The implementation of multiliteracy based pjbl to improve innovation and creativity skill

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Keywords:	Abstract
pjbl; multiliteracy; innovation and creativity	This study aims to determine the improvement of students' ability to innovate and creativity through the application of multiliteracy-based PjBL. The type of research used is Classroom Action Research (PTK) model Kemmis and Mc. Taggart model with the research subject being second semester students of the PGMI study program at the Al-Qur'an University of Science in 2022/2023. The research instruments used were performance tests, observation sheets, questionnaires, and field notes. The results of the performance test show that multiliteracy-based PjBL can increase the ability to innovate by 7.88% and creativity by 6.88%. Students' innovation and creativity were realized in several products that were exhibited in the work title, including renn car, Nusantara quartet, blog, dance creation, vlog of historical places, and so on. The average score of improvement in the ability to innovate between cycles is 1.26 and creativity is 1.65. In addition to improving the ability to innovate and creativity, questionnaire data shows that student enthusiasm in attending lectures has also increased. As many as 58% of students felt enthusiastic during the lecture by applying multiliteration-based PjBL. Based on the results of observations and field notes, intensive guidance during project work is very helpful for students in expressing ideas and more creative problem solving. The integration of PjBL syntax and literacy elements can stimulate students to think divergently while improving their ability to present their work attractively.

INTRODUCTION

Background of the Study

The Law No. 12/2012 on Higher Education Article 4b states that one of the functions of Higher Education is to develop an innovative, responsive, creative, skilled, competitive, and cooperative academic community through the implementation of Tridharma (Ismiyanti, 2015). Higher Education takes an important role in realizing the ideals of national education which can be done within

the scope of teaching, research, and community service. One manifestation of the success of Higher Education in carrying out its functions is reflected in the quality (outcome) of students. Students as one of the elements of the Higher Education academic community as well as agents of change should have the ability to innovate, be competitive, skilled, and creative (Elbadiansyah, 2018). These abilities are needed so that students can be part of the agents of reform and change for nation building.

Creativity is one of the skills needed today. Along with the rapid development of science, technology and information (IPTEKS), citizens of the world are competing to create innovations. Artificial intelligence (AI) is a trend of technological sophistication today. AI can be found in various fields of life, whether in social media, education, health, finance, or other fields. AI is considered so intelligent that it can know many things beyond the human ability to remember knowledge, solve problems, adapt and learn (Manongga et al., 2022). Even Stephen Hawking said, if this AI is not controlled, then it can turn into an enemy for humans (Malau & Brake, 2022). Therefore, education today should no longer be just a transfer of knowledge, but honing skills that AI does not have, namely creativity. Creativity needs to be an important part of the learning system from elementary to tertiary levels (Doringin et al., 2020).

The PGMI (Madrasah Ibtidaiyah Teacher Education) study program is one of the educational programs to prepare prospective teachers at the primary level. The five categories of 21st century teacher skills according to the International Society for Technology in Education are: 1) facilitating, inspiring student learning and creativity; 2) designing, developing learning experiences and digital era assessments; 3) modeling how to work and learn in the digital era; 4) encouraging, being a community and modeling digital responsibility; and 5) participating in professional development and leadership (Daryanto & Karim, 2017). Therefore, students must have the ability to innovate and be creative as a basic ability that must be possessed by teachers in the 21st century (Tarihoran, 2019). Prospective teacher students must be sensitive in seeing existing social phenomena, so that these phenomena become the basis for making learning innovations that are certainly beneficial to students.

Problem of The Study

In reality, students face various problems in realizing creativity and innovation. Based on initial observations made on second semester PGMI UNSIQ

students, the data obtained are: 1) students have an instant mindset (27%); 2) students' reading literacy skills are low (45%); 3) prefer individual assignments (10%); 4) difficulty expressing creative ideas (40%); and 5) guidance is still needed (85%). The results show that there are three problems faced by most students, namely the need for students to obtain guidance while completing the project, students have difficulty in expressing creative ideas and low literacy skills, especially reading literacy. These problems resulted in students' lack of skill in solving problems creatively. The results of pre-research field notes show that there are at least four factors that cause students' creativity and innovation abilities to not be optimal. These factors include: 1) a less supportive academic climate both from the point of view of teaching, student organizations, and self-development; 2) lack of creative space, students are not given space and facilities to be creative, for example through research and service grant activities for students. Students only rely on the national and highly selective Student Creativity Week (PKM) activities; 3) less than optimal guidance from lecturers, most lecturers do not care about student achievement; and 4) students do not get appreciation for their hard work in doing something.

