Chapter 3

Research Method

Research Design

The researcher adopted the descriptive analytical
method of research to carry out this study. The descriptive
method means "any research that describes a setting or events
in numerical terms" (Brown & Rodgers, 2002, p. 118). The
researcher adopted this type of research as the study seeks to
answer the research question mentioned previously, that is, to
what extent the LOTS and HOTS are available in the National
Exam of English subject of 2013/2014 academic year.

The researcher applied descriptive analytical method of
research by searching for emerging patterns within and across
the 20 test packages of the National Exam of English subject of
2013/2014 academic year under Barrett taxonomy. After
classifying the question items into particular level of
comprehension by Barrett taxonomy, the researcher later
categorized the items into the appropriate level of thinking

skills, whether each item belonged to lower order thinking

skills (LOTS) or higher order thinking skills (HOTS).

The design is illustrated in the following diagram:

HOTS & LOTS in ENE for Senior High School students of 2013 - 2014 academic year

Research Question:

To what extent are the lower order thinking skills (LOTS) and higher order thinking skills (HOTS) required in the questions in the ENE of 2013/2014 academic year in the light of suggested criteria?

Criteria of evaluation

Barrett Taxonomy

content analysis

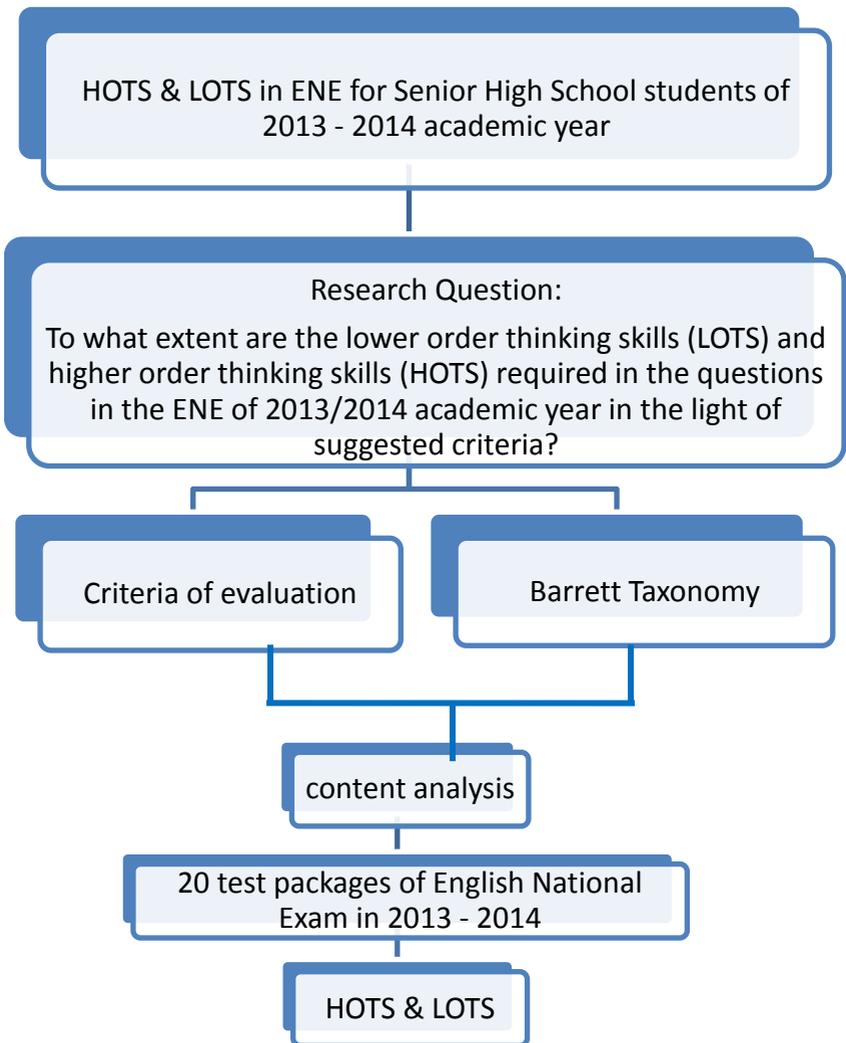20 test packages of English National Exam in 2013 - 2014

HOTS & LOTS

Figure 3.1 The Research Design

The researcher conducted the following procedures:

1. Building the criteria of the evaluation in the form of coding scheme through reviewing the literature related to analysis of comprehension questions under Barrett Taxonomy and Lower Order Thinking Skills as well as Higher Order Thinking Skills.

