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Effectiveness of Multicultural Problem-Based Learning Models in Improving Social Attitudes and Critical Thinking Skills of Elementary School Students in Thematic Instruction

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Abstract

This study aims to analyze the effectiveness of multicultural problem-based learning models to improve social attitudes and critical thinking skills of elementary school students in thematic learning. This study employs a quasi-experimental approach with a posttest-only control group design. There are 165 students in the sample of the study. The data collection method used is a questionnaire on social attitudes and an achievement test on critical thinking ability. The post-test data are analyzed using descriptive and inferential statistics. The analysis covers the mean score, standard deviation and variance while the inferential statistical analysis utilizes the MANOVA test. The results of the analysis show that the multicultural problem-based learning model is effective in improving students' social attitudes and critical thinking skills. Therefore, this learning model is recommended as an innovative learning model.

Keywords: Multiculturalism, Problem-based learning, Learning model, Social attitudes, Critical thinking skills.

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Contents

Contribution of this paper to the literature

The results of this research strengthen the theory of the guided inquiry learning model which has a positive effect on the creativity of children in kindergartens. Moreover, the application of the guided inquiry learning model also interacts with the social interaction ability of children. Children with high social interaction inclinations show great improvement in creativity when they are taught using the guided inquiry learning model. Meanwhile, students with low social interaction tendencies improve when they are taught using the conventional learning model. So, children's social interaction abilities need to be identified before applying the appropriate learning model.

1. Introduction

The industrial revolution 4.0 is one of the challenges faced by the world of education. The start of this revolution brought about many transformations in all areas of life (Bilotta, Bertacchini, Gabriele, Giglio, Pantano, & Romita, 2020). One of the changes that is seen today is automation in all areas of life , where there is no need for humans to operate machines due to technological advances (Alaloul, Liew, Zawawi, & Kennedy, 2020). This condition certainly demands that educational outcomes equip students with 4.0 revolution skills. The skills that must be mastered by students are knowledge, meta cognitive skills, critical and creative thinking skills and the ability to communicate and collaborate effectively (Fatmawati, Zubaidah, Mahanal, & Sutopo, 2019; Greenstein, 2012; Indraswati, Marhayani, Sutisna, Widodo, & Maulyda, 2020). It is hoped that students will be able to solve problems encountered in everyday life by equipping themselves with these skills (Redhana, 2019). One of the skills that must be possessed by students in accordance with this description is critical thinking skills (Kavenuke, Kinyota, & Kayombo, 2020). Critical thinking is the ability to think independently to generate new and innovative ideas as well as solving problems, reflecting critically on experiences and learning processes and making effective decisions (Indraswati et al., 2020). Also, critical thinking is a skill that can shape a child's mental, moral, social, cognitive and scientific developments (Mohd Darby & Mat Rashid, 2017). Furthermore, critical thinking includes higher-order cognitive strategies that cover comparing situations, explaining problems and results, developing criteria for evaluation, analyzing information to generate solutions and building relationships (Ihsan, Ramdani, & Hadisaputra, 2019; Pitt, Powis, Levett-Jones, & Hunter, 2015; Polat & Aydın, 2020; Sudarti & Putra, 2015). In order to develop critical thinking skills, students must be directly involved in the learning process (Boso, Van Der Merwe, & Gross, 2021). Inculcating critical thinking skills influences students' ability to solve and control social problems that occur by conceptualizing, analyzing and solving them (Tapung, Maryani, & Supriatna, 2018). It is also considered important for students because critical thinking is closely related to the awareness of students, which becomes the basis to solving problems (Crismono, 2017; Ikhsan, Munzir, & Fitria, 2017; Kyrychenko, 2018). Besides, critical thinking skills can also familiarize students with thinking more rationally in determining and choosing the best alternative choices (Firdaus, Nisa, & Nadhifah, 2019).This explanation provides a clear picture of the importance of critical thinking skills for students.

