

The Development of an Ethnopedagogical LMS to Enhance the Creativity of Elementary School Teacher Candidates in Learning Science Course

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Abstract. This research aims to develop an ethnopedagogy-based LMS tool to increase the creativity of prospective teacher students. This research is included in development research that adopts the 4D model. In this research, an ethnopedagogy-based LMS tool was produced that is oriented towards the creativity of prospective elementary school teachers. The tools developed are semester learning plans, student assignment plans, teaching materials, student worksheets, and creativity test instruments. The learning tools developed are integrated into the LMS so that users can access them online. The validity testing stage of the device was carried out by three experts. The validation test results were then analyzed using Aiken's V to determine the validity index of the content of the device being developed. Based on the results of data analysis, it can be concluded that the device developed is valid for use. Ethnopedagogy-based LMS tools can be used to train the creativity of prospective teacher students in elementary school science learning.

Keywords: Creativity; Ethnopedagogical; Learning management system; Learning Science

Introduction

Education in the era of the Industrial Revolution 4.0 is expected to improve education quality to achieve Sustainable Development Goals (SDGs). Achieving the SDGs in this era continues to change teaching methods and the organization of the learning process (Goel et al., 2020). The changes in Education 4.0 truly reflect the learning preferences of the current generation. Education must adapt to the changes brought about by the Industrial Revolution 4.0. It is time for educators to consider integrating more technology into learning (Hussin, 2018). Therefore, addressing such transformations requires a holistic approach that includes innovative and sustainable system solutions, not just technological ones (Morrar et al., 2017). Technological changes in the education sector are not only in concepts but also in the mechanisms of education itself (Gunawan et al., 2019). One effective technology

for learning today is the learning management system (LMS).

LMS can provide learning content and information media to facilitate interaction between lecturers and students. Many students stated that accessing various resources via LMS in blended learning was very useful in understanding the material (Pektas & Gurel, 2014). Online learning platforms such as LMS are used as facilitators media for delivering material, assessments, or collecting assignments (Gunawan et al., 2021). LMS helps students practice using virtual classes well and optimizes learning outcomes (Cavus, 2015). LMS makes it easier to provide feedback on tasks, supports active user involvement and offers more accessible communication (Rubin et al., 2010). Moodle LMS can increase student activity, independence, and achievement (Juwita, 2012) and train creativity (Gunawan et al., 2019).

LMS continues to develop in facilitating students' learning experiences. This role will be more effective

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with the integration of LMS into the field of ethnopedagogy. Ethnopedagogy is rooted in understanding and appreciating diverse cultural backgrounds and contexts (Oktavianti & Ratnasari, 2018). Apart from that, ethnopedagogy can be instilled to build an identity with cultural potential and become an alternative to solving educational problems (Putra, 2017). Ethnopedagogy offers a unique perspective that educators can use to enhance the creativity of prospective teachers.

The integration of LMS tools and ethnopedagogy not only fosters a more inclusive and culturally responsive educational environment but also empowers future educators with the skills and knowledge necessary to nurture the creativity of their future students. The reciprocal relationship between creativity and technology will create better educational outcomes (Henriksen et al., 2016). Creativity is critical to 21st-century success. Creativity plays an essential role in gaining global competition, where creativity is knowledge from the human brain, which can change something to be more valuable and offer a competitive advantage (Wu et al., 2014). A person's creativity can provide a good handling of problems and analyze them appropriately (Gunawan et al., 2019). Education needs to facilitate students' development of creativity that spans various disciplines and use technological tools for creative solutions and results (Henriksen et al., 2016).

Based on the background that has been described, it is very necessary to implement LMS tools based on ethnopedagogy to improve the quality of learning so that it can increase the creativity of prospective teacher students. An ethnopedagogy-based LMS in science learning can help students more creatively manage science learning at the elementary school level by highlighting the cultural theme or background of each student. Apart from that, developing LMS is important because in the process, LMS provide virtual classroom settings that support the learning process and students are encouraged to work together with other people in completing assignments (Bradley, 2021). This can help them to develop skills that are important for creativity, such as the ability to collaborate with others and share ideas. This research aims to produce ethnopedagogy-based LMS tools. Learning components related to teaching materials and learning media are integrated into an ethnopedagogy-based LMS platform, so that students can access learning at any time and can still interact with educators as facilitators. Combining LMS and ethnopedagogical tools, we will investigate the transformative potential of this approach, examining how it can shape the creativity of student teachers.

