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RESEARCH ARTICLE

The Level of Teacher Creativity in Developing Digital Learning Materials on Learning Management System

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ARTICLE INFO	ABSTRACT
  *Corresponding Author: marmuah@staff.uns.ac.id	Creativity in developing digital learning materials must continue to be improved along with curriculum changes. Merdeka curriculum, an innovative educational framework designed to improve the quality of students and teachers. Teachers must be able to improve their creativity in developing digital learning materials to create a dynamic and student-centered learning environment. Despite elementary school teachers having limited creative abilities, this research investigated their creativity in preparing digital learning materials with learning management system and its impact on learning outcomes. This study used a mixed methods approach involving teachers, and used questionnaires, tests, interviews, observations, and documentation for interactive model analysis. Findings revealed a high average score of teachers' creativity level in developing digital learning materials using learning management system, indicating an influence on student learning outcomes. The research suggests that highly creative teachers are more innovative in implementing the Merdeka curriculum across various contexts. Learning management system plays a significant role in digital learning materials development. The study provides guidance for teachers to enhance creativity and effectiveness in learning materials, supporting the Merdeka curriculum's implementation and improving student learning outcomes. Overall, this research contributes valuable insights for continuous improvement in digital learning materials and the quality of education.

1. INTRODUCTION

The rapid evolution of digital education requires creativity from teachers, especially in developing digital learning materials and learning management. The development of digital learning materials and learning management can be supported by a digital technology called Learning Management System (LMS). Along with this evolution of digital education, the curriculum also evolves to suit the needs and skills of the digital era. The *Merdeka* Curriculum is an alternative curriculum that aims to address learning setbacks and improve student outcomes. It allows students to learn independently according to their potential, interests, and talents while considering the needs of the community, nation, and state (Neary & Van Rhee, 2020). The *Merdeka* curriculum policy strongly influences curriculum and academic policies at the national, regional, and institutional levels. Teachers can regulate the learning process by implementing a *Merdeka* curriculum. Teachers can use the *Merdeka* curriculum in primary schools to create a pleasant learning environment by employing a variety of creative and innovative learning strategies (Purnomo et al., 2023). Creating a digital teaching environment and materials through an LMS is also a creative and innovative strategy for implementing a *Merdeka* curriculum.

Teachers must creatively and innovatively implement the *Merdeka* curriculum, collaborate with other teachers, and improve technology, pedagogy and knowledge in learning (Kandiko Howson & Kingsbury, 2023). The creativity of teachers can be done by developing digital learning materials in the form of Learning Management Systems (LMS) in managing learning at various levels of education, including elementary schools. Implementing the *Merdeka* curriculum in elementary schools must meet student needs, including designing, implementing, and assessing independent learning activities. Implementing the *Merdeka* Curriculum can be successful if teachers can play an essential role as designers, implementers, and assessors of this curriculum, and they need to empower themselves and be mobilized at the right time. Teachers must build competencies to apply the *Merdeka* curriculum, which includes professional knowledge, professional learning methods, and career development Teachers must have suitable digital competencies to impart skills to their students. Teacher creativity and innovation in designing and delivering lessons impact the success of curriculum implementation(Banegas, 2016). The implementation of *Merdeka* curriculum with the development of digital learning materials on LMS will increase teacher creativity.

Creativity is one of the 21st century's abilities (Tsai et al., 2017). Creativity is the skill of producing a new thought or product. Creativity can also be interpreted as the capacity to generate fresh ideas and how it creates new and valuable concepts and solutions to solve problems uniquely and differently (Alacapinar, 2008). Creativity must be developed to find solutions to problems, work differently, and create original ideas. In addition, creativity is also needed to develop students' creative thinking skills in learning. Creativity is required in science, work, sports, and other fields of human life. Creative thinking is favorably associated with critical thinking abilities. It can be concluded that creativity is one of the 21st-century abilities that is useful for perceiving things from multiple perspectives and addressing challenges in the beginning. It has never been done by combining several things systematically.

Teacher creativity in developing digital learning materials on Learning Management Systems (LMS) plays a crucial role in improving the quality of education. A review of students' and teachers' experiences in using LMS shows that the success of LMS implementation is highly dependent on how teachers are able to create content that is not only informative but also interesting and interactive (Aldosemani, 2023). Creativity in the use of the LMS is key, especially in the long run, where teachers' motivation to continue using and developing the LMS is determined by how effective they are in creating materials that are interesting and relevant to students' needs. LMS development also highlights the importance of digital tools that enable teachers to be more creative and efficient in managing the learning process. Furthermore, the use of Moodle as an LMS in the training of physics teacher candidates shows that LMS integration can significantly improve teacher creativity, which in turn contributes to a more innovative and effective learning process. Thus, creativity in the development of digital learning materials on the LMS not only supports the achievement of learning objectives but also facilitates a more interesting and memorable learning experience for students.

