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Analysis of Differences: Application of the Problem-Based Learning Model Integrated with Scaffolding

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Abstract: The purpose of this research is to find out how students' creative thinking skills use the usual Problem Based Learning model with an integrated scaffolding problem-based learning model. This study uses a quantitative method with a comparative type. The sample used was 42 class X students from each school, bringing the total to 168 students. The sampling technique used is random sampling. In this study using quantitative data analysis with SPSS 26, to look for descriptive statistics and inferential statistics. Based on the analysis that has been done, it can be concluded that there are differences in students' creative thinking skills using the problem-based learning model and students' creative thinking abilities using the integrated scaffolding problem-based learning model in the four schools.

Keywords: Creative thinking; Problem-based learning; Scaffolding

Introduction

Education is everything that affects the growth, change and condition of every superior human being to be able to compete at the global level and a means to advance all areas of human life (Ilham, 2019; Winata et al., 2021; Pristiwanti et al., 2022). Education is the most powerful weapon that can be used to change the world (O'Keeffe et al., 2019; Asif et al., 2020; Khan et al., 2020). Therefore, education is very important for every human being regardless of race, ethnicity, religion (Ramadhan et al., 2019; Zakieva et al., 2019; Masyhum, 2021). Education is closely related to a learning process.

The learning process is the process of interaction between students and educators and learning resources in a learning environment. The learning process can be created in such a way as to facilitate students in carrying out learning activities (Hazmi, 2019; Sukmawati & Nensia, 2019; Husni, 2020). Teachers need to make an effort to vary the learning process, both approaches, methods, or innovative learning models (Nurfadilah & Hakim, 2019; Rao, 2019; Schunk & DiBenedetto, 2020). With a well-planned learning process, it will achieve the goals that have been set (Jayul & Irwanto, 2020; Sulaeman et al., 2022). One of the learning models that can be applied by the teacher to achieve the learning objectives that have been set is the problem-based learning model.

The problem-based learning model is a problem-based learning model. Problem-based learning will create a productive and conducive learning atmosphere for students, and students can practice solving real problems in everyday life through the material studied (Kawuri et al., 2019; Ginting, 2021; Wijaya, 2022). Problem-based learning is a system of teaching methods in which students gain knowledge as a result of mental work to solve problems (Zakiah et al., 2019; Djabbarova et al., 2020; Mambetkarimov, 2022). Problem-based learning students have the freedom to carry out an investigation that is carried out either outside or inside

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the classroom (Sugeng & Suryani, 2020; Fitriyah & Ghofur, 2021). Efforts to make it easier for students to understand learning material in the application of problem based learning models can be done by integrating the use of problem based learning models with scaffolding.

Scaffolding is providing assistance to students during the early stages of learning and reducing this assistance when they are able to do it themselves. The application of scaffolding is a form of process of providing a learning framework from educators to students that can encourage students to develop their initiatives, motivation, and resources (Kurniasih, 2012; Baird, 2021; Richardson et al., 2022). One of the benefits of using scaffolding in problem based learning is the provision of a supportive learning environment (Mertasari, 2016; Fajarini, 2018; Astuti, 2019). Scaffolding is provided as temporary support by guiding and providing relevant resources as needed for problem solving (Haruehansawasin & Kiattikomol, 2018; Bae et al., 2021; Graulich & Caspari, 2021). In the process of solving problems students must have the ability to think creatively which can help students in solving problems.

Creative thinking is a thought that seeks to create new ideas. Creative thinking is very important to be empowered and is a high-order thinking skill that can be carried out simultaneously in the learning process. Creative thinking is not only useful for enriching and deepening learning experiences, but also for solving problems in everyday life and making decisions. Creative thinking includes finding gaps, opportunities, challenges or things that concern unusual or original possibilities, and details to develop or enrich existing possibilities. Based on the explanation above, the purpose of this research is to find out how students' creative thinking skills use the usual Problem Based Learning model with an integrated scaffolding problem-based learning model. The urgency of this research is as reading material or a source of information by the teacher regarding the results of students' creative thinking skills using the integrated scaffolding Problem Based Learning model.

Method

This study uses a quantitative method with a comparative type. According to Jaya (2020) quantitative is a type of research that produces several findings in the form of statistics or other methods of quantification (measurement). Meanwhile, comparative research is research that seeks to describe symptoms by comparing differences (Saputra, 2016). This study will compare students' creative thinking skills using the usual problem-based learning model and the integrated scaffolding problem-based learning model in 4 schools.