Research's State of the Art

Research related to student creativity and innovation has also been conducted at several universities. Research on PGSD students at Satya Wacana Christian University shows that students have difficulty solving problems (64.06%) and difficulty finding alternative problem solving (53.13%) (Ismiyanti, 2016). Students' difficulty in finding alternative problems is because students are accustomed to convergent thinking, which is looking for the most appropriate answer to a question, based on existing information (Cahyaningtyas et al., 2019).

Students' difficulties in solving creative problems can be influenced by several factors. These factors include: 1) students are not accustomed to solving problems related to critical thinking, 2) students are less creative in choosing or finding the right strategy according to the problems given, and 3) students are less careful in solving problems (Ismiyanti, 2016). The lecture process has an important role in stimulating student creativity. The Teacher Centered Learning (TCL) model tends to make students passive and creativity is not awakened, so learning in higher education is directed at the Student Centered Learning (SCL) model (Ardian & Munadi, 2016)

Novelty, Research Gap, & Objective

One of the alternatives to improve students' ability to innovate and create is through the application of a project-based learning (PjBL) model. Projects are based on essential questions that must be answered by students. Generally, these essential questions require higher order thinking skills. This is what distinguishes projects from assignments in general. Based on research conducted in various countries, PjBL can have a significant impact when applied to prospective teacher students, namely improving problem-solving skills and increasing awareness of the learner object (Kokotsaki et al., 2016).

21st century skills, such as creativity and creative thinking can be developed through the application of project-based learning. The results showed that PjBL can help students of mathematics education study program in a private university to create innovative teaching materials (Zakiah et al., 2020). Other 21st century skills that improved were problem solving and critical thinking. The stages of PjBL help students to gather and process information so that thinking skills can be developed (Susanto et al., 2020). PjBL can improve student learning outcomes, for several reasons, namely: 1) emphasizes contextual-based learning; 2) increases student participation in meaningful problem solving; 3) constructs knowledge independently; and 4) produces real products/works (Putra & Purwasih, 2015). The application of MBKM in the higher education curriculum, leading students in an era of independent learning. The application of PjBL is very suitable for realizing the era of independent learning for students, because PjBL can facilitate students in thinking critically and producing a variety of creative products / works (Sari & Angreni, 2018; Wicaksana & Sanjaya, 2022). Based on these findings, it can be concluded that PjBL can improve the skills needed to answer the challenges of the 21st century. Among these findings, there is no research on the application of PjBL integrated with literacy activities, even though literacy is also an important element in answering the challenges of the 21st century. For example, one study showed that there was a positive relationship between teachers' digital literacy skills and creativity in teaching (Wajdi et al., 2021). As an effort to overcome the various problems that arise in PGMI UNSIQ students, this PjBL is collaborated with multiliteracy learning. In the process of working on projects and their results, students must involve several basic literacies such as reading, writing, numeracy, science, digital, financial, cultural and civic literacy. PjBL based on multiliteracy is considered to be able to help students to make broader innovations while

developing creativity more broadly (Ismiyanti et al., 2019).

This study aims to improve the ability to innovate and creativity of PGMI UNSIQ students through the application of multiliteracy-based PjBL. Theoretically, the application of multiliteracy-based PjBL can provide additional knowledge related to the application of fun and challenging learning at the college level. Practically, multiliteracy-based PjBL can contribute to learning breakthroughs so as to improve students' abilities and skills and have an impact on society.

METHOD

Type and Design

The research was conducted at the PGMI UNSIQ Wonosobo campus with the research subjects being second semester students of PGMI UNSIQ Wonosobo Academic Year 2022/2023 as many as 70 students. The research used is included in the Classroom Action Research (PTK) model of Kemmis and Mc. Taggart model to solve the problems faced by most students. Classroom action research has four stages that must be passed, namely 1) planning; 2) action; 3) observation; and 4) reflection (Subyantoro, 2019). Stages of Classroom Action Research can be viewed below.

