



CHAPTER THREE

MOTHOODOLOGY

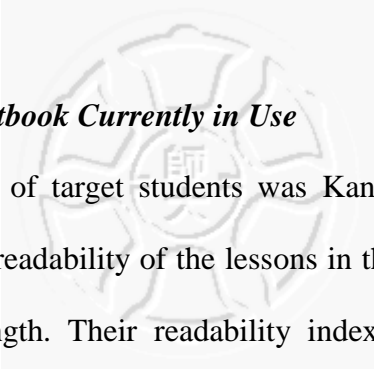
In this chapter, a pilot study and main study designs are presented. The pilot study was conducted to determine the text and time allotments. The main study, which was designed to answer research questions, consisted of four major sections: (1) Participants, (2) Instruments, (3) Data-Collection Procedure, and (4) Data Analysis

Pilot Study

To select the text suitable for the main study and to test the appropriateness of the time allotted for each instrument, a pilot study was conducted in the first semester of the 2006-07 school year, on two mixed-ability classes of 38 ninth grade students at Chang Tai Junior High School in central Taiwan. There were two parts in the pilot study. The first part was the selection of target reading text with one class. The second part was to see whether the time spent on each treatment was adequate.

Selecting Text

To verify whether the text readability and content difficulty was suitable for the target participants, the researcher took four steps: (1) examining the length and readability of the target students' English textbook currently in use, (2) selecting the narrative texts with comic strips, (3) modifying the texts, and (4) confirming content familiarity of the target reading text with students.



Examining the English Textbook Currently in Use

The English Textbook of target students was Kang Hsuan English Textbook, Book Five. The length and readability of the lessons in this textbook ranged between 133 and 164 words in length. Their readability indexes ranged from 2.6 to 6.8 according to Flesch-Kincaid Grade Level.

Selecting the Texts with Comic Strips

The researcher then picked two narrative texts (hereafter Text One & Text Two) with comic strip within this range. The reasons for choosing the narrative type were as followed. First, it was the genre that junior high school students were not only more familiar with but more interested in. Students had more willingness to read narrations rather than expositions. This willingness would lead to better quality of their recall, especially emotional responses. Sadoski et al. (1988) asserts that “in full and complete narrative texts, emotional responses are an important aspect of experiencing the text” (p.324). Second, there were more concrete objects or events in the stories. Concreteness is a key factor in reading comprehension based on Dual-coding theory. “It can referentially activate mental images as well as associatively activate mental language” (Sadoski and Paivio, 2004, p.1356). The more concrete the text was, the more comprehensible and memorable the text would be. Third, it’s easier to illustrate narratives. The content of the narrative text, such as characters, plots, story patterns, could be best presented visually with comic strips. It helped to make readers generate more interpretation on narratives.

Modifying the Texts

Text One which was titled “Hold On, Joe” was a narrative with 233 words in length and 3.1 readability according to Flesch-Kincaid Grade Level. Some



modification of this text was made so that the text could be more natural for ninth-grade EFL students.

First, the tense of the text was adjusted. The original text was written for beginning readers, so the author used present tense all the way to write this narrative with simple sentence patterns. However, the text would be a little unnatural for higher-level students because they might have difficulty distinguishing the time sequence of events in this story. Since participants in the present study had learned past tense for at least one and a half years, changing the tense could make the text more natural and suitable for them. Therefore, the tense of the text was changed from present tense to past tense except for some sentences on facts and those in quotation marks.

Second, to make the text more comprehensible and coherent, the sentence *Joe Thompson is 18 years old, and he drives a small Jeep.* was changed as *Joe Thompson is 18 years old. He used to drive a small Jeep before.* Another clause *the top comes off* was changed as *the top of the Jeep came off.* After modification, the resultant Text One was 237 words in length, and 3.3 in readability.

Text Two titled “Girls Save Falling Child” was a narrative with 155 words in length and 6.1 in readability at Flesch-Kincaid Grade Level. Unlike Text One, the original Text Two was written in past tense and no linguistic problem was found with the sentences in it. The only modification researcher made was to change the names of the characters into common names that students were more familiar with. For example, the girls’ names “Stephanie” was changed to “Sue”, and “Samantha” was changed to “Sally”; the boy’s name “Skylar” was changed to “Bill.” This modification was for ease of recall. Therefore, the word length and readability of Text Two were unchanged.

Confirming Text Suitability

In order to confirm the suitability of the text, a class of 38 ninth-grade students was asked to read these two texts. After they read the texts, they were asked to (1) check if they had read the texts before, and (2) rate the difficulty level of reading texts on a five-level Likert Scale (1: too difficult to 5: too easy) on their sheets. All of the students claimed they have never been exposed to the two texts before, and the mean scores of the students' ratings of difficulty were 2.8 and 1.5 respectively. This result indicated that students perceived Text One easier and more suitable than Text Two. Therefore, Text One was chosen.