Method

The procedure in this research was adapted from the 4-D modelling tool by Thiagarajan et al. (1974). This model consists of 4 development stages: define, design, develop and disseminate. The stages for this research and development can be seen in Figure 1.

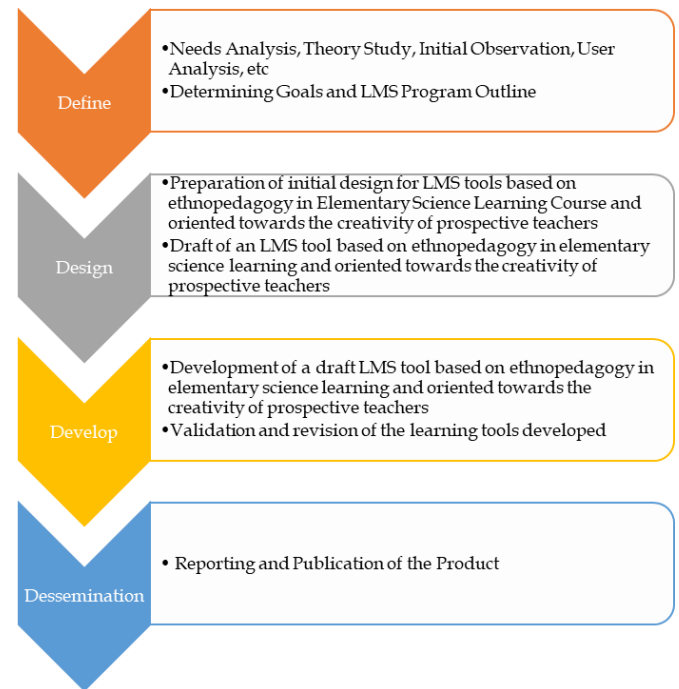


Figure 1. The research and development stages with 4D models

At the define stage, brainstorming, content analysis and appropriate literature review are carried out. At the design stage, the program structure and detailed content are determined. Flowcharts and storyboards from the LMS tool are designed in this section. At this stage, the product is also produced. Every detail of the content has been prepared for further development.

The next stage is developing and creating elements of an ethnopedagogical-based LMS tool oriented towards prospective teachers' creativity as planned. Three experts then validated the designed LMS device. This expert validation validates the content and construction of the learning tools that have been developed.

The validity of learning tools is calculated based on assessments from three experts using the following equation:

$$V = \frac{\sum \text{Average Score of Each Expert}}{\text{Number of Expert}} \quad (1)$$

The V value is then interpreted based on the following table:

Table 1. Validity Assessment Criteria

Average score	Criteria
$4.2 \geq V \leq 5.0$	Very valid
$3.4 \geq V < 4.2$	Valid
$2.6 \geq V < 3.4$	Fairly valid
$1.8 \geq V < 2.6$	Less valid
$2.6 \geq V < 1.8$	Invalid

The validity of the learning tools was also analyzed using Aiken's V formula (Aiken, 1997)

$$V = \frac{\sum(s)}{n(c - 1)} \tag{2}$$

Result and Discussion

The ethnopedagogy-based LMS tool is an innovative tool that combines online learning technology with ethnopedagogical principles to form prospective teachers with higher creativity. This system is specifically designed to support science learning at the elementary school level with an approach appropriate to the diversity of students' cultures and backgrounds.

This tool consists of a Semester Learning Plan, Student Assignment Plan, Teaching Materials, Student Worksheets, Creativity test instruments integrated into the LMS-tools related to local wisdom and online collaboration between prospective teachers. With an ethnopedagogical approach, this LMS adapts teaching methods and learning materials based on cultural context and student experiences, creating a more relevant and in-depth learning environment. In this research, we have succeeded in developing an ethnopedagogy-based LMS tool for elementary school science learning courses to increase the creativity of prospective teacher students. This research uses 4-D model development stages. The limitations of this research are the development stage, which includes validity testing by 3 (three) experts.

At the define stage, brainstorming, content analysis and appropriate literature review are carried out. Many parts are decided in this section, such as the equipment needed, the number of instruments to be developed, the type of instrument chosen, the material in elementary science learning courses, and who will be involved or involved in this research. Apart from that, an analysis of the learners (students), task analysis, concept analysis and specification of learning objectives were also carried out. Febrian et al., (2021) stated that it is important to analyze needs related to the problems faced by students and their needs, so that the e-learning that is developed will be able to facilitate these needs.

