Analysis of Self-Efficacy, Creativity, and Relationship with Implementation Learning Innovation of Senior High School Teachers in Malang City

Azizatunnisa'*, Asep Sunandar, Ahmad Yusuf Sobri

State University of Malang, Jl. Semarang No. 5 Malang, East Java, Indonesia

*Author of correspondence, Email: azizatunnisa.2001316@students.um.ac.id

Abstract

The aims of research are: (1) knowing teacher self-efficacy; (2) knowing teacher creativity; (3) knowing the application of teacher learning innovations; (4) knowing the relationship between teacher self-efficacy and the application of teacher learning innovations; (5) knowing the relationship between creativity and the application of teacher learning innovations; (6) knowing the relationship between self-effiacy and creativity with the application of teacher learning innovations in public high schools in Malang City. The research used a quantitative approach with a descriptive correlational research design. Sampling technique using propotional random sampling technique was used for each school with a total sample size of 167 certified teachers (Civil Servants). The analysis techniques used are descriptive analysis techniques, prerequisite analysis tests, and hypothesis testing with the help of IBM SPSS Statistic 20. The results of the study are (1) the self-efficacy variable is in the very high category; (2) the creativity variable is in the high category; (3) the variable application of teacher learning innovation is in the high category; (4) there is a positive and significant relationship between self-efficacy and the application of teacher learning innovation; (5) there is a positive and significant relationship between creativity and the application of teacher learning innovation; and (6) there is a positive and significant relationship between self-efficacy and creativity with the application of teacher learning innovation in public high schools in Malang City.

Keywords: relationship; self-efficacy; creativity; implementation of learning innovations; teacher

1. Introduction

The National Education System is the basis for the implementation and reform of education as stipulated in the Law of the Republic of Indonesia Number 20 of 2003 discussing the vision, mission, functions, and objectives of national education, namely to realize education that has quality, and the process is relevant to the needs of each individual community and its realization can be competitive in facing life in this era of globalization. The main capital in following the current global competition is education, through this education the main goal is to form individuals who are competent in their fields, especially facing the development of information and communication technology will be realized (Juniartani, et al., 2017). The implementation of quality education is caused by the main factor that supports education, namely educators, teachers who are the main benchmark for the running of an education.

Teachers here must be able to carry out quality education adapted to the dynamic changes in the era of life, especially being able to follow changes in the current curriculum, of course, must be supported by a skill or trust in him. Because, the changes that occur require teachers to be able to make a change in making learning innovation strategies by utilizing technology so that students' motivation to learn is achieved. In the last education survey in

This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License

2022 regarding learning innovations carried out by teachers, it was stated that currently the Teacher Mobilizer Program (PGP) of the Ministry of Education, Culture, Research and Technology has been assessed as 99.9% successful in improving teachers' innovation abilities, reflected in the number of Indonesian Political Indicator Surveys at the end of 2021 to 938 respondents, a percentage of 68.5% of respondents strongly agreed while 31.5% of respondents agreed. PGP has been said to have achieved success in improving teacher skills and has a good positive impact on themselves, students, and schools. However, although the survey has provided a fairly good improvement, in reality there are still many schools that have educators and education personnel who have low innovative behavior, both due to age and technological advancement. The low motivation to have innovative behavior is caused, among others, because teachers do not have the ability or confidence to adjust to frequent curriculum changes, low technology mastery skills, learning methods that are less varied and creative, and the use of printed books without any motivation to create innovative teaching modules. With this statement, it is the task of education, especially schools, to be able to strive for educators to continue to improve and develop their motivation to use creativity and trust in themselves to create and do positive things so as to create innovations that will have an impact on the learning excellence produced by students.

Teachers efforts to have innovative behavior to create innovations in learning are certainly supported by several internal factors such as creativity. This creativity is usually characterized by creating a new idea that is actualized in a learning method that did not exist before and has never developed the creativity of the idea. In addition to creativity, self-efficacy is also a factor in shaping innovative behavior, because this self-efficacy has an impact on the level of confidence or ability of the teacher to try new things, be able to face every problem, and the teacher's confidence in motivating his students to develop their skills. In accordance with research conducted by Wangid, et al. (2020) that the behavior of teachers when faced with sudden problems or tasks, individuals who have high levels of self-efficacy will be calmer when carrying out the tasks and challenges they face, and those with low levels of self-efficacy feel they do not have the ability to face and complete challenges or tasks, accompanied by a tense mood.

Teachers self-efficacy about their ability to get the job done is an important factor that will influence them and the way they actualize any innovative ideas or creativity they have by integrating technology into the curriculum. Teachers with higher self-efficacy are more likely to utilize innovative components in the learning process and will be more ready to try creative and untested teaching methods. Teachers will be open to new concepts, more dedicated to teaching, and more eager to implement more effective teaching techniques (Purnomo, et al., 2023). In the process of applying this self-efficacy, teachers are certainly supported in terms of their soft skills in making innovative learning through creativity. Teacher creativity here is not required to produce new innovative ideas, but can refer to the application of new elements in the implementation of learning combined with a pattern of creation which can later manifest a type of teaching method or technique that will cause active learner behavior, attract, and present challenges for learners to continue learning.

The application of learning innovations that have been carried out by educators is proven in one of the cities in East Java Province, namely Malang City, mentioned by the Ministry of Religion of the Republic of Indonesia on November 26, 2022 in Malang City there are teachers who received awards at the peak night of the commemoration of National Teacher's

Day which took place in Jakarta on November 25, 2022, namely Ahmad Thohir Yoga who won 1st place in the 2022 Achievement Teacher Education Personnel (GTK) Award in creating Citinzhep Global Education Innovations at Madrasah Aliyah Negeri (MAN) 2 Malang City. This is a competition that not only students can be studded with achievements, but educators must also excel. In addition, there is also the Head of SMA Negeri 1 Malang who received the East Java Innovation Work award in commemoration of National Education Day and the Birth of Pancasila at the Sabha Nugraha room of the East Java Provincial Education Office on June 13, 2023. Therefore, one aspect of advancing education and producing quality education quality can be seen from how creative teachers are in maximizing their creativity competencies or beliefs to create learning innovations that will be applied to their students.