The population in this study were class X students at SMPN 1 Jambi City, SMPN 5 Jambi City, SMPN 11 Jambi City and SMPN 7 Jambi City. While the sample used was 42 class X students from each school, bringing the total to 168 students. The sampling technique used is random sampling. The random sampling technique is a data collection technique where the sampling technique is randomly selected from the population (Wahyudi & Syah, 2019; Nahar, 2023). The reason the researchers used this technique was because in this study they took randomly from the population without regard to the strata in that population.

The instruments used in this study were questionnaires in the form of student response questionnaires to the usual problem based learning model, student response questionnaires to the scaffolding integrated problem based learning model and questionnaires on students' creative thinking skills. A research instrument is a tool used to collect data or measure the subject of a research variable (Muslihin et al., 2022; Latief & Novalia, 2023). In the questionnaire used to see student responses to the problem-based learning model usually consists of 30 statements with a Likert scale of 4, and the questionnaire used to see student responses to the integrated scaffolding problem-based learning model consists of 26 statements with a Likert scale of 5, while the student's creative thinking ability questionnaire consists of 26 statements with a Likert scale of 5. The lattice of the student response questionnaire instrument to the usual problem-based learning model is shown in Table 1. The description of student response categories to the usual problem-based learning model is shown in Table 2.

Table 1. Student Response Questionnaire Lattice to the Usual Problem-Based Learning Model

Variable	Indicator	Statement Item Number
Student responses to the usual problem-based learning model	Enthusiasm in participating in learning	1, 2, 3, 4, 5, 6, 7, 8
	Media use	9, 10, 11, 12, 13, 14, 15
	Interest in studying science	16, 17, 18, 19, 20, 21, 22, 23
	It's easy to understand the concept and importance of science in life	24, 25, 26, 27, 28, 29, 30

Table 2. Description of Student Response Categories to the Usual Problem-Based Learning Model

Category	Interval Indicator Student responses to the usual problem-based learning model
Very not good	30.0 – 52.5
Not good	52.6 – 75.0
Good	75.1 – 97.5
Very good	97.6 – 120

The lattice of the student response questionnaire instrument to the scaffolding integrated problem-based learning model is shown in Table 3.

Table 3. Student Response Questionnaire Lattice to the Scaffolding-Integrated Problem-Based Learning Model

Variable	Indicator	Statement Item Number
Student responses to the problem-based learning model integrated with scaffolding	Enthusiasm in participating in learning	1, 2, 3, 4, 5, 6, 7, 8
	Media use	9, 10, 11, 12, 13, 14
	Interest in studying science	15, 16, 17, 18, 19, 20, 21
	It's easy to understand the concept and importance of science in life	22, 23, 24, 25, 26

The description of student response categories to the problem based learning integrated scaffolding learning model is shown in Table 4.

Table 4. Description of Student Response Categories to the Scaffolding Integrated Problem-Based Learning Model

Category	Interval Indicator Student responses to the problem-based learning model integrated with scaffolding
Very not good	26 – 46.8
Not good	46.9 – 67.6
Enough	67.7 – 88.4
Good	88.5 – 109.2
Very good	109.3 – 130

The grid of students' creative thinking ability questionnaire instruments is shown in Table 5.

Table 5. The lattice of the students' creative thinking ability questionnaire instrument

Variable	Indicator	Statement Item Number
Students' creative thinking ability	Sensitivity	1, 2, 3, 4, 5
	Fluency	6, 7, 8, 9, 10, 11
	Flexibility	12, 13, 14, 15, 16
	Originality	17, 18, 19, 20, 21, 22
	Elaborate	23, 24, 25, 26

The description of the category of students' creative thinking ability is shown in Table 6.

Table 6. Description of the Categories of Students' Creative Thinking Abilities

Category	Interval Indicator Students' creative thinking abilities
Very not good	26 – 46.8
Not good	46.9 – 67.6
Enough	67.7 – 88.4
Good	88.5 – 109.2
Very good	109.3 – 130

In this study using quantitative data analysis with SPSS 26, to look for descriptive statistics and inferential statistics. Descriptive statistics are statistics that discuss the collection, processing, presentation, and calculating the values of a data described in the table (Hidayati, 2020; Hendriyani, 2023). Meanwhile, inferential statistics discusses methods of conducting data analysis, estimating, predicting, and drawing conclusions based on various data (samples) taken randomly from the population (Rinaldi et al., 2021; Hardi et al., 2023).