The results obtained from literature studies and field studies have been explained at the define stage.

Overall, these results show that several problems need to be resolved. Learning innovation is necessary to support the learning process and produce more optimal results, especially using practical learning tools.

At the design stage, the ethnopedagogical-based LMS learning tool is carried out. The main objective of the design stage is to prepare a device prototype, such as preparing tests, selecting media and selecting format. At this stage, an initial draft of tools is also produced, including Semester Learning Plan, Student Assignment Plan, Student Worksheets, teaching materials and test instruments adapted to elementary school science learning courses. This device is integrated into the LMS so that the learning process uses a blended learning model.

At the design stage, the appearance of the e-learning is also designed. The e-learning system uploads device documents such as teaching materials, Student Worksheets, test questions, videos and presentation materials to support learning. The e-learning system is also equipped with a chat feature or discussion room, making it easier for students to discuss or express ideas related to the studied topic. According to Nouraey et al. (2023) stated that several challenges in designing e-learning include developing materials and determining online class duration. Researchers must ensure that online classes can run well.

The test questions designed are in the form of e-assessments. The creativity test is in the form of a description, which includes a verbal creativity test. The creativity test also has indicators: fluency, flexibility, originality and elaboration. In the verbal creativity test, students will directly type their answers in the column provided on the LMS. They can upload several documents for test purposes in the column provided on the LMS.

The third stage in this research is the development stage. This stage is carried out after completing the define and design stages. Learning tools were produced as Semester Learning Plan, Student Assignment Plan, Student Worksheets, teaching materials and creativity test instruments in making the initial product. The initial product creation was based on the applicable curriculum in the Mataram University FKIP Primary School Teacher Education Study Program, namely the Elementary Science Learning course.

Next, the resulting LMS device was tested through a validation test process by three expert validators who reviewed and assessed aspects of content, presentation and learning activities. Based on the validation results, it was found that the device developed was included in the category of validity level that was suitable for use. Table 2 below summarises the validation results by three expert validators for each component of the learning tool.

Table 2 concludes that the validity value of each component of the learning tools developed in this research meets the valid category because the average validity score is in the interval 3.4 – 4.2, and the Aiken index value is above 0.70. The average Semester Learning Plan validity score is 4.26, with an Aiken index of 0.81 in the very valid category. There are several inputs needed to improve the Semester Learning Plan being developed. Comments and suggestions from

expert validators include adding information regarding the limitations of the material listed in the Semester Learning Plan to make it easier for readers to review it. The semester learning plan is developed based on established procedures so that it has a very valid score. Of course, this must really be ensured considering that semester learning plans are useful in preparing learning frameworks such as assignment designs, teaching materials and student worksheets (Utami et al., 2019).

Table 2. The Validation Results

	Semester Learning Plan	Student Assignment Plan	Learning material	Student Worksheets	Instrument of Creativity
Validator I	4.86	4.89	4.90	4.90	4.83
Validator II	4.30	3.83	3.80	3.90	3.78
Validator III	3.61	4.06	3.75	3.75	3.89
Average	4.26	4.26	4.15	4.18	4.17
Aiken's Index	0.81	0.81	0.79	0.80	0.79
Validity Criteria	Very Valid	Very Valid	Valid	Valid	Valid

The Student Assignment Plan is in the very valid category. The validity score is 4.26, with an Aiken index of 0.81. Student Assignment plan is prepared to accommodate student assignments so that they are planned and on target by the Semester Learning Plan being developed. The criticism and suggestions given by the expert validator are that the assignment objectives must be adjusted to the variables to be studied, namely, those related to the creativity of prospective teacher students. The assignments must also be in accordance with the available material and not too burdensome for students. Apart from that, the Student Assignment Plan identity needs to include the name of the material from the related assignment.

The validity test for teaching material score is 4.15 with Aiken index 0.79. Teaching materials with a percentage in the valid or suitable for use category also need to be revised. The expert validator suggested that teaching materials should include examples of integrating science learning with ethnopedagogy, specifically on cultural differences in Sasak, Samawa and Mbojo. According to Ramdani et al. (2021), to encourage students to participate actively in learning activities, teaching materials, including student textbooks, should be as diverse as feasible and have clear instructions. Students' ability to think critically is greatly enhanced by the way that teachers create their lesson plans and use the science learning paradigm. In addition, Doyan et al. (2021) stated that learning tools consisting of teaching materials are expected to be able to effectively facilitate and measure student creativity. Consequently, it may be said that creativity is the capacity for self-discovery and original creation that benefits both the environment and the individual. Something does not have to be brand-new to be

considered innovative. Even if the aspect of novelty has always existed, by combining and building in new ways, a unique quality will be produced (Rahmatiah et al., 2023).