The findings of interviews conducted with teachers of grades I and V of elementary schools in Surakarta, Indonesia, revealed that teachers' creativity in developing digital learning materials and learning management system (LMS) was still low. This is because teachers still use the same learning models and methods. In addition, in preparing the lesson plan, the teacher does not update ideas or activities so that students get bored in the learning process. The preparation of lesson plans also only follows the existing systematics, even though the Ministry of Education and Culture has given the freedom to teachers to develop lesson plan designs according to the characteristics of students.

The low ability of teachers' creativity in developing learning materials is caused by the lack of adequate learning resources and facilities at schools. In addition, it is caused by the teacher's lack of ability to manage classes and only use the classroom for learning. The boredom factor can also affect teacher creativity to be low. The climate of the organization is a factor that can affect teacher creativity. A conducive school environment openness can increase teacher creativity more creatively for the school's progress. Another thing that can hinder teacher creativity is a rigid and closed school environment for risk-taking (Cırıt & Aydemir, 2023).

This research is essential to discover elementary school teachers' creativity in developing learning materials on learning management systems. Teacher creativity must be encouraged since it is critical

to increasing the quality of student learning outcomes. In addition, this ability can be used to develop new products, ideas, or problem solutions that benefit the individual teacher, social circles, or other people. In the creative learning process, teachers must invite and increase teacher performance in teaching, curiosity to provide feedback on students' interests and ideas, and develop students' creative potential (Kangas, 2010). Teacher creativity is also needed to determine differentiation learning according to the different characteristics of students. Each student is unique, with their own set of interests, learning styles, ability levels, and absorption rates. Creativity for teachers provides opportunities to create ideas and thinking styles and new workplace opportunities.

Previous research on teacher creativity includes teacher creativity regarding learning methods during online learning (Adnan & Prihananto, 2022). Previous research revealed teacher obstacles in preparing various learning methods due to limited technological facilities and difficulties controlling students during online learning. Second, research on the teacher's role in offering creative learning. The research reveals that the teacher's role in creative learning is to fulfill product-oriented demands and outcomes, optimize positive job outcomes, and integrate work knowledge and skills in a balanced coaching and training program to promote creative learning. Third, research on moderating creativity against stress and cognitive demands during learning for prospective teachers. The research revealed that teacher creativity can reduce stress and cognitive demands and develop teaching skills. Furthermore, it has been discovered that teacher creativity in generating learning media has a considerable influence on student learning results in a variety of topics (Alkhateeb & Abdalla, 2021). In the context of teacher creativity in managing the classroom, the LMS can balance technology, pedagogy, and material delivery to maintain an effective and sustainable digital learning environment.

This study differs from prior ones. This study focuses on the impact of students' learning outcomes on teacher innovation in developing digital learning materials on LMS in the *Merdeka* curriculum. Creativity is one of the skills in the 21st century that is useful for seeing things from different points of view and initially solving problems. However, combining several things systematically has never been done. Creativity research is also crucial in work and global knowledge (Delos Santos et al., 2023). In addition, the *Merdeka* curriculum is the newest curriculum implemented in Indonesia.

This study is important because the *Merdeka* Curriculum must be applied in all schools, especially elementary schools. This research will influence teachers' creativity in developing unique learning materials on LMS. The formulation of this research is: 1) How does teacher creativity affect the development of digital learning materials on LMS? 2) How does teacher creativity affect student learning outcomes? 3) How is teacher creativity in developing learning in intracurricular, co-curricular, and extracurricular learning?

This study intends to demonstrate instructors' different creativity in generating unique learning materials for the *Merdeka* curriculum's implementation, as well as school teachers' creativity in developing digital learning material. Creativity in teachers will help in the learning process because students can find fun learning experiences. These research questions contribute to the role of teacher creativity in education. They provide insights into the ways creative instructional approaches influence both the tools used in teaching and the ultimate learning outcomes for students. This understanding can inform educational policies, professional development programs for teachers, and curriculum design, ultimately leading to more effective and engaging learning experiences for students across diverse educational settings. The findings of this study will help primary school instructors become more creative.

2. LITERATURE REVIEW

2.1 Teacher creativity in developing teaching materials

How creatively teachers construct their lesson plans is a significant factor in how successful and exciting the learning process is for the pupils. Creative teachers frequently employ approaches that promote interaction and immersive learning experiences. To boost student enthusiasm and comprehension of the content being taught, educators should, for instance, use interactive software, podcasts, or movies in their courses (Chang et al., 2024; Tzeng et al., 2023; Yu & Sumayao, 2022). By

using this technology, students can learn at their own pace and better understand complicated subjects through improved visualization.