Tabel 1. Stages of Classroom Action Research

Planning	Action	Observation	Reflection
1. Studying on Study Program's CPL, CPMK, sub-CPMK, indicators contained in RPS 2. Compiling Learning Activity Plan Based on RPS learning material 3. Preparing means of evaluation (Performance rubric) 4. Determining indicators of achievement and compiling instruments for collecting data 5. Preparing observation sheet, questionnaire, and notes	The Classroom Action Research managed to sonduct in two cycles. Each cycle means 1 meeting.	Observation is an act to determine students' activities, innovation and creativity skill in using instruments.	Reflection is to study learning process in forms of GMI UNSIQ students' innovation and creativity activities. The effectiveness of learning process can be observed through the achievement of indicators in the first cycle. Then, the researchers managed to make a follow-up evaluation for the next cycle based on previous cycle.

Data and Data Sources

The data sources used in this study were students, PGMI UNSIQ Wonosobo academic year 2022/2023 as many as 70 students. Student data sources were obtained from observation sheets, questionnaires, field notes and performance tests in the first cycle and second cycle. The research instruments are clarified in Table 2.

Tabel 2. Research Instruments

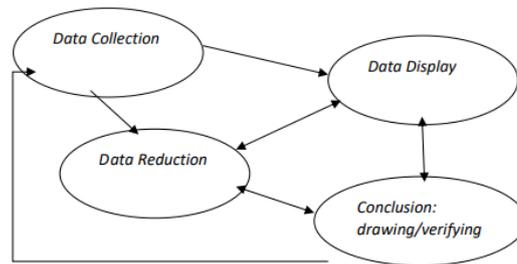| Method	Obsevation	Questionnaire	Notes	Test
Instrument	Observation Sheet	Structured Questionnaire	On-Field Notes Sheet	Assessment Rubric
Data Source	Students	Students	Students	Students
Data collected	Students activities during the learning	Students' Enthusiasm	Things that are not recorded in other instruments	Innovation and Creativity Skill
Indicators	Skill of presenting works; Intensive guide impacts	Participation during the learning	-	Flexibility, Fluency, Details, and new ideas of a product

Data collection technique

The types of data in this study are: 1) quantitative data, in the form of data on the results of the ability to innovate and creativity obtained from performance tests; and 2) qualitative data in the form of data on observations of student activities and enthusiasm obtained from observation sheets, field notes, and questionnaires and presented descriptively. There are four categories to show the level of creativity and innovation of students, clarified in Table 3.

Table 3. Category of Student Innovation and Creativity Skill

Creativity		Innovation Skill	
Scores	Category	Scores	Category
1 – 6	Not Good	1 – 4	Not Good
7 – 12	Fairly Good	5 – 8	Fairly Good
13 – 18	Good	9 – 12	Good
19 – 24	Excellent	13 – 16	Excellent

Data analysis

The data analysis techniques used include: 1) quantitative data. The data analysis technique used is analysis using descriptive statistics to determine the amount of improvement. Descriptive statistics used include mean, mode, median, lowest value, highest value; and 2) qualitative data. Qualitative data analysis using the Miles and Huberman model includes three stages, namely: data reduction, data display, and conclusion drawing/verification. The components in data analysis are presented in Figure 1.

