CHAPTER 3

RESEARCH PROCEDURE

In this study, the effectiveness of using moral dilemma episodes to inculcate moral values among Form One students was investigated. It involved two groups of students, an experimental group and a control group. The experimental group was subjected to the treatment. A pretest and a posttest were administered to both groups. The mean scores of both groups were compared.

Included in this chapter are the descriptions of the sample, the design of the study, the treatment, the moral dilemma episodes, the instruments, schedule of the research and the data analysis procedures.

The sample

The sample was chosen from Form One students studying in four coeducational secondary schools in Wilayah Persekutuan. The schools were Sekolah Menengah Petaling, Sekolah Menengah Taman Desa, Sekolah Menengah Bukit Indaraya and Sekolah Menengah Sri Pantai. Coeducational schools were chosen because they enabled the researcher to find out whether significant differences exist between boys and girls with regards to their moral values. The four selected schools had enrolments of students staying in the

by housing estates or squatter areas and their
ence teachers agreed to participate in the study.

The division of the four schools into the experimental
control groups was based on the kind of enrolment the
ols had. Each group had one school with an enrolment of
dents from the nearby housing estates (HES) and another
ool with an enrolment of students from the nearby
atter areas (SAS). The experimental and control groups
re taken from separate schools because such division could
prevent leakages of the treatment given to the students
the experimental group. Sekolah Menengah Taman Desa and
olah Menengah Bukit Bandaraya have students coming from
ir respective housing estates while Sekolah Menengah
aling and Sekolah Menengah Sri Pantai have students
ing from their respective squatter areas or low-cost
ts. Students studying in Sekolah Menengah Petaling and
kolah Menengah Taman Desa were chosen to be in the
perimental Group while students studying in Sekolah
nengah Bukit Bandaraya and Sekolah Menengah Sri Pantai
ame the Control Group.

One hundred and thirty-three students took part in the
dy. Seventy-three were males (54.9 %) and sixty were
males (45.1 %). Out of this, sixty-seven were in the
perimental group (50.4 %), of which forty were males
.7 %) and twenty-seven were females (40.3 %). The control
up, on the other hand, consisted of sixty-six students

(57.6 %) with an equal number of males and females. The breakdown of the sample is shown in Table 2.

TABLE 2

Percentage of students according to schools and sexes

Group	Schools	Males	Females	Total
Experimental	S.M. Petaling	21 (61.8 %)	13 (38.2 %)	34
	S.M. Taman Desa	19 (57.6 %)	14 (42.4 %)	33
Control	S.M. Bukit Bandaraya	14 (48.3 %)	15 (51.7 %)	29
	S.M. Sri Pantai	19 (51.4 %)	18 (48.6 %)	37
	Total	73 (54.9 %)	60 (45.1 %)	133

The Design of the Study

A quasi-experimental design was used in this study. It was chosen because the researcher had no control over the selection of the experimental and control subjects. The pretest-posttest nonequivalent control group design as described by Campbell and Stanley (1963) was also used. The overall design was identical to the pretest-posttest control group design of a true experiment except for the fact that the random assignment of subjects to conditions

could not be made. However, such a design was found by Campbell and Stanley (1963) to have a measurably high internal validity. Internal validity refers to the question of whether the experimental treatment did in fact make a difference to the experimental group. In this study, high internal validity means that all extraneous variables have been accounted for and do not affect the outcomes.

Diagramatically, the design can be shown as follows :

O1 ----> X ---> O2

O3 ----------> O4

O1 = Pretest for experimental group

O2 = Posttest for experimental group

O3 = Pretest for control group

O4 = Posttest for control group

X = Treatment

O2 - O4 = Result of treatment X

The Treatment

Two types of treatment have been identified by researchers concerning moral dilemma discussions (Lockwood, 1978). The first type was identified as the direct discussion of moral dilemmas and issues. In this treatment,

students were asked to discuss moral dilemmas and ethical issues and clarify their moral reasonings in the discussions. Frequently, the teachers or instructors were encouraged to increase the student's reasoning one stage above the reasoning being expressed by the student or group of students. The stages of reasoning were defined by Kohlberg as discussed in Chapter 1. This method is called plus-one matching.

The second type of treatment was identified as psychological education where the students were engaged in a variety of psychological activities and practices. As in the plus-one matching, students were also encouraged to reason at a stage one above that which was being expressed. In addition to the discussions, students had to do exercises in empathy training, peer counselling, role-playing, and evaluation of counselling skills emphasizing listening and communication.