To further ensure Text One was suitable for the target participants, the researcher compared Text One with the texts in participants' English textbook they currently used. Text One was 237 words in length, and 3.3 in readability based on Flesh-Kincaid Grade Level while the texts in English Textbook ranged between 133 and 164 words in length, and 2.6 to 6.8 in readability. Although Text One was a little longer than the texts in participants' textbook, its readability, 3.3, was within the range of that in their textbook. Therefore, it was believed that participants were capable to comprehend this text independently.

Confirming the Appropriateness of Time Allotment for Each Instrument

In order to see whether the time allotment for each instrument was sufficient, another class of 38 ninth-grade students participated in the second part of the pilot study. Based on their grade of 1st English Mock Basic Competence Test, they were divided into three groups by means of the S-distribution so that every group was of similar ability. Their seats were re-arranged by the researcher before the pilot study. The first and second rows were Pre-reading group, the third and fourth rows were

During-reading group, and the last two rows were Post-reading group.

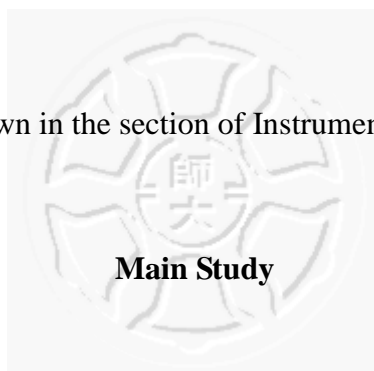
There were two phases in the whole procedure. In the first phase, all of the participants read the same text and the same comic strip, but with different sequencing of the comic strip presentation. Pre-reading group read the comic strip for three minutes first and then, with the comic strip removed, read the text for seven minutes. During-reading group read the text together with comic strip for ten minutes. The Post-reading group read the text for seven minutes first and then, with the text removed, read the comic strip for three minutes.

In the second phase, the participants wrote down the free recall for fifteen minutes. After all three groups went through the procedure of the pilot study, they were requested to fill in a questionnaire with five-level Likert Scale (1: too long ~ 5 too short) to show their reflections about the appropriateness of the time allotment for each phase.

From their feedback questionnaire, over 70 percent of students thought the time for each phrase were appropriate (mean score: 2.7). Among the rest 30 percent of the students, most of them reflected the time allotted for the above instruments was too long. Only one student responded the time was not enough for the text.

Though the text difficulty and time allotment was tested to be appropriate, two adjustments were still made for the main study. The first one was about the grouping. The researcher decided to add a Control group, which received no visual aids so that the effect of comic strips on reading comprehension could be drawn. So, in the main study, there would be four groups. One class was assigned to one group. Thus, four classes participated in the main study. The second adjustment was to add a perception questionnaire before the recall. The purpose of the questionnaire was to disrupt participants' memorization of the text and comic strips so that their recall of the text could be best drawn from long-term memory. A detailed description of perception

questionnaire would be shown in the section of Instrument in the main study.



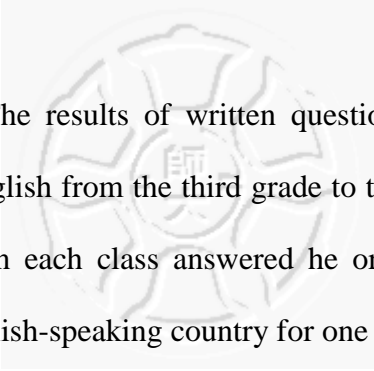
Based on the adjustment of the pilot study, the main study was conducted in the first semester of 2006-07 school year at the same school described in the pilot study. Four classes of ninth-grade students other than the pilot classes participated in the study.

Participants

The participants for the main study were 144 ninth-grade junior high school students enrolled in a public school in Changhua City. These students were selected from four different mixed-ability classes. Each of the class consisted of 36-38 students.

The participants were expected to receive EFL instruction formally for at least three and a half years. Since 2001, students in Taiwan had started to learn English in the fifth or sixth grade in elementary school. It was based on the policy of Nine-Year Integrated Curriculum enacted by Ministry of Education. Students took English classes two periods per week in elementary school, and five periods per week in junior high school. The participants in the study were in their last year of junior high, so they were expected to be able to deal with longer reading texts.

To understand more deeply about participants' English learning background, a questionnaire was used as an instrument in the main study. Question One asked which group participants were assigned in this study. Question Two asked when participants started learning English, and Question Three asked whether participants have had the experience of study abroad in any English-speaking country for one year



(See Appendix C, p.97). The results of written questionnaire showed that overall students began studying English from the third grade to the sixth grade in elementary school. Only one student in each class answered he or she had the experience of staying and studying in English-speaking country for one year.