In addition to the use of technology, innovation in teaching techniques is essential. Through the investigation of real-world issues, instructional strategies like project-based learning encourage students to participate fully in the learning process (He et al., 2023; Kibga et al., 2022; Namukasa & Aryee, 2021). Through the use of the project-based learning approach, the curriculum for autonomous learning also encourages the development of critical thinking abilities. This method fosters critical thinking and the application of knowledge to real-world situations, which helps students gain deeper comprehension and develop crucial skills like cooperation and problem-solving. Student engagement and learning outcomes frequently improve when teachers use strategies like PBL.

Creativity can also be used to tailor educational materials to the specific needs of each student. This could entail changing the curriculum to accommodate different learning styles and specific academic requirements (Beibei, 2022; Elmy & Jizat, 2019; Hasibuan et al., 2023). For example, teachers may alter assignments and projects for kids with particular needs or provide additional demanding material for high-achieving pupils. This inventiveness in differentiation makes all students feel included and respected and ensures that each kid has the best chance of succeeding within their capabilities.

Continuous reflection and review of teaching approaches are also essential to teaching creativity. Creative teachers aggressively seek feedback from students and colleagues and constantly review their teaching approaches' efficacy (Alturki et al., 2022; Beibei, 2022; Namukasa & Aryee, 2021). It entails modifying and experimenting with new strategies and teaching aids based on student feedback and learning outcomes. Teachers use this reflection to enhance their teaching skills and foster a creative and responsive learning environment (Namukasa & Aryee, 2021).

2.2 Learning management systems in school education

In the world of education, learning management systems (LMS) have become an important means of supporting teaching and learning activities in schools. LMS provides a digital platform where learning content can be organized, delivered, and accessed by students and teachers. Features such as content management, task management, and automated grading make it easier for teachers to manage various aspects of learning efficiently (Akram et al., 2022; Akram et al., 2023; Alfalah, 2023). In addition, LMS helps students gain access to learning materials anywhere and anytime, which is very beneficial in supporting hybrid and distance learning models (Drira et al., 2012; Elmunsyah et al., 2023).

Interaction between students and teachers, as well as between fellow students, also becomes easier with the LMS. These platforms are generally equipped with communication tools such as forums, chat, and messaging systems, which facilitate discussion and collaboration in a virtual environment (Krumova, 2023; Tuğtekin, 2023; Turnbull et al., 2023). This convenience is very important, especially when situations force learning to be done remotely, such as during the COVID-19 pandemic, where LMS has proven vital in maintaining the continuity of the teaching and learning process. LMS also allows personalized learning, where teachers can tailor learning materials and resources according to the needs and abilities of each student. This system supports the implementation of differentiated instruction and personalized learning approaches, both of which have been shown to improve student motivation and learning outcomes (Azmuddin et al., 2023). Students with special needs can also be better accommodated through tools and configurations that can be configured in the LMS to suit their needs.

The analytics provided by LMS are also an important factor in assessing the effectiveness of the learning process. The data collected by these systems provide deep insights into student learning activities, helping teachers identify who needs more help and what topics may need additional explanation. With real, timely feedback, teaching can be adapted to meet diverse learning needs in the classroom(Amanah et al., 2023; Daar et al., 2023; Frankl, 2017). The adoption of LMS in schools offers a range of benefits that include administrative efficiency, more inclusive and personalized learning support, and analytical capabilities that aid pedagogical decision-making. Over time, these

technologies continue to evolve, integrating new and more sophisticated tools to support more effective and interactive learning (Fathi et al., 2023; Mumtaz et al., 2023; Tuğtekin, 2023).

3. METHODOLOGY

3.1 Research method, data collection and analyze

This study's research methodology is a mixed-method. This method aims to statistically determine the level of teacher creativity and obtain a detailed explanation of this ability. The subjects of this study were 12 teachers and 120 students in 12 fourth-grade elementary schools in the Surakarta Residency area, Central Java, Indonesia. The research subjects were selected through a purposive sampling technique. This is because the research subjects were chosen to fulfill the expected objectives or characteristics: teachers who have implemented the *Merdeka* curriculum.

Questionnaires, tests, interviews, observations, and document studies were utilized to collect data in this study. The instruments used in this study were adapted from (Acosta et al., 2023). The technique is used to collect data on teacher innovation, the development of Curriculum *Merdeka* learning materials by utilizing the "Kuriokreasi" learning management system (LMS) that has been developed, and the impact on student learning outcomes. Quantitative data is collected by distributing teacher creativity questionnaires and exams to determine the impact of student learning outcomes on teacher creativity in building learning resources. In this study, the questionnaire used a Likert scale with a scoring scale of 1-5. The test is carried out utilizing convergent validity, where the value of the loading factor or outer loading should be more than 0.70 with the construct to be measured. AVE is the variable's value; it must be greater than 0.5. Cronbach's Alpha is used for reliability testing, which demands that a construct be reliable if the constructed value is greater than 0.60 and the composite reliability is greater than 0.6.

