CHAPTER III
TOOLS CONSTRUCTION AND DEVELOPMENT

The aim of the present investigation is to conduct the study of "Development of Instructional Package for prevention of narcotic drug problem of Lower Secondary Students in the Expansion Opportunity Schools in Thailand".

The investigator constructed following tools:
- An Instructional Package
- The criterion test
- Survey questionaire
- Teacher questionnaire

The preparation of tools and their development is described in this chapter.

3.1 CONSTRUCTION AND DEVELOPMENT OF INSTRUCTIONAL PACKAGE

The investigator designed learning module for Instructional Package of this study by applying "A model for a systems Approach to Curriculum Design" of Thomas E.Cyrs and Rita Lowenthal (audiovisual Instructions Jan. 1970) and "Modular Approach to Curriculum Design Using the System Approach" of Thomas E.Cyrs, Jr. Director of division of Instructional Systems Development, Office of Educational Resources Northwestern University (1975). Following steps were described:
Steps in the Design of a Learning Module (Instructional Package)

Step 1 Identify user population

Step 2 Select concept, principle, rule or procedure

Step 3 Specify terminal performance objective(s) (TPO)

Step 4 Identify all constraints

Step 5 Conduct behavioural analysis

Step 6 Design criterion test

Step 7 Select teaching-learning strategy

Step 8 Select content

Step 9 Select media alternatives

Step 10 Assemble module or teaching plan

Step 11 Field test module

Step 12 Produce final module

**Step 1 Identify User Population**

The user population comprises the group for which the instructional package was designed. Some possible characteristics of the user population were grade level, achievement level as determined by criterion test, background of students, motivational factors. In this study the population comprises of grade 8 students in The Expansion Opportunity Schools which have similar background.

**Step 2 Select Concept, Principle, Rule or Procedure**

After selection, the concept was broken down into subparts and limitation placed on the analysis.
Step 3  Specify the Terminal Performance Objective (TPO)

The TPO specifies the final performance requirement and is therefore, the highest level of intellectual development in the module.

Step 4  Identify All Constraints

All those things that would inhibit the design and implementation of the module such as lack of equipment were identified.

Step 5  Conduct the Behavioural Analysis

5.1 Identify all intermediate performance objectives (IPO). The IPO's includes all transitional steps toward achievement of TPO.

5.2 Classify, all IPOs into hierarchies, classify all IPOs as cognitive, affective, and psychomotor.

5.3 Sequence IPOs. Examine the cognitive classification of the IPO's and sequence into a learning hierarchy. More IPO's will probably have to be added as transitional steps toward achievement of the TPO.

5.4 Specify entering behaviour. These include all prerequisite skills that expect the student will already have mastered prior to beginning the module.

Step 6  Design Criterion Test

Criterion test is designed to evaluate the achievement of all performance objectives and is used as pre-test and post test. The investigator presented the design of criterion test in previous steps.
Step 7  Select the Teaching-Learning Strategy

Strategies based on the types of responses called for in the performance objectives.

Step 8  Select the Content

Only that content or subject matter relevant to the achievement of the objectives was selected. The "nice-to-know" and "need to know" was clearly distinguishable.

Step 9  Select Media Alternatives

Many different media as possible was selected in order to accommodate a wide range of learning style.

Step 10  Assemble the Module

Many different physical formats were available for the module design. These include unipacs, teaching learning plans and manual.

Step 11  Field Test the Module

The completed module was used with 2 students who represent the user population. Observe these students learning through the module and note all questions and points of difficulty. Note the feedback points throughout the flowchart. Continue to redesign the module until the specified criterion level was reached.

Step 12  Produce the Final Module

In this step the investigator used the module with the small group (20 students) again to observe these students, learning through the module
and measure the performance by using pre-test before using Instructional package and used post-test after the use of Instructional package. Then The Instructional Package was prepared for the teachers who teach student's in class 8 (M.S. 2) of The Expansion Opportunity Schools and were the sample of this study. As some schools do not use English in everyday language, the Instructional Package was prepared in Thai language. It consists of directions, manual, teaching plans, material and test.

3.1.1 Editing of the Instructional Package

After writing the Instructional Package, editing and reviewing the Instructional Package becomes essential, for very few investors can write Instructional Package perfect in all respect in the first attempt. Before using the Instructional Package with the students, the main objective editing first draft either personally or with the help of a colleague is to make it free of ambiguities and inadequacies. Besides, the logical sequence of teaching plans and the technical accuracy of the content have to be assessed critically.