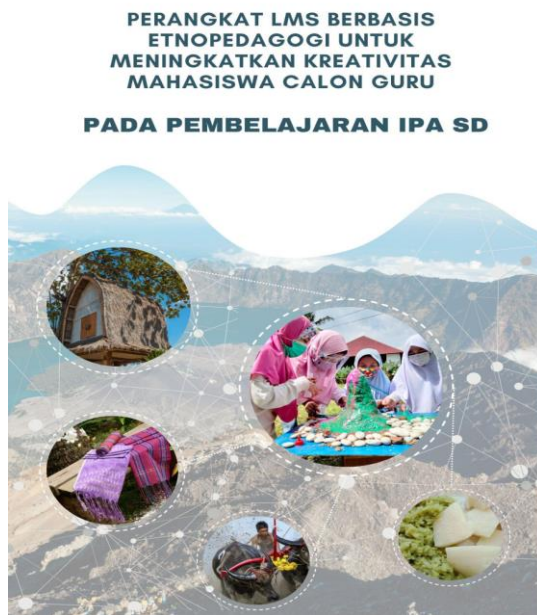
Student Worksheets in in the valid category with an average 4,18 and the Aiken index 0.80. The validation by experts also stated that, the questions listed in the Student Worksheets should also be supplemented with conceptual questions so that mastery of the concepts of Science Learning Course can be facilitated well. According to Meutia et al. (2021) student worksheets presented electronically must be rich with intellectual stimulation. This will facilitate students' understanding in high-level reasoning. In addition, creating student worksheets with a problem-based approach is crucial. The worksheet includes problem-solving techniques that help students become more engaged and passionate about the learning process (Melawati et al., 2022) and the discovery proses to improve critical thinking (Rizki et al., 2021). Apart from that, worksheets based on project work can also increase user creativity (Chalsum et al., 2023).

The creativity test instrument was also tested for validation. The verbal creativity instrument developed also has four indicators spread across the test questions. According to Guilford (1950), the creativity test indicators used include fluency, flexibility, originality, and elaboration (developing ideas in detail). The validation results show that valid category. The average score is 4.17 with Aiken index 0.79. There is a validator suggestion to create a creativity assessment sheet during the learning process that includes each indicator of creativity. The creativity test consist the key components of the capacity to think creatively. Flexibility is for the quantity of answers, originality for the caliber of ideas,

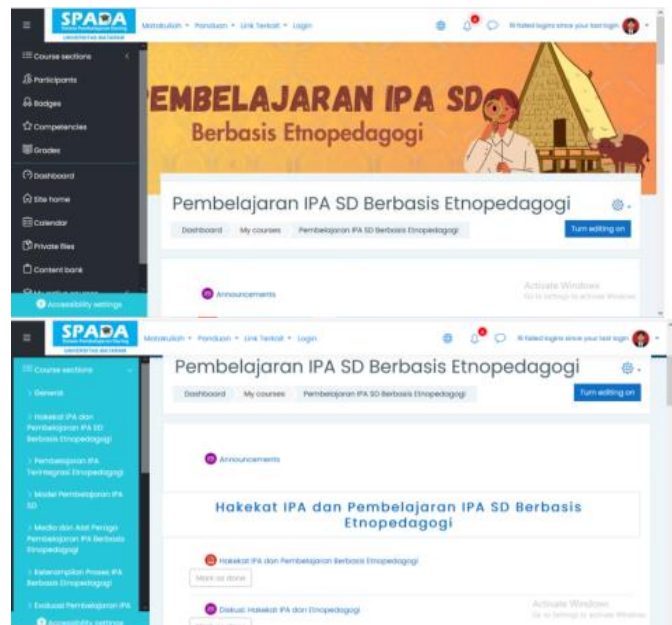
and fluency for the quantity of answers (Weiss & Wilhelm, 2022) and elaboration is the capacity to invent concepts from preexisting ones (Hendrik et al., 2022).