Based on the background that has been described, the researcher will examine matters that have to do with the application of teacher learning innovation as the dependent variable and try to reveal its relationship with self-efficacy and creativity as independent variables. Therefore, the researcher conducted a study by taking the title "Analysis of Self-Efficacy, Creativity, and Relationship with Implementation Learning Innovation of Senior High Schools Teachers in Malang City".

2. Method

This research uses a quantitative approach with a descriptive correlational research design. The analysis techniques used are descriptive analysis, prerequisite analysis, and hypothesis testing. Descriptive analysis is used as an analysis to describe the variables of self-efficacy, creativity, and the application of teacher learning innovations in public high schools in Malang City with techniques that determine the length of the interval class, determine the percentage, and determine the mean. The prerequisite analysis technique is used as a requirement test before conducting hypothesis testing with techniques namely normality test, linearity test, and multicolonierity test. Hypothesis testing techniques are used to determine the relationship between the independent variable and the dependent variable, namely (1) the relationship between self-efficacy and the application of teacher learning innovation; (2) the relationship between creativity and the application of teacher learning innovation; (3) the relationship between self-efficacy and creativity with the application of teacher learning innovation in public high schools in Malang City. Hypothesis testing uses Pearson product moment correlation analysis, multiple correlation analysis, coefficient of determination, and path analysis. The research population is permanent/certified teachers (civil servants) in public high schools in Malang City. The total population in the study was 287 teachers. The sampling technique used propotional random sampling. This is because the researcher takes the number of samples in a balanced and equitable manner, reflecting the exact proportion of each group in the population that is used as a representative to be studied and observed further. Using the Slovin formula, the total sample in this study was 167 respondents.

The research instrument used a closed questionnaire / questionnaire with Google Form media. The reference for making questionnaires / surveys is carried out using a Likert scale with alternative answers 5 to 1 which has a range of values from very positive to negative. A good instrument must be valid and reliable. The validity level of the instrument statement items used Pearson's Product Moment correlation technique using IBM SPSS Statstic 20. Statement items are valid if $r_{count} > r_{table}$ with a significance level of 0.05 (5%), namely rtable is

0.3494 with N = 30. Based on the validity test results, all statement items were declared 57 valid and 4 invalid. The next stage is the reliability test using Cronbach's Alpha with IBM SPSS Statstic 20, where the instrument is reliable if the Cronbach's Alpha value is > 0.6. Cronbach's Alpha value is 0.920 > 0.6 for variable X_1 (self-efficacy), 0.917 > 0.6 for X_2 (creativity), and 0.911 > 0.6 for Y (application of teacher learning innovation). Based on these results, namely 57 statements, it can be stated that the research instrument is valid and reliable.

3. Results and Discussion

3.1 Result

Description of Research Data

1. Description of Self-Efficacy Data (X_1)

Description of self-efficacy data obtained through a questionnaire submitted to 167 respondents from 11 public high schools in Malang City. The results of table 1 show that 86 teachers (51%) of respondents stated that the level of self-efficacy was in the very high category, 80 teachers (48%) of respondents stated that the level of self-efficacy was in the high category, 1 teacher (1%) of respondents stated that the level of self-efficacy was in the medium category, no respondents stated that the level of self-efficacy was in the low category, and no respondents stated that the level of self-efficacy was in the very low category. The mean value obtained from the self-efficacy variable is 94.27 rounded to 94, which is in the interval 94 - 110. So it can be concluded that the level of teacher self-efficacy according to the perceptions of a sample of teachers in public high schools in Malang City is in a very high category. Figure 1 shows the percentage diagram of the level of teacher self-efficacy in public high schools in Malang City.

Table 1. Interval of Self-Efficacy Variable (X_1)

Interval Value	Category	Frequency	Percentage
94 – 110	Very High	86	51%
76 – 93	High	80	48%
58 – 75	Medium	1	1%
40 – 57	Low	0	0%
22 – 39	Very Low	0	0%
Total		**167**	**100%**

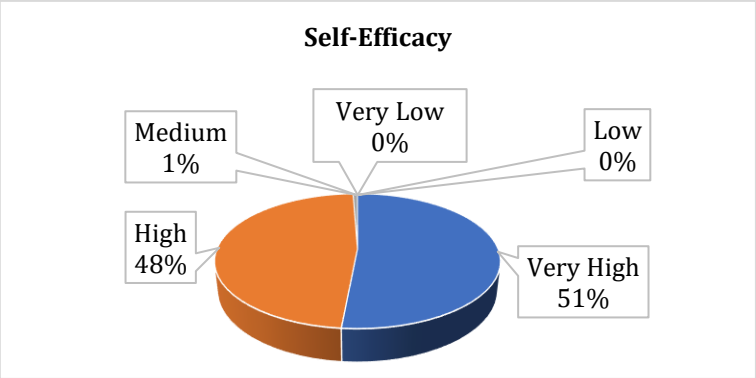

Figure 1. Results of Descriptive Analysis of Self-Efficacy Variable Pie Diagram

2. Description of Creativity Data (X_2)

Description of creativity data obtained through a questionnaire submitted to 167 respondents from 11 public high schools in Malang City. The results of table 2 show that 59 teachers (35%) of respondents stated that the level of creativity was in the very high category, 107 teachers (64%) of respondents stated that the level of creativity was in the high category, 1 teacher (1%) of respondents stated that the level of creativity was in the medium category, no respondents stated that the level of creativity was in the low category, and no respondents stated that the level of creativity was in the very low category. The mean value obtained from the creativity variable is 46.07 rounded to 46, located in the interval 38 - 46. So it can be concluded that the level of teacher creativity according to the perceptions of the sample of teachers in public high schools in Malang City is in the high category. Figure 2 shows the percentage diagram of the level of teacher creativity in public high schools in Malang City.