Optimizing students' critical thinking skills determines their success in learning achievement. Learning achievement refers to all forms of results from the learning process covering knowledge, skills and attitudes. Learning achievements are strongly influenced by the emotions experienced by students in instructional processes (Roh, Jang, & Issenberg, 2021). Likewise, talking about learning achievement also means considering the attitude aspect. Students' attitudes are reflected in their behavior (Utomo & Muntholib, 2018). Attitude is the ability to develop and accept certain beliefs, interests, perspectives and tendencies (Surahman & Mukminan, 2017). One type of attitude that must be owned by students is social attitude. Social attitude is a tendency to act positively or negatively in particular social situations (Uge, Neolaka, & Yasin, 2019). Social attitude is a process of character development to be a good citizen based on social values (Firat Durdukoca, 2019). Another opinion states that social attitude is the relationship and interdependence amongst humans (Irawan, 2019).The formation of social attitudes can be initiated by continuous interaction between individuals by exchanging information, socializing within family, community, schools and environment (Bustami, Corebima, Suarsini, & Ibrohim, 2017; Groenewoudt, Rooks, & Van Gool, 2019). Social attitude is very important for students since it becomes their basis to interact with teachers and peers in an acceptable manner.

However, the current condition of the expected learning achievement is not optimal due to arguments and disagreement occurring in various layers of society as an effect of technological advances. The occurence of conflicts under the name of ethnicity, religion, race and intergroups indicate that the social attitudes and critical thinking skills of the Indonesian people are still weak and they have not been able to manage issues of ethnic, religious, racial and inter group conflicts that lead to suspicion and hostility. The lack of social attitudes within individuals affect the community by giving rise to social conflicts (Nagovitsyn, Bartosh, Ratsimor, & Maksimov, 2018). A weak social attitude indicates that current learning practices have not effectively touched the intercultural competence of the students (Schlein, Taft, & Ramsay, 2016). Through learning, students should be able to internalize, understand and practice how to live in a community. This kind of learning process increases student awareness of national unity, individual and social values and mental conditions, that is knowledge and understanding (Alabas, 2018; Smith & Crowley, 2018). Generally, problems in education lie in the implementation of instructional processes in schools (Margunayasa, Dantes, Marhaeni, & Suastra, 2019). This is where guarding the learning process that emphasizes competence, attitudes and skills should be maintained

One of the alternatives that can be offered is to use a problem-based learning model. PBL is a learning model that has a great impact on the learning process. The use of PBL in classrooms has been proven to increase student ability to learn vocabulary (Lin, 2015). The application of PBL can synergize students' critical thinking skills and potential in learning (Seibert, 2021). Further, the application of PBL improves students' performance in the learning process (Waite, Smith, & McGiness, 2020). The use of PBL also develops the social-constructivist principles of the students as well as provides a great opportunity for lifelong learning with the experience gained (Bosica, Pyper, & MacGregor, 2021). In this modern learning era, the use of PBL is proven to improve students' learning achievement, problem-solving skills and classroom interaction (Aslan, 2021). The application of Problem-based Learning also encourages students to have critical thinking skills in various activities (Narmaditya,

Wulandari, & Sakarji, 2018; Seibert, 2021). Therefore, the application of PBL in the learning process provides opportunities for students to develop critical thinking to improve learning achievement and be more active in the classroom. This positive influence is the major reason why this study should be conducted. On the other hand, most of the applications of problem-based learning in recent times have paid less attention to social justice, equity and decolonization (Caires-Hurley, Jimenez-Silva, & Schepers, 2020). In order to solve these problems, PBL should be collaborated with multiculturalism.