2. Consulting some specialists to verify the tool.

3. Modifying the tool according to the experts' comments.

4. Codifying all the questions asked in the English National Exam for Senior High School students of 2013-2014 academic year.

5. Analyzing the data in the form of frequencies and percentages and organizing it through tables.

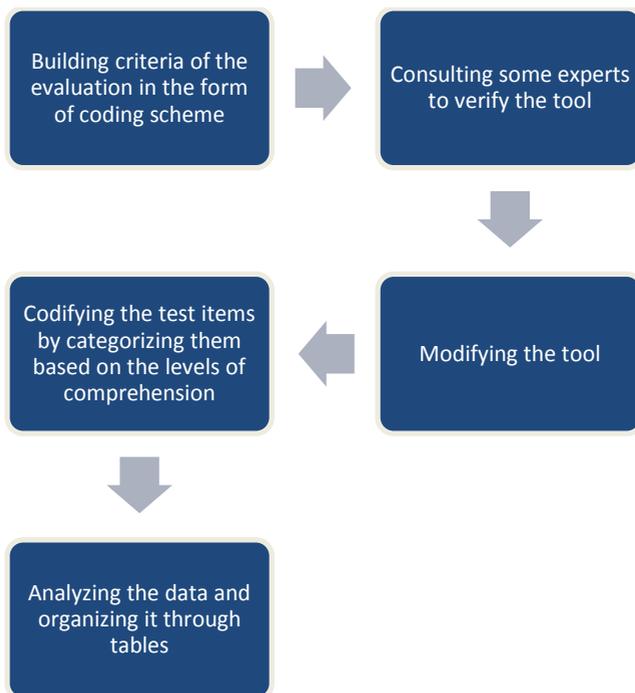The procedures are visualized in the following diagram:

Figure 3.2 The Research Procedure

Objects

Because this study is a descriptive study which aims
to investigate to what extent LOTS and HOTS are required in
the National Exam items of English Subject for Senior High
School Students of 2013-2014 academic year, the objects of the
study were the twenty packages of test items of English

National Exam for Senior High School Students of 2013-2014
academic year in each of which are 50 multiple-choice test
items with four alternatives supplied in each item.

Sources of Data and Data

The qualitative data were collected and used in this
research. The sources of data were the twenty packages of the
English National Exam for Senior High School students of
2013-2014 academic year. Qualitative data were taken from 50
test items comprising 15 listening and 35 reading
comprehension questions of each test package which
accumulated into 1,000 test items in total.

Instruments

The major instrument in conducting this study is the
researcher herself. She developed a tool called categorical
content analysis. Murray (2009, p. 51) uses the term
'categorical content analysis' to refer to a method of data
analysis that identifies categories by selecting utterances from a
text, which are then classified and grouped together.

Content analysis was used as the research tool in this study. Hsieh & Shannon (2005, p. 1278) define content analysis as "a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns". Along with this definition, content analysis is considered to be "an approach of empirical, methodological controlled analysis of texts within their context of communication, following content analytic rules and step by step models, without rash quantification" (Marier, 2000, p. 2).

From these definitions, it is obvious that qualitative content analysis emphasizes an integrated view of speech/texts and their specific contexts. Qualitative content analysis goes beyond merely counting words or extracting objective content from texts to examine meanings, themes, and patterns that may be manifested or latent in a particular text. It allows researchers to understand social reality in a subjective but scientific manner (Weber: 1990).

Consequently, to achieve the study purpose, a content analysis card was used to collect, describe and analyze data regarding the availability of LOTS and HOTS in the listening and reading exercises of the English National Exam for Senior

High School students in 2013-2014 academic year in the light
of the suggested checklist in the analysis card.

