

## Chapter III

### Research Methodology

#### Study Design

This study is a field trial (experimental) design.

#### Sample Specification

Target Population The target population is the population which the investigators want to be able to apply the result of the study. For this study, the target population was the male students who studied in the second year of the craftsman certificate level at Samutprakan college.

Sample Population The sample population is the population defined by the eligibility criteria. So, the sample population in this study was the same group as the target population who satisfied the eligibility criteria.

#### Inclusion Criteria

1. The second year craftsman certificate level students.
2. Both the morning shift and the afternoon shift.

### Exclusion Criteria

1. Classes that had females students more than 50% of all students in that class.

### Sample Size Calculation

This study was an experimental study done in 2 groups. The intervention (education programme) was given to the experimental group while the control group was taught according to the institution regular programme. The main result was summarized in proportion. So, the sample size calculation formula for two independent groups with data summary in proportions was used (Chitr, 1987).

$$n/\text{group} = [2(Z_a + Z_b)^2 \times P(1-P)] / (P_c - P_t)^2$$

$Z_a$  = correspond to type I error

$Z_b$  = correspond to type II error

$P_c$  = expected event rate in control group

$P_t$  = expected event rate in experimental group

$$P = [P_c + P_t] / 2$$

This following assumption used in the formula to estimate the sample size needed for the study was:

1. The Probability of Type I Error: This is the probability of making a wrong conclusion when the researcher wants to conclude that there is a difference between the two comparison groups. This is also called the alpha error. This study was needed to specify the difference of interest in one direction (the knowledge, attitude about AIDS and behaviour in condom use when having sexual contact with female in the experimental group after receiving AIDS education programme was expected to be better than the control group).

In this study, the type I error of 5% was used. This corresponds to a  $Z_a$  of 1.645 ( $Z_a$  = point on the abscissa of a normal distribution curve with mean = 0 and variance = 1 [Meinert, 1986]).

2. The Probability of Type II Error: This is the probability of making a wrong conclusion when the researcher wants to conclude that there is no difference between the two comparison groups. Type II error or beta error is always one way. In this study, a type II error of 10% was used, which corresponds to  $Z_b$  of 1.28. The power (or sensitivity) of this study was 90%.

3. The Estimated Event Rates in the Control Group: ( $P_c$ ) The main outcome for the research question was condom

use behaviour. Many documents were review and also pilot study was done at the same Samutprakan technical college. The result showed that 22% of the second year male craftsman certificate level who had a risky sexual behaviour of HIV infection of all the sampled students.

