

# Problem based Learning with Cooperative Learning on Performance in Solving Moral Dilemmas among Form Four Students That Different Gender, Birth Order, and Family Size

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**Abstract**— The purpose of this study was to investigate the effects of the moderator variables namely gender, birth order, and family size. The independent variable was the method of instruction while the dependent variables were the student performance in solving moral dilemmas according to Kohlbergs' Moral Development Stages. The instrument comprised pre- and post-tests that contain moral dilemmas adapted from Kohlbergs' Development Skills (1975). The sample comprised 60 Form Four students from two intact classes. Equivalence in achievement between the classes was established using the Penilaian Menengah Rendah (PMR) examination results. However, there were no significant differences between Problem-Based Learning with cooperative learning and Problem-Based Learning with Individual learning in preferences for giving punishment, giving warnings, giving benefit of the doubt, and apathy by gender, birth order and family size. The findings showed that Problem-Based Learning with Individual learning is more effective in increasing positive moral values and is recommended for use in the classroom.

**Index Terms**— Learning behaviour, PBL, learning performance, cooperative learning

## 1 INTRODUCTION

Based on Moral Education Curriculum (Ministry of Education Malaysia, 2000), which was revised to emphasize moral values and patriotism to enlighten students about their roles and responsibilities to self, family, community, nation and world (Vishalache, 2007). However, the revised curriculum will be meaningless and can not achieve if the students are not interested to learn. The use of passive teaching methods such as lecture method with the memorization techniques are most tedious students (Syed Anwar, 2002).

Moral development is a process that is assumed to change in moral judgment to show that an alternative has been taken in a moral dilemma. This decision was based on a number of reasons for decisions taken on the earlier moral dilemma (Vishalache, 2007). According to Kohlberg (1973), moral development is directly linked to cognitive because it can stimulate students' active thinking on the issues and make decisions related to the moral. Cognitive moral development theory for the first time described by Dewey (Kohlberg, 1973; Bertens, 2003).

## 2 THEORETICAL FRAMEWORK

Theoretical framework of this study, the Social Development Theory of Vygotsky which emphasizes the interaction between internal and external aspects of learning and the emphasis on the social environment of learning where cognitive function is derived from social interaction of individuals in the concept of culture. Learning occurs when a person carries out tasks that have not been studied and it is in their zone of proximal development (ZPD). Vygotsky's theory of scaffold-

ing describe concept that provides a lot of guidance in the early stages of learning and then reducing the assistance and give students the opportunity to take over the responsibility after they are able to do it yourself.

## 3 STUDIES THAT RELATED TO THE MORAL DEVELOPMENT STAGES

Through extensive researches, Kohlberg has confirmed the levels and stages of moral reasoning as a study carried out for 20 years with the boys from middle-class background and the workers in Chicago. These subjects between the ages of 10-16 years during the first interview, then they interviewed again after the lapse of three years. A long term study was conducted with the boys from the rural and urban areas in Turkey, which is in the same age as above. Some cross-cultural studies such as in Canada, Britain, Yukata, Honduras and India. Based on his studies, Kohlberg (1975) claimed that the theory of moral development is universal and cross-culturally. He says that every individual in every culture uses thirty basic moral categories, the concept of order and perinsip through the same stages of development, even if they have a variety of terminals in the development of moral thinking. The claim is based on empirical findings from research that has been exercised in students from different cultural backgrounds such as the United States, Taiwan, Turkey, Mexico and Yukata. The way Kohlberg conducted his studies is to use a moral dilemmas, especially hypothetical.

Rest (1983) found that the respondents were given a hypothetical moral dilemmas making moral decision at a higher level than their level of moral reasoning that shows that stu-

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dents have the cognitive skills to reach a moral decision before they commit immoral actions. Selman (1980) suggested effective ways to improve the level of cognitive moral development of students is to follow the steps to detect the level of moral reasoning during an individual to give hypothetical moral dilemmas and discuss the issues raised according to their age and maturity.