Multiculturalism is an affirmation of democratic values, cultural pluralism, social justice and students' personality and intellectuality. Multicultural education is an effort to build self-awareness in individuals who have the potential to make positive contributions to community development (Danoebroto, 2012; Ihsan, 2017). Multicultural education is a concept that aims at creating equal educational opportunities for all students of different races, ethnicities, social classes and cultural groups and help them to acquire the necessary knowledge, attitude and skills (Indrapangastuti, 2014; Ningtyas, 2018).Multiculturalism in practice is a strategy of social integration where cultural diversity is truly recognized and respected, thus it can function effectively in identifying issues of separatism and social disintegration (Afifah, 2017). Multiculturalism in this learning innovation refers to the basic values contained in *Pancasila* (Five basic principles of life) covering (1) Divinity (2) Human Rights, (3) Unity, (4) Democracy and (5) Social justice. The problem-based learning model with multicultural content constitutes a series of learning activities that begin with problems faced in real life situations by students and continues with a problem-solving process that emphasizes divine values, human rights, unity, democracy and social justice. The problem-based learning model with multicultural content is an effort to enable students to master various skills in the field of education in the 21st century (Beswick & Fraser, 2019). Based on this description, the PBL model with multicultural content can have a positive impact on critical thinking skills and social attitudes. There are a number of studies that support this statement. Bachtiar, Zubaidah, Corebima, and Indriwati (2018) state that the combination of PBL and NHT models is very effective in improving students' social attitudes. Monrad and Mølholt (2017) also argue that problem-based learning can be used to develop problem solving skills including students' critical thinking skills. A study on multicultural teaching can be conducted through drama and discussions on various social statuses of students (Aslan, 2019). Cho (2017) and Pang (2019) highlight the fact that application of multiculturalism in students' lessons will be very effective if the aspects of justice and equality can be managed properly in learning. Thereunto, the purpose of exploring one's own life experiences and that of others can be created in classrooms (Ashmawi, El-Sanchez, & Carmona, 2018). Based on these descriptions, this study aims to analyze the effectiveness of problem-based learning with multicultural content on students' social attitudes and critical thinking skills in thematic learning of elementary school students.

2. Methods

This study aims to analyze the effectiveness of using problem-based learning models with multicultural content on social attitudes and critical thinking skills in thematic instruction of elementary school students. This study employs a quasi-experimental approach in the form of posttest-only control group design. In addition, this study is carried out by providing multicultural problem-based learning treatment to the experimental group while the control group is treated without multicultural problem-based learning. Both the experimental and control groups are given a posttest to determine the differences in social attitudes and critical thinking skills. The sample of the study was selected using purposive sampling technique by taking into consideration the location of the schools in urban, suburban and rural areas with various student characteristics. The total sample was 88 students for the experimental group and 77 for the control group.

The data collection method used was a questionnaire on social attitudes and a test on critical thinking ability. Attitude questionnaires were developed by referring to the indicators covering (1) honesty, (2) working independently, (3) Wearing uniform accordingly, (4) carrying out cleaning duties, (5) confessing to mistakes, (6) demonstrating problem-solving skills, (7) respecting others, (8) controlling emotions, (9) empathy, (10) helping friends in distress, (11) expressing opinions and (12) trying something new. These indicators were further developed into 30 statement items. The complete version of the social attitude instrument is presented in Table 1. After the social attitude instrument had been developed, its validity and reliability were tested. The content validity value as indicated by the Content Validity Ratio (CVR), is the degree of agreement between expert validators on one item that represents the content validity through a single indicator ranging from -1 to 1. **Provision:** If CVR> 0, then the item is valid; If CVR= 0, then the item is invalid and needs correction; if CVR < 0, then the item is declared invalid/failed. The validity test showed the average score at 1, meaning the 30 items were declared valid. Further, the reliability test using Cronbach Alpha reliability coefficient was calculated using SPSS. The value of the correlation coefficient of the instrument was also obtained using the SPSS analysis. The standard for instrument reliability was based on Kerlinger where the value should be at least 0.70. The results of the validity and reliability tests using IBM SPSS 26 for the social attitude instrument showed that from the 30 statement items, 27 were valid statements (3 were dropped); with a reliability value of 0.848 which indicated validity and reliability as being very high.

The collection of critical thinking data was done through a test that included : 1) Interpretation, which is one's ability to interpret and analyze a situation through data and applicable rules and procedures; 2) Analysis, which is one's ability to explain information by connecting concepts to problems; 3) Evaluation, which is the ability to asses information based on the related concept ; 4) Inference, which is a person's ability to explain conclusions rationally based on relevant information presented with the elements needed; 5) Explanation, which is a person's ability to provide a clear description that is justified based on data evidence and 6) Self-regulation, which is one's ability to reason and act based on the concept of a problem. These 6 indicators were elaborated into 12 essay questions. After the instrument for critical thinking was developed, its validity and reliability were tested.

Table 1. Blueprint of social attitude instrument.