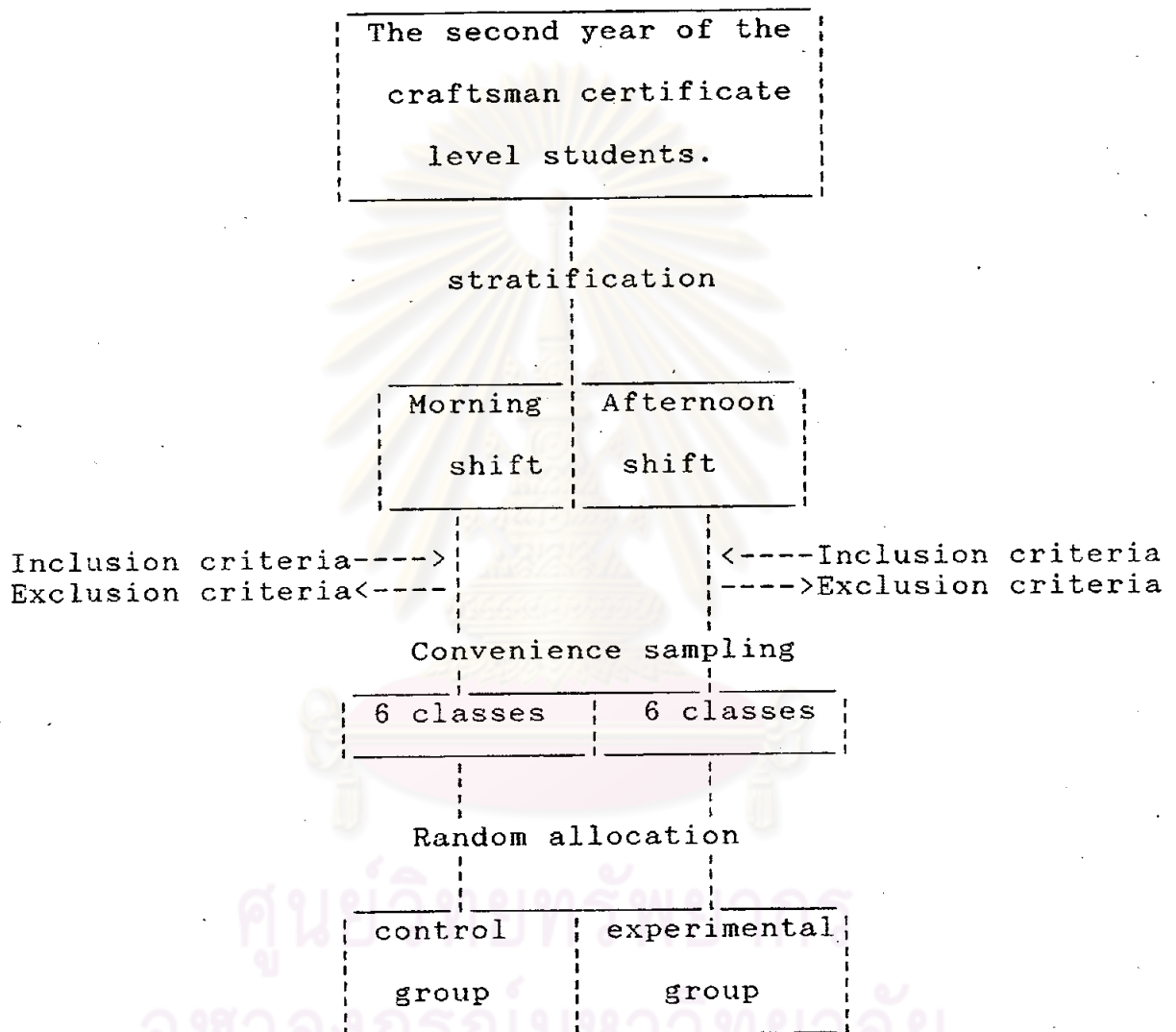
4. The Estimated event rates in the experimental group: Eleven percentage was derived from the expectation that risky sexual behaviour of HIV infection will decrease by 50% from the estimated rate in the control group: ie  $11 = 22 - (22 \times 0.5)$ .

Substituting relevant values in the equation, the study will need at least 195 students per group. So, the total sample size was 390 persons.

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Sampling Method

Figure 4: Sampling Method.



The second year male craftsman certificate level students were stratified according to shifts, the morning and the afternoon shift. After stratification, the exclusion and inclusion criteria were applied.

The convenience sampling was used (non-probability sampling). In each shift, 6 different classes were taken for the sample. The convenience sampling was used due to the fixed schedule, and the shortage of research assistant (only one health teacher).

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The experimental group received the AIDS education programme adapted from the "Guideline about AIDS for teacher" by researcher and verified by national experts for accuracy, suitability, convenience for use. Group discussion among students with appropriate inputs from teachers was an important component of the programme. It took 4 weeks (1 hour per class per week) to run the programme.