#### 4 CURRENT ISSUES

Teaching methods to enable the solution according to Kohlberg Stages of Moral dilemmas such as a) preferences for giving punishment, b) giving warnings, c) giving benefit of the doubt, and d) apathy or explicitly associated with the teaching and learning. Kohlbergs' Stages of Moral Development based on a certain level. Level of maturity occurs only with cognitive conflict resolution such as solving a moral dilemma (Wong, 2000). According to Kohlberg (1984) the best way for a student up to a level higher moral thinking is to solve the moral dilemma in social situations. Therefore the best method is PBL cooperative. In the context of the cooperative, the study also found that learning in the context of social or cooperative which contains scaffolding experts or peers improve cognitive development. Cooperative method is also suitable for moral education because it offers a review of every corner of the ideas that emerged in the group. Cooperative learning requires students of various abilities to work in small groups to achieve a common goal (Slavin, 1990). Five basic elements of cooperative learning are interdependent with one another in a positive way, interact, face to face, individual accountability for their own learning, cooperative skills, and group processing. It encourages students to interact actively and positively in the group and enable the sharing of ideas and examining their own ideas in an environment that is not threatened, according to the philosophy of constructivism. Apart from the experiences of a person, position in the family (birth order) and family size also influence the level of moral development of student thinking. Studies conducted by (Heiland, 2004) found that there are status effects on cognitive development of children. The last child was found to be not taking care about the environment, while the child is beginning to be rather more to the review of environmental aspects. This condition can be associated with the development of moral thinking of the students, early child (first child) are more likely to punish and warn. Theory of mind development is a descriptive, not prescriptive. Stimulus given in the instruction so that students can move from one point to another quickly by giving the right question but not the right answer (Barrows, 1996).

#### 5 METHODOLOGY

This is a quasi-experimental study using 2 X 2 factorial design to test the effect of the method used. The first factor was the method of instruction namely Problem-Based Learning with cooperative learning and Problem-Based Learning with individual learning. The second factors were the moderator variables namely gender, birth order, and family size. The independent variable was the method of instruction while the dependent variables were the student performance in solving

moral dilemmas according to Kohlbergs' Moral Development Stages. Moderator variable is the background of students by gender, birth order, and family size. The dependent variable is tendencies; a) preferences for giving punishment, b) giving warnings, c) giving benefit of the doubt, and d) apathy according to prescription Kohlberg theory. The instrument comprised pre- and post-tests that contain moral dilemmas adapted from Kohlbergs' Development Skills (1975). Pre and post test used to measure development of students' moral reasoning level. T tests were used to measure the equivalence of scores according to pre test. While one-way ANCOVA test was used to determine the effect of independent variables on the dependent variable. Pre-test scores used as a covariate to neutralize the initial position of knowledge and students. This study was conducted on 60 students of Moral Education form four secondary schools in the district of Georgetown, Penang.

#### 6 HYPOTHESIS TESTING

Hypothesis testing provides test results to test the equivalence of T test according to the pre score. No significant differences in each dimension of the test stage of development of moral thinking Kohlberg the Co-operative group and the individual are equivalent.

Table 1 reports report mean, standard deviation and results of ANCOVA test for tendencies; a) preferences for giving punishment, b) giving warnings, c) giving benefit of the doubt, and d) apathy according to gender-based preferences. a) ANCOVA test conducted to give  $F(1,55) = 1.92$  at  $p = .171$ . Since  $p > 0.05$  then  $H_{a1}$  (a) was rejected. This finding indicates that the cooperative method is similar to the method of the individual in influencing the formation of students by gender in the preferences for giving punishment. b) ANCOVA test conducted to give  $F(1,55) = 1.92$  at  $P = .171$ . Since  $p > 0.05$  then  $H_{a1}$  (b) rejected. This finding indicates that the cooperative method is similar to the method of the individual in influencing the formation of students by gender in a significant giving warnings. c) ANCOVA test conducted to give  $F(1,55) = 1.92$  at  $p = .171$ . Since  $p > 0.05$  then  $H_{a1}$  (c) rejected. This finding indicates that the cooperative method is similar to the method of the individual in influencing the formation of students by gender in the giving benefit of the doubt. d) ANCOVA test conducted to give  $F(1,55) = 1.92$  at  $p = .171$ . Since  $p > 0.05$  then  $H_{a2}$  (d) was rejected. This finding indicates that the cooperative method is similar to the method of the individual in influencing the formation of students by gender in apathetic tendency significantly.