Figure 1. Analysis of Qualitative Data Kualitatif on PTK

In this study, data presentation was dominated in the form of tables and bar charts. The next step is conclusion drawing and verification. The initial conclusions put forward are still temporary and will change if no strong evidence is found to support the data collection stage.
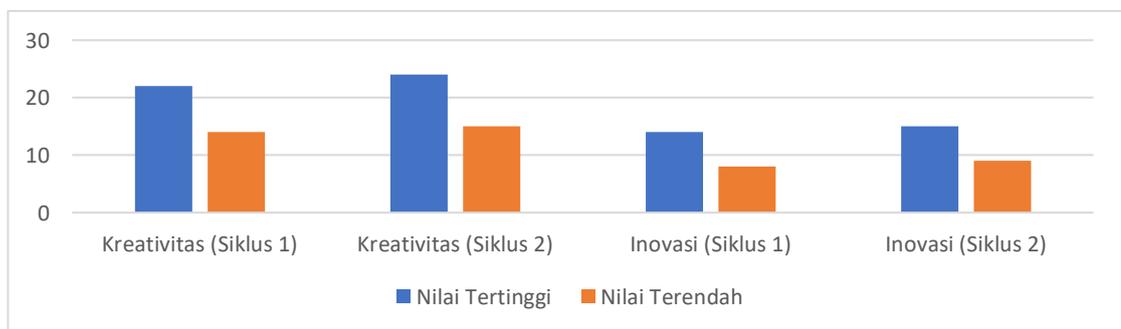
RESULTS

PjBL based on multiliteracy was applied to second semester students in the 2022/2023 academic year in the Basic Social Studies course. Based on this application, there is an increase in the ability to innovate and student creativity that can be seen in the first cycle and the second cycle. The research results are clarified in Table 4.

Table 4. Result of Study After the Implementation of Multiliteracy-Based PjBL

No	Skill	Average			Gain Cycle 1 and 2
		Pre-Cycle	Cycle 1	Cycle 2	
1.	Creativity	11,04 (FG)	17,48 (G)	19,13 (E)	1,65 (6,88%)
2.	Innovation	7,17 (FG)	10,65 (G)	11,91 (G)	1,26 (7,88%)

Note: Not Good (NG); Fairly Good (FG); Good (G); Excellent (E)

Based on the results of the performance, the data shows that the average score of pre-cycle, cycle one, and cycle two showed an increase. In addition to the increase in scores, the categories of ability to innovate and student creativity also increased from the category of Fairly Good (FG) to Good (G) and Excellent (E). Student creativity increased by 6.88% while the ability to innovate increased by 7.88%. This increase is still below 10%, meaning that students still need to be given action in other courses, so that the ability to innovate and creativity scores can increase significantly. The comparison of the highest and lowest scores of students in each cycle is clarified in Figure 2.

Figure 2. Comparison of Scores in Each Cycle

The diagram revealed a consistent improvement on both highest and lowest score. The highest score in innovation and creativity skill gained Excellent category, while the lowest score gained Good category.

After applying multiliteracy-based PjBL, students can make 23 diverse creative products. These student works are a representation of the freedom of thinking carried out by students through the intermediary of the essential questions posed. During the project, students were given intensive guidance. Students routinely make weekly progress reports, after receiving feedback and reflecting, students revise their products. Revisions are made 3-4 times so that the products are ready to be exhibited in the Student Work Show at the end of the semester. Multiliteracy learning is integrated in the process and results/products of PjBL. During the product development process, students need to explore various relevant sources that have an impact on improving students' reading literacy skills. The process of preparing products can also be related to science concepts, making diagrams or schemes, planning production cost budgets, and so on so that other literacy skills are also honed. Examples of student products are shown in Table 5.
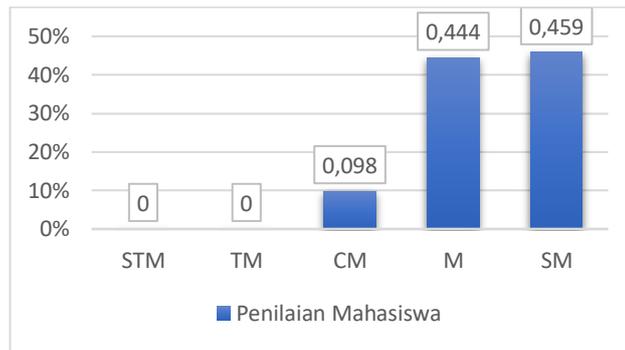
Table 5. Example of Student Products