No	Dimension	Indicators	Statements		Total
			Positive	Negative	
1	Honesty	Telling the truth	1, 22	3	3
		Accomplishing tasks independently	2,8	-	2
2	Discipline	Wearing uniform accordingly	10, 13	7	3
		Carrying out cleaning duties	21	17	2
3	Responsibility	Admitting mistakes	14, 18	-	2
		Showing problem-solving skills	6, 25	12	3
4	Polite	Respecting others	4, 11	28	3
		Controlling emotions	9, 29	-	2
5	Care	Being sensitive to others' problems	5, 27	19	3
		Helping friends in need	30	26	2
6	Confidence	Expressing ideas	16, 20, 23	-	3
		Taking on new challenges	15	24	2

If the CVR < 0, then the item is declared invalid/failed. The results of the analysis show that all items are valid with a CVR score of 1. Thus, the 12 items above could be used for testing the group of students. The item validity test was conducted using the product moment of Carl Pearson, while the reliability was tested using Cronbach Alpha reliability coefficient which was calculated using SPSS. The standard for the instrument reliability was based on Kerlinger, where the degree of reliability should be at least 0.70. The results of the validity and reliability test using IBM SPSS 26 show that from the12 items in the critical thinking skills instrument, there are 9 valid items and 3 invalid items, with a reliability value of 0.752 which indicate a high level of reliability and validity.

The post-test data gathered were analyzed using descriptive and inferential statistical analysis. Descriptive analysis covers the mean score, standard deviation and variance while inferential statistical analysis is used to determine the effects of problem-based learning with multicultural content on social attitudes and critical thinking skills. In this study, MANOVA was used to analyze the inferential statistical analysis. Before the Manova test was carried out, prerequisite tests such as the normality test, homogeneity test and multi correlation test were carried out. The data normality test was intended to show that the sample came from a normally distributed population. The normality test in this study employed the Kolmogorov-Smirnov and Shapiro-wilk tests. The test criteria states that the data should show a normal distribution with a significance value of more than 0.05 or else the data is not normally distributed. The homogeneity test is conducted to show that two or more groups of samples selected from the population have the same variance. Thus, the differences that occur in hypothesis testing really come from differences between groups, not within. For this purpose, the researchers in this study used Levene's test of equality of error variance. The test criteria states that data is said to have the same variance (homogeneous) if the significance value is more than 0.001, otherwise the sample variance is not homogeneous. The MANOVA test and prior tests were carried out using SPSS 26.0 for Windows. To test the hypothesis, the F test was used though multivariate analysis of variance (MANOVA). The multivariate test shows the effects of each source on the dependent variable, namely critical thinking skills and students' social attitudes. Multivariate tests were conducted on the significance of the F value by Using Pillai's Trace, Wilks' Lambda, Hotelling Trace and Roy's Largest Root. A significance value less than 0.001 means that H_0 is rejected. In other words, there was a significant effect of the dependent variable between groups. All hypothesis testing was carried out at a significance level of 5% because this study is in the field of education.

3. Results and Discussion

3.1. Results

This study aims to analyze the effectiveness of using a problem-based learning model with multicultural content on social attitudes and critical thinking skills in thematic learning of elementary school students. This study's results show that there is a significant difference between students who are treated through problem-based learning with multicultural content and students who are not treated through this model. The results of the analysis of the descriptive data are presented in Table 2. The analysis reveals that there is a difference in the mean scores on social attitudes and critical thinking skills between the experimental group and control group, with each showing a score of 0.279 and 0.234 respectively.

Table 2. Descriptive analysis of social attitudes and critical thinking skills.

Descriptive Statistics						
Treatment	**Dependent Variable**	**Mean**	**Std. Deviation**	**Max.**	**Min.**	**N**
Problem-based learning model with multicultural content	Social attitudes	0.770	0.088	1.000	0.608	88
	Critical thinking skills	0.596	0.193	1.000	0.235	88
Without Problem-based learning model and multicultural content	Social attitudes	0.491	0.078	0.639	0.160	77
	Critical thinking skills	0.362	0.193	0.731	0.034	77