Based on the results of validation by experts, the ethnopedagogy-based LMS tool developed to increase the creativity of prospective teacher students in elementary science learning courses is suitable for use. Some of the suggestions given by each validator were used to improve the learning tools to produce draft 2, which was better than before. The learning tools

developed are then integrated into e-learning using the SPADA LMS platform. The e-learning system uploads several device documents, such as teaching materials, Student Worksheets, videos and virtual simulations to support the learning process. The e-learning system is also equipped with a chat feature or discussion room, making it easier for students to discuss or express ideas related to the studied topic. The following is a display of Ethnopedagogy-Based LMS Tools in Elementary Science Learning Courses that students can access.



(a) Cover of LMS Tools



(b) The Display of LMS

UNIVERSITAS MATARAM FAKULTAS REGURJAN DAN ILMU PENDIDIKAN PROGRAM STUDI PENDIDIKAN GURU SEKOLAH DASAR JURUSAN ILMU PENDIDIKAN		KODE DOKUMEN						
RENCANA PEMBELAJARAN SEMESTER								
MATA KULIAH (MK)	KODE	BOBOT (sk)						
Pembelajaran Sains SD	411222	9 sk						
Mata Kuliah Kualifikasi Berbasis (MKQ)		(TM 3'50') + (T1 3'40') + (BM 3'50')/minggu						
Pengembang RPS		Ketua PRODI						
Tim Teaching		Dr. Siti Istikomah, M.Pd						
OTORISASI/PENGESAHAN								
CPL-PRODI yang dibebankan pada MK								
CP1	SB	Menginternalisasi nilai, norma, dan etika akademik.						
CP2	SP	Menunjukkan sikap bertanggung jawab atas pekerjaan di bidang keahliannya secara mandiri.						
CP3	SDS	Menginternalisasi semangat kemandirian, kejuangan, dan kewirausahaan.						
CP4	P1	Menguasai prinsip dan teori pendidikan di sekolah dasar.						
CP5	P3	Menguasai pengetahuan konseptual bidang studi di sekolah dasar meliputi Bahasa Indonesia, Matematika, IPA, IPS, PKn, SBdP, dan PjO&K.						
CP6	KK1	Mampu menganalisis menerapkan pengetahuan konseptual bidang studi di sekolah dasar melalui perencanaan dan pelaksanaan pembelajaran dengan metode saintifik sesuai dengan etika akademik.						
CP7	KK4	Mampu menganalisis, merekonstruksi, dan memodifikasi kurikulum, pendekatan, strategi, metode, teknik, bahan ajar, media dan sumber belajar yang inovatif/efektif guru kelas di sekolah dasar secara mandiri.						
CP8	KU1	Mampu menerapkan pemikian hagi, kritis, sistematis, dan inovatif dalam konteks pengembangan atau implementasi ilmu pengetahuan dan teknologi yang memperhatikan dan menerapkan nilai humaniora yang sesuai dengan bidang keahliannya.						
CP9	KU5	Mampu mengambil keputusan secara tepat dalam konteks penyelesaian masalah di bidang keahliannya, berdasarkan hasil analisis informasi dan data.						
Capaian Pembelajaran Mata Kuliah (CPMK)								
CPMK 1	Melalui serangkaian kuliah daring dan tatap muka, <i>project based learning</i> , pengujian, dan diskusi mahasiswa semester 5 S-1 PGSD FKIP Unram diharapkan mampu memahami konsep dasar pembelajaran sains SD yang terintegrasi dengan etnopedagogi (SB, SS, P1, P3, KX3, KU1).							
CPMK 2	Melalui serangkaian kuliah daring dan tatap muka, <i>case study</i> dan diskusi mahasiswa semester 5 S-1 PGSD FKIP Unram diharapkan mampu menelaah pembelajaran yang sesuai dengan pembelajaran sains SD berbasis etnopedagogi (SB, SS, P1, P3, KX3, KU1, KU5).							
CPMK 3	Melalui serangkaian kuliah daring dan tatap muka, <i>case study, project based learning</i> dan diskusi mahasiswa semester 5 S-1 PGSD FKIP Unram diharapkan mampu merancang media pembelajaran sains SD berbasis etnopedagogi (SB, SS, P1, P3, KX3, KU1, KU5).							
CPMK 4	Melalui serangkaian kuliah daring dan tatap muka, <i>case study, project based learning</i> dan diskusi mahasiswa semester 5 S-1 PGSD FKIP Unram diharapkan mampu menguraikan keterampilan proses sains SD berbasis etnopedagogi (SB, SS, P1, P3, KX3, KU1, KU5).							
CPMK 5	Melalui serangkaian kuliah daring dan tatap muka, <i>project based learning</i> dan diskusi mahasiswa semester 1 S-1 PGSD FKIP Unram diharapkan mampu merancang perangkat pembelajaran sains SD (SB, SS, P1, P3, KX3, KU1).							
Kemampuan maha siswa belajar (Sub-CPMK)								
Sub-CPMK 1	Menganalisis konsep pembelajaran IPA							
Sub-CPMK 2	Menganalisis pembelajaran IPA terintegrasi etnopedagogi							
Sub-CPMK 3	Menganalisis model-model pembelajaran IPA berbasis etnopedagogi							
Sub-CPMK 4	Menganalisis media pembelajaran IPA berbasis etnopedagogi yang efektif, efisien, dan menarik dalam pembelajaran sains SD							
Sub-CPMK 5	Menganalisis keterampilan proses sains SD berbasis etnopedagogi yang sesuai dengan pembelajaran di SD							
Sub-CPMK 6	Membahas strategi pembelajaran yang sesuai dengan pembelajaran sains SD							
Sub-CPMK 7	Merancang instrumen penilaian pembelajaran sains SD							
Sub-CPMK 8	Merancang perangkat pembelajaran sains SD berbasis yang sesuai dengan kurikulum Merdeka							
Korelasi CPMK terhadap Sub-CPMK								
	Sub-CPMK1	Sub-CPMK2	Sub-CPMK3	Sub-CPMK4	Sub-CPMK5	Sub-CPMK6	Sub-CPMK7	Sub-CPMK8
CPMK 1								
CPMK 2			V					
CPMK 3								
CPMK 4				V				
CPMK 5					V	V		
CPMK 6							V	V

