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Analysis of Pre-Service Teacher's Performance Viewed by Creativity and Self-Regulated Learning

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Abstract: This study aims to analyze the effect of creativity and self-regulated learning on the pre-service teacher's performance in school internships. This research was an ex-post facto with a quantitative approach. The sample of this research was selected using a purposive sampling technique. Seventy-three students at the University of Mataram FKIP participated in the school internship as the research sample. The research instrument used was a creativity questionnaire, a self-regulated learning questionnaire, and a school internship performance instrument. The data obtained were analyzed using multiple linear and straightforward linear regression tests. The results of this study were a) there was a significant effect between creativity and self-regulated learning on the performance of the pre-service teacher in school internship, b) there was a significant influence between creativity and pre-service teacher performance and c) there was a significant effect between self-regulated learning and pre-service teacher performance. This study concludes that there is an influence, either partially or simultaneously, between creativity and self-regulated learning on the performance of pre-service teacher who takes school internship programs. It implies that creativity and self-regulated learning are two aspects to consider when evaluating PLP student performance. Improving their abilities in these two areas will help them succeed in the PLP program.

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Introduction

A school internship is one of the subjects that must be followed by pre-service teachers (students who are enrolled in a teacher education program). This program is a sustained period of involvement with the school that helps aspiring teachers develop professional knowledge, competencies, and abilities and a positive outlook on education and teaching (Gupta, 2017). It can be seen as the stage to go to a professional teacher (Chennat, 2014). Pre-service teachers can learn about their careers realistically from that (Basturk, 2016). This course requires pre-service to observe and analyze problems at school and then provide solutions to these problems (Usman & Ma'ruf, 2013)

The duration of a school internship may vary according to the country. In America, this program takes one semester (Waters, 2016). In Australia, the range of the varies program vary from long-term long term (Ledger & Vidovich, 2018). It can take 14 weeks in Turkey to finish this program (Filiz & Durnali, 2019). In India, the school internship has been expanded from 40 days to 20 weeks for all educational courses (Alam, 2019). Meanwhile, in Indonesia, especially at the University of Mataram, the school internship (PLP) takes 38 effective working days during the new normal period. This internship is divided into two parts, PLP I (eight effective working days) and PLP II (thirty effective working days) (Faculty of Teacher

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Training and Education University of Mataram, 2022). The essence of PLP I activities is direct observation, analysis, and appreciation of school activities. Meanwhile, through a series of activities, PLP II aims to strengthen academic competence in education and fields of study.

During the PLP II, students must produce several outputs that will become aspects of the assessment by the tutor teacher who supervised them in school and the lecturer. Students must produce five types of outputs in PLP II (Faculty of Teacher Training and Education University of Mataram, 2022). Table 1 summarizes the results.

Table 1. The Output of PLP II for University Mataram's PLP Students in 2022

Number	Output Type	Output Detail
1.	Minimum 3 sets of learning set	a. Syllabus b. Lesson plan c. Learning media d. Teaching material e. Worksheet for student f. Assessment instrument
2.	Simulation and teaching practice	a. Teaching simulation with tutor teacher twice b. Simulation of teaching independently twice c. Teaching practice as PLP II final exam
3.	Tutorial video	One 10-15 minute learning video uploaded on the faculty youtube channel
4.	Student social attitude	
5.	PLP final report	

PLP II requires pre-service teachers to go directly to the school for teaching practice (Nurdin et al., 2021). Meanwhile, the students who will be taught in school are still transitioning from the pandemic era to the new normal, in which learners are beginning to return to offline learning. These transitional students are vulnerable to learning loss (Maulyda et al., 2021). Learning loss is the difference in student rate in learning material and skill under specific settings compared to normal ones (Donnelly & Patrinos, 2022). It is difficult for PLP students since they must create learning sets to facilitate learning recovery after the pandemic. On the other hand, PLP students have certain anxieties, particularly when it comes to teaching, due to a lack of teaching experience, content proficiency, and time management skills (Sari & Anwar, 2021). In addition, they also have difficulty in doing various learning tasks and supervising the class, particularly if they are not accompanied by a teacher supervisor (Salviana et al., 2021).