The next step was Manova analysis on the posttest data. Before conducting the Manova analysis, the normality test, homogeneity test and multi correlation test were carried out. Normality test with Kolmogorov-Smirnov showed that all data from the groups were normally distributed. This is indicated by the value of Sig. > 0.05 which is 0.200. The complete results of the analysis are presented in Table 3. After the normality requirements were fulfilled, the next prerequisite test was the homogeneity test. This test was conducted using two sets of analyses, Levene's test of equality and the Box's test of equality of covariance matrices. The results of the homogeneity analysis showed the same interpretation where the findings of the study were derived from homogeneous data collection. This can be seen from the significance value where each test showed a value of more than 0.05. The Sig. value from Levene's Test of Equality was 0.119 for social attitudes, while the Sig. value of critical thinking skills was 0.967. On the other hand, the Box's Test of Equality of Covariance Matrices showed that the Box's M was at

4.606; the F value was 1.514 and the sig. at 0.209. The next test was the multi correlation test where this test aimed to determine the relationship between each variable. The results showed that all data showed a tolerance value > 0.1 and VIF value < 1.000 for each data group. Thus, it can be concluded that the entire data does not have multi collinearity.

Table 3. The results of normality test.

Treatment		Kolmogorov-Smirnov		
		Statistic	Df	Sig.
Social Attitude	Problem-based learning model with multicultural content	0.002	88	0.200
	Without Problem-based learning model with multicultural content	0.090	77	0.200
Critical Thinking Skills	Problem-based learning model with multicultural content	0.002	88	0.200
	Without Problem-based learning model with multicultural content	0.086	77	0.200

Since the requirements of the MANOVA analysis had been fulfilled, where the data were normally distributed and homogenous, with no multi correlation found, the hypothesis test was conducted. The complete analysis is shown in Table 4 and Table 5. Generally, the analysis reveals that the F value for Pillai's Trace, Wilk Lambda, Hotelling Trace and Roy's Largest Root has a significance value of less than 0,001, which means all are significant. Therefore, it is clear that there is a significant effect of problem-based learning model with multicultural content on students' social attitudes and critical thinking skills. Tests of Between-Subjects Effects that seek the relationship between the learning model (A) and social attitudes (Y1) shows an F value of 435.32 with a significance of 0.000 < 0.001. This indicates that there is a significant effect of the use of problem-based learning with multicultural content on students' social attitude. Likewise, the relationship between the learning model (A) and critical thinking skills (Y2) shows an F value of 57.51 with a significance of 0.000< 0.001. Therefore, it can be stated that problem-based learning with multicultural content has a significant effect on students' critical thinking skills. These results also show that there is a significant effect of problem-based learning with multicultural content on students' social attitudes and critical thinking skills. The calculation to determine the effectiveness of problem-based learning with multicultural content on social attitudes and critical thinking skills of fourth graders in the context of implementing the 2013 curriculum in Buleleng Regency by using t-test is shown in Table 6:

Table 4. The results of multivariate analysis.

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	0.984	4667.059	2.000	155.000	0.000
	Wilks' Lambda	0.016	4667.059	2.000	155.000	0.000
	Hotelling's Trace	60.220	4667.059	2.000	155.000	0.000
	Roy's Largest Root	60.220	4667.059	2.000	155.000	0.000
A	Pillai's Trace	0.744	224.988	2.000	155.000	0.000
	Wilks' Lambda	0.256	224.988	2.000	155.000	0.000
	Hotelling's Trace	2.903	224.988	2.000	155.000	0.000
	Roy's Largest Root	2.903	224.988	2.000	155.000	0.000

Table 5. Tests of between-subjects effects.

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	Social Attitudes Value (Y1)	3.038	1	3.038	435.323	0.000
	Critical Thinking Skills Value (Y2)	2.135	1	2.135	57.505	0.000
Intercept	Social Attitudes Value (Y1)	61.972	1	61.972	8879.251	0.000
	Critical Thinking Skills Value (Y2)	35.806	1	35.806	964.564	0.000
A	Social Attitudes Value (Y1)	3.038	1	3.038	435.323	0.000
	Critical Thinking Skills Value (Y2)	2.135	1	2.135	57.505	0.000
Error	Social Attitudes Value (Y1)	1.089	156	0.007	0.000	0.000
	Critical Thinking Skills Value (Y2)	5.791	156	0.037	0.000	0.000
Total	Social Attitudes Value (Y1)	70.122	158	0.000	0.000	0.000
	Critical Thinking Skills Value (Y2)	46.249	158	0.000	0.000	0.000
Corrected Total	Social Attitudes Value (Y1)	4.127	157	0.000	0.000	0.000
	Critical Thinking Skills Value (Y2)	7.926	157	0.000	0.000	0.000

Table 6. Results of t-test analysis.

