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Enhancing Creativity and Life Skills Through Project-Based Learning Models in Floor Gymnastics Instruction.

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Abstract

This study began with an analysis of the results and evaluation of gymnastics learning in the Physical Education study program. Lecturers had difficulty analyzing the impact of gymnastics learning on students' life skills and creativity because they had been using instruction-based learning that emphasized technique and knowledge alone, which tended to make students passive, thereby inhibiting the development of creativity and life skills values. The purpose of this study was to determine the effect of the PjBL model on students' creativity and life skills and to determine the extent of improvement in creativity and life skills through the PjBL model. The research method used a quasi-experiment with a descriptive quantitative approach. The research design was a pretest-posttest control group design. The population consisted of all JPOK FKIP ULM students. Sampling used purposive sampling. The sample consisted of 80 students who took the basic gymnastics learning course. Sampling was done using purposive sampling. The research instruments used were the LSSS questionnaire for life skills and the TTCT for creativity. The results showed a significant effect of the PjBL learning model on life skills ($P = 0.00 < 0.05$) and creativity ($P = 0.03 < 0.05$). The PjBL learning model can improve students' life skills, with the problem-solving and decision-making component increasing the most (80.51%), followed by the creativity component, namely flexible thinking, which increased by 77.25%. These results will serve as a reference for future learning to use a student-centered learning model so that floor gymnastics learning becomes more meaningfu

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INTRODUCTION

In the midst of globalisation and rapid technological developments, university graduates are not only required to have solid academic understanding, but also must possess high life skills and creativity. Creativity helps a person think innovatively and flexibly, while life skills such as communication, cooperation, and problem-solving are very important for facing the challenges of an increasingly complex world of work. The main challenge in education, particularly in physical education, is how to create a learning environment that fosters creativity and life skills among students (Wenno et al., 2021).

Floor gymnastics is a branch of physical education that focuses not only on motor skills, but also emphasises creativity in movement and body expression (Hadjarati et al., 2020). Floor gymnastics instruction in higher education generally still uses traditional methods that emphasise mastery of basic techniques and repetition of movements. This approach tends to provide fewer opportunities for students to hone their creativity and life skills. This study began with an analysis and evaluation of gymnastics courses in the Physical Education Study Programme. The results showed that students' movement skills increased by 37%, while their participation, creativity, creative thinking, and cooperation only increased by 12%. Based on these evaluation results, the objectives of this study are to determine the effect of the PjBL model on students' creativity and life skills and to determine the extent of improvement in creativity and life skills through the PjBL model.

Several studies show that innovative learning models have a significant effect on life skills (Haffyandi et al., 2025), improve student learning outcomes and skills in gymnastics (Fathoni et al., 2024), and enhance creative thinking through more meaningful learning (Wenno et al., 2021). This is because the implementation of structured learning can improve life skills compared to unstructured learning (Bean et al., 2016). In the context of sports learning, research shows that the Project-Based Learning model can increase student motivation and academic skills, especially in practice-based courses. Research conducted by Mahendra et al. (2023) shows that the use of the PjBL method in rhythmic movement learning can improve students' conceptual understanding, motor coordination, and creativity in creating innovative movement variations. Therefore, the application of Project-Based Learning in floor gymnastics learning can be an innovative solution to enhance students' creativity and develop their life skills, such as teamwork, communication, and problem-solving (Gero et al., 2023).

Project-Based Learning (PjBL) is a learning model that emphasises active student participation in completing real projects. With this method, students are encouraged to

design, develop, and evaluate projects that are relevant to the learning material, thereby enhancing their creativity and critical thinking skills (Ramadhan et al., 2020). In floor gymnastics learning, the application of PjBL allows students to explore and create more innovative movement variations. In addition, teamwork in completing projects can help develop their communication and collaboration skills. The purpose of this study is to analyse the effect of the PjBL learning model on students' creativity and life skills and to analyse the extent of improvement in students' creativity and life skills through learning with the PjBL model.

