

# Investigate the Effects of Problem Based Learning with Cooperative Learning on Performance

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**Abstract**— The purpose of this study was to investigate the effects of Problem-Based Learning with cooperative learning on performance. The study employed the 2X2 factorial design. The first factor was the method of instruction namely Problem-Based Learning with cooperative learning. 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 sample comprised 60 form four students from two intact classes. The findings showed that Problem-Based Learning with Individual learning significantly decreased preferences for giving punishment and apathy.

**Index Terms**— PBL, learning performance, cooperative learning.

## 1 INTRODUCTION

Kohlberg (1975) recognizes that a fundamental moral education in a stimulating active thinking when they make decisions on social issues. Kohlberg technique using stories containing moral dilemma is a situation where an individual or a group of people face a conflict situation there are several alternatives in making a moral decision. A moral dilemma consists of an issue, one or several specific character in which a person is forced to deal with the issue and make a decision based on rational reasons. Kohlberg (1975) make the assumption that humans process all information in the moral dilemma through the cognitive structures that brought them to their level of moral development. This theory is known as the development as it considered the goals of moral education as a movement through moral stages (Kohlberg, 1973; Bertens, 2003). According to Kohlberg (1975), the levels of moral stages are as follows:

### Level 1. Preconventional Morality

#### *Stage 1. Obedience and Punishment Orientation*

A person is selfish and to comply with a more powerful because of fear of punishment or penalty.

#### *Stage 2. Individualism and Exchange.*

Person taking care of others but have self-interest that motivated satisfy themselves and ignored the needs of others, unless it benefits himself.

### Level II. Conventional Morality

#### *Stage 3. Good Interpersonal Relationships.*

Person taking care of others and follow their norms at this stage. They will try to meet the expectations of other people that close to them to be a good as expected by others.

#### *Stage 4. Maintaining the Social Order.*

One is concerned about peace in a society. It has the responsibility to preserve the rules of society.

### Level III. Postconventional Morality

#### *Stage 5. Social Contract and Individual.*

At this stage, one has an obligation to the social contract law to comply with the law in order to protect the welfare and protecting their rights. Values such as liberty and life should be

defended in any society regardless of majority opinion.

#### *Stage 6: Universal Principles.*

At this stage, a rational person believe in the integrity of the universal moral principles such as justice, equality and respect for the dignity of the public as an individual and they have a personal commitment to it.

## 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 scaffolding 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 PROBLEM BASED LEARNING (PBL)

PBL is an active learning method using ill-structured problems to stimulate learning (Barrows, 2000, Hmelo-Silver & Barrows, 2006). This method requires the involvement of students to think, discuss, argue and give opinions to solve realistic problems of everyday life. In addition, it can promote and build confidence in students who focus on student learning which will facilitate the students to maintain and practice the knowledge gained as a platform to solve the complex (Cognition and Technology Group at Vanderbilt [CTGV], 1997; Blumberg, 2000; Mergendoller, Maxwell & Bellisimo, 2005). Problem-solving activities provide many opportunities for students to apply knowledge from declarative and procedural knowledge lectures and rote activities. According to (Boud & Felletti, 1997;

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Goodnough & Woei Hung, 2008) PBL derived from the health sciences of various disciplines specific to an integrated program that involves students in developing problem or a problem Formulation and thus solve the problem. Problem-solving activities provide many opportunities for students to apply knowledge from declarative and procedural knowledge lectures and rote activities. According to (Duch, 2000; Goodnough & Woei Hung, 2008) PBL is a teaching method that uses real-world problems as a context for learning critical thinking skills and problem solving skills to motivate, focus and begin to learn at high levels of Bloom taxonomy to analyze, synthesize and evaluate. While (Jones, 1996; Edwards & Hammer, 2007) extolled the virtues of PBL with the emphasis on meaning rather than fact. To replace the lecture with discussion forum, guidance from teachers and joint research, students are active and meaningful learning experience. Syed Anwar (2002) study found that the scaffolding teachers should not structured so that students engage in the process of restructuring and acquisition of knowledge actively and empirical-minded students showed improved performance of inductive reasoning than those who think the hypothetical-deductive. High dynamism constructivism does not guarantee the acquisition of higher knowledge.

#### 4 METHODOLOGY

This is a quasi-experimental study using 2 X 2 factorial design to test the effect of the method used. 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. A test of moral thinking development consists of 40 items were constructed based on Kohlbergs' Moral Development Stages. Level adopted was Stage 1 which contain the items severely punished and to punish by warning and Stage 4, which contains references to laws and regulations. Stages were selected as Form 4 students should have reached at least Level 3 or 4.

Intervention sessions conducted using PBL modules built to meet the time of 80 minutes on two groups of subjects and group self-cooperative groups. For cooperative groups, subjects were divided into small groups of 4 to 5 persons per group to discuss and find information. While for the controll group sought information on their own self. Sessions conducted by teachers teaching subjects with more than five years experience teaching Moral Education. Post test given one week after intervention carried out.

#### 5 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 Kholberg the Co-operative group and the individual are equivalent.

Ha1: 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 with the following tendencies: a) preferences for giving punishment, b) giving warnings, c) giving benefit of the doubt, and d) apathy

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

Tendency	Method	Mean $\bar{x}$	Standard deviations $\sigma$	ANCOVA Test
Preferences for giving punishment	Cooperative	38.43	3.37	F(1,57) = .008, P = .928
	Individual	38.33	3.12	
Giving warnings	Cooperative	39.47	3.83	F(1,57) = .054, P = .817
	Individual	39.07	4.08	
Giving benefit of the doubt	Cooperative	41.37	3.61	F(1,57) = 4.38, P = .041
	Individual	42.77	3.10	
Apathy	Cooperative	41.93	3.96	F(1,57) = 5.01, P = .029
	Individual	39.97	4.32	

Table 1 above reports the mean values, standard deviations and ANCOVA test results for the following tendencies: a) preferences for giving punishment, b) giving warnings, c) giving benefit of the doubt, and d) apathy. ANCOVA tests carried out as follows: a) reject the hypothesis Ha1 (a) which shows that the cooperative method is similar to the method of self in influencing the formation of the students in preferences for giving punishment. (b) ANCOVA tests carried out to give F (1.57) = .054 at p = .817. Since p > 0.05 then Ha1 (b) rejected. This finding indicates that the cooperative method is similar to the method of individual in influencing the formation of the students in a significant tendency giving warnings. (c) ANCOVA tests carried out to give F (1.57) = 4.39 at p = .041. Since p < 0.05, then there are significant differences in the findings. However Ha1 (c) reverse the findings of which were rejected due to self-rule have influenced significantly the formation of student value in allowing the tendency giving benefit of the doubt. (d) ANCOVA tests carried out to give F (1.57) = 5.010 at p = .029. Since p < 0.05, then Ha1 (d) is received. This finding indicates that the cooperative method influence significantly the formation of the students in apathetic tendency of increasing the negative orientation.

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 gender-based with the following tendencies: a) preferences for giving punishment, b) giving warnings, c) giving benefit of the doubt, and d) apathy.

#### 6 FINDING

These findings indicate that individual method significantly

better in increasing the likelihood of reducing the preference of giving benefit of the doubt and apathy. The results showed that the individual method is significantly better in enhance a positive value, namely the preference giving benefit of the doubt and in reducing the negative value of apathetic tendencies.

## 7 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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