Variable	N	Mean	SD	t	Sig.	ES	Category
A1Y1	88	0.770	0.088	20.86	0.000	3.57	Highly Effective
A2Y1	70	0.491	0.078				
A1Y2	88	0.596	0.193	7.58	0.000	1.21	Highly Effective
A2Y2	70	0.362	0.193				
A1Y1Y2	88	0.683	0.1405	15.00	0.000	1.88	Highly Effective
A2Y1Y2	70	0.427	0.136				

Based on Table 6, it can be seen that: (1) the t-value of critical thinking skills is calculated from the root of F Manova FAY1 which is 20.86; 2-way (2-tailed) with a significance value of 0.000< 0.001, which means that there is a significant difference in social attitudes between the experimental group (A1) and the control group (A2) , where the mean score for Y1A1 is 0.770> Y1A2 is 0.491, meaning that problem-based learning model with multicultural content is more effective in improving students' social attitudes compared to the conventional learning method. This is strengthened by the ES value of 3.57 which is categorized as highly effective; (2) the t-value of critical thinking skills is calculated from the roots of F Manova FAY2 which is 7.58; 2-way (2-tailed) with a significance value of 0.000< 0.001. This means that there is a significant difference in critical thinking skills (Y2) between the

experimental (A1) and control (A2) groups, where the mean score of Y2A1 is 0.596 > Y2A2 0.362. In other words, the problem-based learning model with multicultural content is effective in improving students' critical thinking skills compared with the conventional learning method. This is supported by the ES value of 1.21 which is categorized as highly effective; (3) the simultaneous t-value is calculated from the roots of F Wilks Lambda A which is 15.00; 2-way (2-tailed) with significance 0.000<0.001. This means that there is a significant difference in social attitudes (Y1) and critical thinking skills (Y2) between the experimental (A1) and control (A2) groups where the mean Y1Y2A1 is 0.683 > Y1Y2A2 0.427. This indicates that problem-based learning with multicultural content is more effective and simultaneously improves students' social attitudes and critical thinking skills compared to the conventional learning method. This is supported by the ES value of 1.88 which is categorized as highly effective.

4. Discussion

Based on the above explanations, it is clear that the problem-based learning model with multicultural content is effective in improving social attitudes. The effectiveness of this learning model cannot be separated from the steps or the activities conducted in the instructional process. Problem-based learning with multicultural content familiarizes students with their surroundings because the learning process is based on daily life problems. PBL is fundamentally built on collaborative learning experiences and helps students to develop lifelong learning skills (Bosica et al., 2021). PBL is an approach that motivates students to learn through involvement in real problems (Lin, 2015). PBL focuses on constructivist principles to encourage the application of prior knowledge, collaborative learning and active engagement (Zhou, 2018). Problems in PBL must be related to real life and based on students' daily problems (Perusso & Baaken, 2020; Seibert, 2021). The PBL model is able to foster students' interaction skills with their peers. A good relationship between peers will be very effective as a strategy to attract students' interest in the learning process. Learning with peers will also encourage students to play an active role in learning (Oh, 2019). Peering enhances independent learning through feedback given by friends (Gabriele, Holthaus, & Boulet, 2016). Peers help, guide, and support each other through interaction and collaboration (Andersen & Watkins, 2018). Learning that involves peers reduces anxiety and stress because peers guide, assist and give feedback that enable learners to increase their self-confidence levels (Han, Baek, & Jeong, 2015; Stone, Cooper, & Cant, 2013). In addition, the presence of multicultural content is able to help build students' respect, solidarity, responsibility, sensitivity, tolerance, love, cooperation, peace and patriotism (Grosseman et al., 2014; Polat & Aydın, 2020). Students' social attitudes can be honed with a multicultural-based approach because they are accustomed to collaborating with different backgrounds. Students' social attitudes are formed because of the implementation of a structured learning model that optimizes interactions in heterogeneous groups based on multicultural content in the problem-based learning model. The findings of this study which indicate that there is a significant effect of problem-based learning on students' attitudes compared with conventional teaching are in line with Demirel and Dağyar (2016) findings that problem-based learning is effective in helping students acquire positive attitudes. Another study highlights that problem-based learning can be integrated with classical methods, extracurricular activities in the form of religious activities, scouting, sports and Islamic arts, as well as moral habituation which results in the improvement of moral quality (Nurzaman, 2017). PBL is an effective method in increasing students' knowledge about the environment and developing positive attitudes toward the environment. The most important material in problem-based learning activities are the instructional processes (Ural & Dadli, 2020). Another study states that problem-based learning with *Tri Kaya Parisudha* principles has a significant effect on student learning achievement in social studies as well as in improving students' social attitudes (Pasek, Sudarma, & Astawan, 2018). The use of PBL can also be integrated into the learning process of local high-achieving students as it has a positive effect on students' social attitudes (Soraya, Jampel, & Diputra, 2019). In short, it can be concluded that the use of problem-based learning with multicultural content is effective in improving students' social attitudes.