Table 2. Interval of Creativity Variable (X_2)

Interval Value	Category	Frequency	Percentage
47 – 55	Very High	59	35
38 – 46	High	107	64
29 – 37	Medium	1	1
20 – 28	Low	0	0
11 – 19	Very Low	0	0
Total		**167**	**100%**

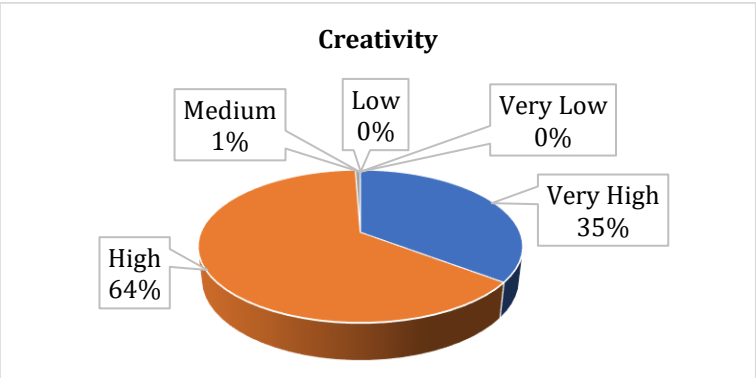

Figure 2. Results of Descriptive Analysis of Creativity Variable Pie Diagram

3. Description of Data on the Implementation of Teacher Learning Innovation (Y)

Description of data on the Implementation of teacher learning innovation is obtained through a questionnaire submitted to 167 respondents from 11 public high schools in Malang City. The results of table 3 show that as many as 64 teachers (38%) respondents stated that the level of application of teacher learning innovation was in the very high category, 102 teachers (61%) respondents stated that the level of application of teacher learning innovation was in the high category, 1 teacher (1%) respondent stated that the level of application of teacher learning innovation was in the medium category, no respondents stated that the level of application of teacher learning innovation was in the low category, and no respondents stated that the level of application of teacher learning innovation was in the very low category. The mean value obtained from the variable of the application of teacher learning innovation is 99.44 rounded to 99, located in the interval 81 - 99. So it can be concluded that the level of application of teacher learning innovation according to the perceptions of the sample of teachers in public high schools in Malang City is in the high category. Figure 3 shows the percentage diagram of the level of implementation of teacher learning innovations in public high schools in Malang City.

Table 3. Intervals of Variable Implementation of Teacher Learning Innovation (Y)

Interval Value	Category	Frequency	Percentage
100 – 120	Very High	64	38
81 – 99	High	102	61
62 – 80	Medium	1	1
43 – 61	Low	0	0
24 – 42	Very Low	0	0
Total		**167**	**100%**

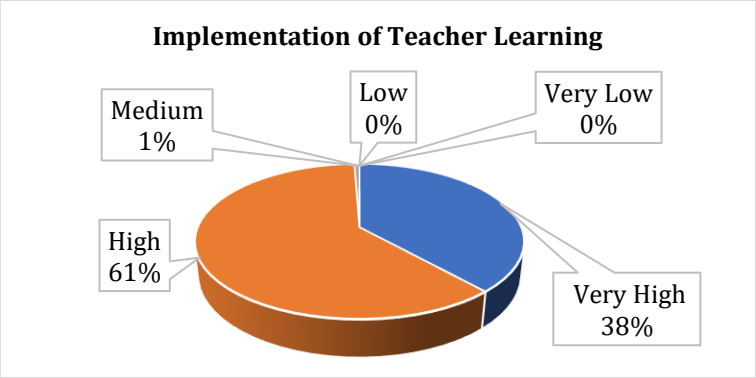

Figure 3. Results of Descriptive Analysis Implementation of Teacher Learning Variable Pie Diagram

Analysis Prerequisite Test

1. Normality Test

The normality test of this study was carried out with the help of IBM SPSS Statistic 20 through the One Sample Kolmogorov-Smirnov test with the criteria that the data is said to be normal if the significant value is > 0.05 and said to be abnormal if the significant value is < 0.05. The calculation results can be described in Table 4.

Table 4. Normality Test Calculation Results

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		167
Normal Parameters[a,b]	Mean	0E-7
	Std. Deviation	4.47163504
Most Extreme Differences	Absolute	.068
	Positive	.062
	Negative	-.068
Kolmogorov-Smirnov Z		.878
Asymp. Sig. (2-tailed)		.423

Based on Table 4, the results of the data normality test with the significance value of the residual data obtained are 0.423. This shows that the value of the calculation results > 0.05 (0.423 > 0.05) so it can be concluded that the variables in this study are normally distributed.

2. Linearity Test

The linearity test of this study was carried out with the help of IBM SPSS Statistic 20 through the Linearity test with the criterion that the Sig value < 0.05 means the data is linear, while if the Sig value > 0.05 means the data is not linear. The linearity test can also be through a benchmark using Deviation from Linearity if the Sig value > 0.05 means that the linearity relationship is fulfilled. The calculation results can be described in Tables 5 and 6.

Table 5. Calculation Results of Linearity Test of Self-Efficacy (X_1) and Application of Teacher Learning Innovation (Y)

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
Penerapan Inovasi Pembelajaran Guru * Self-Efficacy	Between Groups	(Combined)	11208.593	31	361.568	10.406	.000
		Linearity	10393.331	1	10393.331	299.137	.000
		Deviation from Linearity	815.262	30	27.175	.782	.781
	Within Groups		4690.496	135	34.744		
	Total		15899.090	166			

Based on Table 5, the calculation between the self-efficacy variable and the application of teacher learning innovation can be seen that through the linearity benchmark, the significance value is 0.00 < 0.05 and through the deviation from linearity benchmark, the value is 0.782 > 0.05 so that it can be concluded that the two variables have a linear correlation.

Table 6. Calculation Results of Linearity Test of Creativity (X_2) and Application of Teacher Learning Innovation (Y)

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
Penerapan Inovasi Pembelajaran Guru * Kreativitas	Between Groups	(Combined)	12485.104	18	693.617	30.069	.000
		Linearity	11991.045	1	11991.045	519.825	.000
		Deviation from Linearity	494.060	17	29.062	1.260	.227
	Within Groups		3413.985	148	23.067		
	Total		15899.090	166			

Based on Table 6, the calculation between the creativity variable and the application of teacher learning innovations can be seen that through the linearity benchmark, the significance value is 0.00 < 0.05 and through the deviation from linearity benchmark, the value is 0.227 > 0.05 so it can be concluded that the two variables have a linear correlation.