**Table 1: Summary of ANCOVA Test Cooperative X Individual By Gender For Kohlbergs' Moral Development Stages.**

Tendency	Method	Gender	Mean $\bar{X}$	Standard deviations $\sigma$	ANCOVA Test
Preferences for giving punishment	Cooperative	male	38.13	3.64	$F(1,55) = 1.92$ $P = .171$
		female	38.73	3.17	
	Individual	male	37.53	3.07	
		female	39.13	3.07	
Giving warn-	Cooperative	male	38.73	3.73	

ings	Individual	female	40.20	3.91	F(1,55) = 2.187 P = .145		3	38.14	4.06	.58	
		male	37.93	3.06							
Giving benefit of the doubt	Cooperative	female	40.20	4.74	F(1,55) = .002 P = .966		Individual	1	40.23	3.17	P = .71
		male	41.53	3.02							
	female	41.20	4.23								
	male	42.40	2.99								
Apathy	Cooperative	female	43.13	3.27	F(1,55) = .504 P = .481		Giving benefit of the doubt	Cooperative	1	42.33	4.41
		male	41.87	2.92							
	female	42.00	4.88								
	male	39.20	3.27								
	Individual	female	40.73	5.16			Individual	1	43.00	3.24	.477

Ha2 : Moral Dilemma solving method based on PBL with cooperative enhance significantly the development of moral thinking than Moral Dilemma solving method based on PBL with individual learning according to birth order with the following tendencies: a) preferences for giving punishment, b) giving warnings, c) giving benefit of the doubt, and d) apathy. Table 3 reports the mean values, standard deviations and ANCOVA test results.

- a) ANCOVA test conducted to give  $F(5,49) = 2.37$  at  $p = .053$ . Since  $p > 0.05$  then Ha2 (a) was rejected. This finding indicates that the cooperative method is similar to the method of the individual in influencing the formation of students by birth order in the preferences for giving punishment significantly.
- b) ANCOVA test conducted to give  $F(5,49) = 0.58$  at  $p = .71$ . Since  $p > 0.05$  then Ha2 (b) was rejected. This finding indicates that the cooperative method is similar to the method of the individual in influencing the formation of students by birth order in the preferences for giving warnings significantly.
- c) ANCOVA test conducted to give  $F(5,49) = 3.70$  at  $p = .477$ . Since  $p > 0.05$  then Ha2 (c) was rejected. This finding indicates that the cooperative method is similar to the method of the individual in influencing the formation of students by birth order in the preferences for giving benefit of the doubt significantly.
- d) ANCOVA test conducted to give  $F(5,49) = 2.44$  at  $p = .047$ . Since  $p < 0.05$  then Ha2(d) was accepted. This finding indicates that the cooperative method is similar to the method of the individual in influencing the formation of students by birth order in the preferences for apathy significantly.

**Table 2: Summary of ANCOVA Test Cooperative X Individual By Birth Order For Kohlbergs' Moral Development Stages.**

Tendency	Method	Birth Order	Mean $\bar{x}$	Standard deviations $\sigma$	ANCOVA Test
Preferences for giving punishmen	Cooperative	1	40.50	1.64	F(5,49) = 2.37 P = .053
		2	37.54	3.15	
		3	37.43	3.26	
		4	42.00	4.00	
	Individual	1	37.23	2.71	
		2	38.25	3.53	
		3	39.17	1.94	
		4	40.00	4.24	
Giving warnings	Cooperative	1	41.33	2.50	
		2	39.61	4.51	

Apathy	Cooperative	1	43.50	4.08	F(5,49) = 2.44 P = .047
		2	40.61	4.62	
		3	43.28	3.09	
		4	41.00	1.00	
Individual	Individual	1	41.15	4.63	P = .047
		2	37.75	3.91	
		3	40.17	3.37	
		4	39.00	7.07	

Ha3 : Moral Dilemma solving method based on PBL with cooperative enhance significantly the development of moral thinking than Moral Dilemma solving method based on PBL with individual learning according to family size with the following tendencies: a) preferences for giving punishment, b) giving warnings, c) giving benefit of the doubt, and d) apathy.

Table 4 reports the mean values, standard deviations and ANCOVA test results.