The second finding is that problem-based learning with multicultural content is effective in improving students' critical thinking skills. Critical thinking in this respect is formed through a habituation process of students in examining the problems that are in line with the application of the PBL model with multicultural content, communication patterns and self-reflection, until they are able to analyze problems as well as give solutions in diverse group conditions. At this point, the learning process is considered by students to be more exciting and challenging because they can express their opinions well in various classes (Kardoyo, Nurkhin, Muhsin, & Pramusinto, 2020). In multicultural problem-based learning, critical thinking is formed through heterogeneous groups where students are trained to distinguish and decide which information is feasible and which is not, which ideas are supported by empirical evidence and which are only based on opinion (Kumar & Refaei, 2017; Saputra, Joyoatmojo, Wardani, & Sangka, 2019). PBL is basically built on collaborative learning experience and helps students to develop lifelong learning skills (Bosica et al., 2021). PBL relies on constructivist principles to encourage the application of prior knowledge, collaborative learning and active engagement (Zhou, 2018). PBL is also based on real life situations that students may face (Perusso & Baaken, 2020; Seibert, 2021). Based on this description, it can be said that the introduction of PBL provides opportunities for students to develop critical thinking skills. Critical thinking is the ability to think independently to generate new and innovative ideas as well as being able to solve problems, being critical in the learning process and being effective in decision making (Indraswati et al., 2020). Critical thinking is a skill that is able to shape a child's mental, moral, social cognitive and scientific developments (Mohd Darby & Mat Rashid, 2017). Critical thinking covers higher-order cognitive strategies such as comparing situations, explaining problems and results, developing criteria for evaluation, using information sources, generating solutions and analyzing and building relationships (Ihsan. et al., 2019; Pitt et al., 2015; Polat & Aydın, 2020; Sudarti & Putra, 2015). In order to develop critical thinking skills, students must be directly involved in the learning process (Boso et al., 2021). The importance of inculcating critical thinking skills is to solve and control social problems that occur in society by conceptualizing, analyzing and solving them (Tapung et al., 2018). The ability to think critically is very important for students because it is closely related to the awareness of students to solve a given problem (Crismono, 2017; Ihsan, 2017). Critical thinking skills can also familiarize students to think more rationally in determining and choosing the best alternative choices (Firdaus et

al., 2019). Thus, problem-based learning with multicultural content encourages students to develop critical thinking skills. In this study, critical thinking skills are seen to be better in the experimental group compared with the control group (Dakabesi & Luoise, 2019). The application of problem-based learning is also able to improve critical thinking skills in each cycle (Sholihah & Lastariwati, 2020). Multiculturalism in the learning process creates tolerance and respect for differences which lead to freedom to think and give opinions (Saputra et al., 2020; Wibowo, Murtono, & Utaminingsih, 2021). Regardless of the differences in personal backgrounds, ethnicity, gender and religion, students have the same right to equality, democracy and justice (Zammit, 2021). Based on this description, it can be said that problem-based learning with multicultural content is effective in improving critical thinking skills.

