objectives, as well as the form and type of assignments that support the blended learning method. However, there are suggestions that the instructions and assignment assessment criteria be made more explicit to make it easier for students to understand the assignments given.

In the Student Worksheet aspect, the average lecturer response was 4.41, indicating a rating between "Good" and "Very Good." Lecturers feel that the learning activities prepared align with the Student Learning Plan and can facilitate the development of student creativity. The appearance of the Student Worksheet also received a positive response, but suggestions were made to make it more varied and interactive to increase its attractiveness to students.

The teaching material aspect received an average score of 4.35, also in the "Good" category. The material presented is considered attractive, has a scope and depth appropriate to the student's level of development, and is relevant to everyday life. However, the lecturer suggested enriching the material with more relevant examples and increasing interaction between students and learning resources.

Finally, in the e-learning aspect, the average lecturer response was 4.55, which places it in the "Very Good" category. Lecturers expressed appreciation for the appearance and features provided, as well as the accessibility of the content, which makes learning more accessible for students. The e-learning used is also considered effective in helping students develop their creativity.

Overall, the ethnopedagogy-based e-learning tools applied in elementary science learning courses were assessed positively by the lecturers. Ratings are carried out using a scale of 1-5, where a score of 5 means "Very Good," a score of 4 means "Good," a score of 3 means "Fairly Good," a score of 2 means "Not Good," and a score of 1 means "Not Good." This tool aligns with learning objectives, is relevant to the blended learning approach, and can foster student creativity and engagement. With several improvements in the clarity of assignment instructions, time flexibility, increased interaction, and variations in the display of teaching materials and student worksheets, it is hoped that the e-learning tool will be more effective in supporting elementary science learning lectures for prospective teachers.

E-learning systems packaged in LMS are increasingly used to provide efficient learning services. Extensive data-based e-learning systems can support more flexible and customized course delivery and personalized learning (Liu & Yu, 2023). E-learning also benefits students from their perspective and positively impacts their performance by providing them with a better understanding of the course material being studied (Mahajan, 2023). Learning with an e-learning system that is integrated with local wisdom can also make learning more effective, as it increases the relevance of the material to the student's cultural and environmental context, making learning more meaningful and easier to understand (Qurniati & Wahyudiati, 2023). Two advantages of integrating local wisdom into science education are the preservation of local knowledge and the growth of students' character. Through formal education combined with indigenous knowledge, students develop a feeling of self-awareness and self-recognition that can foster a love for the nation and other Pancasila values (Erfan et al., 2024). Moreover, studies show that local wisdom-based approaches significantly enhance students' critical thinking skills, with notable differences observed between the effectiveness of local wisdom-based guidance and guided inquiry models. Teachers are encouraged to pose more reasoning-based questions and consistently guide students to foster critical thinking (Mulatsih et al., 2023).

Data were collected through questionnaires administered to students to evaluate the practicality of ethnopedagogy-based e-learning tools in enhancing the creativity of prospective elementary school teachers. This questionnaire consists of several indicators, including understanding of ethnopedagogy, involvement in e-learning activities, ease of access and use of the e-learning, increased creativity through the e-learning, feedback and evaluation of the e-learning, and the quality of the learning delivered. Each indicator is measured through several statements to which students

must respond using a Likert scale, ranging from strongly disagree to agree strongly.

The results of this questionnaire provide an overview of student perceptions of various aspects of e-learning used during science learning. The collected data is processed to produce an average score for each indicator, which is then categorized to provide a more straightforward interpretation. Figure 2 below presents student response data based on each indicator that has been measured, which will then be used as a basis for analyzing the effectiveness of e-learning tools in supporting student creativity and understanding in this course.