(c) Semester Learning Plans

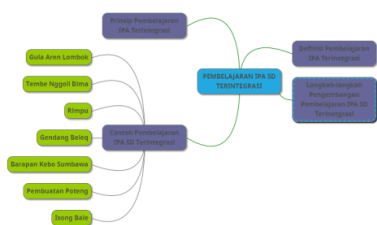
UNIVERSITAS MATARAM FAKULTAS REGURJAN DAN ILMU PENDIDIKAN PROGRAM STUDI PENDIDIKAN GURU SEKOLAH DASAR JURUSAN ILMU PENDIDIKAN	
RENCANA TUGAS MAHASISWA	
Mata Kuliah	Pembelajaran Sains SD
Kode	411222
Dosen Pengampu	Tim Teaching
Bentuk tugas	
Studi Kasus	
Sub-CPMK	
Mengidentifikasi dan menganalisis pembelajaran sains SD terintegrasi etnopedagogi	
Judul tugas	
Mengidentifikasi dan menganalisis jenis-jenis etnopedagogi yang berkaitan dengan pembelajaran IPA SD pada video klip Musik SASAMBO	
Capaian tugas	
Mahasiswa mampu mengidentifikasi dan menganalisis macam-macam etnopedagogi yang berkaitan dengan pembelajaran IPA SD pada video klip Musik SASAMBO	
Deskripsi tugas	
Secara berkelompok, mahasiswa mampu mengidentifikasi dan menganalisis macam-macam etnopedagogi yang berkaitan dengan pembelajaran IPA SD pada video klip Musik SASAMBO	
Metode pengerjaan tugas	
1. Membentuk kelas menjadi beberapa kelompok (1 kelompok = 2-3 orang).	
2. Setiap kelompok menonton video klip musik SASAMBO pada link https://youtu.be/ujTyzdLrg7features=share	
3. Setiap kelompok berdiskusi untuk mengidentifikasi dan menganalisis macam-macam etnopedagogi yang berkaitan dengan pembelajaran IPA SD pada video klip Musik SASAMBO.	
4. Setiap kelompok mempresentasikan hasil kerja kelompoknya pada pertemuan minggu depannya.	
5. Seluruh mahasiswa secara individu mengupload laporan sederhana tugas kelompoknya ke SPADA Unram.	
Indikator, Kriteria, dan Bobot Penilaian	
a.	Objek luaran
	Laporan sederhana terkait macam-macam etnopedagogi yang berkaitan dengan pembelajaran IPA SD pada video klip Musik SASAMBO
b.	Bentuk luaran
	1. Laporan sederhana
	2. Power point sebagai bahan presentasi
c.	Bobot penilaian
	Bobot penilaian tugas ini adalah 12,5% dari dari 100% penilaian mata kuliah ini. Adapun kriteria penilaian meliputi:
	1. Kesesuaian antara etnopedagogi dengan materi pembelajaran IPA SD yang dipilih