The third finding of the study is that the problem-based learning model with multicultural content simultaneously improves students' social attitudes and critical thinking skills. The organization of problem-based learning with multicultural content is able to solve problems related to attitudes and critical thinking. The presentation of the model is not only limited to implementation, but also followed by knowledge on diversity. Critical thinking about a problem leads to a positive attitude because the selection of problems in the problem-based learning model contains an element of diversity (Amin, Utaya, Bachri, Sumarmi, & Susilo, 2020). Meanwhile, multicultural learning that prioritizes local talent raises children' awareness of the importance of respecting others and different cultures (Noor & Sugito, 2019). When a multicultural problem-based learning model is applied, the ability to think critically appears when completing both individual and group tasks with the teachers' assistance (Thorndahl & Stentoft, 2020). Also, the expected attitudes of the students are formed when interacting with others by showing their respect to others' ideas and behavior. In general, the application of this method helps students learn skills and characteristics such as collaboration and teamwork, critical thinking and problem solving, creativity and innovation and self-direction and interpersonal skills (Culclasure, Longest, & Terry, 2019; Skinner, Braunack-Mayer, & Winning, 2015). Thus, seen from these perspectives, problem-based learning can improve social attitudes and critical thinking skills.

The fourth finding of the study is that problem-based learning with multicultural content is more effective than learning without this model. This is because problem-based learning with multicultural content provides opportunities for students to learn to be more active in solving the problems given. Students who are active in the learning process gain more benefits because they can gather more experience and use it in their daily life. Problem-based learning with multicultural content accustoms students to think critically before accepting answers from others. Critical thinking is an independent thinking process that generates new and innovative ideas, a reflection process on experiences and learning processes to make effective decisions (Indraswati et al., 2020). Critical thinking is a skill that can shape children's mental, moral, social, cognitive and scientific developments (Mohd Darby & Mat Rashid, 2017). Critical thinking skills cover higher-order cognitive strategies such as comparing situations, explaining problems and results, developing criteria for evaluation, making use of information sources, generating solutions and analyzing and building relationships (Ihsan et al., 2019; Pitt et al., 2015; Polat & Aydın, 2020; Sudarti & Putra, 2015). In short, the use of this learning model helps students develop their critical thinking skills. In this learning process, there is also the process of interaction between students who are both competing and working collaboratively, which forms students' social attitudes. Attitude is the ability to develop and accept certain beliefs, interests, views and tendencies (Surahman & Mukminan, 2017). One of the attitudes owned by students is social attitude. Social attitude is a tendency to act positively or negatively in special social situations (Uge et al., 2019). Social attitudes are character development processes creating citizens with social values (Firat Durdukoca, 2019). Another argument states that social attitude is the interdependence relationship among humans (Irawan, 2019). The formation of social attitudes can be initiated through continuous interaction by exchanging information on situations, socializing within family, community, school and surroundings (Bustami et al., 2017; Groenewoudt et al., 2019). Social attitude is very important for students because they will be able to interact well with teachers and peers. The problem-based learning model with multicultural content is a series of learning activities that begin with problems in real situations in students' environments followed by a problem-solving process that emphasizes divine values, human rights, unity, democracy and social justice. Problem-based learning model with multicultural content is an educational effort at developing 21st century skills (Beswick & Fraser, 2019). Based on these features, PBL with multicultural content can have an impact on critical thinking skills and social attitudes.

Several related studies support the present findings, one of which states that the combination of PBL and NHT are effective at improving students' social attitude (Bachtiar et al., 2018). It is also stated that the use of PBL aids in developing students' problem-solving as well as critical thinking skills (Monrad & Mølholt, 2017). Teaching multiculturalism can also be conducted through drama and discussion methods on students' social status (Aslan, 2019). The application of multicultural teaching is optimal if equality and justice factors are managed well in the instructional process (Cho, 2017; Pang, 2019). Therefore, the objective of the study, which is exploring self-experience, can be created in a classroom situation (Ashmawi et al., 2018). The findings of the study show that the implementation of problem-based learning with multicultural content has a significant effect on students' social attitudes and critical thinking skills. Thus, this learning model is recommended to be implemented as an innovative teaching strategy.

5. Conclusion

The problem-based learning model with multicultural content has a significant effect on students' social attitudes and critical thinking skills. Students are trained to solve problems both individually and in groups; this fosters the development of critical thinking skills and social attitudes. Therefore, the PBL model with multicultural content is recommended to be implemented as an innovative teaching strategy.

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