3. Multicolonierity Test

The multicolonierity test in this study was carried out with the help of IBM SPSS Statistic 20 with the aim of testing whether there is a correlation relationship in the independent variables. Good data should not have multicolonierity symptoms. The provisions are if the VIF value < 10 or the Tolerance value > 0.01, it is stated that there is no multicolonierity, while if the VIF value > 10 or the Tolerance value < 0.01, it is stated that there is multicolonierity. The calculation results can be described in Table 7.

Table 7. Multicolonierity Test Calculation Results Self-Efficacy (X_1) and Creativity (X_2)

Uji Multikolonieritas Variabel Bebas	Tolerance	VIF
X1	0,364	2,744
X2	0,364	2,744

Based on the results of Table 7, it is known that the Tolerance value of self-efficacy (X_1) and creativity (X_2) is 0.364 > 0.01 then the VIF value of self-efficacy (X_1) and creativity (X_2) is 2.744 < 10, it can be concluded that the two variables do not occur multicolonierity.

Hypothesis Test

1. Pearson Product Moment Correlation Analysis Hypothesis Test

The hypothesis test of this study was carried out with the help of IBM SPSS Statistic 20 through the Pearson product moment correlation test with the aim of knowing the relationship between the independent variable and the dependent variable, namely X_1 with Y and X_2 with Y. The criterion if the significance value is < 0.05 is that the significance value is < 0.05. The criteria if the significance value is < 0.05 then there is a correlation, and the basis for interpreting the strength and weakness of the relationship is given in Table 8 below:

Table 8. Interpretation of the Correlation Coefficient

Coefficient Interval	Relationship Level
0,00 – 0,199	Very Low
0,20 – 0,399	Low
0,40 – 0,599	Simply
0,60 – 0,799	Strong
0,80 – 1,000	Very Strong

Source: Sugiyono (2018)

Table 9. Hypothesis Test Calculations of the Relationship between Self-Efficacy (X_1) with the Implementation of Teacher Learning Innovation (Y)

Correlation			
		Self-Efficacy	**Penerapan Inovasi Pembelajaran Guru**
Self-Efficacy	Pearson Correlation	1	.809**
	Sig. (2-Tailed)		.000
	N	167	167
Penerapan Inovasi Pembelajaran Guru	Pearson Correlation	.809**	1
	Sig. (2-Tailed)	.000	
	N	167	167

Based on the Table 9, the Pearson Correlation value is 0.809, which means that there is a very strong correlation level and the significance value of 0.000 is smaller than 0.05 or (0.000 < 0.05). Then the research hypothesis, namely H_0 is rejected and H_1 is accepted. So it can be concluded that overall there is a relationship between self-efficacy and the application of teacher learning innovations, and the two variables have a positive relationship because the pearson correlation value is positive.

Table 10. Hypothesis Test Calculations of the Relationship between Creativity (X_2) with the Application of Teacher Learning Innovation (Y)

Correlation			
		Kreativitas	**Penerapan Inovasi Pembelajaran Guru**
Kreativitas	Pearson Correlation	1	.868**
	Sig. (2-Tailed)		.000
	N	167	167
Penerapan Inovasi Pembelajaran Guru	Pearson Correlation	.868**	1
	Sig. (2-Tailed)	.000	
	N	167	167

Based on theTable 10, the Pearson Correlation value is 0.868, which means that there is a very strong correlation level and the significance value of 0.000 is smaller than 0.05 or (0.000 < 0.05). Then the research hypothesis, namely H_0 is rejected and H_1 is accepted. So it can be concluded that overall there is a relationship between creativity and the application of teacher learning innovations, and the two variables have a positive relationship because the pearson correlation value is positive.

2. Multiple Correlation Analysis Hypothesis Test

The multiple correlation test is used to measure the relationship that occurs between the dependent variable Y (Application of Teacher Learning Innovation) and two or more independent variables X_1 (Self-Efficacy) and X_2 (Creativity). The criteria if the significance value is < 0.05 then there is a correlation, and the basis for interpreting the strength and weakness of the relationship is given in Table 8 above.

Table 11. Calculation Results of Multiple Correlation Analysis of the Relationship between Self-Efficacy (X_1) and Creativity (X_2) with the Implementation of Teacher Learning Innovation (Y)

Model Summary

Model	R	R Square	Adjustes R Square	Std. Error of the Estimate
1	.890[a]	.791	.789	4.499

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12579.834	2	6289.917	310.776	.000[b]
	Residual	3319.256	164	20.239		
	Total	15899.090	166			

Based on Table 11, the results of multiple correlation analysis show that the value of R (Correlation Coefficient) is 0.890, which means that the level of relationship between self-efficacy and creativity variables with the application of teacher learning innovations (Y) has a very strong relationship. While the value of the significance result of 0.000 is smaller than 0.05 or (0.000 < 0.05). Then the hypothesis of this study is H0 rejected and H1 accepted. So it can be concluded that there is a positive and significant relationship between self-efficacy (X_1) and creativity (X_2) with the application of teacher learning innovation (Y).

3. Coefficient of Determination

The coefficient of determination shows the linear relationship and direction of the relationship between the independent variables of self-efficacy (X_1) and creativity (X_2) with the dependent variable of the application of teacher learning innovations (Y). The coefficient of determination states the ability of the model to explain the variation of the independent variable. The coefficient of determination has a value between zero and one. Testing this value can be seen from the adjusted R-Square (R^2) in Table 12.

Table 12. Results of the Coefficient of Determination

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.890[a]	.791	.789	4.499	.791	310.776	2	164	.000

Based on Table 12, the R value is 0.890. These results indicate that the relationship between self-efficacy (X_1) and creativity (X_2) variables with the application of teacher learning innovation (Y) is 89%. The adjusted R-Square value obtained is 0.789, meaning that the interpretation level of the coefficient of determination has a strong correlation. It can be concluded that variables X_1 and X_2 have a significant relationship of 78.9% to variable Y, while 21.1% has a relationship with other variables outside this study.