In this study, researchers used the mean, median, mode to find out information based on descriptive statistics. In this study, before testing the hypothesis, a prerequisite test was carried out first. The prerequisite tests carried out in this study were the homogeneity test and the normality test. The homogeneity test aims to show that two or more groups of data samples are taken from populations that have the same variance (Sianturi, 2022; Azuratunnasuha, 2023). While the normality test for find out whether what is analyzed is normal or not (Parnabhakti & Puspaningtyas, 2020; Medina, 2023). Furthermore, for inferential statistics using MANOVA analysis with posthoc tukey advanced tests. This test aims to find out the differences in each group if the MANOVA test results show that there is a significant difference (Gunawan et al., 2016).

In data collection, the first activity that must be carried out is to select the sample to be used. Then, giving a questionnaire of student responses to the problem-based learning model integrated with scaffolding and a questionnaire for students' creative thinking skills. After that, the questionnaire data was processed using the SPSS application and conclusions were drawn from the processing of the data. The procedure for collecting data in this study is in accordance with the following the diagram in Figure 1.

Figure 1. Research procedure

Result and Discussion

Descriptive Statistics Test

The statistical test results describe student responses to the usual problem-based learning model as shown in the Table 7. Based on the table above, it was found that at SMPN 1 Kota Jambi, student responses to the usual problem-based learning model were dominant in the not good category with a percentage of 54.8 and at SMPN 5 Jambi City, the dominant category was not good with a percentage of 57.1% while at SMPN 11 Jambi City, it was balanced. In the good and bad categories with a percentage of 47.6% and at SMPN 7 Jambi City the dominant category is good with a percentage of 57.1%. The statistical test results describe student responses to the problem based learning integrated scaffolding learning model as shown in the Table 8.

Based on the table above, the results show that at SMPN 1 Jambi City the student response to the integrated scaffolding problem-based learning model is dominant in the good category with a percentage of 85.7% and at SMPN 5 Jambi City is dominant in the good category with a percentage of 66.7% while in SMPN 11 Jambi City dominant in the good category with a percentage of 71.4% and in SMPN 7 Jambi City dominant in the good category with a percentage of 69.0%. The results of statistical test descriptions of students' creative thinking abilities are shown in the Table 9.

Table 7. Description of Student Responses to the Usual Problem-Based Learning Model

Student Response	Interval	F	%	Category	Mean	Median	Min	Max
SMPN 1 Kota Jambi	30.0 – 52.5	0	0.0	Very not good	74.95	75.00	53.00	90.00
	52.6 – 75.0	23	54.8	Not good				
	75.1 – 97.5	19	45.2	Good				
	97.6 – 120	0	0.0	Very good				
SMPN 5 Kota Jambi	30.0 – 52.5	0	0.0	Very not good	75.69	74.00	62.00	92.00
	52.6 – 75.0	24	57.1	Not good				
	75.1 – 97.5	18	42.9	Good				
	97.6 – 120	0	0.0	Very good				
SMPN 11 Kota Jambi	30.0 – 52.5	2	4.8	Very not good	75.69	75.00	48.00	91.00
	52.6 – 75.0	20	47.6	Not good				
	75.1 – 97.5	20	47.6	Good				
	97.6 – 120	0	0.0	Very good				
SMPN 7 Kota Jambi	30.0 – 52.5	0	0.0	Very not good	77.14	79.50	61.00	95.00
	52.6 – 75.0	18	42.9	Not good				
	75.1 – 97.5	24	57.1	Good				
	97.6 – 120	0	0.0	Very good				

Table 8. Description of Student Responses to the Problem Based Learning Integrated Scaffolding Learning Model

Student Response	Interval	F	%	Category	Mean	Median	Min	Max
SMPN 1 Kota Jambi	26 – 46.8	0	0.0	Very not good	95.00	96.00	78.00	107.00
	46.9 – 67.6	0	0.0	Not good				
	67.7 – 88.4	6	14.3	Enough				
	88.5 – 109.2	36	85.7	Good				
	109.3 – 130	0	0.0	Very good				
SMPN 5 Kota Jambi	26 – 46.8	0	0.0	Very not good	93.64	93.00	78.00	110.00
	46.9 – 67.6	0	0.0	Not good				
	67.7 – 88.4	13	31.0	Enough				
	88.5 – 109.2	28	66.7	Good				
	109.3 – 130	1	2.4	Very good				
SMPN 11 Kota Jambi	26 – 46.8	0	0.0	Very not good	93.80	93.50	81.00	107.00
	46.9 – 67.6	0	0.0	Not good				
	67.7 – 88.4	12	28.6	Enough				
	88.5 – 109.2	30	71.4	Good				
	109.3 – 130	0	0.0	Very good				
SMPN 7 Kota Jambi	26 – 46.8	0	0.0	Very not good	91.00	91.00	70.00	101.00
	46.9 – 67.6	0	0.0	Not good				
	67.7 – 88.4	13	31.0	Enough				
	88.5 – 109.2	29	69.0	Good				
	109.3 – 130	0	0.0	Very good				