In this study, the plus-one matching type was used as the treatment. Moral dilemma episodes in the form of short stories or anecdotes were presented to the students during the single period which took place for about forty minutes. It was formally planned to be carried out at the end of the double period practical science lessons. Since the students would not manage to discuss in the short time available, the treatment had to be carried out during the single period. There were five periods of science lessons per week,

two double periods and one single period. The students were therefore given one treatment a week for a period of seven to nine weeks.

During the treatment, the class was divided into small groups of about eight to ten students. A group leader was chosen on a rotating basis. Each group was given a printout of the story and the discussion questions were read aloud by the leader. After the discussions, the group leader presented the group's opinion to the whole class. Meanwhile, the teacher facilitated the class discussions and tried to bring the students to a higher level of moral reasoning. The researcher made observations of each episode conducted by the teachers and, at the end of the lesson, the researcher offered advice and help to the teachers so that they could improve their conduct of other episodes.

The Teachers

The teachers who participated in the study were briefed by the researcher on Kohlberg's moral reasoning stages. They were reminded that their main job was to motivate the students towards Stage Five of Kohlberg's moral reasoning stages. Stage Five was chosen because the average age of the students in the sample was about thirteen years old. According to Kohlberg, (Kohlberg, 1975), children at that age should have reached Stage Four. In this study, the teachers were expected to help the children to reach one

reasoning stage above their expected reasoning stage. A teacher's Guide was prepared for the teachers to help them conduct the treatment (see Appendix D) and detailed discussions were also held between the teachers and the researcher.

Of the four teachers involved in the study, only the teachers from Sekolah Menengah Petaling and Sri Pantai had undergone KBSM in-service courses in science. The teachers from Sekolah Menengah Bukit Bandaraya had attended the KBSM in-service course in mathematics. Observations showed that the teachers who had not gone for any KBSM in-service courses had also conducted the teaching of the KBSM science.

The Moral Dilemma Episodes

The moral dilemma episodes were written by the researcher based on five moral values that were relevant to the teaching of the first topic in the Form One syllabus specification of science. (Refer to Appendix E).

The moral dilemmas were written in the form of short stories followed by two to five discussion questions. Two types of stories were written. The first type was an 'unfinished story' with one or more characters facing some sort of ethical dilemma. The students were supposed to make the decision for the character facing the dilemma. The other type was a 'complete story' with all decisions having been

made by the character and the students were asked to comment on the decisions made.

A total of five moral dilemma episodes were presented to the experimental group students during the appropriate science lessons. The presentation of the episodes was done after the teachers had taught the science contents. For example, when the teacher had already taught about fire extinguishers, the teacher brought in the moral dilemma about the usage of 'iron bars or grills' across windows which became fire traps when a fire breaks out. The teachers took about nine to ten weeks to complete the first topic. The control group was taught the same lessons but without the moral dilemma episodes.

The presentation of the five episodes is summarized in Table 3 .

TABLE 3

Schedule for the presentation
of the five moral dilemma episodes

School	Date	Moral Dilemma Episode
S.M. Petaling	19.12.89	A
	26.12.89	E
	3.01.90	D
	18.01.90	B
	8.02.90	C
S.M. Taman Desa	20.12.89	A
	4.01.90	E
	25.01.90	B
	8.02.90	C
	15.02.90	D

Note : Titles of the moral dilemma episodes

A = Fire
B = Laziness
C = Cleaning the school toilet
D = On the brink of death
E = Cheating

The Instruments

Two instruments were used for the pre- and posttests. They were the Moral Values Questionnaire (MVQ) and the Science Achievement Test (SAT).

The MVQ was developed by the researcher (Refer to Appendix F) in Bahasa Malaysia, the language used as the

medium of instruction. Thirty multiple-choice items were formulated based on the five moral areas, including honesty, cleanliness, cooperation, compassion and responsibility. Each question contained five possible answers which reflect the five stages of Kohlberg's moral reasoning pattern. The students were asked to select one of the five possible answers for each question. Each possible answer was given a certain score depending on which stage of moral reasoning the answer belongs. One point was awarded for an answer that is equivalent to Stage One, two points for Stage Two and so on. The total score for every student on the thirty questions was then calculated. A student's stage of moral reasoning was identified using the following ranges of scores :

Scores	Stage of moral reasoning
30 - 44	Stage 1
45 - 74	Stage 2
75 - 104	Stage 3
105 - 134	Stage 4
135 - 150	Stage 5

According to the classification, the more points the students obtain, the higher they are in the moral reasoning stages. Higher scores do not directly indicate better moral values. It does however, show that the students are more aware of good moral values.