4. Path Analysis

This path analysis aims to test the strength of the relationship between independent and dependent variables either directly or indirectly, identify the path that causes a certain variable to other variables it causes, and draw and test a mathematical model using the underlying equation (Hypothesis) Y = pyx1 X1 + pyx2 X2 + pyxL. The following is the calculation of the path analysis model, namely:

a) Pearson Product Moment Correlation of Free Variables

Table 13. Calculation Results of Pearson Product Moment Relationship of Self-Efficacy (X_1) and Creativity (X_2)

Correlation			
		Self-Efficacy	**Kreativitas**
Self-Efficacy	Pearson Correlation	1	.797**
	Sig. (2-Tailed)		.000
	N	167	167
Kreativitas	Pearson Correlation	.797**	1
	Sig. (2-Tailed)	.000	
	N	167	167

Based on Table 13, the Pearson Correlation value is 0.797, which means that there is a strong correlation level and the significance value of 0.000 is smaller than 0.05 or (0.000 < 0.05). Then the research hypothesis, namely H_0 is rejected and H_1 is accepted. So it can be concluded that overall there is a relationship between self-efficacy and creativity, and the two variables have a positive relationship because the pearson correlation value is positive.

b) Partial Relationship between Independent Variables and Dependent Variables

Table 14. Calculation Results of the Relationship between Self-Efficacy (X_1) and Creativity (X_2) with the Application of Teacher Learning Innovation (Y)

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.243	4.267		-.057	.955
	Self-Efficacy	.402	.074	.319	5.394	.000
	Kreativitas	1.342	.129	.614	10.394	.000

Based on Table 14, the partial relationship value of X_1 with Y seen in the Coefficients Beta table is 0.319 and has a significance value of 0.000 < 0.05. While the partial relationship between X_2 and Y is 0.614 and has a significance value of 0.000 < 0.05. Furthermore, the Coefficient of Determination (CD) can be found, with the following formula:

CD = $r^2 \times 100\%$

= $(0{,}319)^2 \times 100\%$

= 0,101761

Table 15. Calculation Results of Partial Relationship between Self-Efficacy (X_1) and Implementation of Teacher Learning Innovation (Y)

Variables	Interpretation	Calculations	Magnitude of Relationship
Self-Efficacy	Direct Relationship	$0{,}319^2$	0,101761
	Indirect Relationship	0,319 × 0,614 × 0,797	0,156105
Total Relationship			**0,257**

Based on Table 15, it can be seen that the total partial relationship of the self-efficacy variable to the application of teacher learning innovations is 0.257 or 25.7%.

CD = $r^2 \times 100\%$

= $(0{,}614)^2 \times 100\%$

= 0,376996

Table 16. Calculation Results of Partial Relationship between Creativity (X_2) and Application of Teacher Learning Innovation (Y)

Variables	Interpretation	Calculations	Magnitude of Relationship
Creativity	Direct Relationship	$0{,}614^2$	0,376996
	Indirect Relationship	0,319 × 0,614 × 0,797	0,156105
Total Realtionship			**0,533**

Based on Table 16, it can be seen that the total partial relationship of creativity variables to the application of teacher learning innovations is 0.533 or 53.3%.

c) Simultaneous Relationship of Independent Variables and Dependent Variables

Table 17. Calculation Results of Simultaneous Relationship between Self-Efficacy (X_1) and Creativity (X_2) with the Application of Teacher Learning Innovation (Y)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.890[a]	.791	.789	4.499	.791	310.776	2	164	.000

Based on Table 17, the simultaneous relationship value of self-efficacy (X_1) and creativity (X_2) with the application of teacher learning innovation (Y) is 0.791 or 79.1% and

other variables are 20.9%. The results of this simultaneous relationship calculation can also be applied in the following table, namely:

Table 18. Conclusion of Simultaneous Relationship Calculation Results

Variables	Path Coefficient	Direct Relationship	Indirect Relationship		Sub Total Relationship
			X1	X2	
X1	0,319	0,101761	...	0,156105	0,257
X2	0,614	0,376996	0,156105	...	0,533
Total Relationship					**0,791**
Other Variable Relationship					0,209

Based on Table 18, the path analysis obtained from the Pearson product moment correlation between self-efficacy and creativity is 0.797, the partial direct relationship between self-efficacy and the implementation of teacher learning innovation is 0.319, the partial direct relationship between creativity and the implementation of teacher learning innovation is 0.614, the simultaneous relationship between self-efficacy and creativity to the implementation of teacher learning innovation is 0.791, and the relationship of other variables to the application of teacher learning innovation is 0.209.

d) Forming path analysis diagram

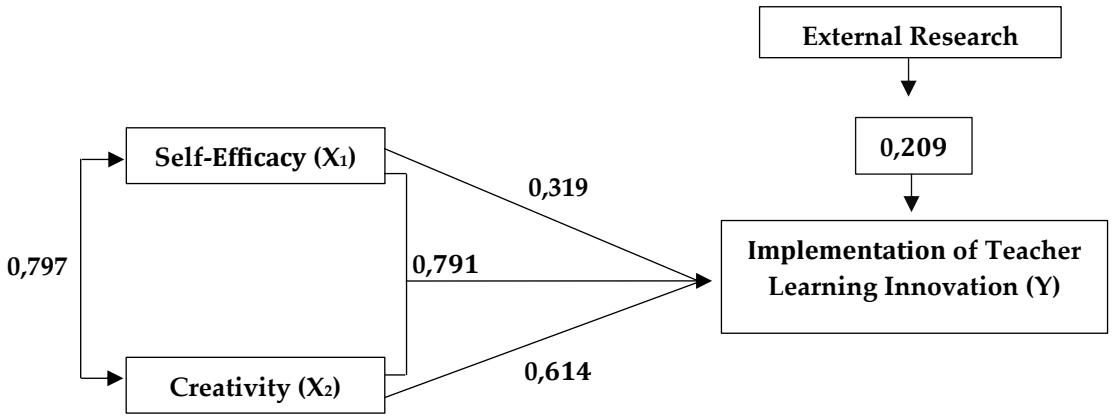

Figure 4. Path Analysis

Hypothesis equation Y = 0.319 X1 + 0.614 X2 + 0.209 XL

The equation of the hypothesis shows that the value of the direct relationship to variable Y is 0.319 from the self-efficacy variable and 0.614 from the creativity variable. While the value of the indirect relationship to variable Y is 0.209 from variables outside the study. This study states that the limitations of the study are that researchers can describe the two independent variables that have been studied, so with this, the variables outside this study are not described in detail. Variables outside this study that can relate to the application of teacher learning innovations such as research conducted by Tibahary & Muliana (2018) state that the internal factors that teachers have to support in the process of implementing teacher learning

innovations are intelligence, aptitude, skills, competence, interest. motivation, physical condition, and mental. While external factors are the school environment, family and community environment, curriculum, and supporting facilities.