Table 9. Description of Students' Creative Thinking Abilities

Student Response	Interval	F	%	Category	Mean	Median	Min	Max
SMPN 1 Kota Jambi	26 – 46.8	0	0.0	Very not good	105.28	104.00	87.00	121.00
	46.9 – 67.6	0	0.0	Not good				
	67.7 – 88.4	1	2.4	Enough				
	88.5 – 109.2	30	71.4	Good				
	109.3 – 130	11	26.2	Very good				
SMPN 5 Kota Jambi	26 – 46.8	0	0.0	Very not good	106.73	107.00	90.00	123.00
	46.9 – 67.6	0	0.0	Not good				
	67.7 – 88.4	0	0.0	Enough				
	88.5 – 109.2	27	64.3	Good				
	109.3 – 130	15	35.7	Very good				
SMPN 11 Kota Jambi	26 – 46.8	0	0.0	Very not good	107.23	109.50	81.00	122.00
	46.9 – 67.6	0	0.0	Not good				
	67.7 – 88.4	1	2.4	Enough				
	88.5 – 109.2	20	47.6	Good				
	109.3 – 130	21	50.0	Very good				
SMPN 7 Kota Jambi	26 – 46.8	0	0.0	Very not good	104.80	105.00	85.00	123.00
	46.9 – 67.6	0	0.0	Not good				
	67.7 – 88.4	1	2.4	Enough				
	88.5 – 109.2	28	66.7	Good				
	109.3 - 130	13	31.0	Very good				

Based on the table above, it was found that at SMPN 1 Jambi City students' creative thinking skills were dominant in the good category with a percentage of 71.4% and SMPN 5 Jambi City were dominant in the good category with a percentage of 64.3% while SMPN 11 Jambi City was dominant in the very good category with a percentage of 50% and SMPN 7 Jambi City is dominant in the good category with a percentage of 66.7%.

Assumption Test

Normality test

As for the normality test results of students' responses to the usual problem-based learning model, student responses to the scaffolding integrated problem-based learning model and students' creative thinking skills as shown in the Table 10.

Table 10. Normality Test

Variable	School	Sig.	Distribution
Student responses to the usual problem-based learning model	SMPN 1 Kota Jambi	0.15	Normal
	SMPN 5 Kota Jambi	0.21	Normal
	SMPN 11 Kota Jambi	0.17	Normal
	SMPN 7 Kota Jambi	0.19	Normal
Student responses to the problem-based learning model integrated with scaffolding	SMPN 1 Kota Jambi	0.26	Normal
	SMPN 5 Kota Jambi	0.32	Normal
	SMPN 11 Kota Jambi	0.35	Normal
	SMPN 7 Kota Jambi	0.26	Normal
Creative thinking ability	SMPN 1 Kota Jambi	0.26	Normal
	SMPN 5 Kota Jambi	0.33	Normal
	SMPN 11 Kota Jambi	0.13	Normal
	SMPN 7 Kota Jambi	0.25	Normal

Based on the results of the normality test for this research variable, a significant value was obtained greater than 0.05, so it can be concluded that the data is normally distributed.

Homogeneity Test

As for the homogeneity test results of students' responses to the usual problem-based learning model, student responses to the problem-based learning model integrated with scaffolding and students' creative thinking abilities as shown in the Table 11.

Based on the results of the homogeneity test in this study, a significance value was obtained that was greater than 0.05 so that it could be concluded that the data used in this study had a homogeneous distribution.