PLP students must study various skills throughout PLP II to support their teaching ability. Moreover, due to the multiple outcomes that PLP students must produce within 30 effective working days, it is necessary to be able to direct oneself and minimize reliance on colleagues to complete the task on time. Students must also learn to organize and design their learning goals during the internship (Endedijk et al., 2016). Individuals monitor, manage and evaluate their learning through a process known as self-regulation (Ganda & Boruchovitch, 2018). This ability also includes the skill to make plans, organize, and evaluate processes independently without relying on peers to achieve goals (Lu'luilmaknun & Wutsqa, 2018). The ability of preservice-teacher to self-regulate their learning has a substantial impact on the quality of their learning (Endedijk, 2014)

Furthermore, PLP students must use various learning resources and continue to develop their creativity (Faculty of Teacher Training and Education University of Mataram, 2022). It is an effort to prepare students to be creative teachers in the era of the Fourth

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Industrial Revolution (Formi & Yulhendri, 2021). Creative teachers can lead to creative students because imitating teachers' behaviour is one method learners might use to develop their creative skills (Soh, 2017).

Some scholars include originality and usefulness as the standard definition of creativity (Hernández-Torrano & Ibrayeva, 2020). Creative teachers are those who have the following characteristics: 1) adaptability, or the ability to solve problems using various methods; 2) originality, or the ability to produce expressive forms and think outside the box to persuade certain parties; and 3) elaboration, or the ability to create an excellent idea or thing and then detail it so that it becomes enjoyable (Jeffrey & Craft, 2010; Kurniasih & Muchyidin, 2019). Piirto also states that a creative teacher has characteristics such as thinking creatively and working creatively with others (Astuti et al., 2019).

Students' PLP output is one of the mirrors of their performance during PLP. Global to local research has been conducted to investigate the factors that predict PLP students' performance, such as grade point average (GPA) and emotional intelligence (Ingle, 2017), organizational environment (Samonte & de Guzman, 2018), resilience (Nghia & Tai, 2017), learning engagement (al Mubarokah & Pradita, 2020) anxiety (Roidah et al., 2022), self-efficacy (Izzah et al., 2022), student skills in preparing lesson plans (Setiawan et al., 2022), and basic teaching skills (Rhamayanti, 2018). Moreover, the faculty factor believes that pre-service teachers must be subject–matter experts and should find ways and means to help their students succeed in all areas, significantly contributing to their pre-service teacher internship performance (Marasigan, 2018). However, few studies have looked into the relationship between self-regulated learning and student learning creativity as the factor that influences the performance of PLP students. This study attempts to analyze the factors influencing PLP students' performance during the new normal period, focusing on PLP students' self-regulated learning and creativity. The findings of this study are expected to assist universities in general in mapping capabilities that can support the quality of PLP students, ensuring that the quality of graduates is maintained even during shifting circumstances, such as the Covid-19 pandemic, which has not yet ended.

Research Method

This research was ex-post facto research with a quantitative approach. The population of this study was students of mathematics education FKIP UNRAM. Samples were taken using purposive random sampling. The sample used in this study was 73 students of mathematics education at the University of Mataram who participated in the PLP. A creativity questionnaire in PLP activities with 22 statements, self-regulated learning with 22 statements, and an assessment of PLP student performance was used in data collection. The following characteristics were used in developing the creativity questionnaire: fluency, flexibility, originality, and detail. Controlling behavior, regulating, and evaluating learning are the indicators for constructing a self-regulated learning questionnaire. The instrument used in this study was validated by two experts (expert judgment) and can be used after revision. PLP student performance data is collected from lecturers using the PLP student performance assessment instrument created by the PLP Implementation Unit at the University of Mataram.

The categorization of PLP students' creativity levels, self-regulated learning, and PLP student performance from lecturers can be seen in Table 2, Table 3, and Table 4. Following data collection, a descriptive statistical analysis was performed on the data. Furthermore, a statistical inference test was performed on the obtained data. Multiple regression and linear regression tests are used to make inferences. The multiple linear regression test was used to

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see if there was a correlation between the interaction of the two independent variables and the dependent variable. In contrast, the linear regression test was used to see if each independent variable affected the dependent variable. The data must meet the normality assumption before the two tests can be performed. The significance value in the Kolmogorov-Smirnov table was used to perform the normality test in this study using SPSS 21 software. The normality assumption is met if the significance value of Kolmogorov-Smirnov is greater than 0.05. Simultaneous significant tests were performed using the F test and the SPSS 21 software. If $F_{count} > F_{table}$, then H0 is rejected; otherwise, H0 is rejected if the sig. value is less than 0.05.

Table 2. The Categorization of PLP Students' Creativity Level

Interval	Category
$x < 2{,}26$	Low
$2{,}26 \leq x < 2{,}73$	Medium
$2{,}73 \leq x$	High

Table 3. The Categorization of PLP Students' Self-Regulated Learning

Interval	Category
$x < 2{,}87$	Low
$2{,}87 \leq x < 3{,}62$	Medium
$3{,}62 \leq x$	High

Table 4. The Categorization of PLP Students' Performance by the Lecturer

Interval	Category
$x < 78{,}43$	Low
$78{,}43 \leq x < 85{,}56$	Medium
$85{,}56 \leq x$	High

When analyzing the influence of a variable, a coefficient of determination (R square) was used to interpret the level of influence between the independent and dependent variables. Table 5 provides guidelines for interpreting the coefficient of determination (Sarjana et al., 2020).