3.2 Discussion

Dynamic changes in education are the main factors that need to be considered by educational institutions, especially in analyzing the needs of teachers to prepare themselves to be able to adapt to any changes, especially curriculum changes. Therefore, teachers here must be able to create a learning innovation tailored to the needs of students and adapted to technological developments which will have a direct effect on the learning outcomes. This innovation depends on the critical ability and cutting-edge ability of the teacher, therefore this ability is generated from a form of self-belief and creativity that can be a support or intrinsic factor that supports it. Teacher confidence or self-efficacy will affect the goals, teaching materials, classroom interaction models that will be produced. Teachers who have high self-efficacy will be ready to accept new ideas and be able to utilize new teaching methods in helping to improve the quality of learning of their students, because teachers who have high self-efficacy will act positively and be fully committed to their teaching duties (Moalasi & Forcheh, 2015). This high teacher self-efficacy can be used in developing teacher innovation behavior towards their work (Khayati, 2015). In addition, the creativity of teachers is also a supporting factor in the implementation of learning innovations, this creativity will encourage the renewal of ideas or ideas, because teachers who have a high level of creativity will have a considerable sense of curiosity, enrich an idea, and propose ideas that are certainly innovative.

The self-efficacy of public high school teachers in Malang City is in a very high category as indicated by the fulfillment of seven sub-variable indicators used in creating and implementing innovative learning. The sub-variable indicators are (1) the dimension of the level of overcoming task difficulties; (2) the experience of others; (3) the dimension of self-strength; (4) social persuasion; (5) physical and emotional conditions; (6) experience of success; and (7) the dimension of generalizing understanding of self-ability. These sub-indicators have the same score value, which is in the very high category. Teachers here optimistically have confidence in their ability to be able to implement and apply the innovative ideas generated to realize their learning method strategies, and in the process teachers are also able to overcome various problems that occur, especially those related to students in managing personal stress and managing their classes (Dwiutami & Wardi, 2015). Not only in terms of realization, but here the teacher also independently makes efforts to improve internal factors in himself through the process of processing the results of successful experiences both from himself and others. The teacher is involved in handling problems in the work of his coworkers, so the teacher will know how the process in it is both during the implementation process and the repair process, then in the future the experience gained will be useful for the teacher when faced with problems in work with the same topic. This is in line with previous research that teachers who have high self-efficacy will tend to be motivated to participate in contributing to their work environment, supporting extra activities that are beyond their responsibility, and always actively participating in school activities, because teachers believe that this can be used as experience for themselves in the future (Setyaningsih, 2024). In addition, in their own experience, teachers must have an educational background and experience in the teaching process, where with this they make this self-efficacy in dealing with each of their jobs, be it experience when sitting in college, past teaching experience, overcoming student problems,

managing classes, and strategies for applying learning methods. This will be the main provision that will generate teacher confidence to be able to carry out their duties in the future. In accordance with previous research by Sa'pang & Purbojo (2020) that experience is referred to as the main capital that has a major impact on self-efficacy in a person.

The creativity of public high school teachers in Malang City is in the high category as indicated by the fulfillment of four sub-variable indicators used in creating and implementing innovative learning. The sub-variable indicators are (1) assessment and evaluation; (2) rational thinking; (3) flexibility of thought; and (4) collaborative. These sub-indicators have the same score value which is in the high category. Public high school teachers in Malang City are generally able to use their thinking creativity to create learning innovations that they implement. Teachers are able to think rationally and flexibly when delivering learning materials to students with unique unconventional methods, and teachers are able to view a problem from various perspectives so that teachers will independently be creative in modifying various learning concepts adapted to real life, and teachers are also able to rationally measure the potential abilities of students. This is measured by the teacher being able to provide various learning activities which in the process involve the competence or potential of the students. In accordance with previous research that teachers must think rationally and flexibly be able to answer questions from students clearly and invite them to participate in thinking systematically based on real events through discussion forums so that teachers here can also measure how the ability of students to do and the creativity they produce (Andayani & Hadiati, 2022). The statement is also reinforced by research by Fitriyani, et al. (2021) that flexible teachers in the context of learning, also utilize their creative abilities to create a classroom atmosphere that allows students to freely study and explore various topics about the importance of the curriculum by asking various questions where students will show their understanding in their own way so that they will get a more varied and greater number of answers. In addition, teacher creativity is also marked by how they are able to analyze evaluations that must make changes in themselves to review the programs that have been carried out to create new creativity and innovation in teaching in the future. In accordance with previous research that teachers must realize to evaluate themselves, teachers who have high creativity are certainly not only satisfied with quality in teaching their students, but these teachers must be able to quality to excel outside so that creative abilities in the teaching process will continue to advance and develop following existing innovations (Supriadi, 2017).

The application of learning innovation of public high school teachers in Malang City is in a high category, indicated by the fulfillment of seven sub-variable indicators. The sub-variable indicators are (1) institutional support or facilities; (2) curriculum adaptation; (3) teaching methods; (4) learner involvement; (5) technology integration; (6) creative challenges; and (7) designing learning. These sub-indicators have the same score value which is in the high category. Teachers here have alternately applied various learning innovation strategies to students in accordance with the applicable curriculum through problem/project-based teaching methods, environmental experimentation methods, cooperative/discussion methods, and teachers are able to arrange learning with the aim of improving the cognitive aspects of students to determine their activeness and character. In accordance with previous research, teachers apply project-based learning to strengthen the profile of Pancasila students used to help students in actively discussing solving problems and with the implementation of this learning can develop good behavior character values inherent in students (Nafi'ah, et al., 2023). In addition, in the process of implementing this learning innovation, teachers have also

integrated technology by utilizing digital media sharing, infographic visualization, and online learning platforms to their students. This is related to previous research that learning in the current era must be supported by implementing technology-based learning through STEM (Science, Technology, Engineering, and Math) because it will affect the sustainability of students' lives in the future (Nuragnia, et al., 2021). Of course, in realizing various learning strategies with these various innovations, teachers also get various challenges, but here public high school teachers in Malang City have proven that teachers have also been able to solve creative challenges, with teachers developing their logical mindset creating various models of creative learning innovations tailored to the students' skill mastery stage and have been able to run according to the applicable curriculum (Aditiya & Fatonah, 2023).

