

CHAPTER 5

INTERPRETATION OF RESULTS

Two research instruments, the Moral Values Questionnaire and the Science Achievement Test, were used to measure the students' levels of moral reasoning and their achievement in science respectively. The results of the students' performances in the two instruments were reported in Chapter 4. In this chapter, the interpretation of the results are described. These interpretations are discussed under two major sections, effects of moral dilemmas on moral values and effects of moral dilemmas on science achievement.

Effects of moral dilemmas on moral values

The results indicate that there was no significant difference between students in the experimental group and students in the control group with regards to their moral values on the pretests. However, there was a significant difference between students in the two groups after the moral dilemma treatment. This shows that the moral dilemmas approach did have a positive effect in the inculcation of moral values for students in the experimental group. Although the students were exposed to only five moral dilemma episodes over a period of about nine weeks, the results show positive changes.

As described in Chapter 3, during the treatment, the students were encouraged to think about the situations in the episodes, discuss them and make decisions about the issues involved. The positive results show that the thinking and reasoning skills of the students have been put into practice.

Thinking may be described as a method of inquiry which is directed towards decision making. When a person is asked to make some kind of decision, thinking may help him or her to see alternatives which are relevant and at the same time anticipate a variety of consequences associated with the alternatives (Raths et al, 1966). According to Raths, the thinking process involves observing, reporting what is observed, comparing, contrasting, summarizing, interpreting, classifying, imagining, planning and executing, outlining, criticizing, analyzing, looking for assumptions, discovering and problem solving. These processes have been significantly increased using the moral dilemma episodes need further empirical evidence. However, the students were involved with most of these thinking processes during the experiment. Most of them had participated actively in the moral discussions.

Another interpretation that can be made for the significant increase in the achievement of moral values among the students in the experimental group was the choice of materials for the treatment. Short stories were used as

main material for the treatment. These short stories were not ordinary stories but stories which contained moral dilemmas. The students were expected to make a decision for the main character in the story or cite reasons for the behaviour of the character. This study seemed to support a similar study conducted by Johnson (1981).

Johnson (1981) has conducted a study to determine whether selected short stories could help increase sixth grade students' moral values. He used a method called "moral judgment training" consisting of reading several short stories, discussing the moral dilemmas contained in the stories, and role-playing. The findings indicate that the moral values of the students improved.

The third interpretation for the significant increase in the achievement of moral values among students in the experimental group was related to the effectiveness of a student-centred method of learning. In a student-centred learning situation, the primary goal was to assist students in attaining greater personal integration, effectiveness, and realistic self-appraisal (Joyce et al, 1986). In this study, the students themselves had to identify the problems and make decisions. This helped develop their confidence in giving opinions freely and without fear of being intimidated by the teacher.

Lastly, the role played by the teachers could have an impact on the students' moral values. In this study, the teachers were actively involved in facilitating the discussions and encouraging the students to evaluate arguments. They tried to help the students give reasons at a Stage Five moral reasoning level. The probing questions and the reflective comments used by the teachers could have raised the students' consciousness of their own perceptions and feelings and thus help them to clarify their values.

Effects of environmental background on moral values

A comparison on the MVQ scores among the four different schools on the pretests and posttests showed that significant differences existed between students studying in Sekolah Menengah Taman Desa and students studying in the other three schools. The mean MVQ score of the students from Sekolah Menengah Taman Desa was higher than the mean score of students from the other three schools. This can be interpreted as the result of the impact of the students' home background on the MVQ scores. A majority of the students from Sekolah Menengah Taman Desa resided in housing estates (HES). The difference in the environmental backgrounds of these students could have caused their moral values to differ. The students residing in housing estates seemed to have higher moral values than

children residing in squatter areas. Thomas (1986) found that factors such as family condition and socio-economic status could have an effect on the moral development. Children who come from culturally deprived homes and low socio-economic status tend to have lower moral values than children who come from better homes where children receive more parental assistance. Chuah (1989) has also found that pupils from higher SES backgrounds were consistently higher in their moral reasoning abilities when compared to pupils from a lower SES.

The researcher has also made several observations on students' behaviours during the conduct of the moral dilemma episodes. It was found that the students studying in Sekolah Menengah Taman Desa were very well behaved and attentive in the classroom as compared to students in the other three schools. This could be the reason for the significant increase in the MVQ scores for the students studying in Sekolah Menengah Taman Desa. Another reason could be the fact that the students residing in housing estates may have been brought up with good manners and trained to respect the teachers. The students from the other three schools were observed to be more playful in the classroom and were not very attentive.

A comparison was also made between the two groups of students in the experimental group. The result shows that the students studying in Sekolah Menengah Taman Desa who

Students in housing estates were better in their moral values than the students studying in Sekolah Menengah Petaling who reside in the squatter areas. However, the results show that the moral dilemma treatment was more effective for students residing in squatter areas than for students residing in housing estates (Refer to Tables 5 and 10). Students residing in squatter areas are culturally deprived due to poverty. According to Liebert (1982, 356), "poverty exposes parents to the increased likelihood of additional stress that may have deleterious effects upon their capacities to care adequately for their children". The children's behaviour tend to be more influenced by their own peer groups rather than by their parents. Therefore, if teachers could show more care and concern for these children, they may attain good moral values.