The first draft of the Instructional Package is always for the investigator herself rather than for teachers. The editing of the Instructional Package involves three stages:

- Editing for technical accuracy
- Editing for technique of Instructional Package
- Editing for Composition.
3.1.1.1 Editing for technical accuracy

For the editing of content, the content selected for the Instructional Package was discussed with the subject experts and their expertise was sought to edit it for technical accuracy. All changes and modifications suggested by them were incorporated after each administration of the Instructional Package. The content was thoroughly scrutinized for vocabulary, keeping in mind the mental level.

3.1.1.2 Editing for technique of the Instructional Package

Editing for the technique of the Instructional Package was done as a whole. The continuity of the teaching-plan, came first of all. flow from plan to plan and inter-relationship between the different parts of The Instructional Package were ensured. The ideas were developed logically and methodically with an adequate amount of supporting material. It was seen that the illustrations used were apt and the teachers and the students should be familiar with them. It was ensured that the edited Instructional Package should have smooth reading, appeal to reason and successfully achieve objectives determined.

3.1.1.3 Editing for composition

Editing for composition involved checking of the Instructional Package for grammatical errors, aptness of the language, spelling, punctuation, the ability of the plans to communicate with the teachers directly and clearly. While editing the Instructional Package, all points stated above were kept in view and the Instructional Package was given to the Instructional Package experts for perusal.
Editing was also done each time the Instructional Package was administrated on the target population and further improvements done, which were sought on the basis of observations and impressions made by the students. Some of the activities were revised and modified on the basis of analysis of the responses till the desired standard was achieved.

3.1.2 Validation of the Instructional Package

The stage in development of Instructional Package is testing and evaluation. Testing The Instructional Package in different phases plays a crucial role in improving the content activities and organisation of the teaching plans for effective instruction. Try-outs of The Instructional Package reveal its inadequacies and weak spots that need revision and modification.

The investigator in the present study validates the Instructional Package in 3 different stages:

- First try-out (Individual testing stage)
- Second try-out (Small group testing stage)
- Final try-out (Field testing stage)

In each of testing, the Instructional Package was validated against two types of criteria—internal and external.

Internal validation was concerned with the scores which the students got from exercises after teaching plans in Package. The external validation of the Instructional Package was carried out by analysing the Instructional Package against the external criterion (The criterion test).
Instructional Package

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3.2 CONSTRUCTION AND DEVELOPMENT OF CRITERION TEST

Criterion test is designed to evaluate the achievement of each Terminal Performance Objective (TPO). They include preassessment and postassessment. Criterion test provides a numerical index of performance.

After the survey of literature related to narcotic drug problem of Lower-Secondary Students in Thailand the investigator identified the contents and objectives needed for the project work which were used both in Instructional Package and criterion test. Finally came up with a synthesis of objectives and contents.

3.2.1 IDENTIFICATION of objectives

Terminal Performance Objective is "Students have knowledge, understanding, attitudes and skills in preventing and avoiding narcotic drugs". This Terminal Performance Objective (TPO) is divided into 3 categories; they are

1. Students have knowledge and understanding about
   a) definition of narcotic drugs
   b) classification of narcotic drugs
   c) narcotic drug impact upon the individual
   d) narcotic drug impact upon the family
   e) narcotic drug impact upon the society
   f) narcotic drug legal controls
   g) narcotic drugs prevention and avoidance
   h) news or article related to narcotic drug
i) narcotic drug problems
j) narcotic drug abuse and addiction

(2) Students will be able to develop attitude
   a) identify the effects in the positive ways that paying respect to parents and teachers is the right way to do.
   b) realise themselves in the positive ways that paying respect to parents and teachers is the right way to do.
   c) show good conduct to parents and teachers

(3) Students will be able to
   a) make decision or select the right choice or decision from the given situations or problems.
   b) co-operate narcotic drug resistance in social skills.

3.2.2 Identification of content area

Prior to the construction of the test items and Instructional Package, the investigator identified the content area by choosing the common topics found in the newspapers, syllabus, as well as graded text books and manuals in narcotic drugs which were brought by the investigator from various resources. As a result, 6 common topics were chosen and sub-topics were listed down as basis for the content area of the proposed project. With the advice of the supervisor and the experts the 6 topics were later grouped and reduced to 4 main topics as following:

i) Narcotic drug over-all impact upon the individual family and society.
ii) Drug abuse and addiction
iii) Narcotic drug legal controls

iv) Ability of making decision and selecting the right ways

The investigator prepared respective table of specification based on
the 4 main topics as content and the objectives as thinking skills with the
corresponding number of test items to be constructed per objective. It
was agreed between the investigator and supervisor that the test items to
be made with the number of items listed down in the table of specifications
prepared by the investigator as follows:

Table 3.1: Specifications of Test Items

<table>
<thead>
<tr>
<th>TPO</th>
<th>Number of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1-50</td>
</tr>
<tr>
<td>2</td>
<td>51-70</td>
</tr>
<tr>
<td>3</td>
<td>71-100</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

The investigator formulated the test questions i.e. writing of the test
items and distracters. Initially about 150 items were formulated in English
for the 4 main topics. After careful considerations, items were chosen for
making a total of 100 test items.