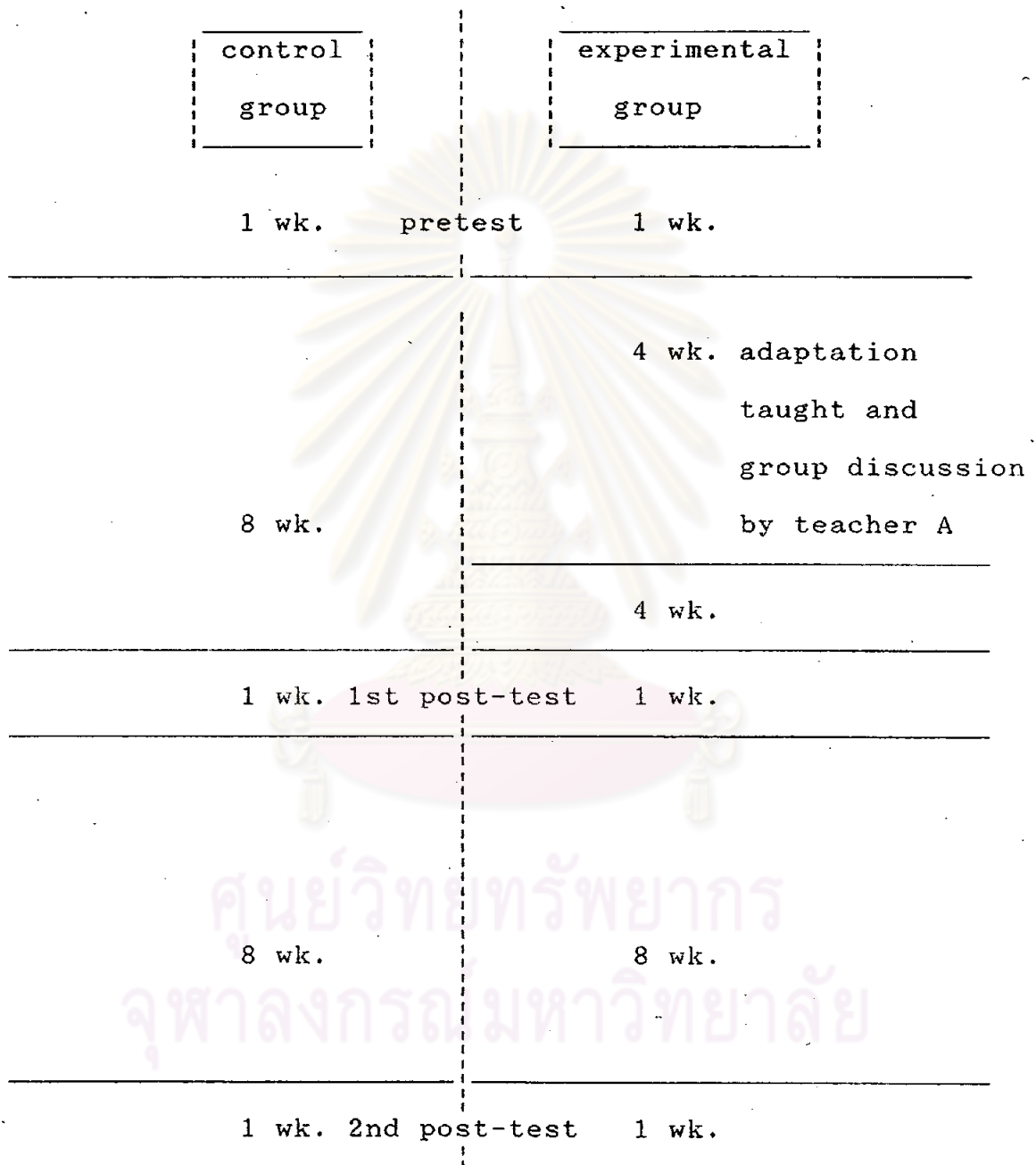
The control group did not receive any formal education about AIDS within 4 weeks. Both the control and the experimental groups were pretested with the same questionnaire (designed by the researcher, validated by national experts and tested for reliability and validity) one week before the beginning of the study. One month waiting period was needed after finishing the education programme of the experimental group. After the waiting period, both groups did this questionnaire again for post-test at the same time. The reason for requiring the waiting period one month before post-test was to allow time

for interested behaviour to have a chance to occur and thus, made it possible to evaluate the effectiveness of the education programme for AIDS prevention.