The researcher reviewed variant sources to build the
criteria for evaluation. These criteria were the elements of the
analysis card. The analysis covered all the questions in the
National Exam of English Subjects for Senior High School
students in 2013-2014 academic year.

To ensure the validity of the content analysis card, it
was shown to some experts so that the researcher could benefit
from their comments and suggestions for further modifications.
The list of the criteria was checked to examine:

1. The comprehensiveness of the domains needed for the
    analysis,

2. The relevance of the items to the domains, and

3. The clarity and linguistic correctness of the criteria.

Afterwards, the experts assured the suitability of the
criteria included in the checklist for evaluating the availability
of LOTS and HOTS in the National Exam of English Subjects
for Senior High School students in 2013-2014 academic year.
Having confirmed the final version of the checklist, the writer
divided the number of coded points into five categories i.e.;

literal, reorganization, inferential, evaluation, and appreciation

as shown in Table 3.1.

Table 3.1
The Number of Coded Points in each Domain of the
Analysis Card

No.	Domains	Number of coded points
1.	Literal comprehension	12
2.	Reorganization comprehension	4
3.	Inferential comprehension	8
4.	Evaluation comprehension	5
5.	Appreciation comprehension	4
Total		33

The number of coded points in this table refers to the

Quick Reference Outline of Barrett Taxonomy presented in

Table 2.2. It reveals that the domain of Literal Comprehension

consists of recognition comprehension comprising six points

and recall comprehension comprising six points which add up

to twelve points. The second domain, Reorganization

Comprehension, consists of four points, while Inferential
Comprehension domain consists of eight points. Evaluation
Comprehension consists of five points and Appreciation
Comprehension comprises four points.

The elaboration of each point in the Table 3.1 is
presented as follows:

1. Literal Comprehension: Literal comprehension focuses on
   ideas and information which are explicitly stated in the
   selection. Purposes for reading and teacher's questions
   designed to elicit responses at this level may range from
   simple to complex. A simple task in literal comprehension
   may be the recognition or recall of a single fact or incident.
   A more complex task might be the recognition or recall or a
   series of facts or the sequencing of incidents in a reading
   selection. (Or these tasks may be related to an exercise
   which may itself be considered as a reading selection).
   Purposes and questions at this level may have the following
   characteristics:

   1.1 Recognition

   Recognition requires the student to locate or identify
   ideas or information explicitly stated in the reading
   selection itself or in exercises which use the explicit

ideas and information presented in the reading
selection.

   1.2 Recall

Recall requires the student to produce from memory
ideas and information explicitly stated in the reading
selection.

2. Reorganization: Reorganization requires the student to
   analyze, synthesize, and/ or organize ideas or information
   explicitly stated in the selection. To produce the desired
   thought product, the reader may utilize the statements of
   the author verbatim or he or she may paraphrase or
   translate the author's statements.

3. Inferential Comprehension: Inferential comprehension is
   demonstrated by the student when he or she uses the ideas
   and information explicitly stated in the selection, his or her
   intuition, and his or her personal experience as a basis for
   conjectures and hypotheses. Inferences drawn by the
   student may be either convergent or divergent in nature
   and the student may be asked to verbalize the rationale
   underlying his or her inferences. In general, then,
   inferential comprehension is stimulated by purposes for
   reading and teachers' questions which demand thinking

and imagination that go beyond the printed page. (Personal experience is interpreted to include formal learning experiences, as well as those things which the reader has personally experienced in a first-hand situation. Prior knowledge, regardless of where this knowledge came from, is an integral part of inference. The crucial factor distinguishing inference questions from recognition and recall questions is that their answers are not explicitly stated but must be inferred.)

4. Evaluation: Purposes for reading and teacher's questions, in this instance, require responses by the student which indicate that he or she has made an evaluative judgment by comparing ideas presented in the selection with external criteria provided by the teacher, other authorities, or other written sources, or with internal criteria provided by the reader's experiences, knowledge, or values. In essence evaluation deals with judgment and focuses on qualities of accuracy, acceptability, desirability, worth, or probability of occurrence. (Evaluative judgment is the key to this category.) Evaluative thinking may be demonstrated by asking the student to make the following judgments as shown in Appendix.