Meanwhile, qualitative data is gathered through interviews, observations, and documentation studies. The purpose of the interview was to find out the creativity of teachers in developing learning material on LMS and their impact on student learning outcomes. Interviews are conducted using structured interviews by asking questions arranged based on indicators. Observation aims to find out facts related to teacher creativity in developing digital learning materials on LMS. Observation is made by looking at evidence of learning devices used during the learning process by teachers. The instrument indicators in Table 1 and Table 2 were used to collect data.

The data validity technique used in this research is the content validity technique through technical triangulation and informant review. Triangulation techniques were used to obtain valid data by checking the correctness of the data through three questionnaire techniques, interviews, and observations. Informant reviews were carried out by examining data collected and processed systematically and then examined by experts in their fields.

The interactive analysis miles and Huberman model were utilized in this study to analyze data(Miles & Huberman, 1994). Data analysis stages include data gathering, data reduction, data display, and conclusion. Research procedures carried out by researchers are determining research objects, formulating problems, determining research objectives, making instruments, collecting data, analyzing data, and making research conclusions. The results are categorized based on Table 3.

Table 1: Teacher creativity instrument indicator

No.	Indicator	Sub-indicator
1.	Fluency	Quickly spark many thoughts, responses, and problem-solving connected to learning equipment.
		Provide several methods or recommendations for carrying out various tasks relating to creating digital learning materials.
2.	Flexibility	Produce a variety of ideas, responses, or questions, and be able to see a topic from several angles concerning learning materials.
		Look for an options or paths variety to construct learning materials.
		Capable of changing one's attitude or style of thinking to improve digital learning materials.
3.	Elaboration	Capable of improving and developing a concept or learning device product

No.	Indicator	Sub-indicator
		They include or emphasize information about an item, idea, or circumstance to make the learning instrument more appealing.
4.	Originality	Capable of creating fresh and distinctive expressions to create digital learning materials.
		Thinking of unconventional ways to develop digital learning materials.
		Capable of combining unexpected pieces or aspects in the development of digital learning materials.

Table 2: Indicators of cognitive learning outcomes

No.	Indicator	Descriptor
1.	Knowledge	Able to mention or re-explain
2.	Comprehension	Able to understand instructions/problems/interpret and restate in one's own words
3.	Application	Able to use concepts in new practices or situations
4.	Analysis	Able to separate concepts into several components to gain a broader understanding of the impact of components on the concept as a whole
5.	Synthesis	Able to assemble or rearrange components to create new meaning/understanding/structure
6.	Evaluation	Able to evaluate and assess something based on norms, references, or criteria

Table 3: Teacher creativity profile categories

Interval Score	Category
0.00 – 1.00	Very Low
1.01 – 2.00	Low
2.01 – 3.00	Middle
3.01 – 4.00	Hight
4.01 – 5.00	Very High

Source: (Landa et al., 2021)

3.2 Design and function of 'Kuriokreasi' learning management system (LMS)

The software architecture model developed into the "Kuriokreasi" Learning Management System (LMS) is a novel platform designed to facilitate and enhance the creation of digital learning materials by teachers. This platform categorizes users into four distinct roles: Principal, Teacher, Other Teachers, and Students. "Kuriokreasi" offers a suite of features including registration, login, upload, comment, quiz, scoring, grading, and logout functionalities.
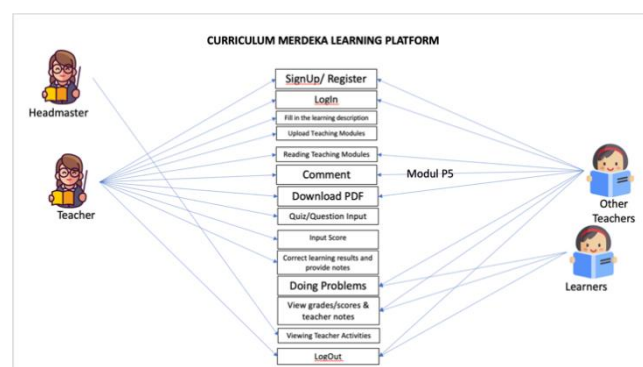

Figure 1: Architectural model of "Kuriokreasi" LMS

A standout feature of the "Kuriokreasi" LMS is its advanced commenting capability. This allows teachers to engage in rich discussions about perspectives, materials, strategies, and various teaching

activities, fostering a collaborative learning environment. Additionally, school principals can monitor and participate in these educational interactions, gaining insights into the teaching process.

Upon launching the "Kuriokreasi" LMS, users encounter an intuitive User Interface (UI), as illustrated in the respective figures. The UI features seven main menu buttons with text and images for easy navigation. Notably, a prominent yellow "Start Learning" button at the top right corner and a large orange "Register Now" button at the center facilitate easy system access and new user registration. The "Home" page at the bottom includes a discussion forum, encouraging communication among teachers, peers, and students.