Table 5. Interpretation of Determination Coefficient (R square)

R	Interpretation
0.00-0.199	Very weak
0.20-0.399	Weak
0.40-0.599	Medium
0.60-0.799	Strong
0.80-1.00	Very strong

Results and Discussion

The results of descriptive statistics of the independent and dependent variables are presented in Table 6.

Table 6. The Result of Descriptive Statistics

Variable	Category		
	High	Medium	Low
Creativity	21%	62%	18%
Self-regulated learning	15%	67%	18%
Performance of PLP student	16%	64%	19%

Table 6 shows that more than 50% of the sample is in the moderate category, both in creative ability, self-regulated learning, and performance in PLP. For the high category, less than 25% of students are in that category for the three variables studied, similarly in the low category. These descriptive statistics show that each variable has a distribution of students that is nearly

the same in each category. Furthermore, data analysis was carried out through statistical inferential tests. The first test used was multiple linear regression to see the joint influence of creativity and self-regulated learning on the performance of PLP students. The data obtained are presented in Table 7.

Table 7. The Result of Multiple Linear Regression for The Influence of Creativity (X_1) and Self-Regulated Learning (X_2) toward the Performance of PLP Student (Y)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	123.133	2	61.566	10.110	.000[b]
	Residual	426.289	70	6.090		
	Total	549.421	72			

a. Dependent Variable: Y
b. Predictors: (Constant), X1, X2

Table 8. *Coefficient*[a] (X1_X2-Y)

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	67.954	4.111		16.531	.000
X1	4.192	1.802	.269	2.327	.023
X2	2.152	.844	.294	2.549	.013

Table 7 shows the significance of creativity and self-regulated learning ability on performance when PLP = 0.000. This level of significance is less than the 0.05 level. It means that creativity and self-regulated learning ability significantly influence student PLP performance. Table 8 shows the relationship between three variables, namely Y=4.192X_1+2.152X_2+67.954. The following relationship is explained: each 1-point increase in the creativity (X1) and self-regulated learning (X2) variables results in a 6.344-point increase in PLP student performance. For example, a student receives an average of 2 out of 4 on the creativity questionnaire and a maximum of 4 on the self-regulated learning questionnaire. Substitute the average score on the creativity and self-regulated learning questionnaires into the equation to get the student's estimated PLP performance score of 82.794. Furthermore, suppose the student raises his or her average score on the creativity questionnaire by one point to three and his or her average score on the self-regulated learning questionnaire by one point to four. In that case, the predicted PLP performance score is 89.138. It means that the performance of PLP students has increased from 82.794 to 89.138. This increase is 6.344 points, which occurs when creativity and self-regulated learning increase by one point.

Furthermore, the strength of the influence of creativity and self-regulated learning on PLP student performance was examined using an R square. Table 9 displays the results of the correlation strength.

Table 9. The Correlation Strength of Creativity (X_1) and Self-regulated Learning Ability (X_2) on PLP Student Performance

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	.473[a]	.224	.202	2.46776

a. Predictors: (Constant), X1, X2

The coefficient of determination is 0.224, as shown in Table 9. It reveals that creativity and self-regulated learning affect 22.4% of PLP students' performance, with the remaining 77.6% attributed to variables not included in this study. The correlation of 22.4% falls into the low correlation category.

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The effect of each independent variable (creativity and self-regulated learning) on the dependent variable (PLP student performance) was also determined using simple linear regression. Tables 10 and 11 show the results of a simple linear regression on the influence of creativity on PLP student performance. Based on Table 10, It obtained a significance of 0.001 < 0.05 significance level. It implies that creativity has a significant impact on PLP students' performance. Table 11 provides the regression equation for the relationship between creativity and PLP student performance: Y = 70.218+6.082 X1. According to this equation, every 1-point increase in the average score on the creativity questionnaire (X1) results in a 6,082-point increase in PLP student performance.

Table 10. Result of Simple Linear Regression for The Influence of Creativity (X_1) toward the Performance of PLP Student (Y)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	83.558	1	83.558	12.735	.001[b]
	Residual	465.863	71	6.561		
	Total	549.421	72			

a. Dependent Variable: Y
b. Predictors: (Constant), X1

Table 11. *Coefficient*[a] (X1-Y)

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	70.218	4.166		16.854	.000
	X1	6.082	1.704	.390	3.569	.001

The coefficient of determination was used to determine the level of influence. Table 12 shows the findings of the analysis. The coefficient of determination is 0.152, according to the table. It means that creativity contributed to 15.2% of PLP students' performance. This contribution is categorized as having a very low influence.