The researcher questioned the students in the experimental group at the end of the treatment regarding their reactions to the stories. A few of the students from Sekolah Menengah Taman Desa regarded listening to the stories as a waste of time. They said that they had been exposed to such stories in 'Moral Education' classes. They seemed to prefer the science content rather than taking part in the sessions. However, the students in Sekolah Menengah Petaling enjoyed the sessions. This indicated that the treatment was more effective for students staying in squatter areas than for students staying in housing estates.

Significant differences also existed between students studying in Sekolah Menengah Petaling and Sekolah Menengah Sri Pantai on the MVQ pretests. Both schools formerly had a majority of students residing in the squatter areas (KAS). However, students from Sekolah Menengah Sri Pantai who used to stay in the squatter areas have now moved to newly built low-cost flats. This change in the environment could have been the reason for the significant difference between students in the two schools on the MVQ pretests. Students studying in Sekolah Menengah Sri Pantai obtained a higher mean score than students studying in Sekolah Menengah Petaling. Better amenities and facilities in the low-cost flats may have changed the moral values of the students for the better.

A comparison was also made between students from the two schools on the MVQ posttests. The results revealed no significant difference. Students from Sekolah Menengah Sri Pantai who were not subjected to the treatment did not show significant increases in their MVQ mean score on the posttests. The results indicate that the moral dilemmas treatment produced some positive effect on the moral values irrespective of the students' environmental backgrounds. The students' home background was not an important indicator of the students' readiness or willingness to receive the treatment.

Effects of sex differences on moral values

Comparisons made between boys and girls with regards to their moral values on the MVQ pretests and posttests revealed no significant differences between them. Studies conducted on early adolescents by Biaggio in 1976, Blatt and Kohlberg in 1975, Krebs and Gillmore in 1982 and Turiel in 1976 as reported by Walker (1984) showed that girls in the adolescent stage were more advanced in their moral reasoning than boys. Most of these studies were conducted using Kohlberg's interview method.

Walker summarised that sex differences in moral reasoning were very limited in childhood and early adolescence. If sex differences in moral reasoning did occur at that stage, then according to Walker, it favoured the females. This could be due to the fact that girls mature faster cognitively than boys. Gage and Berliner (1979) state that in the preschool years, girls score higher on intelligence tests than the boys. A person's level of moral reasoning depends on his/her level of cognitive reasoning (Kohlberg, 1975). Therefore, if girls mature cognitively faster than boys, then the girls would naturally be higher in their level of moral reasoning than the boys. Mitsacos-Tannopoulos (1984) investigated the relationship between Greek preschool childrens' intelligence scores and their moral development. She found that a relationship existed

between intelligence and moral development. Rest (1979) reviewed twenty studies on the effects of sex differences on moral reasoning. He found no sex influences on moral judgment. Chuah (1989) also did a similar study. He found no significant difference between Malaysian boys and girls in Standard Six with regards to their moral development.

In the present study, Kohlberg's stages of moral reasoning were used. It is not the same as the Kohlberg interview method as used by most of the previous researchers.

The study shows no significant difference between boys and girls with regards to their moral reasoning. Two reasons could be given for this result. One is that today's boys and girls get the same kind of moral exposure at home and in schools. Boys and girls are not being raised differently. Parents no longer insist that their sons and daughters be given different moral exposures. In olden days, boys were given more freedom than the girls. Another reason is that a very careful consideration has been made during the formulation of the instrument in order to avoid bias regarding sex. According to Walker (1984), sex bias exists in Kohlberg's scoring system which may favour the males. This could be due to Kohlberg's reliance on male samples only. The items in the MVQ were based on situations in everyday living that could happen to both males and females.

Effects of moral dilemmas on moral areas

In this study, five moral values were presented in moral dilemma episodes, related to honesty, cleanliness, responsibility, cooperation and compassion. Comparisons were made between the pretest and posttest scores of each moral area for the experimental group to see whether there were significant increases in the mean scores in any moral area.

The results indicated that there were significant increases in the mean scores for only three moral areas, namely cleanliness, responsibility and cooperation. These three moral areas were found to be very much related to the first topic. The lessons in the first topic deals with knowledge about practical work in the science laboratory. It was found that these three moral areas were very important for the students and were easily inculcated in these lessons because they have to do laboratory work. During laboratory work, for example, the students have to show a sense of responsibility, cooperation and cleanliness.

The other two moral areas, the honesty and compassion, may have been out of context to the lessons. Honesty and compassion are also very complex moral areas. The moral episodes which were related to these two moral areas may not have been made clear to the students. Although the students may have agreed that the characters in the related

episodes were supposed to be honest and compassionate, they could not agree to it because they could not relate to any real situation in the classroom. Most people, as we all know, always expect other people to be virtuous and good even when they themselves cannot live up to it. For example, if a person was asked whether a doctor should operate on an AIDS patient and risk his life, the answer would be yes. However, if that person were told that if he/she were the doctor, different concerns would emerge. Would he/she do it? The answer would most probably be no. According to Robert (1982), youngsters who are always cheating express more disapproval of cheating than those who do not.