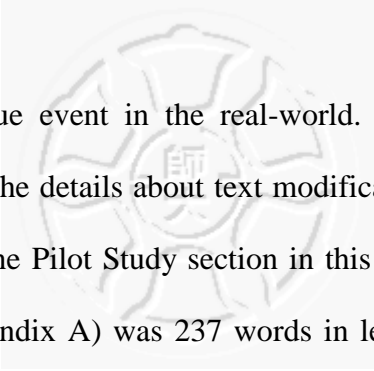
In order to investigate the effect of the comic strip and its effect of different sequencings of presentation in the reading phase, each of the four classes represented one group -- Control group, Pre-reading group, During-reading group and Post-reading group respectively. To further ensure these four groups were similar in their English reading ability, mean scores of the four groups in their three Mock Basic Competence English Tests were compared by one-way analysis of variance (ANOVA), with groups as independent variables and mean scores as dependent variables. Mean scores for each group were: Control, 28.49 (SD = 11.87); Pre-reading, 30.29 (SD =10.04); During-reading, 31.25 (SD = 11.67); Post-reading, 30.65 (SD = 13.35). The result indicated that the four groups were equivalent in terms of their Mock Basic Competence English Test, $F(3, 145) = .370, p > .05$.

Instruments

Five instruments were employed in this study and they were explained as follows: (1) The text; (2) the comic strip; (3) the perception questionnaire; (4) the recall sheet; and (5) the perception interview.

The Text

The materials selected for the study were one English reading text and one comic strip. They were selected from the book—*All New Easy True Stories* written by Sandra Heyer, and published by Longman, Pearson Education, Inc. in 2004. The story



was written based on a true event in the real-world. The reasons of choosing a narrative as text genre and the details about text modification had been mentioned in the Text Selection Part of the Pilot Study section in this chapter. After modification, the resultant text (see Appendix A) was 237 words in length, with a 3.3 readability level, and appropriate suitability (according to students' ratings, 2.8, based on the pilot study).

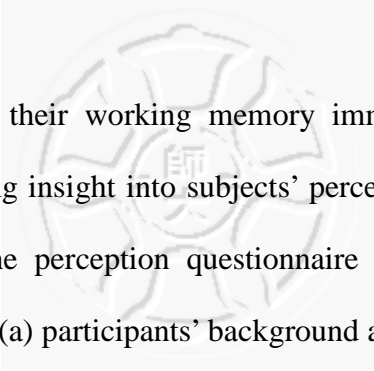
Though the length of the text was longer than those in their textbook, most of the participants from the pilot study responded that they could comprehend the text. Besides, students' comprehension could be better evaluated from reading longer texts. There were some new words in the text, but no glossary was given because making sense of new words was part of reading ability.

The Comic Strip

The comic strip consisted of a series of nine pictures (See Appendix B). The pictures were numbered and presented in correspondence with the sequence of the story in the text. The comic strip was highly relevant to the text contents and no verbal stimulus was shown in the comic strip. Researcher herself and other four experienced English teachers at the same school judged the relevance according to the criteria developed by Schallert (1980), "The information of the illustrations is (a) central to text, (b) congruent with the text content, and (c) provides a spatial or schematic representation of the text content"(Gambrell & Jawitz, 1993, p.267). All the five judges agreed that the comic strip was highly relevant to the text.

Perception Questionnaire

This task, administered after reading and before written recall, was performed for two purposes: (1) serving as a distracting activity if students should still keep textual



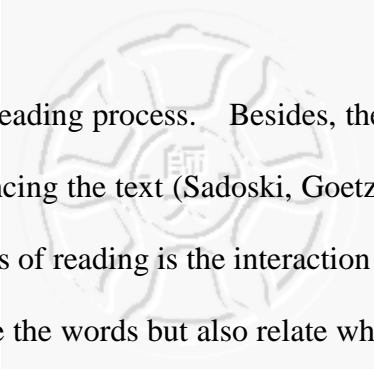
or imagery information in their working memory immediately after reading and before recall, and (2) gaining insight into subjects' perception toward comic strip on reading comprehension. The perception questionnaire designed by the researcher herself contained two parts. (a) participants' background and (b) perception of reading the text and the comic strip (see Appendix C & D). In part A, Questions 1~3 were about students' English learning background. In part B, Questions 4~11 concerned participants' perceptions toward the reading text and the effect of comic strips. Participants in the present study received the questionnaire of Chinese Version. Their opinions were elicited by filling in a five-level Likert Scale.