The responsive web design employed in the development of the LMS's front-end ensures compatibility with various devices. Whether accessed via smartphones, tablets, or other mobile computing devices, the platform's design automatically adjusts to small screens, ensuring a user-friendly experience across different devices. This adaptability enhances the accessibility and usability of the "Kuriokreasi" LMS, making it a versatile tool for teachers in developing and sharing digital learning materials.

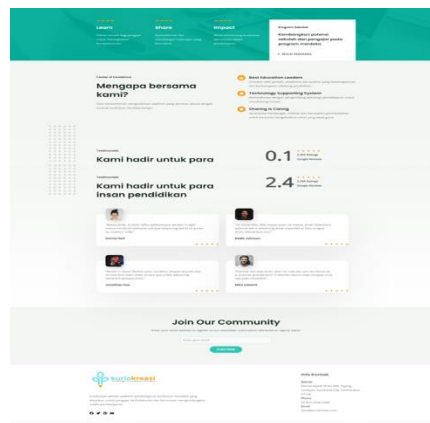**Figure 2: Home menu display design of "Kuriokreasi" LMS**

Figure 3: Discussion forum display design of "Kuriokreasi" LMS

4. RESULTS AND FINDINGS

Based on the results of data collection that has been carried out, the research results are presented in Table 4.

Table 4: Results of the teacher creativity profile questionnaire

No.	Indicator	Score	Category
1	Fluency	3,99	High
2	Flexibility	3,96	High
3	Elaboration	4,14	Very High
4	Originality	3,96	High
Average		4,01	Very High

According to the statistics in Table 4, the teacher's creative thinking ability on the fluency indicator is 3.99, which places her in the high category. The adaptability indicator had a high category score of 3.96. Then, the elaboration indicator obtained a score of 4.14, with a very high category. Furthermore,

a score of 3.96 is obtained by the originality indicator. This shows that the elaboration indicator gets the highest score on the ability to think creatively of teachers. Then, the flexibility and originality indicators score lower than the other indicators of creative thinking. The average teacher's creative ability is very high, with a score of 4.01.

The learning data displays the results of Cronbach's Alpha reliability test, which requires that a construct be reliable if the constructed value is greater than 0.60 and the composite reliability is greater than 0.6. The Cronbach alpha values obtained from this study's reliability test were X1 0.924, X2 0.951, X3 0.869, X4 0.941, and Y 1 > 0.60. This data demonstrates that the data used is trustworthy. In the hypothesis test, the R square value is 0.165, meaning that variable X affects variable Y by 0.165 x 100% = 16.5%. Meanwhile, based on the test results, the path coefficient values are presented in Table 5.

Table 5: Table of path coefficients scores of student learning outcomes

	X1	X2	X3	X4	Y
X1					0,529
X2					-0,823
X3					0,230
X4					0,322

According to Table 5, the following have a positive association direction: X1 with Y, X3 with Y, and X4 with Y. X2 with Y is the one with a negative relationship direction. Where X1 is an indicator of fluency, X2 is flexibility, X3 is elaboration, X4 is Originality, and Y is student learning outcomes.
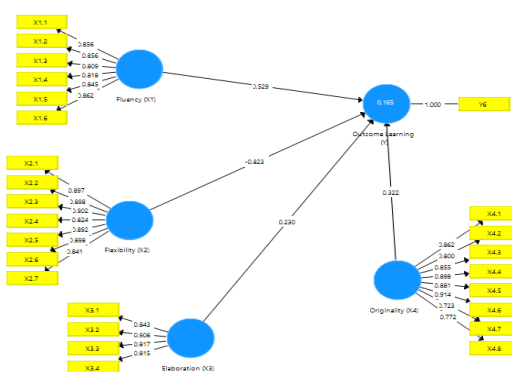

Figure 4: Relationship between each variable

Based on Figure 2 shows the relationship between the teacher creativity in developing digital learning materials on LMS variable and its impact on learning outcomes.

Based on the findings of the interviews, the teacher created a lesson plan, referred to as the teaching module. The teachers have arranged the teaching modules according to the context of the student's learning environment and the characteristics of the student's needs. In addition, teachers have also started implementing differentiated learning according to the abilities of students.

Differentiated learning is carried out based on the results of observations by administering a diagnostic test at the start of learning and then applying learning based on the level of ability. Figure 5 is an observation of a sample teaching module that the teacher has prepared for learning.