The MVQ was given for both the pre- and posttests. The questionnaire was tested for content validity by a panel of experts from the University of Malaya and the Curriculum Development Centre, Ministry of Education. The panel consisted of one psychologist, one science educator and three senior curriculum developers. The questionnaire was given to all five experts along with the printout of Kohlberg's levels of moral development as found in Table 1 of Chapter 1. They were asked to determine the stage of Kohlberg's moral reasoning for the five possible answers given in every question in the questionnaire. Each expert judged the items individually since it was not possible to have them meet on the same fixed date. The responses from all the experts were compared. The classification of the answers into their respective stages of moral reasoning was done based on the experts' decision. Over 80 % of the experts' classifications were the same. In those where there was disagreement, it was usually the case that three of five experts were in agreement. In less than 5 % of cases was it necessary for the researcher to categorise the answers because no clear preference emerged.

A pilot study was conducted with thirty-one Form One students who were studying in Sekolah Menengah Sri Pantai in October 1989. The reliability coefficient was computed using the Split-half method and the value of r was found to be 0.7.

The SAT was also developed by the researcher in Bahasa Malaysia (Refer to Appendix G). It consists of thirty multiple-choice items based on the first topic 'Introduction to Science' of the Form One Specification of syllabus for science. The topic deals with the introduction to science laboratory which includes subtopics like safety in the laboratory, measurements of length, weight, volume and time, handling of science apparatus and chemicals, introduction to what is science and technology, and the process skills involved in scientific investigations.

All thirty items were in the cognitive domain. There were fourteen items in the knowledge level, ten in the comprehension and six in the application levels of Bloom's taxonomy. The SAT was also tested for content validity using the same procedure. A pilot study was also carried out with the same sample and the reliability coefficient was found to be 0.7 using the Split-half method.

Both the MVQ and SAT were administered to the students one week prior to the treatment and one week after completing the first topic. None of the classes had started a proper lesson on the topic when the students took the pretest. However, students from Sekolah Menengah Bukit Bandaraya had some exposure to laboratory rules and regulations.

The Schedule for the research

The schedule for the study was as follows :

1.	Briefing the teachers on the moral dilemma episodes and Kohlberg's moral reasoning stages.	4th Dec 1989 - 8th Dec 1989.
2.	Administer pretests to the students :	
i)	S.M. Bukit Bandaraya	11th Dec 1989.
ii)	S.M. Petaling	12th Dec 1989.
iii)	S.M. Taman Desa	13th Dec 1989.
iv)	S.M. Sri Pantai	20th Dec 1989.
3.	Teachers conduct the experiment :	
i)	S.M. Petaling	19th Dec 1989 - 8th Feb 1990.
ii)	S.M. Taman Desa	20th Dec 1989 - 15th Feb 1990.
4.	Administer posttests to the students :	
i)	S.M. Bukit Bandaraya	13th Feb 1990.
ii)	S.M. Sri Pantai	14th Feb 1990.
iii)	S.M. Petaling	6th Mar 1990.
iv)	S.M. Taman Desa	15th Mar 1990.
5.	Analyze data collected.	16th Mar 1990 - 16th Apr 1990.

Most teachers took slightly more than nine weeks to finish because of the numerous public and term holidays.

Data Analysis Procedures

There were four major research questions in the study.

1. Are there differences between the experimental and control groups with regards to their moral reasoning after being exposed to the moral dilemma episodes ?
2. Are there significant increases in the students' levels of moral reasoning in any of five areas of moral values (compassion, cleanliness, co-operation, responsibility and honesty) after being exposed to the moral dilemma episodes ?
3. Are there differences between boys and girls with regards to their moral values after being exposed to the moral dilemma episodes ?
4. Would students perform better academically after being exposed to the moral dilemma episodes ?

Analysis of the data collected was carried out using the SPSS programme on the personal computer. The mean scores and the standard deviation on the MVQ and SAT before and after the treatment were computed for both the experimental and control groups as well as for the sexes.

The independent t-tests were used to compare the difference between the mean scores of the following two groups :

(i) experimental and control on the MVQ

(ii) experimental and control on the SAT

(iii) boys and girls on the MVQ

(iv) boys and girls on the SAT

To determine which of the five moral areas has a significant increase in their mean scores due to the treatment, the paired t-tests design was employed.

In order to test the hypothesis that the mean scores of the students from the four schools in the MVQ and SAT are equal, a one-way analysis of variance was employed. A Scheffe procedure with an alpha of .05 was then applied to make pairwise comparisons between the mean scores for which there was a significant F value.

The results obtained from these analyses are reported in the following chapter.