- a) ANCOVA test conducted to give  $F(5,48) = 19.23$  at  $p = 1.98$ . Since  $p > 0.05$  then Ha3 (a) was rejected. This finding indicates that the cooperative method is similar to the method of the individual in influencing the formation of students by family size in the preferences for giving punishment significantly.
- b) ANCOVA test conducted to give  $F(5,48) = 19.23$  at  $p = 1.98$ . Since  $p > 0.05$  then Ha3 (b) was rejected. This finding indicates that the cooperative method is similar to the method of the individual in influencing the formation of students by family size in the preferences for giving warnings significantly.
- c) ANCOVA test conducted to give  $F(5,48) = 1.73$  at  $p = .217$ . Since  $p > 0.05$  then Ha3 (c) was rejected. This finding indicates that the cooperative method is similar to the method of the individual in influencing the formation of students by family size in the preferences for giving benefit of the doubt significantly.
- d) ANCOVA test conducted to give  $F(5,48) = 9.29$  at  $p = .780$ . Since  $p > 0.05$  then Ha3 (d) was rejected. This finding indicates that the cooperative method is similar to the method of the individual in influencing the formation of students by family size in the preferences for apathy significantly.

**Table 3: Summary of ANCOVA Test Cooperative X Individual By Family Size For Kohlbergs' Moral Development Stages.**

Tendency	Method	Family Size	Mean $\bar{x}$	Standard deviations $\sigma$	ANCOVA Test
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Preferences for giving punishmen	Cooperative	3	40.60	1.52	F(5,48) = 1.98 P = 0.98
		4	37.60	2.97	
		5	39.00	4.06	
	Individual	6	36.90	2.92	
		7	41.00	3.82	
		3	37.40	3.36	
		4	37.71	3.55	
Giving warnings	Cooperative	5	38.40	2.32	F(5,48) = 1.20 P = 0.32
		6	38.00	3.08	
		7	41.66	4.16	
	Individual	3	41.80	2.49	
		4	41.00	3.81	
		5	36.80	5.40	
		6	39.60	3.69	
Giving benefit of the doubt	Cooperative	7	37.75	2.36	F(5,48) = 1.73 P = .217
		3	41.00	1.58	
		4	36.71	3.77	
	Individual	5	38.30	4.05	
		6	42.00	3.08	
		7	39.00	6.92	
		3	43.60	4.50	
Apathy	Cooperative	4	41.20	2.38	F(5,48) = 1.73 P = .217
		5	40.40	3.78	
		6	41.70	4.29	
	Individual	7	39.50	1.29	
		3	40.80	3.63	
		4	42.71	1.88	
		5	43.80	3.61	
Apathy	Cooperative	6	41.20	2.04	F(5,48) = 9.29 P = .780
		7	45.33	2.08	
		3	41.60	5.02	
	Individual	4	41.20	3.89	
		5	43.80	3.03	
		6	41.40	4.90	
		7	42.00	2.16	
Apathy	Individual	3	40.80	4.65	
		4	39.42	3.59	
		5	41.10	4.48	
		6	37.40	4.56	
Apathy	Individual	7	40.33	5.50	

## 7 RESEARCH SUMMARY

These findings indicate that there was no significant effect of these methods to create value for students with the following tendencies: a) preferences for giving punishment, b) giving warnings, c) giving benefit of the doubt, and d) apathy based on gender, birth order and family size. There was no significant effect between Moral Dilemma Solution method based on a cooperative PBL and individual in the development of student values for preferences for giving punishment, giving warnings, giving benefit of the doubt, and apathy based on gender. This finding contradicts with the findings of Gilligan and Attanucci (1988), who reported that there were influences in the formation of values which comply with the female students than male students as female students more rapidly transformed between levels one to three ie self-interest, self-sacrifice, and post-conventional thinking. In addition, factors

closer to the mother and take the mother as the model also make women more rapidly experience the process of development of moral thinking. But studies Silbermandan and Snarey (1993) have shown different results, which is gender does not significantly influence the development of moral reasoning these students because of the way decisions are currently based on rational thinking and influenced by culture.

## 8 CONCLUSION

The findings of this study indicates that Problem-Based Learning with individual learning over a lasting impact in the formation of moral values such as allowing a positive defense compared to Problem-Based Learning with cooperative learning among form four students. The key findings from this research suggest that Problem-Based Learning with individual learning better than Problem-Based Learning with cooperative learning for the peers influence students' decision-making towards the negative. Findings in this study also showed moral values can be applied through the apprenticeship method such as a child with the mother or student with the teachers. This study involved only a four-hour intervention sessions held in class only. Therefore, the student should be involved in greater depth with a variety of moral dilemmas that are more real life. Such studies can measure students' ethical moral principles. Thus through greater exposure to the problem of moral dilemma that is more real life, will be mature students in decision making of ethical moral principle.

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