Effects of mmoral dilemmas on stages of moral reasoning

Scores on the MVQ have been categorized according to the stages of moral reasoning (Chapter 3). There were six stages of moral reasoning classified by Kohlberg. In this study, only the first five stages have been considered. The results show that at the beginning of the study, no students were found to be in Stage One. This shows that punishment was not the criteria for the students to behave or not to behave in certain ways. Only 1.5 % of the students were in Stage Two. This shows that very few students were self-centred. About 45.1 % of the students were in Stage Three. This shows that nearly half of the students do good because

they want to please others. Over half of the students were already in Stage Four. This result was expected because students participating in this study should have reached this stage, the stage in which they show respect for authority, rules and regulations. Only one student was found to reach Stage Five. A Stage Five person is one who is sensitive about infringing on the rights of others. Chuah (1989) conducted a similar study on Standard Six pupils' moral development by using four moral stories based on Kohlberg's interview. He found that a large proportion of the pupils were in Stage One (34.7 %) and Stage Two (24.7 %). Only a small percentage of the pupils were in Stage Three. This shows that primary school pupils (11 - 12 years old) have not reached Stage Four moral reasoning level. The present study seemed to support the study conducted by Chuah.

In the present study, the researcher investigated whether students who were exposed to the moral dilemma treatment could increase their own moral reasoning to reach a higher stage. It was found that one student who was in Stage Two in the pretest increased his moral reasoning stage to Stage Four after the treatment (a jump of two stages). This was an incredible achievement. Studies conducted by Blatt (1975) show that the moral reasoning of most of the students could only be increased by one stage, for example, from Stage Two to Three, from Stage Three to

Stage Four and so on. In this study, 25.4 % of the students increased their moral reasoning stage from Stage Three to Stage Four and only 1.5 % of the students increased their moral reasoning level from Stage Four to Stage Five. Although the teachers tried hard to increase the moral reasoning stage of the students to Stage Five during the treatment, the students in Stage Three managed to increase their moral reasoning to Stage Four only. This is quite a logical result according to Blatt. Although 71.6 % of the experimental group students did not manage to increase their moral reasoning stage to a higher level, they did manage to increase their scores on the MVQ after the treatment. Thirteen year old students are not expected to increase their moral reasoning level to Stage Five by being exposed to a few weeks of treatment. Time is needed to inculcate moral values. It is a lifelong process. Kohlberg (1975) states that although more than 50 % of late adolescents and adults are capable of full formal reasoning, only 10 % of them display principled moral reasoning.

Effects of moral dilemmas on science achievement

Apart from investigating the effects of moral dilemmas on students' moral values, the researcher also investigated the effects of moral dilemmas on students' academic performances.

The students were given the moral dilemmas treatment during the science lessons. These lessons were taken from the topic 'Introduction to Science' as described in Chapter . The SAT was used to evaluate the students' performances in science. Each student had to answer thirty multiple-choice questions chosen from the cognitive domain. The thirty questions were divided into fourteen in the knowledge level, ten in the comprehension level and six in the application level. These levels were based on Bloom's taxonomy.

The results show that the students in the experimental and control groups did not differ significantly on the SAT mean scores on both pretests and posttests. Most research conducted on academic achievement has concentrated on factors which affect learning and achievement. Very few researchers have looked at the effects of using moral dilemmas on increasing the moral values of students and their academic achievement ; they have not used one treatment to study two dependent variables. Stahl (1979), Hunt (1981) and Kern (1985) did however conduct such a study to see the effects of moral dilemma discussions on the moral values and attitudes of the students as well as their academic achievement. Both Stahl and Kern found significant differences between students in the experimental group and students in the control group with regards to their academic achievement which contradicts the findings of this study.

However, Hunt found that the students in the experimental and control groups did not differ significantly in their academic achievement after being exposed to the moral dilemmas.

The results show that students residing in housing estates (HES) had SAT mean scores which were significantly higher than the scores of students residing in the squatter areas on the pretests. This can be interpreted as that the squatter homes do not provide the students with conducive environments for studying and for academic achievement. When parents show less concern for their children's welfare, especially their education, the children themselves will have a negative attitude towards academic achievement.

Observations of the teaching-learning situation of the students residing in the squatter areas revealed that these students were not attentive in the classroom. They seemed to be doing what the teacher asked without understanding what they did. They were also seen to be very reluctant to ask any questions pertaining to the lessons taught.

The results also show that there was no significant difference between boys and girls in their science performance on the pretests and the posttests. According to Page and Berliner (1983), most studies conducted on sex differences and academic achievement tend to show that girls do better than boys in school achievement, particularly in the elementary grades. This was shown to be true even in

mathematics and science areas. However, these differences grow considerably in the high school years. Throughout the school years, girls seem more stable in their scholastic performance than boys. The results of the present study therefore seems to contradict the findings of most of the previous studies. This could be due to the same kind of academic exposure boys and girls get in schools. Teachers do not differentiate girls and boys according to their general intelligence and academic achievement. Both sexes are given equal attention in their studies both by parents and teachers.