After this post-test, the experimental group discontinued AIDS education programme. The control group did not received any formal educational programme about AIDS. The duration in this second interval was equal to the first interval (4 weeks for intervention and another 4 weeks waiting period). Both groups did the same questionnaire again for the second post-test. This allowed us to evaluate the sustainability of knowledge, attitude about AIDS and behaviour about AIDS prevention and to evaluate the change in these measurement parameters in the groups who received the recent education programme (see Figure 5).

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Figure 5: Research Methodology





## Implementation

1. Development of Educational Modules and Questionnaire for Assessment: The AIDS education programme was adapted from the Ministry of Public Health (MOPH). A self-reported questionnaire was used to assess knowledge, attitude and behaviour. Many documents, textbooks and research reports were reviewed to develop these two materials for implementation.

### 1.1. The Adaptation AIDS Education Programme:

The AIDS education programme of this study had similar objectives as the MOPH. However, some adaptations were made as tabulated below (see Figure 6).

Figure 6: The Different Between MOPH's AIDS Education and the Adaptation One.

	/ = Have	X = Have not
<u>component</u>	<u>MOPH</u>	<u>Adaptation</u>
1. Concept	/ a few	/ more coverage in every part
2. Objective	/	/ same as the MOPH and added some more objectives
3. Class-activities		
- Lecture	/	/
- Discussion	/ a few	/ more discussion in every part
- Game	X	/
- Demonstration	X	/ condom use demonstrated using a model

Figure 6: (continue)

	/ = Have	X = Have not
<u>component</u>	<u>MOPH</u>	<u>Adaptation</u>
- Brain strom	X	/
4. Materials		
- Transparency	/	/
- Poster, picture	/	/
- slide	/	/
- game	X	/
- handouts	X	/
- condom use model and condom	X	/
5. Teacher	/	/ health teacher
6. Content	/ Brief	/ more details
7. Time duration	1-2 hours	at least 4 hours
8. Evaluation after class	X	/
9. Questionnaires	/ short, a few in knowledge and attitude part	/ longer, covers all objectives and corresponds to content.

This adapted education modules has 4 parts;

- Epidemiology pattern and AIDS situation
- General knowledge about AIDS
- Pathology, Curative HIV positive and AIDS

patients

- Modes of transmission and prevention of HIV infection.

Each part had 2 sets, one for the teacher (see Annex A) and another one for the students (see Annex B). The components of each part was shown in Figure 7.

Figure 7: The Different Components of Teacher's Set and Student's One of AIDS Education Programme.

	/ = Have	X = Have not
<u>Components</u>	<u>Teacher's set</u>	<u>Student's set</u>
- Topic	/ the same	/ the same
- Concept	/ the same	/ the same
- Objective	/ the same	/ the same
- Activities	/	X
- Materials	/	X
- Content	/ more details and had emphasis on parts to convince the students to recognize and be aware of AIDS and HIV infection	/ simplification and condensation
- Evaluation	/	X

The adapted AIDS education programme was given by the research assistant who was the health teacher of studied sample college. All of the sample received the AIDS education handouts before the start of the class.

1.2. The Questionnaire: The self-reported questionnaire consists of 4 parts (see Annex C);

1.2.1. Demographic Part: Included age, salary, last term grade average, sources of AIDS news, living pattern, visit of discotheque, night club, bar,



massage, prostitute work place.

1.2.2. Knowledge Part: Included the meaning of AIDS, the mode of HIV transmission, simple pathology, high risk groups and activities, blood test for HIV infection, places that give service and counselling about AIDS, knowledge about condom and condom use, the simple counselling to AIDS patients. This part had 17 items. It was 4 items multiple choices.