This study was conducted with the aim of knowing the relationship between self-efficacy and the application of teacher learning innovation, knowing the relationship between creativity and the application of teacher learning innovation, and knowing the relationship between self-efficacy and creativity with the application of teacher learning innovation. Based on the analysis calculations described in the sub-results above, the overall research objectives were achieved. First, there is a positive and significant relationship between self-efficacy and the application of learning innovations of public high school teachers in Malang City. In the hypothesis results, the significance value of 0.000 is smaller than 0.05 and the Pearson Correlation value of 0.809 shows that the two variables have a very strong correlation level. From these results, it can be interpreted that teachers who have high self-efficacy will be able to increase their innovation both in motivation to create or develop learning methods, as well as renewal of learning strategies. This is different if the teacher has low self-efficacy, the lower the level of innovation to create and implement learning innovations. This statement is supported in Ariani's research (2021) which shows that teachers with high self-efficacy will have a passion for teaching, be ready to accept new ideas and be able to develop and implement new teaching strategies to help students in their learning process. The higher the teacher's self-efficacy, the higher the level of innovation. Teachers here have the belief that renewing teaching confidence is a prerequisite for learning innovation, so they adopt the new teaching model to meet the demands of innovation supported by some of the experience they have gained. This is in line with the research of Inayah, et al. (2022) that teachers with longer and more mature experience have higher self-efficacy beliefs in their ability to face all the dynamics and demands of innovation in the teaching and learning process.

Second, there is a positive and significant relationship between creativity and the application of learning innovations of public high school teachers in Malang City. In the hypothesis results, the significance value of 0.000 is smaller than 0.05 and the Pearson Correlation value of 0.868 shows that the two variables have a very strong correlation level. From these results, it can be interpreted that teachers who have high creativity will be able to create and implement learning innovations with various media model strategies, methods, and approaches by utilizing technology tailored to the needs of students and applicable curriculum provisions so that the learning process will be able to motivate students to learn. This is different if the teacher has low creativity, the lower the level of innovation to create and apply learning innovations and use more conventional learning model strategies or imitate pre-existing learning methods. This statement is supported by Sari & Jarkawi's research (2022) that if teachers want to develop students' innovation abilities, teachers must have the creativity to design and implement innovative learning. The intended innovative learning is learning that is designed by the teacher himself with the creativity of coming up with new ideas to provide

facilities for students to master skills and achieve the specified targets. In addition, the creativity of teachers here must always be developed, because the application of learning innovations that are carried out is required in line with the development of technology, as well as demanded by various existing needs. Other research also states that creativity must be developed by teachers to face the challenges of changes that come very quickly, especially related to the use of technology in innovative learning (Hikmah, et al., 2021).

Third, there is a positive and significant relationship between self-efficacy and creativity with the application of learning innovations of public high school teachers in Malang City. In the hypothesis results, the significance value of 0.000 is smaller than 0.05 and the R value (correlation coefficient) of 0.890 shows that the three variables have a very strong correlation level. Based on the results of the calculation of "Model Summary", the results of the calculation of the coefficient of determination with an adjusted R-Square value of 0.789, this means that there is a strong level of correlation between self-efficacy and creativity with the application of learning innovations for public high school teachers in Malang City. As for developing this research, researchers conducted path analysis calculations to test the strength of the relationship between dependent and independent variables with the results, namely the partial correlation between self-efficacy and creativity of 0.797, the direct correlation between self-efficacy and the application of teacher learning innovation of 0.319, the direct correlation between creativity and the application of teacher learning innovation of 0.614, and the simultaneous correlation between self-efficacy and creativity with the application of teacher learning innovation of 0.791. It can be interpreted that teachers who have high self-efficacy and creativity can create and apply learning innovations to students with various learning model strategies such as problem-based learning, project-based learning, cooperative learning, experimental learning, and differentiated learning utilizing digital technology. This is different if the teacher has low self-efficacy and creativity, the lower the level of innovation to create and implement innovative learning. This is in line with the research of Nurhikmah, et al. (2021) that teachers with self-efficacy and creativity will be able to carry out the process of teaching and learning activities to improve quality, because new ideas and ideas can be applied by teachers with a modified process of renewing learning media, designs, and strategies that are realized in innovative learning. In addition, it is also reinforced by Khayati's research (2015) that self-efficacy has a direct relationship with creativity which will have an impact on the innovations produced by teachers in the learning system at school. Self-efficacy will build the concept of belief in an individual to maximize the results of his efforts by having the ability to complete tasks, face challenges, and be able to improve his performance. Teachers with self-efficacy will appear to have a high level of innovative behavior as well. In addition to self-efficacy, creativity will also shape individual behavior in designing, making, and doing something different, by utilizing new ideas that will be useful for increasing innovation. Teachers with creativity will be able to create innovative ideas and ideas that are applied in the learning process. In line with research by Ripki, et al. (2023) shows that self-efficacy is directly related to teacher creativity which will affect the results of the learning process. Teachers here show confidence in their personal abilities through attitudes, knowledge, skills by making breakthroughs, and creating innovative ideas in every lesson along with being able to adapt flexibly to changing educational situations and conditions.

4. Conclusion

The conclusions in the research of self-efficacy (X1) and creativity (X2) with the application of teacher learning innovations (Y) in public high schools in Malang City are described as follows: (1) self-efficacy of public high school teachers in Malang is classified as very high; (2) creativity of public high school teachers in Malang is classified as high; (3) the application of learning innovations of public high school teachers in Malang is classified as high; (4) there is a positive and significant relationship between self-efficacy and the application of learning innovations of public high school teachers in Malang; (5) there is a positive and significant relationship between creativity and the application of learning innovations of public high school teachers in Malang; (6) there is a positive and significant relationship between self-efficacy and creativity with the application of learning innovations of public high school teachers in Malang.