No	Name of Product	Description	Multiliteracy	Innovation
1.	*Renn Car* (Solar Panel Car)	Addressing the social phenomenon of using alternative energy from the sun (geography). Renn car is a toy car that utilizes solar energy.	Reading Literacy; Science Literacy; financial literacy	Using used ice cream containers as eco-friendly toys
2.	"Kwartet Nusantara" Card Games	Addressing social phenomena about various cultures in Indonesia (anthropology). The archipelago quartet is a quartet card that contains a variety of Indonesian cultures such as traditional clothing, traditional houses, traditional weapons, and so on. These cards can be used as teaching media for children.	Reading Literacy; Science Literacy; financial literacy	Update on quartet card with cultural contents
3.	Horta Doll	Promotes the social phenomenon of utilizing used goods into more useful (economic) goods. Horta dolls are dolls that are made in such a way that they can be used as planting media. This doll is made from used socks, husks, and fertilizer. This aesthetic planting media can be used to beautify the room, as well as selling ideas. The average price of a horta doll on the market is Rp30,000.	Reading Literacy; Science Literacy; financial literacy	Kreasi media tanam

In addition to improving students' ability to innovate and creativity, multiliteracy-based PjBL is also considered a fun and challenging learning model. During the Covid-19 pandemic, there were many changes in the lecture model. Some lecturers still apply online learning and are considered less challenging for students.
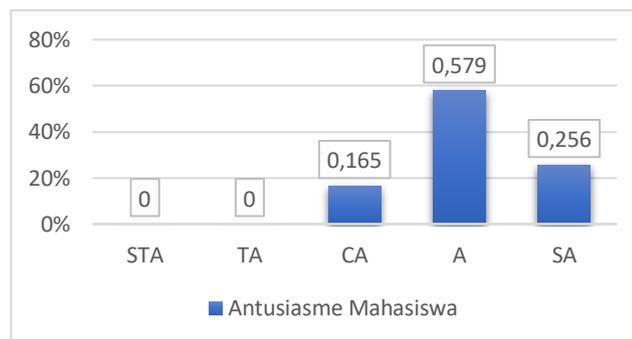
This saturation point of students in online learning needs to be addressed by applying innovative learning models so that learning becomes more meaningful.

Based on questionnaire data, most students give high ratings to assess lectures during one semester. The level of assessment of lectures by students is clarified in Figure 3.

Gambar 3. Assessment by PGMI UNSIQ students

As many as 46% of students stated that learning during one semester was very interesting and fun. While 44% of students stated that it was interesting and 10% of students stated that it was quite interesting. PjBL based on multiliteracy on average gets a good assessment from students. There were no students who gave bad assessments on lectures during one semester, both assessments by second, fourth, and sixth semester students. The assessment also correlated with students' enthusiasm in attending lectures. The level of student enthusiasm is clarified in Figure 4.

Figure 4. Level of Enthusiasm by PGMI UNSIQ Students While Participating in a Learning

A total of 58% of students felt enthusiastic during the lecture by applying multilteration-based PjBL. As many as 26% of students felt enthusiastic and the rest

felt quite enthusiastic. There were no students who were not enthusiastic during the lectures. Based on the results of random interviews with several students, they stated that lectures by applying multiliteracy-based PjBL are learning innovations that are both fun and challenging. Students are encouraged to keep trying and working, not just listening to lectures and presentations. Based on the reflection results between cycle one and cycle two, information was obtained that students need a framework to determine the steps of project preparation. Students have not been able to make creative products if there is no guidance. Therefore, intensive guidance became indispensable. In the second cycle, intensive guidance was followed by product revision so that the students' products were more mature to be submitted in the Student Work Sheet.

DISCUSSIONS

Generally, PjBL is combined with various learning media. However, this finding does not use media as an element of innovation. The author combines PjBL with multiliteracy learning, in accordance with current educational needs. Based on the 2018 PISA results, Indonesia is ranked 74th or sixth from the bottom in the reading literacy category (Tohir, 2019). Even though reading literacy is the foundation of other literacy skills, it means that Indonesia's literacy level is still far from ideal. An example of multiliteracy-based PjBL syntax in the Basic Social Studies course is clarified in table 6 as follows.