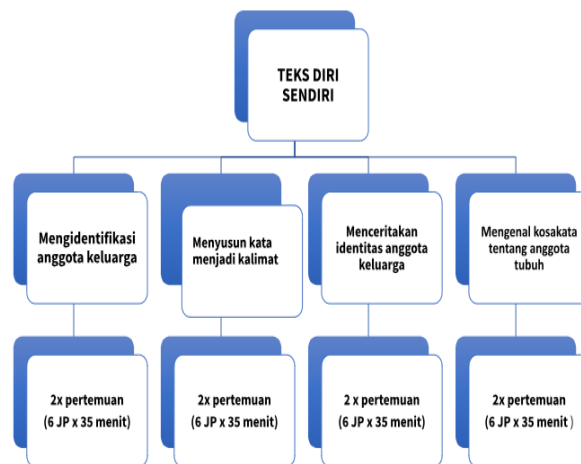**Figure 5: Teaching module (study plan) made by the teacher**

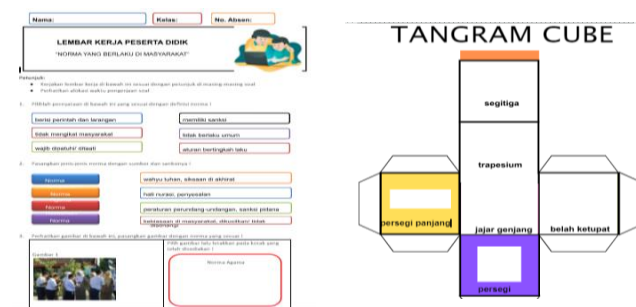**Figure 6: Learning outcomes and learning objectives flow created by the teacher**

Figure 7: Assessment created by the teacher

Based on observation, teachers have developed learning media using interactive and exciting technology. Teachers have also implemented collaboration between different learning elements in content, process, product, and environment. Teachers are also able to collaborate on learning materials in the *Merdeka* curriculum with LMS. The teacher also makes Student Worksheets as enrichment for the learning process and increases skills in learning using the Canva application. Figure 8 through 11 are the outcomes of the Student Worksheets that were created.

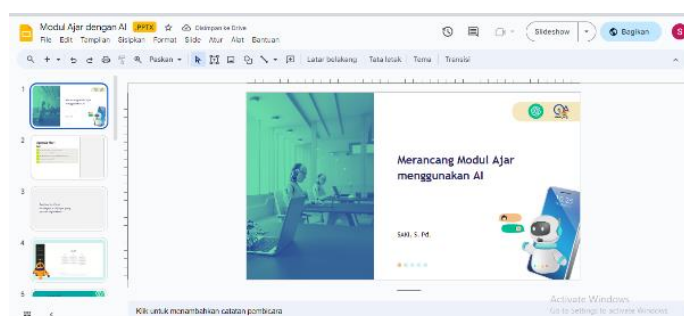**Figure 8: Student worksheets created by the teacher**

Figure 9: AI (Artificial Intelligence) as a tool for developing digital learning material
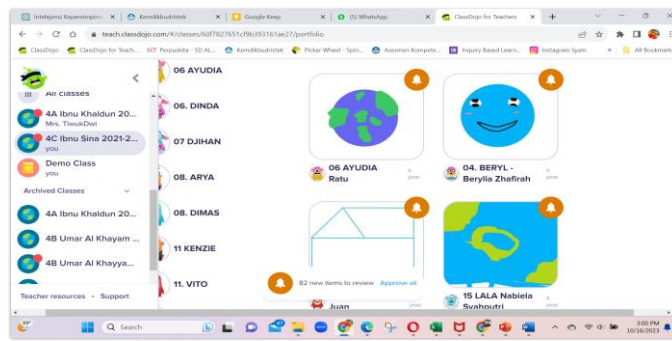
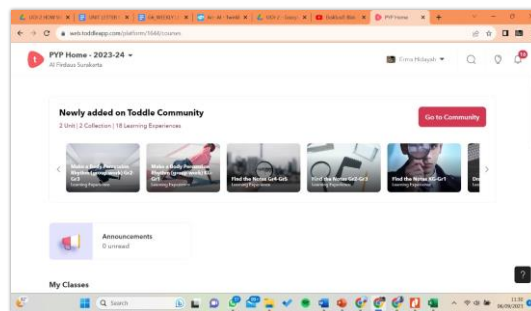**Figure 10: Class Dojo, a tool for organizing class portfolios and learning video information**

Figure 11: Use of Toodle apps in structuring teaching modules

Figure 12: Batik making activities as co-curricular learning

Figure 13: Scouting activities as compulsory extracurricular learning

Based on the findings of the research and data collecting, it is possible to conclude that teachers' creative thinking talents, particularly in the area of elaboration, have a favorable impact on student learning outcomes. Teachers' creativity profiles revealed a very high degree of ability, with an average score of 4.01. Based on Alpha Cronbach's alpha reliability tests, the data used in the study proved to be reliable. In terms of hypothesis, the variables fluency, elaboration, and originality show a positive relationship with student learning outcomes, while flexibility has a negative relationship. Figure 1 depicts the link between variables and gives a visual explanation of the influence of teacher creative variables on learning outcomes.