References

Aditiya, N., & Fatonah, S. (2023). Efforts to Develop the Competence of Driver Teachers in Elementary Schools in the Merdeka Belajar Curriculum. Scholaria: Journal of Education and Culture, (13)2, 108-116. https://doi.org/10.24246/j.js.2023.v13.i2.p108-116.

Andayani, I., & Hadiati, S. N. (2022). The Effect of Teacher Creativity on Student Learning Interest in Islamic Religious Education Subjects. Islamic Journal of Education, 1(2), 114-130. https://doi.org/10.54801/ijed.v1i2.137.

Ariani, N. W. T. (2021). The Role of Teacher Self-Efficacy in Early Childhood Education. Pratama Widya: Journal of Early Childhood Education, 6(1), 96. https://doi.org/10.25078/pw.v6i1.2190.

Dwiutami, L., & Wardi, T. D. (2015). Self-efficacy and Information Literacy Skills in High School Teachers. JPPP - Journal of Psychological Research and Measurement, 4(2), 65-73. https://doi.org/10.21009/JPPP.042.04.

Fitriyani, Y., Supriatna, N., & Sari, M. Z. (2021). Development of Teacher Creativity in Creative Learning in Social Studies Subjects in Elementary Schools. Journal of Education: Journal of Research Results and Literature Review in the Field of Education, Teaching, and Learning, 7(1). https://doi.org/10.33394/jk.v7i1.3462.

Hikmah, N., Suradika, A., & Gunadi, R. A. A. (2021). Agile Method to Improve Teacher Creativity through Knowledge Sharing. Journal of Instruction, 3, 1. https://doi.org/10.24853/instruksional.3.1.30-39.

Inayah, S., Juandi, D., Siswanto, R. D., & Morin, S. (2022). Self-Efficacy of Mathematics Teachers in Facing Learning Dynamics during the Covid 19 Pandemic. JPMI (Journal of Innovative Mathematics Learning), 5(2), 439. https://doi.org/10.22460/jpmi.v5i2.10012.

Juniartani, N. W., Sudiatmika, A. A. I. A. R., & Sujanem, R. (2017). The Effect of Conceptual Change Learning Model Assisted by Phet Simulation to Improve Students' Understanding of Physics Concepts. Undiksha Journal of Physics Education, 7, 2. https://doi.org/10.23887/jjpf.v7i2.11352.

Khayati, N. (2015). Self-Efficacy and Creativity to Create Teacher Innovation. Journal of Education and Culture, 21. https://doi.org/10.24832/jpnk.v21i3.189.

Moalasi, W. T. S., & Forcheh, N. (2015). Self-Efficacy Levels and Gender Differentials among Teacher Trainees in Colleges of Education in Botswana. Journal of Education and Learning, 4(3). https://doi.org/10.5539/jel.v4n3p1.

Nafi'ah, J., Faruq, D. J., & Mutmainah, S. (2023). Learning Characteristics of the Merdeka Belajar Curriculum in Madrasah Ibtidaiyah. Auladuna Journal, 5(1), 1-12. https://ejournal.uas.ac.id/index.php/auladuna/article/view/1248.

Nuragnia, B., Nadiroh, & Usman, H. (2021). Steam Learning in Primary Schools: Implementation and Challenges. Journal of Education and Culture, 6(2). https://doi.org/10.24832/jpnk.v6i2.2388.

Nurhikmah, H., Rahmawati, I., & Lestari, H. (2021). The Relationship between Self-Efficacy and Work Creativity of Civil Servant Teachers (PNS) of Public Elementary Schools in Cibungbulang District. Journal of Dirosah Islamiyah, 3(1), 10-17. https://doi.org/10.47467/jdi.v3i1.289.

Purnomo, E. N., Imron, A., Sobri, A. Y., & Dami, Z. A. (2023). E-Leadership, Technology Acceptance and Technological Self-Efficacy: Its Effect on Teacher Attitudes in Using Virtual Learning Environments. Pegem journal of Education and Instruction, 13(4). https://doi.org/10.47750/pegegog.13.04.23.

Ripki, A. J. H., Nurlaelah, N., & Triyono, A. (2023). The Effect of Self-Efficacy on Teacher Creativity. EDUKASIA: Journal of Education and Learning, 4(2), 1949-1954. https://doi.org/10.62775/edukasia.v4i2.527.

Sa'pang, A. W., & Purbojo, R. (2020). Teacher Self-Efficacy, Understanding of Student Character, and Understanding of 21st Century Skills as Predictors of Facilitator-Type Teaching Style. Journal of Ulayat Psychology, 7(2), 192-211. https://doi.org/10.24854/jpu108.

Sari, D. R., & Jarkawi. (2022). Teacher Creativity in Education. Journal Proceeding: Malayu Islamic University of Kalimantan. http://dx.doi.org/10.31602/.v0i0.6697.

Setyaningsih, S. (2024). The Effect of Transformational Leadership and Self-Efficacy on Organizational Citizenship Behavior (OCB) of Elementary School Teachers in the Era of Merdeka Belajar. Scientific Journal of Education, 12 (1). https://doi.org/10.20961/jkc.v12i1.84822.

Sugiyono. (2018). Quantitative Research Methods, Qualitative, and R & D. Bandung: Alfabeta.

Supriadi, D. (2017). Implementation of Innovation Management and Teacher Creativity in Improving Learning Quality. Indonesian Journal of Education Management and Administration Review, 1(2). http://dx.doi.org/10.4321/ijemar.v1i2.944.

Tibahary, A. R., & Muliana. (2018). Innovative Learning Models. Scolae: Journal of Pedago, 1(1), 54-64. https://doi.org/10.56488/scolae.v1i1.12.

Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System. (2003). Ministry of Education. https://jdih.kemdikbud.go.id/ accessed September 21, 2023.

Wangid, M. N., Mustadi, A., & Mokshien, S. E. B. (2020). The Exploration of Teachers' Efficacy in Teaching: A Comparative Study in Indonesia and Malaysia. Journal of Cakrawala Pendidikan, 39(2), 257-268. https://doi.org/10.21831/cp.v39i2.30012.