5. Appreciation: Appreciation involves all the previously
    cited cognitive dimensions of reading, for it deals with the
    psychological and aesthetic impact of the selection on the
    reader. Appreciation calls for the student to be emotionally
    and aesthetically sensitive to the work and to have a
    reaction to the worth of its psychological and artistic
    elements. Appreciation includes both the knowledge of
    and the emotional response to literary techniques, forms,
    styles, and structures.

Data Collection

The researcher collected qualitative data from test
items, analyzed them, and attempted to interpret the analysis. It
was descriptive and exploratory in nature. Descriptive statistics
allows the researcher to describe the data and examine
relationships between variables that provide information about
conditions, situations, and events that occur in the present.

To gather all information needed, the researcher
collected all suitable documents that are available. Efferin,
Darmadji, and Tan (2004) state that documentation is one of
the ways in collecting data by analyzing the notes and

documents that are available. The documents collected in this research were the coding sheet of comprehension questions analysis, the twenty test packages of English National Exam for Senior High School in the 2013/2014 academic year that are obtained from schools, and the table of specifications listed in Education National Standard Organization Regulation No. 0019/P/BSNP/XI/2012, a document which is publicly available on the Internet.

Data Analysis

The data were analyzed using Barrett Taxonomy and focused on the classification of questions asked. The question items asking students' LOTS and HOTS were identified and put into several categories within the content analysis card. Sentences and concepts that make up questions in exam papers are discoverable using content analysis method.

The categorical content analysis is more concerned with logical analysis because it is extremely dependent on the logical understanding and view of the analysts on the categorization process. The analysis is between the test items of English National Examination for Senior High School with

the questions' levels of comprehension based on Barrett
Taxonomy and the Model of Lower Order Thinking Skills as
well as Higher Order Thinking Skills.

To analyze the test items, the researcher used a coding
sheet to classify the test items of English National Examination
for Senior High School in the 2013/2014 academic year into
the questions' levels of comprehension. In the process of
developing the coding sheet, the form was drafted by the
researcher and commented on by the experts. The form
addressed the relationship between the test items and the
questions' levels of comprehension based on Barrett
Taxonomy and the Model of Lower Order Thinking Skills as
well as Higher Order Thinking Skills.

The following stages were followed in the analysis of
the examination questions. First of all, the selected examination
paper samples were sorted by assigning numbers from 1 to 20
to the papers. Then, 1,000 questions within the papers were
dealt with one by one, and they were determined to which level
of thinking skills under Barrett's Taxonomy they belonged.

Trustworthiness

Building trustworthiness in this study was conducted through the help of inter-rater reliability. It is meant to assure that the result of the study is reliable and excludes any bias or the researcher's subjectivity. Reliability can be perceived from internal or external perspectives. Brown and Rodgers (2002, p. 241) point out that internal reliability is "the degree to which we can expect consistent results if the data for the study were re-analyzed by another researcher". Meanwhile, the external reliability is defined as "the degree to which we can expect consistent results if the study was repeated".

Thus, to achieve this, the researcher invited three raters to code the qualitative data into various categories, i.e. levels of comprehension and thinking skills. The first rater is a prolific writer and an expert in educational field and the rest are Senior High School teachers who pursue their postgraduate education at Widya Mandala Catholic University. The writer chose them due to their expertise and experience in teaching English.

A total of 20 test packages of English National Exam for Science major of Senior High School students were selected. A sample of test package was randomly chosen to be

analyzed by the raters independent from one another. The
researcher provided the raters with the criteria prepared for
evaluating the levels of comprehension questions that have
been reviewed by experts. Question terms in the question base
like *who, what, where, when, how, express, define, summarize,
compare, plan, arrange, distinguish, show, conclude, find*, etc.
have been taken into account in determining the question
levels. She discussed later with them how to conduct the
analysis.