(d) Student Assignment Plan

PEMBELAJARAN IPA SD
TERINTEGRASI ETNOPEDAGOGI

BAB I

MIND MAPPING



TUJUAN PEMBELAJARAN

- Setelah mempelajari materi melalui bahan ajar ini, mahasiswa didik dapat:
1. Menjelaskan konsep pembelajaran IPA terintegrasi dengan benar
 2. Menganalisis pembelajaran IPA terintegrasi etnopedagogi dengan benar
 3. Menganalisis pembelajaran IPA terintegrasi etnopedagogi di daerah masing-masing dengan jelas

(e) Learning Material

LEMBAR KERJA MAHASISWA I
PEMBELAJARAN IPA TERINTEGRASI ETNOPEDAGOGI

Nama :
NIM :

Tujuan:

1. Mampu menjelaskan konsep pembelajaran IPA terintegrasi
2. Mampu mengidentifikasi etnopedagogi berkaitan dengan pembelajaran IPA SD
3. Mampu menganalisis muatan pembelajaran IPA terintegrasi etnopedagogi
4. Mampu menyimpulkan muatan pembelajaran IPA terintegrasi etnopedagogi.

Petunjuk:

Simaklah video klip musik Sasambo pada link youtube <https://youtu.be/aj7y2d5Lcg?features=shared> atau video yang disajikan pada sistem e-learning (LMS). Kemudian jawablah pertanyaan pada kolom-kolom yang disediakan.

Kegiatan I

1. Pada video yang telah Anda tonton, identifikasilah beberapa jenis etnopedagogik yang disajikan pada video tersebut.

2. Pada video yang telah Anda tonton juga, analisislah penerapan etnopedagogi dalam pembelajaran IPA masing-masing daerah.

(f) Students' Worksheet

Kisi-Kisi Instrumen Kreativitas

Program Studi : Pendidikan Guru Sekolah Dasar
Mata kuliah : Pembelajaran IPA SD
Jumlah Soal : 11
Bentuk Soal : Uraian

1. Rubrik Penilaian Kreativitas

Indikator	Bagus (5 poin)	Sedang (3 poin)	Butuh Pengembangan (1 poin)
Kelancaran (Fluency)	Mengajukan gagasan yang banyak meskipun masih dalam satu sudut pandang (perspektif) yang sama dengan orang lain.	Mengajukan gagasan sedang meskipun masih dalam satu sudut pandang (perspektif) yang sama dengan orang lain.	Mengajukan gagasan malah lebih sedikit dibandingkan dengan orang lain, dalam satu sudut pandang (perspektif) yang sama dengan orang lain.
Keluwesan/ Keragaman (Flexibility)	Mengajukan gagasan yang sangat beragam meskipun masih dalam satu sudut pandang (perspektif) yang sama dengan orang lain.	Mengajukan gagasan yang cukup beragam meskipun masih dalam satu sudut pandang (perspektif) yang sama dengan orang lain.	Mengajukan gagasan yang tidak beragam dalam satu sudut pandang (perspektif) yang sama dengan orang lain.
Kestlian (Originality)	Menggunakan komponen dan cara penyajian yang sangat berbeda dari orang lain tapi bukan sekedar aneh, melainkan juga fresh (segar) dan menarik (unik) secara desain.	Menggunakan komponen dan cara penyajian yang cukup berbeda dari orang lain secara desain.	Menggunakan komponen dan cara penyajian yang sama dengan orang lain (umum) atau biasa juga aneh namun tidak dapat dimengerti terlalu memaksakan untuk terlihat kreatif.
Perincian/Penguraian (Elaboration)	Menguraikan permasalahan dengan sangat mendetail/terperinci.	Menguraikan permasalahan dengan cukup mendalam.	Menguraikan permasalahan secara dangkal (tidak terperinci).

g) Creativity Instrument Rubric



h) Assignment on LMS



i) Discussion Room feature on the LMS



j) Creativity Quiz

Figure 2. Ethnopedagogy-based LMS tools in elementary science learning courses

The LMS platform can share learning resources, discuss, make announcements, give assignments and exams, and provide assessments. Students can also access materials, practice questions and submit assignments. The tools developed refer to the blended learning model in the learning process. Similar research has also been conducted by Gunawan et al. (2021), who found that Moodle-based learning tools are suitable for learning in higher education. The results of research by