The content, stem and distracters of each item were critically
examined and scrutinized by the investigators, supervisor, the curriculum
major, the narcotic drug control expert. As a result of the critique, some
questions were discarded while others were modified the improved items
were then translated to Thai language by the investigators.
3.2.3 Validation of the Test Items

After completing the translation, the final draft was subjected to assessment and critique in accordance with the content area and the objectives and the specified number of the test items for each. The final evaluation critiquing of the test instrument was done by the:

- Supervisor
- Curriculum and teaching expert
- Measurement and evaluation expert
- Narcotic drug expert
- Research methodology expert

Some of the items were revised while alterations were made based on the suggestions of the empirical and logical review so that the content validity of the test was assured. The final test draft composed of 100 items was typed, printed and prepared for administration.

3.2.4 Try-out of the Test

Permission was sought from the proper School Authorities, after which the test was administered at Ban Wiang Phang School in Phang District, Chiang Mai. The sample consisted of three classes of Matthayon Suksa III (grade 9), who have just completed their grade 8 and about to start their grade 9, classified according to their scholastic rating as following:

Upper class - 33 Students
Upper class - 34 Students
Lower class - 33 Students
The participants were grouped into heterogeneous group. The test was administrated within one and half hour.

Immediately after the try-out the answer sheets were checked and scored. The data was then computerized and analysed to determine the difficult Index \( (p) \) and Index of Discrimination \( (r) \). After analysis the 50 compleitive items were selected. The analysis of the data has been presented in next Chapter.

**3.3 CONSTRUCTION AND DEVELOPMENT OF SURVEY QUESTIONNAIRE**

The investigator constructed the survey questionnaire for the students in order to identify the students who were taking drug and non-taking drugs.

The questions are mixed with closed-ended questions and open-ended questions. For closed-ended questions, students are offered a set of answers and asked to choose the one that represents their views. The closed-ended questions are easy to ask and quick to answer. The open-ended questions are more appropriated. The students can express their thoughts freely, spontaneously and in their own language.

Before using the survey questionnaire, the teacher had to establish and rapport with the students and given the required instruction to fill the code number. The important way to get the true answers is making students feel comfortable and tell them that their answer will be have no effect on marks will be kept as secret as possible and will be useful for students themselves. The survey questionnaire is enclosed in appendix.
3.3.1 Editing of the Survey Questionnaire

After collection of items for the survey questionnaire, editing and reviewing becomes essential. The main objective of editing its first draft either personally or with the help of a seasoned colleague is to make it free of ambiguities and inadequacies. The sequences of questions and contents have to be critically assessed.

The first draft of the survey questionnaire is primarily centers around collection and editing of the items by the investigator.

For the editing of content, the content selected for the survey questionnaire was discussed with the supervisor and the subject expert. The content was thoroughly scrutinized for vocabulary, the continuity of questions, flow from questions to questions and interrelationship between the different parts of the questions were ensured. It was also seen that the edited survey questionnaire yield smooth reading, appeal to reason and successfully direct towards pre-determined conclusions.

The last stage in development of survey questionnaire is testing and evaluation. Try-out of the survey questionnaire reveal inadequacies and weak spots that need revision and modification. The investigator validated the survey questionnaire by try-out with students in class 8. The try-out can identify the students, so the survey questionnaire was retained for the target-sample.

3.4 CONSTRUCTION AND DEVELOPMENT OF TEACHER QUESTIONNAIRE

The investigator constructed the teacher questionnaire for the teachers who used the Instructional Package with their students in order to find
teacher perception or opinion towards Instructional Package. The teacher questionnaire contains in open-ended question form.

3.4.1 Editing of the Teacher Questionnaire

After preparing the teacher questionnaire, the teacher questionnaire was discussed with the subject experts and the investigator tried-out the questionnaire with the 5 teachers who were teaching at school near the target-schools. It was encouraging for the teachers to express their thoughts and perceptions freely. So the teacher questionnaire could be used by teacher who were administering the Instructional Package in the final testing stage.