Although various studies have shown that PjBL is effective in enhancing creativity and life skills, its application in floor gymnastics learning has not been widely studied. Therefore, further research is needed to explore how PjBL can be adapted to this context and its influence on student skill development. Currently, project-based learning in gymnastics is only applied to rhythmic gymnastics material. This study raises a novelty by integrating the PjBL model into practical learning, particularly floor gymnastics, which has tended to be delivered through a demonstration and routine exercise approach. The state of the art of this research not only assesses cognitive or psychomotor learning outcomes but also explicitly highlights the influence of PjBL on the development of students' creativity and life skills, such as communication, collaboration, and decision-making, which have not been comprehensively studied in the context of physical education. Another novelty of this research is the use of authentic projects in physical education learning activities, such as making instructional videos, designing lesson plans, and exploring a playful approach to each basic artistic gymnastics movement, an approach that is still rarely used in sports education in schools.

METHODS

The research method used a quasi-experimental design with a quantitative approach. The research design was a pretest-posttest one-group design. The population consisted of all students majoring in physical education at FKIP ULM. Sampling was conducted using purposive sampling with the following categories: 1. Students majoring in physical education from the 2025 cohort, 2. Students taking the basic gymnastics learning course. The research sample consisted of 80 students taking the basic gymnastics learning course. The research instruments used the Life Skills Scale for Sport (LSSS) questionnaire for life skills and the Torrance Test of Creative Thinking (TTCT) for creativity with the following instrument indicators:

Table 1. Life Skills Scale for Sport instrument indicators

indicator	explanation	question

Team work	An action demonstrated by participants to help each other for the benefit of the group. (Program et al. , 2006)	1,2,3,4,5
Goal setting	Setting goals can be interpreted as determining the achievement of a certain level of proficiency or specific objectives. (Risma et al., 2021)	6,7,8,9,10
Time menegement	The action or process of planning and implementing conscious monitoring of the amount of time spent on specific activities, primarily to improve effectiveness, efficiency, and productivity. (Sari & Fadila, 2022)	11,12,13, 14,15
Emotional skill	Understanding how to control emotions, recognising that behaviour changes when emotional, being aware of one's own feelings, using emotions to stay focused, understanding other people's emotions, recognising how others feel, helping others to use their emotions to stay focused, and helping others to control their emotions when something bad happens. (Pipit Muliyah, Dyah Aminatun, Sukma Septian Nasution, Tommy Hastomo, Setiana Sri Wahyuni Sitepu, 2020)	16,17,18, 19,20
Intrapersonal skill	Understanding how to control emotions, recognising that behaviour changes when emotional, being aware of one's own feelings, using emotions to stay focused, understanding other people's emotions, recognising how others feel, helping others to use their emotions	21,22,23, 24,25

	to stay focused, and helping others to control their emotions when something bad happens. (Pipit Muliyah, Dyah Aminatun, Sukma Septian Nasution, Tommy Hastomo, Setiana Sri Wahyuni Sitepu, 2020)	
Inter personal skill	Speak clearly to others. Listen to what the other person is saying. Maintain good communication with others. (Pipit Muliyah, Dyah Aminatun, Sukma Septian Nasution, Tommy Hastomo, Setiana Sri Wahyuni Sitepu, 2020)	26,27,28, 29,30
Leadership	Implementing high standards within the team, understanding how to motivate others, assisting others in resolving issues, serving as a role model, enabling team members to collaborate effectively, recognising others' achievements, understanding how to influence others to behave positively, and being able to consider the various opinions of each team member. (Program et al., 2006)	31,32,33, 34,35
Decition making and problem solving	Mampu memikirkan secara cermat tentang suatu masalah yang dihadapi, mampu membuat solusi sebanyak mungkin untuk mengatasi berbagai masalah yang akan terjadi, dapat membandingkan setiap solusi untuk mencari solusi yang terbaik, serta dapat mengevaluasi kelebihan dan	36,37,38, 39,40

	kekurangan tentang solusi yang	

	dipilih.(Program et al., 2006)	