Table 11. Homogeneity Test

Variable	School	Sig.	Distribution
Student responses to the usual problem-based learning model	SMPN 1 Kota Jambi	.071	Homogen
	SMPN 5 Kota Jambi	.053	Homogen
	SMPN 11 Kota Jambi	.064	Homogen
	SMPN 7 Kota Jambi	.058	Homogen
Student responses to the problem-based learning model integrated with scaffolding	SMPN 1 Kota Jambi	.087	Homogen
	SMPN 5 Kota Jambi	.051	Homogen
	SMPN 11 Kota Jambi	.076	Homogen
	SMPN 7 Kota Jambi	.089	Homogen
Creative thinking ability	SMPN 1 Kota Jambi	.069	Homogen
	SMPN 5 Kota Jambi	.085	Homogen
	SMPN 11 Kota Jambi	.076	Homogen
	SMPN 7 Kota Jambi	.057	Homogen

Hypothesis Testing

The hypothesis test used in this study was MANOVA analysis with the posthoc tukey follow-up test which was used to see differences in students' creative thinking abilities using problem based learning models and students' creative thinking abilities using problem based learning integrated scaffolding models. The results of the T-test for students' creative thinking abilities using the problem based learning model and students' creative thinking abilities using the scaffolding integrated problem based learning model are shown in the Table 12.

Table 12. Interpretation Results of Students' Creative Thinking Skills Using the Problem Based Learning Model and Students' Creative Thinking Abilities Using the Integrated Scaffolding Problem Based Learning Model

MANOVA	Value	F	Hypotesis df	Error df	Sig.
Students' creative thinking skills by using problem-based learning models	.751	325.181	2.000	16.000	.000
Students' creative thinking skills by using a problem-based learning model integrated with scaffolding	.938	325.181	2.000	16.000	.000

Based on the table above, it was found that the average significance value was less than 0.025 so it could be concluded that there were differences in SMPN 1 Jambi City, SMPN 5 Jambi City, SMPN 11 Jambi City and SMPN 7 Jambi City. Associated with the average difference between four schools in Jambi City students' creative thinking skills using the problem based learning learning model and students' creative thinking abilities using the integrated scaffolding problem based learning learning model, to see significant differences in the average creative thinking ability students using the problem based learning model and students' creative thinking skills using the integrated scaffolding problem based learning model were subjected to the poshoc tukey test. Based on the analysis that has been done, the results are shown in Table 13.

Based on the Table 13, it can be concluded that there is a significant difference in the group average between junior high schools at SMPN 1 Kota Jambi, SMPN 5 Kota Jambi, SMPN 11 Kota Jambi and SMPN 7 Kota Jambi.

Based on the Table 14, it can be concluded that there are differences in students' creative thinking skills using the problem based learning learning model and students' creative thinking abilities using the scaffolding integrated problem based learning learning model at SMPN 1 Jambi City, SMPN 5 Jambi City, SMPN 11 Jambi City and SMPN 7 Jambi City.

Table 13. Tukey's Post Hoc in Students' Creative Thinking Abilities by Using Problem Based Learning Learning Models and Students' Creative Thinking Abilities by Using Problem Based Learning Integrated Scaffolding Models

The ability to think creatively with PBL and PBL learning models is integrated with scaffolding
Tukey HSDa,b

School	N	Subset for alpha = 0.025	
		1	2
SMPN 1 Kota Jambi	41	23.4379	
SMPN 5 Kota Jambi	41		25.0786
SMPN 11 Kota Jambi	41		25.6810
SMPN 7 Kota Jambi	41		25.0931
Sig.		1.000	.779

Based on the results of descriptive statistical tests on student responses to problem-based learning models, it was found that SMPN 1 Jambi City was dominant in the bad category with a percentage of 54.8 and SMPN 5 Jambi City was dominant in the bad category with a percentage of 57.1%, while SMPN 11 Jambi City was dominant. , balanced in the good and bad categories

with a percentage of 47.6% and at SMPN 7 Jambi City dominant in the good category with a percentage of 57.1% and for the descriptive statistical test results of students' responses to the integrated scaffolding problem-based learning learning model it was found that in SMPN 1 Jambi City it was dominant in the good category with a percentage of 85.7% and SMPN 5 Jambi City is dominant in the good category with a percentage of 66.7% while SMPN 11 Jambi City is dominant in the good category with a percentage of 71.4% and in SMPN 7 Jambi City is dominant in the good category with a percentage of 69.0% while the results of descriptive statistical tests on students' creative thinking abilities were obtained by that in SMPN 1 Jambi City is dominant in the good category with a percentage of 71.4% and in SMPN 5 Jambi City is dominant in the good category with a percentage of 64.3% while SMPN 11 Jambi City is dominant in the very good category with a percentage of 50% and in SMPN 7 Jambi City is dominant in the good category with a percentage of 66.7%.