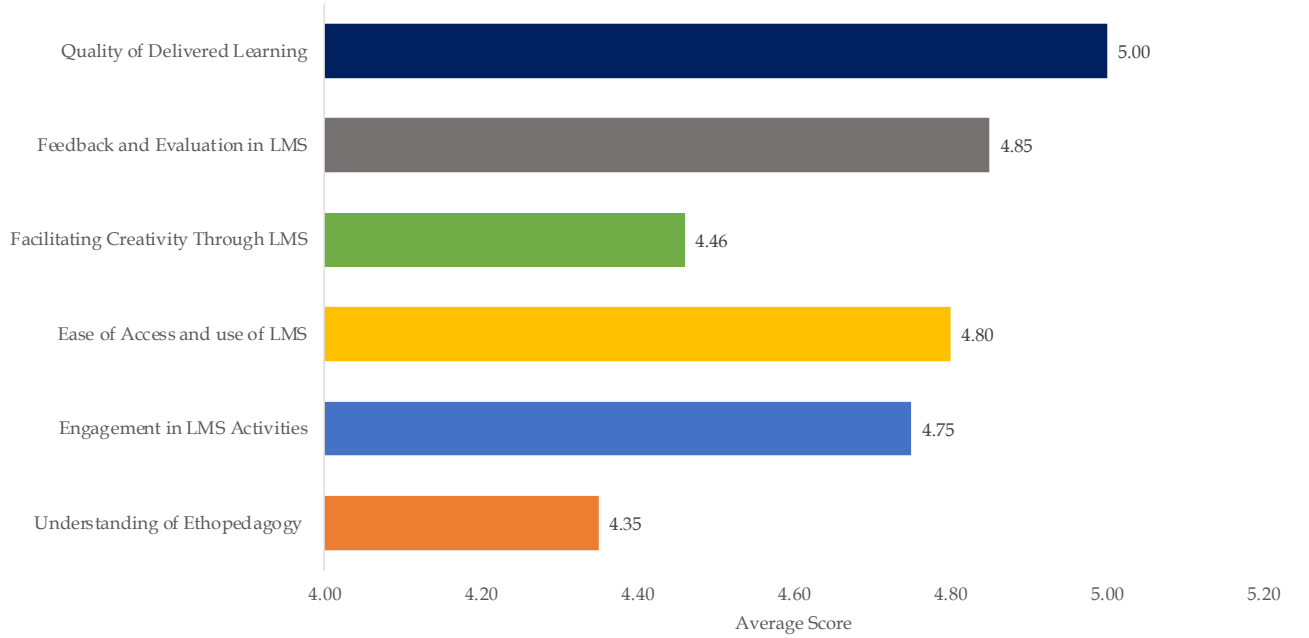

Figure 2. Student response results

The figure above presents the average score results from 95 students' responses to the effectiveness of ethnopedagogy-based e-learning tools in various predetermined indicators. The indicator with the highest score is "Quality of Learning Delivered," with an average score of 5.00. This finding suggests that students value the quality of material presented through e-learning, aligning with previous research that indicates high-quality digital content can enhance students' understanding and learning satisfaction (Karim et al., 2024; Cholik & Umaroh, 2023). Constructivist learning theory supports these findings, where good material delivery facilitates a more effective learning process.

The ethnopedagogy-based e-learning tool has achieved its primary goal: providing high-quality learning, which students recognize as an essential factor in their learning experience. A perfect score on the "Quality of Learning Delivered" indicator indicates that this e-learning presents material effectively and is relevant to the cultural context adopted in the learning process. Previous research supports these findings, suggesting that when learning content is delivered with cultural context in mind, it can increase student engagement and encourage deeper understanding (Fauzan & Santoso, 2023; Harputra & Ramadhani, 2023). In addition, within the framework of constructivist learning theory, where learning is considered an active process shaped by previous experience and knowledge, high-quality material is essential to help students connect new concepts with their existing understanding (Asmendri & Sari, 2018). Therefore, these results emphasize the importance of maintaining and continually improving the quality of material delivered via e-learning to ensure successful learning in the future.