Table 2. Indicator instrument *Torrance test of creative thingking*

Indicator	Explain	Question
Fluid thinking	The characteristics of fluid thinking skills are generating many ideas, answers, problem solutions, or questions, providing many ways or suggestions for doing various things, always thinking of more than one answer (Nurjannah, 2017).	1,2,3,4,5
Flexible thinking	The characteristics of flexible thinking are generating varied ideas, answers, or questions; being able to see a problem from different perspectives; seeking many alternatives or different directions; and being able to change one's approach or	6,7,8,9,10

Indicator	Explain	Question
Original thinking	The characteristics of original thinking are the ability to produce different and unique expressions, think of other ways to express oneself, and be able to make new combinations of parts or elements (Nurjannah, 2017).	11,12,13, 14,15
Detailed thinking	The characteristics of detailed thinking skills are the ability to enrich and develop an idea or product, adding or detailing subjects, ideas or situations in order to make them more interesting. (Nurjannah, 2017).	16,17,18, 19,20

	way of thinking. (Nurjannah, 20 17).	

Data collection techniques used a 1-5 Likert scale questionnaire distributed via Google Forms at the beginning and end of the project presentation meetings. Statistical data analysis used mean, median, and variance analysis, and hypothesis analysis used T-tests with the help of IBM SPSS version 24 software.

RESULT

This study aims to analyze the effect of the PjBl learning model on students' creativity and life skills and to analyze the extent of improvement in students' creativity and life skills through the PjBl learning model. The results of the descriptive statistical analysis are as follows:

Tabel 3. Hasil statistic deskriptif

Result	N	Minimum	Maximum	Mean	Std. Deviation
Pretest creativity	80	91.00	173.00	140,97	15.12
Posttest creativity	80	103.00	190.00	156,70	20.15
Pretest life skills	80	110.00	194.00	148.29	17.26
Posttest life skills	80	124.00	210.00	171.54	19.02

Hypothesis analysis using the independent sample T-test with a significance level of $\alpha = 0.05$ Based on the analysis results, it was found that the project-based learning model had an effect on students' life skills with a significance value (sig 2 tailed) of $P = 0.00 < 0.05$.

Table 4. Results of parametric tests of life skills instruments

		t-test for Equality of Means		
		t	df	Sig. (2-tailed)
Experiment Group (pretest – posttest)	Equal variances assumed	-2.549	79	.000
	Equal variances not assumed	-2.549	74.458	.000

The sample T-test results show that there is an effect of the project-based learning model on student creativity with a significance value (sig 2 tailed) of P = 0.03 < 0.05.

Table 5. Results of theparametric creativity instrument test

Independent Samples Test				
		t-test for Equality of Means		
		t	df	Sig. (2-tailed)
Experiment Group (pretest – posttest)	Equal variances assumed	-2.330	66	.003
	Equal variances not assumed	-2.330	61.458	.003

Next, to analyze the extent of improvement in creativity and life skills from the PjBL learning model, we used N.Gain% analysis with the following results:

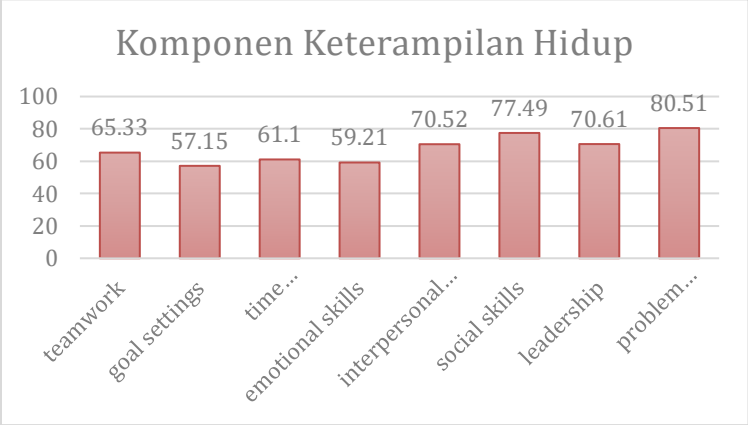

Figure 1. Results of improvement in life skills components

Based on Figure 1 above, it is known that all life skills components increased by more than 50%, with details of teamwork increasing by 65.33%, goal setting by 57.15%, time management by 59.21%, interpersonal communication by 70.52%, social skills by 77.49%, leadership by 70.61%, and problem solving and decision making components increasing the most by 80.51%.