Table 12. *Model summary* (X1-Y)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.390[a]	.152	.140	2.56153

a. Predictors: (Constant), X1

Simple linear regression was then carried out to determine the effect of self-regulated learning on the performance of PLP students. The results of simple linear regression can be seen in Table 13 and Table 14.

Table 13. The Result of Simple Linear Regression for The Influence of Self-regulated Learning (X_1) toward the Performance of PLP Student (Y)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	90.167	1	90.167	13.940	.000[b]
	Residual	459.254	71	6.468		
	Total	549.421	72			

a. Dependent Variable: Y
b. Predictors: (Constant), X1

Table 14. *Coefficient*[a] (Self-regulated Learning (X_1)-Performance of PLP Student (Y))

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		

1	(Constant)	75.592	2.550		29.648	.000
	X2	2.960	.793	.405	3.734	.000

Table 13 showed a significance level of 0.000 < 0.05. It means that PLP students' self-regulated learning significantly impacts their performance. Table 14 yields the regression equation for the relationship between self-regulated learning and PLP student performance: Y = 75,592+2,960 X1. According to this equation, every 1-point increase in self-regulated learning (X1) leads to a 2,960-point increase in PLP student performance.

The coefficient of determination was calculated to determine the level of influence. Table 15 shows the analysis results. According to the table, the coefficient of determination is 0.164. It means that self-regulated learning correlates 16.4% to PLP students' performance. This contribution is included in the very low influence.

Table 15. *Model summary* (Self-regulated Learning (X_1)-Performance of PLP Student (Y)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.405[a]	.164	.152	2.54330

a. Predictors: (Constant), X1

Student performance during PLP results from learning from outputs such as learning tools and learning videos. This performance can also result in skills, such as teaching abilities and social attitudes. The first finding of this study is that creativity and independent learning significantly impact those performances. Supratman and Nurhikmah's research supports this. The study found that the two independent variables simultaneously affect student learning outcomes (Supratman & Nurhikmah, 2021).

The second finding from this study is that creativity significantly influences the performance of PLP students who are future teachers. This finding is consistent with Kasim (Kasim et al., 2020) and Pishghadam's (2012) research, which found that creativity significantly impacts teacher performance. Creativity enables a person to develop and select alternatives. This assists students in developing numerous new alternatives to learning tools and learning videos to improve their performance during PLP.

The third finding from this study is that independent learning significantly influences the performance of PLP students. These findings are consistent with the findings of Misdalina, Ningsih, and Marhamah's research (Misdalina et al., 2017). It is because someone with self-regulated learning can learn how to complete tasks successfully (Endedijk et al., 2016). Students with good self-regulated learning take the initiative to learn without the assistance of others (Tahar & Enceng, 2006), allowing them to motivate themselves to improve their performance.

This study discovered that self-regulated learning and creativity simultaneously impact 22.4% of students' PLP performance. It is regarded as having a low impact. Additionally, student PLP performance is affected separately by creativity and self-regulated learning at percentages of 15.2% and 16.2%. It can be classified as a very low effect. Those results occurred because there are still numerous additional variables that affect students' PLP performance. The research found that Self-efficacy also impacted 67.9% of students' PLP performance (Izzah et al., 2022). Strong correlation can be used to describe this amount of correlation. The ability to create lesson plans is another aspect that affects student achievement in PLP. According to Setiawan et al., this factor shows a moderate correlation (53.2%) with students' PLP performance (Setiawan et al., 2022).

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Conclusion

The conclusions of this research are

a) There is a significant effect between creativity (X_1) and self-regulated learning (X_2) on the performance of PLP students (Y) with a relationship Y=4.192X_1+2.152X_2+67.954.
b) There is a significant influence between creativity (X_1) and PLP student performance (Y), $Y = 70.218 + 6.082\,X_1$.
c) There is a significant effect between self-regulated learning (X_1) and PLP student performance (Y), namely $Y = 75.592 + 2.960\,X_1$.
d) Either partially or simultaneously, there is an influence between creativity and self-regulated learning on the performance of pre-service teachers who take the PLP program.

This implies that creativity and self-regulated learning are two aspects to consider when evaluating PLP student performance. Improving their abilities in these two areas will help them succeed in the PLP program.

Recommendation

Based on the findings of this study, the following advice is made to study programs or faculties to place a higher emphasis on teaching methods that emphasize creativity and self-regulated learning in order to better educate prospective PLP students.

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