The indicator "Feedback and Evaluation in e-learning" had a mean score of around 4.85, indicating that students were satisfied with their feedback. This finding aligns with research conducted by Maulia (2023), which demonstrates that effective feedback helps correct mistakes and motivates students to continue learning and improving themselves. In Ethnopedagogy-based learning, feedback adapted to students' cultural context can also provide more profound and more relevant meaning to the material being studied, thereby increasing their involvement and understanding (Hidayat et al., 2023). In line with this, ethnoscience offers a solution to support teachers and students in

achieving their learning goals, particularly by enhancing student creativity (Andani et al., 2020).

The graph above also shows that the "e-learning, Ease of Access and Use" indicator received an average score of 4.80. This indicates that students found the e-learning platform very easy to use, which positively contributed to their engagement in the learning process. A user-friendly e-learning minimizes technical barriers and allows students to access material, participate in activities, and communicate with lecturers and peers more efficiently. This is in line with the findings in the Technology Acceptance Model (TAM) theory developed by Davis (1989), which emphasizes that user perceptions of ease of use are one of the main predictors of adoption and continued use of technology. When students feel comfortable and do not experience difficulties operating the LMS, they tend to be more involved in learning, which can improve their learning outcomes (Rubin et al., 2010). Integrating interactive teaching materials into an LMS enhances learning quality in elementary schools. This approach also encourages active, creative, and innovative student engagement (Sanjaya et al., 2024).

Ease of access and use of e-learning is also closely related to increasing students' self-confidence in using educational technology. When students feel that they can operate the e-learning, this can increase their confidence in facing other online learning challenges. Research has shown that the ease of using technology in education can also reduce the technology anxiety often experienced by students, especially those less familiar with digital platforms. Thus, well-designed e-learning increases learning effectiveness and promotes inclusivity, ensuring that all students can participate fully in learning activities, regardless of their technical expertise. This aspect becomes crucial in ethnopedagogy-based learning, where the diversity of students' cultural backgrounds and technological experiences must be considered to create an inclusive and supportive learning environment.

The indicator for Facilitating Creativity Through LMS obtained an average score of 4.46, which shows that although e-learning has supported student creativity, there is still potential for further development. These results indicate that the existing e-learning already provides several features and facilities that encourage students to think creatively but may need to be more adequate for creating an environment that genuinely supports exploration and innovation. In learning contexts, creativity often requires more than just access to information. Space also needs space that allows students to experiment, think outside the box, and try new problem-solving approaches. The integration of local wisdom in science learning received positive student responses and effectively supported engagement, collaboration, creativity (Hariana et al., 2023), cultural awareness and and students' love of local culture (Setianingrum et al., 2023). Research conducted by Pakaya & Hakeu (2023) confirms that a supportive environment, including support from learning technology, is essential to facilitate the creative process in education.

These results also highlight the importance of developing more specific e-learning features to encourage creativity. For example, providing more dynamic collaboration tools, interactive discussion forums, or platforms for sharing creative projects could be an excellent step to increase students' creative potential. On the other hand, lecturers can also play an essential role in encouraging creativity by providing challenging assignments that require creative thinking and using e-learning as a tool for idea exploration. Within the framework of constructivist learning theory, it is essential to create learning experiences that encourage students to build their knowledge through creative and innovative activities. Thus, further development of this e-learning, in terms of features and teaching strategies, will be significant in maximizing students' creative potential and improving the overall quality of learning.

The "Involvement in e-learning, Activities" indicator, which received a score of 4.75, shows that this e-learning effectively encourages active student participation in various learning activities. This high involvement is significant because, according to the theory of involvement put forward by Prijanto & Kock (2021), active participation in learning activities is one of the primary keys to achieving meaningful and impactful learning. Students who are actively involved in e-learning activities tend to have a better understanding of the material being taught because they interact more frequently with the content and their peers, and receive feedback from lecturers more often. This emphasizes the importance of designing e-learning activities that stimulate student participation through discussions, interactive assignments, or collaborative projects.