Teaching strategies and lesson planning carried out by teachers, such as the development of learning modules and the application of differentiated learning, support the achievement of optimal learning outcomes. The use of technology, both in the form of artificial intelligence (AI) and supporting applications such as Class Dojo and Toodle, also enriches the learning process. By involving students in extracurricular activities such as batik-making and scout activities, teachers successfully create an innovative and holistic learning environment. In addition, the use of a variety of interactive learning media demonstrates an effort to make learning more engaging and leveraged. As a result, the study's findings provide a comprehensive picture of the interaction between instructor creativity, instructional tactics, and student learning outcomes.

Fluency indicates the ability to think fluently (Banegas, 2016). This indicator is shown by the teacher's ability to think fluently in generating thoughts or ideas in large numbers to compile digital learning materials. The *Merdeka* learning materials that have been compiled include teaching modules, syllabi, and differentiated learning.

If students still lack adequate abilities, remedial or tutoring will be done outside class hours. If students already have the expected abilities, then to increase students' knowledge and understanding of the subject matter, enrichment is provided. In addition, teachers also have enough time to develop learning media, which initially only used books or power points. Now, they are using interactive learning applications to overcome student boredom in learning in class. Technology should be made meaningful for students and pleasant for teachers. Learning materials should include examples so students can understand the knowledge (Arizmendi et al., 2022).

The indicator of flexibility is the teacher's ability to generate many thoughts to overcome problems that arise by changing the approach to solving these problems (Blignaut, 2021). Based on the findings of interviews and observations, teachers have a variety of approaches to dealing with issues linked to the development of digital learning materials on LMS. This can be seen in formulating learning outcomes and the flow of learning objectives adapted to students' learning contexts. Then, the teacher makes learning differentiated apart from process differentiation, and it can also be done by content and product differentiation. Teachers can also carry out product differentiation learning tailored to students' needs.

Furthermore, the teacher can also create learning media according to students' learning styles. This is because each learning style of students has its preferences in learning according to the characteristics of students. In addition to learning media, teachers have also started using various learning methods or methods. In addition to the lecture method, we also use the question-and-answer method, discussions, and demonstrations. Teachers also use other methods, such as outing classes as learning facilities. Besides that, teachers also used activity-based teaching techniques that fostered student participation and allowed students to observe, perform, and explore knowledge while guided by the teacher (Bank et al., 2019).

The elaboration indicator indicates critical thinking by detailing the details of an object, idea, or situation in learning (Cook et al., 2019). This can be seen from the results of interviews and observations and the ability of teachers to enrich and develop digital learning materials on LMS, to make them more attractive, for example, in preparing HOTS assessment instruments. This will affect the results of students' abilities when conducting assessments. Teachers have also started using the project learning model and developing enjoyable student worksheets. Teachers have also developed teaching materials used in learning in detail and attractive according to the context and characteristics of learning and the characteristics of their students.

An indicator of originality is the ability to think creatively by providing unusual or unique responses or ideas (Yildirim et al., 2012). This study's results align with previous research, which revealed teacher creativity in using learning models (Tsai et al., 2017). This research indicates that creative teachers must apply various learning models according to the subject matter's needs to create a quality learning process so that predetermined competencies are achieved and student learning outcomes will be more optimal. When teachers adopt curriculum delivery tactics that appropriately target the needs of their students, when the school climate is favorable, and when parents are involved in their children's education, student performance improves (Beibei, 2022; Pratiwi & Dewi, 2023). The results of this study are also consistent with previous research on teacher creativity in

physical education learning (Amelia et al., 2021). The research reveals that the teacher's indicators in learning are in the form of originality, elaboration, and flexibility. The level of creativity of the teacher in the teaching in physical education is good.

Developing digital learning materials. is an important aspect of education (Awiria et al., 2019). Developing digital learning materials refers to the process of creating or designing educational resources, materials, or instruments that are used to facilitate and enhance the learning experience for students. These tools can include various components such as lesson plans, worksheets, syllabi, question sheets, and evaluation tools, among others. The process typically includes stages such as analysis, design, development, implementation, and evaluation, where experts and validators provide assessments and input to ensure the validity, practicality, and effectiveness of the digital learning materials on LMS. The aim of developing digital learning materials is to create resources that align with the curriculum, promote active and engaging learning, enhance critical thinking skills, support distance learning or online teaching, and address specific learning objectives or topics on a learning management system.

Teacher creativity in developing digital learning materials has a significant impact on student learning outcomes both in formative and summative aspects. Through the use of innovative and interesting digital learning materials, teachers can deepen students' understanding of learning concepts (Kangas, 2010). Teacher creativity not only creates a motivating learning experience but also supports overall student growth.