1.2.3. Attitude Part: Included the attitude toward self-prevention of HIV infection, the HIV infection persons and AIDS patients, the condom use, sexuality in teenager, AIDS promotion of the government and the college.

This part had 24 items. The Likert scale 5 levels was used. There was also another item consisting of open-ended questions. This item was concerned with the current promotion and prevention of HIV infection at the college and the benefit about AIDS prevention and promotion provided by the college.

1.2.4. Practical Part: This included the students' discussion about AIDS, what they do when they have sex feeling, their sexual partners, frequency of intercourse within 6 and 2 months, style of condom use and the pattern of sexual contact, the problems associated with the use of condom.

2. Assurance of Validity and Reliability: In any research, there are three things that should be taken into account about measurement: reliability, validity, and the control of bias.

2.1. Validity: validity is the degree to which the methods and its measurement process were able to make precise, concrete, and correct measurement. In this study, the content validity and the construct validity were of special importance.

The content validity refers to how adequately the sampling of questions reflects the aims of the index, as specified in the conceptual definition of its scope (Mcdowell and Newell, 1987). The procedure to establish content validity is to ask experts to comment on the clarity and completeness.

The construct validity refers to the validation of the construct theories. It can explain the result from the analysis by the logic. The construct validity was assessed by looking at the logic. The content validity and the construct validity of the AIDS education programme and questionnaire were assessed by experts.

2.2. Reliability: reliability is an indication of the consistency of a measurement. It was mentioned that a good test yields roughly the same scores over repeated

measurements as long as that which is being measured does not change dramatically (Sprinthall and Sprinthall, 1990).

The Coefficient Alpha formula was used to test the reliability of the attitude part of this questionnaire. The result was 0.7. The other tests for knowledge part was the measurement difficulty and discriminate index. The items which fails to meet the reliability criteria were detected from the questionnaire.

3. Minimization of Respondent Bias and Data Collection: The same self-reported questionnaire was introduced and given to students for pretest and post-test. It did not have name, number or classroom nor the number of the respondents. This questionnaire was put in an envelope while distributing to and collecting from the respondents in their classes. Thirty minutes was permitted to complete the questionnaire. The respondents themselves put the completed questionnaire in a bag supplied by the researcher. The bag was located in front of their classes.

#### Test for teachers

The study was explained to the teacher who was a research assistant. Attempts were made to clarify the objectives, learning activities and content of the adaptation education programme until the teacher and the researcher had a common understanding on every point. Before the actual implementation, the teaching practice



was tested in another male craftsman certificate level students who did not participate in this programme. The teacher was exposed to the study objectives and learning material one month before the start of this study.

During the study, the teacher was evaluated for his teaching method by the researcher. The researcher went to the college on another day and discuss with a few sample students about the last class. The teacher did not know about this step. If he missed or had problems in some points, the researcher went to discuss with him afterward.

#### Data Processing and Analysis

After finish collecting data, manual coding was done. For open-ended questions, data was summarized to frequency. The coding data was gone through DBASE process. For analysis data, the SPSS programme was used. Before data analysis, the data was cleaned by checking for missing coding or mistake coding. The data was analyzed to detect 3 things:

##### 1. The Difference;

##### 1.1. The difference between two groups.

- The unpaired t-test was used for the continuous data (mean).

- The chi-square was used for the proportion data.

- The Mann Whitney U test was used for rating scales about which it is not certain whether the responses are normally distributed and whether the nature of responses fits the assumption of an interval or ratio scale (attitude part).

1.2. The difference between two times within one group.

- The paired t-test was used for the continuous data (mean).

- The chi-square was used.

- The Mann Whitney U was used.

2. The Different of Change of Score between two groups;

- The chi-square was used.

3. The Relationship between the Variables;

- The multiple regression was used to look for the strength of association between the independent variables and the dependent variables.

- The correlation was used to look for the association between two variables.