A high score on the "Involvement in e-learning, Activities" indicator not only indicates the effectiveness of e-learning in encouraging participation but also reflects the ability of e-learning to provide various forms of relevant and engaging activities for students. The diverse and challenging activities in e-learning enable students to apply the theory they have learned in practice, an essential aspect of the learning process. When students engage in activities such as discussions, interactive quizzes, or group projects, they learn individually and benefit from social learning. Social learning theory supports this, stating that interaction with others and a supportive social context can improve learning outcomes (Chuang, 2021; Hariyadi et al., 2021). Therefore, developing richer and more interactive

activities within the e-learning platform can further strengthen student engagement and increase overall learning effectiveness.

Supporting this, the study by Ali & Zaini (2023) found that the use of interactive e-modules based on local wisdom, utilizing Android, significantly improved students' Higher Order Thinking Skills (HOTS). The modules encouraged learners to analyze, evaluate, and create, while also promoting a deeper understanding of cultural values. This shows that when digital learning tools are designed with both interactivity and cultural relevance, they not only enhance critical thinking but also foster a sense of identity and engagement among students.

Meanwhile, the "Understanding of Ethnopedagogy" indicator, with a score of approximately 4.35, indicates that e-learning is also quite successful in helping students grasp the concept of ethnopedagogy. Although the score is slightly lower than other indicators, these results still demonstrate that e-learning has significantly facilitated the understanding of material related to this culture-based educational approach. According to engagement theory, a deep understanding often results from active participation and meaningful interaction with learning materials. In the context of ethnopedagogy, this means that e-learning not only functions as a platform for delivering content but also as a tool that allows students to explore and understand the cultural values on which the approach is based. Thus, to further enhance students' understanding of ethnopedagogy, the content and delivery methods in e-learning should be further developed, such as integrating more real-world cases or assignments involving local cultural analysis.

In terms of "Understanding of Ethnopedagogy," although the score obtained is slightly lower, this still shows that e-learning has contributed positively to helping students understand ethnopedagogy concepts. Good e-learning presents information and facilitates reflection and application of those concepts in relevant cultural contexts. However, a more integrative approach may be necessary to deliver ethnopedagogical material effectively and achieve a deeper understanding. For example, adding local case studies, interviews with community leaders, or field projects documented in the e-learning can provide students with a new, more accurate, and contextual dimension. E-learning is not only a passive learning tool but also a means that enriches students' learning experiences, especially in understanding and applying ethnopedagogical principles in their future educational practices (Kesuma, 2021). Thus, e-learning with an LMS is essential for supporting effective learning. Easy access to these resources through platforms increases student interest, allows flexible, anytime-anywhere learning (Satriani et al., 2023), and support higher order thinking skills (Ertikanto et al., 2023).

Conclusion

Based on the results, the ethnopedagogy-based e-learning tool for elementary science learning has been proven highly practical. This is supported by an excellent implementation score of 99.67% from classroom observations. Lecturers rated all components highly on a 1–5 Likert scale, with scores ranging from 4.35 to 4.64. Students also provided very positive responses, with scores of 4.80 for ease of access and use, 4.85 for feedback and evaluation, and 5.00 for overall learning quality. Both lecturers and students found the tool to be easy to use and well-aligned with their learning needs. Although minor technical issues, such as internet access, were reported, these did not significantly hinder the learning process. Overall, the e-learning tool is not only practically feasible but also contributes meaningfully to enhancing culturally relevant science education and stimulating creativity among prospective elementary school teachers.

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Conceptualization, M.E. and I.; methodology, project administration, N.M.Y.S.; formal analysis, N.M.Y.S. and S.I.; investigation, M.E. and N.M.Y.S.; resources, N.K.D.; data curation, I.; writing—original draft preparation, funding acquisition, M.E.; writing—review and editing, N.M.Y.S. and I.; visualization, supervision, S.I. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest
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