Sahidu et al. (2017) regarding using LMS also concluded that developing an e-assessment model based on Moodle LMS can help students evaluate their learning outcomes. Apart from that, this model can also help provide motivation and solve problems in learning, especially in elementary science learning. Science learning in schools today should integrate the culture that develops in society into science education. Students can also preserve their culture and link it to related

scientific knowledge (Hikmawati & Khusniati, 2022). We can create innovative and effective STEM learning environments by embracing broader cultural and knowledge system perspectives and contributing more sustainable and equitable solutions to complex global challenges (Verawati et al., 2023).

LMS can be used effectively and efficiently in higher education. When effectiveness and efficiency increase, motivation to achieve learning goals increases, especially when students are distant (Elfeky & Elbyaly, 2023). The success of an LMS as a learning environment by integrating required content can indirectly improve learning outcomes (Al Rashid et al., 2023). Learners can use LMS for learning, communication and collaboration (Despotović-Zrakić et al., 2012). Based on technology, LMS can manage learning and provide easy access (Galliers & Leidner, 2014) students' ability to build knowledge with the LMS system as a learning and evaluation tool improves. The website can facilitate students' learning and help them obtain information quickly to form new knowledge (Praherdhiono & Adi, 2017). Apart from that, The LMS developed should include various technology-based media to facilitate creativity. Virtual media such as phet can develop student creativity better in fluency and elaboration indicators (Susilawati et al., 2023).

Additionally, combining LMS with ethnopedagogy provides several significant advantages in the educational context, especially for prospective elementary school teachers who are learning how to prepare innovative science lessons. The dynamic combination of LMS and ethnopedagogy creates a learning environment that is rich in the cultural context and sensitive to student values. An ethnopedagogical approach allows the tailoring of educational content to suit cultural backgrounds. At the same time, an LMS facilitates the delivery of interactive and engaging learning materials, such as videos, simulations and online activities, enhancing the learning experience. According to Wuryastuti et al. (2023) Science lesson plans that incorporate culture, typically provide opportunities for creating activities that foster the values of the country. This is intrinsically linked to the lectures that students attend, where they learn science in a way that incorporates culture. Students discover a wealth of information about the local knowledge in their surroundings while studying, both in the classroom and on the job. This undoubtedly broadens their understanding of how to convert non-scientific knowledge into scientific understanding.

Incorporating local wisdom is a powerful tool for education. This will benefit students' educational outcomes (Fathurrochman et al., 2021). Ethnopedagogy in elementary school learning helps teachers apply local cultural values as learning resources to make learning

more contextual and creative (Putra, 2017). As a result, there is a greater enthusiasm in learning among students, which boosts creativity (Andani et al., 2021). Combining culture-based approaches such as ethnoscience with online learning will provide better learning motivation. Students gain new knowledge and understand that science is close to everyday life (Khoiriyah & Qosyim, 2021). Students' appreciation of local culture can grow when science instruction incorporates local knowledge, resulting in contextualized and meaningful learning. Students will be more appreciative of the community's culture when science lessons incorporate local knowledge that connects learning with culture (Setianingrum et al., 2023). The preservation of local wisdom and the development of students' character are two benefits of incorporating local wisdom into science education. Students gain a sense of self-awareness and self-recognition through formal education coupled with indigenous knowledge, which can cultivate a love for the country and other Pancasila principles.

Conclusion

The developed LMS device in the Science Learning course obtained valid results after the testing process by expert validators. Semester Learning Plan and Student Assignment Plan obtained very valid criteria from the expert validation test results. Meanwhile, teaching materials, Student Worksheets, and creativity instruments obtained results within valid criteria. This success shows that the ethnopedagogy-based LMS tool has passed evaluation and validation from experts, ensuring that the content is in accordance with science learning principles and meets expected academic standards. The results of this validation strengthen the quality of the LMS device as a tool that can be used to support learning in elementary school science learning courses and provide confidence that this device can positively contribute to the development of creativity in prospective elementary school teacher students. Suggestions for further research include developing new features to improve the overall learning experience. Apart from that, it is necessary to carry out effectiveness tests to determine the effectiveness and superiority of its application.

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Conflicts of Interest

The authors declare no conflict of interest.

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