Table 6. Example of Multi Literacy-Based PjBL Syntax on Basic Social Science Subject

No	Steps	Information
1	Selecting project theme/topic	Social phenomena in daily life
2	Initial activities (Pre-communication)	The lecturer tells students to discuss a news about social phenomena in Indonesia. For example: the rarity of certain natural resources, regional culture recognition, etc.
3	Asking essential questions	The lecturer asks some essential questions about a social phenomenon based on student interest
4	Designing Project Plan	The students analyse the social phenomenon in daily life
5	Arranging Project Timeline	The students arrange project working timeline
6	Finishing Project	The students finish the selected project. The product of the project can be a video, blog, vlog, report, etc.

7	Reporting Project Result	The students report the project result including the preparation, process, challenges, benefits, etc.
8	Evaluating Project	The students revise the product.
	Literacy Domain: reading/writing, numeracy, science, financial, digital, society & culture literacy.	

Source: (Hamidah et al., 2020) & author modification

PjBL based on multiliteracy is a unique learning model innovation. PjBL does not only focus on the products produced by students. But it is accompanied by literacy activities that are internalized in the stages of PjBL. Multiliteracy learning encourages students to learn meaningfully so that it can improve thinking skills such as criticizing, analyzing, evaluating, and communicating information (Khoimatun & Wilsa, 2021). These higher order thinking skills are used to problem solve the essential questions posed. In developing the project, students are given the freedom to create. Students can make any product that suits their interests, as long as it is in accordance with the essential questions. The impact is that the work produced by students is diverse, so that it touches the diversity of literacy elements as well. This is certainly in accordance with the concept of Kampus Merdeka where students are given challenges to develop their capacity, personality, innovation, creativity and independence in finding knowledge (Sopiansyah et al., 2022).

The application of multiliteracy-based PjBL is in accordance with the application of Student Centered Learning. There are four characteristics of SCL, namely: 1) active, interactive, independent, responsible for learning, and lifelong learners (long life education); 2) broad exploration and transformation space so that students are able to develop their potential; 3) collaborative, cooperative, and contextual learning; and 4) lecturers as facilitators (Ismiyanti, 2020Ismiyanti2020). Multiliteracy-based PjBL is in accordance with SCL, where students must play an active role in lectures. Students are also provided with ample space to show their creativity in various products made. Products made by students also show students' interests, talents, and interests in certain social phenomena. Through SCL, students become subjects or active actors in learning both in activities to find materials/sources, read books, and discuss information (Widjatmaka & Praptiwi, 2022). The SCL approach is very much in line with the MBKM program, where students can learn independently, empowered, and useful for more people.

Lecturers as learning facilitators also have other important roles, namely: 1) facilitating students in the learning process; 2) understanding the course learning outcomes that students need to master at the end of learning; 3) designing learning

strategies and environments; 4) providing a variety of learning experiences needed by students in order to achieve the competencies required by the course; 5) helping students access information, organize and process it so that it can be used as an alternative to problem solving; and 6) identifying and determining patterns of assessment of student learning outcomes that are relevant to the learning outcomes to be measured (Ismiyanti, 2018). In multiliteracy-based PjBL, lecturers design strategies, environments and learning experiences so that students can identify and answer the essential questions posed. The answers to these essential questions are expected to be part of alternative problem solving. In addition, intensive guidance is also carried out regularly, so that students understand the direction of the project to be carried out.

CONCLUSION

PjBL based on multiliteracy is a learning innovation that can improve students' ability to innovate and creativity. The increase in the ability to innovate and creativity can be seen from the amount of improvement between cycles, namely 7.88% (ability to innovate) and 6.88% (creativity). The average score of improvement in the ability to innovate in cycles one and two is 1.26 and creativity is 1.65. In addition, PjBL based on multiliteracy can also increase student enthusiasm in attending lectures. As much as 58% of students were very enthusiastic about attending lectures and the rest felt enthusiastic. Most students also gave positive feedback in the application of multiliteracy-based PjBL. The application of multiliteracy-based PjBL is very appropriate when applied in learning in higher education. Students need a more exciting and challenging learning atmosphere, so that it will foster increased thinking skills. The lecture system dominated by lectures, independent presentations, or assignments is considered less relevant to the needs of students today. Therefore, the product-based curriculum in higher education needs special attention. One of the things that can be done is to apply various innovative learning models, such as multiliteracy-based PjBL

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