Table 14. Results of the Independent Sample T-Test for Students' Creative Thinking Abilities Using the Problem-Based Learning Model and Students' Creative Thinking Abilities Using the Integrated Scaffolding Problem-Based Learning Model

	T	Df	Sig.	Std. Deviation	95% confidence interval	
					Lower	Upper
SMPN 1 Kota Jambi	12.731	200	0.016	2.87	12.269	.4110
	12.731	74.264	0.016	1.56	11.927	.5489
SMPN 5 Kota Jambi	12.417	200	0.014	2.65	12.284	.4506
	12.417	75.381	0.014	1.34	11.903	.5381
SMPN 11 Kota Jambi	12.995	200	0.012	2.39	12.193	.4410
	12.995	75.421	0.012	1.94	11.451	.5379
SMPN 7 Kota Jambi	12.796	200	0.013	2.44	12.643	.4153
	12.796	75.582	0.013	1.23	11.994	.5619

Based on the results of the assumption test conducted by the researcher, namely the normality and homogeneity tests, the normality test results obtained a significant value greater than 0.05, namely at SMPN 1 Jambi City at 0.15, 0.26 and 0.26, at SMPN 5 Jambi City at 0.21, 0.32 and 0.33, at SMPN 11 Jambi City is 0.17, 0.35 and 0.13 while in SMPN 7 Jambi City are 0.19, 0.26 and 0.25, so it can be concluded that the data is normally distributed. The results of the homogeneity test obtained a significance value of more than 0.05 with results at SMPN 1 Jambi City of 0.071, 0.087 and 0.069, at SMPN 5 Jambi City of 0.053, 0.051 and 0.085, at SMPN 11 Jambi City of 0.064, 0.076 and 0.076 while at SMPN 7 Jambi City is 0.058, 0.089 and 0.057 so that it can be concluded that the data is homogeneous.

Based on the results of inferential statistical tests using MANOVA analysis with the posthoc tukey advanced test, it can be concluded that there are differences in students' creative thinking abilities using problem based learning models and students' creative thinking abilities using scaffolding integrated problem based learning at SMPN 1 Jambi City, SMPN 5 Jambi City, SMPN 11 Jambi City and SMPN 7 Jambi City. The application of the problem-based learning model must be accompanied by an element of scaffolding that is adapted to the learning objectives to be achieved so that the implementation becomes effective. One of the benefits of using scaffolding in PBL is the provision of a supportive learning environment, where students are free to ask questions, provide feedback and have colleagues who can support them in dealing with new material (Fajarini, 2018).

The successful implementation of the PBL method requires the teacher to act as a guide and simultaneously pay attention to various aspects of the classroom (Brush & Saye, 2000). Scaffolding has a more positive impact compared to students who do not receive scaffolding so that students' understanding and problem-solving abilities can increase (Ding et al., 2011) and students who learn to use problem-based learning have a positive impact than students who learn to use expository learning (Joy, 2014). In the process of solving problems students must have the ability to think creatively which can help students in solving problems.

The PBL model aims to help students develop/improve creative thinking skills, foster student initiative in work, internal motivation in learning, and can develop interpersonal relationships in problem solving skills in group work (Rusman, 2012). The use of the PBL learning model raises aspects of the ability to think creatively, some of which are as stated by Munandar (2012), creative characteristics are always curious, have very broad interests, and like to do creative activities.

This research showed that conceptual scaffolding in problem based learning had an effect on students' problem solving abilities. The integration of scaffolding in problem-based learning was studied by Haruehansawasin et al. (2018). In this study, researchers examined the scaffolding approach which is suitable for

low achieving students using the PBL learning model which shows that providing scaffolding in learning can improve student achievement and activate discussion skills during learning. What distinguishes this research from previous research lies in the variables used and the level of school. The novelty of this study is that this research compares the use of problem based learning models and integrated scaffolding problem based learning on students' creative thinking abilities.

Conclusion

Based on the research that has been carried out by researchers, it can be concluded that there are differences in students' creative thinking skills using problem based learning learning models and students' creative thinking abilities using scaffolding integrated problem based learning learning models at SMPN 1 Jambi City, SMPN 5 Jambi City, SMPN 11 Jambi City and SMPN 7 Jambi City.

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Author Contributions
Yusnidar wrote and revised the article and was responsible for the research; M. Dwi Wiwik and Ernawati made the instruments; Dwi Agus Kurniawan analyzed and processed the data; Miftahul Zannah Azzahra, Fhadira Insani Putri, and Rahmat Perdana carried out data collection.

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The authors declare no conflict of interest.

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