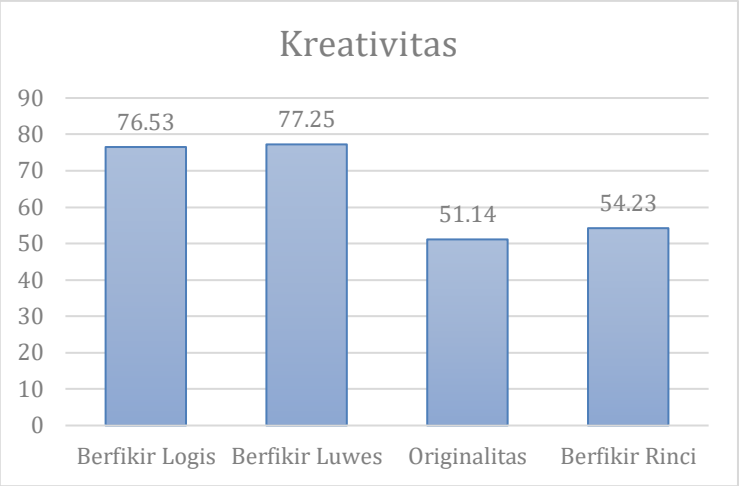

Figure 2. Results of creativity component improvement

Based on Figure 2 above, it can be seen that all creativity components increased by more than 50%, with logical thinking increasing by 76.53%, flexible thinking experiencing the largest increase of 77.25%, originality increasing by 51.14%, and detailed thinking increasing by 54.23%.

DISCUSSION

Based on the results of hypothesis testing, there is a significant effect between the PjBL learning model and students' creativity and life skills, with a significance value of P = 0.00 < 0.05 for life skills and P = 0.03 < 0.05 for creativity. These research results are in line with the opinion of (Jacobs & Wright, 2016) “Life skills can help students cope with everyday problems; they need a place and the means to develop their values. Sports and physical education are the best places to transfer life skills”. This learning model produces students who are actively involved in solving real-world problems collaboratively and creatively. Thus, students not only acquire conceptual knowledge but also develop problem-solving and creativity skills (Cronin & Allen, 2017). These findings indicate that the application of the Project-Based Learning model can be an effective strategy in higher education, especially in enhancing student creativity through innovative projects, developing life skills such as cooperation, responsibility, and communication skills, and encouraging students to learn independently and reflectively, in line with the needs of the 21st century. These results indicate that the application of the Project-Based Learning model not only has a significant impact on students' cognitive aspects but also on the development of higher-order thinking skills and creative character.

Life skills are an individual's ability to deal with life's challenges and problems effectively, including critical thinking, communication, collaboration, and leadership skills. Based on the graph

results, the life skills component that experienced the greatest increase was problem solving and critical thinking (80.51%). In addition, improvements in social skills (77.49%) and interpersonal skills (70.52%) indicate that project-based learning also strengthens social relationships among students. In group projects, students are required to communicate, negotiate, and work together to achieve common goals. The research by Fitriani & Kurniasih (2018) also confirms that PjBL is effective in improving students' collaborative and social skills due to the division of roles and responsibilities in the projects carried out. Thus, it can be concluded that the PjBL model helps students develop life skills oriented towards teamwork, effective communication, and reflective and adaptive thinking skills.

In terms of creativity, the data shows that the component that experienced the greatest increase was flexible thinking, with an increase of 77.25%, followed by logical thinking (76.53%). These results indicate that students who participated in project-based learning became more open to various alternative solutions and were better able to adapt their thinking to new situations. Project-Based Learning is a constructivist learning model that emphasizes collaborative activities and real-world problem solving. Thus, the improvement in students' life skills and creativity in this study is a direct result of project-based learning experiences that require active participation, reflection, and teamwork.

CONCLUSION

Based on the results of data analysis, it can be concluded that there is a significant influence of the project-based learning model on students' creativity and life skills, and there is an increase in all components of students' creativity and life skills. These results will be used as a reference for future learning so that a student-centered learning model is used to make floor gymnastics learning more meaningful.

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