Intra-curricular learning is a regular and scheduled learning activity that all students must participate. Intra-curricular learning allows students to gain the necessary understanding and skills. Teachers can also employ a variety of learning resources to meet the requirements and interests of their students (Adnan & Prihananto, 2022; Greenstein, 2012). Teacher creativity in designing intracurricular digital learning materials contributes significantly to changing the dynamics of learning. The use of technology is not only a tool but also a means to enrich the learning experience. Adapting to students' learning styles is key, with teachers noticing variations in material presentation and offering a variety of learning activities. Collaborative projects and group activities stimulate cooperation, while relevant and contextual content clarifies the interrelationships between lessons and students' daily lives. Thorough formative evaluations become important tools in measuring student understanding, while diversified learning resources engage students in diverse learning experiences. Through this approach, teachers create digital learning materials that are not only effective in transferring knowledge, but also arouse students' interest, motivation, and participation as a whole in the learning process.

Teacher creativity in preparing digital learning materials greatly determines the success of learning. Teachers must be more creative in creating teaching devices in the digital era like today. Figures 1 and 3 show the use of digitization in preparing teaching equipment. Figure 2 shows teachers providing guest teacher facilities as reliable practitioners who can offer concrete experiences to students. Teacher creativity is needed to find solutions to problems, work differently, and create original ideas in preparing digital learning materials. Creativity is also required to find a fun learning experience for students.

Co-curricular learning supplements intra-curricular activities by requiring students to perform assignments, projects, or learning activities relating to intra-curricular subjects (Gripton, 2023). This activity is intended to increase efforts to fulfill Graduate Competency Standards-referencing Pancasila student profiles (Annala et al., 2023). In Surakarta, teachers are already using technology-based co-curricular learning materials. Technology is used in preparing, compiling steps, or preparing media as learning materials used in co-curricular learning. Designing work steps or learning projects also requires technological assistance which can trigger effective learning and can improve student learning outcomes.

Extracurricular learning is an extracurricular activity recommended by the Indonesian Ministry of Education and Culture that aims to develop the skills and competencies of learners outside the formal curriculum related to local wisdom, leadership, courage, creativity, and entrepreneurship. Extracurricular activities serve to channel and develop students' interests and talents by paying respect to student characteristics, local wisdom, and available carrying capacity (Harris et al., 2020).

The development of extracurricular teaching kits involves steps such as goal identification, curriculum design, creation of teaching materials, and appropriate assessment. In addition, student engagement, teacher training, and continuous evaluation are also important aspects of ensuring learning effectiveness.

This finding is a major focus for teachers to develop and adapt learning materials into digital platforms, especially the Learning Management System (LMS). Effective use of LMS aligns with the objectives of *Merdeka* curriculum by enabling more personalized, flexible, and innovative learning strategies. Therefore, teachers as the main facilitators in this transition must embrace and improve their digital literacy skills to create interesting and diverse digital content. This transition is not just about technology adoption, but also an important step to ensure that the innovative spirit of the curriculum is reflected in every aspect of teaching and learning, thus fostering a more dynamic and inclusive educational environment at the national, regional and institutional levels.

This study's results can improve teachers' creative thinking abilities. In addition, it can also be used as a preliminary study in developing digital learning materials on LMS to increase teacher creativity. The limitation of this research is that the scope is only the residency area.

5. CONCLUSION

Creativity is also needed to find a fun learning experience for students. This research is essential to determine elementary school teachers' creativity profile in preparing digital learning materials on learning management system (LMS). Teacher creativity needs to be increased because it has an essential role in improving the quality of student learning outcomes. This study highlights teacher creativity in preparing digital learning materials in the *Merdeka* curriculum. The purpose of this study is to discover instructors' levels of creativity when developing *Merdeka* curriculum learning materials. According to the findings and discussions of the research, the teacher's creativity profile in the preparation of digital learning materials in the *Merdeka* curriculum is quite high, precisely 4.01 on a scale of 1-5. Fluency, adaptability, elaboration, and originality are the creative indicators used in this study. On the fluency indicator, the teacher's creative thinking ability is 3.99 in the high category. The flexibility indicator obtained a score of 3.96 with the high category. Then, the elaboration indicator obtained a score of 4.14, with a very high category. Furthermore, a score of 3.96 is obtained by the originality indicator. This shows that the elaboration indicator gets the highest score on the ability to think creatively of teachers. The flexibility and originality indicators score lower than the other indicators of creative thinking. The results of this study can contribute to developing digital learning materials to improve teachers' creative thinking skills. Various digital technology in the LMS plays a significant role in tool development. The research offers guidance for teachers to enhance creativity and effectiveness in digital learning materials, supporting the *Merdeka* curriculum's implementation and improving student learning outcomes. The study contributes valuable insights for the continuous improvement of digital learning materials, learning management system and the overall quality of education. Based on the research results that have been identified, further research needs to conduct research with a broader scope than one residency area. In addition, further research needs to develop media used to increase teacher creativity in digital learning materials of the *Merdeka* curriculum.

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