Recall Sheet

The reading comprehension assessments adopted in this study were immediate written recall protocols. Unlike the traditional tester-constructed measurement such as multiple-choice and cloze, written recall was regarded as a valid means to assess learner-based EFL readers' understanding of the text. As claimed by Johnston (1983), it is the most straightforward way to assess the interaction between reader and text. Berkemeyer (1989) also asserts that immediate recall protocols demand that readers comprehend the text well enough to be able to recall it in a coherent and logical manner. Through recall protocols, we can assess how the readers reconstruct the text.

In this study, participants were asked to write their free recall in their native language, Chinese, so that their understanding of the texts could be properly tested without the problem of language deficiency (Lee, 1986). Recall prompts in the recall sheets were also presented in Chinese. Participants were reminded to write down as much as they could remember when doing the free recall (see Appendix E).

According to Dual-Coding Theory, verbal responses are elicited as well as

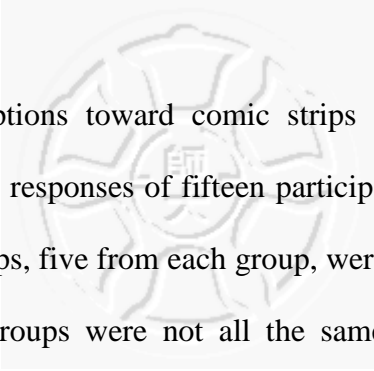


nonverbal responses in the reading process. Besides, the emotional responses are an important aspect of experiencing the text (Sadoski, Goetz, & Kangiser, 1988; Sadoski & Paivio, 2004). The process of reading is the interaction of the reader and the text, so readers may not only decode the words but also relate what they read to their personal experience and affection. Due to this reason, after they finish reading, their recall of the text might mirror or relate to the content of the text. The mirrored parts were participants' retention of the content while the related parts were the inferences which participants made based on the content. According to Kintsch (1998), inferences were activated in the reading process. In order to further investigate the quality of participants' recalls in different experimental groups, the inferences from participants' written recalls were analyzed as well.

Two types of inferences were discussed: text-based inferences and reader-based inferences. Text-based inferences are the synthesized or summarized ideas found in the surface textual information (Barry & Lazarte, 1998). They are "repeated or paraphrased text statements" (van den Broek, Lorch Jr., Linderholm & Gustafson, 2001), and necessary for meaning making (Chu, 2002). Reader-based inferences are the mental model (Johnson-Laird, 1983) or the situation model (Kintsch, 1998) of the text. They are the additive ideas combined from the text with the readers' prior-knowledge (Barry & Lazarte, 1998) for readers to logically explain or interpret the text (Chu, 2002). While text-based inferences are made for local coherence, reader-based inferences are made to establish global coherence (Long, et al., 1996). Both of the two types of inferences are indicators for text interpretation. Examples of these two inferences were presented in Scoring section of this chapter (See page 42).

Perception Interview

The questions in the post-treatment interview were designed by the researcher to



investigate students' perceptions toward comic strips in different sequencings of presentation in reading. The responses of fifteen participants randomly selected from the three Experimental groups, five from each group, were analyzed qualitatively. The questions for these three groups were not all the same because of their different reading experience due to different sequencing of comic strip presentation. There were three questions for each group (see Appendix F & G). In the present study, interview questions were asked by the researcher in Chinese, and the students answered in Chinese as well. The whole procedure of perception interview was tape-recorded. The following were the interview questions of all three groups.

For the pre-reading group, the first question was about *whether pre-reading comic strip helps their comprehension of the text*. The second question was about *when they read the text alone, whether they would refer to the comic strip in mind or just focus on verbal presentation*. The third question was on *when they recall the text whether the main source of their memory is from the text or from the comic strip*.

The first question in during-reading group was about *whether reading the text with comic strip facilitates their comprehension*. The second question was to ask *whether they read the comic strip first or the text first when they have both of them at the same time*. The last question was on *when they recall the text whether the main source of their memory is from the text or from the comic strip*.

There were also three questions in the post-reading group. The first one was on *when they read the text, any images relevant to the story automatically emerge in their mind*. The second was about *whether post-reading comic strip enhances their understanding of the text*. The third question was on *when they recall the text whether the main source of their memory is from the text or from the comic strip*.



Data Collection Procedures

The experiment was conducted in one class period in the first week of the second semester in 2007. Four groups of participants received treatments at the same time, but in different four classrooms. The four homeroom teachers of the four classes of the participants helped with the data collection of each group. They all knew the purpose of the study and the data collection procedure very well before the experiment.

The procedure took about one class period, 45 minutes to complete. Control group read the text without the comic strip for ten minutes while the other three Experimental groups read the text with comic strip but with different sequencings of its presentation. Participants of Pre-reading group first read the comic strip for three minutes, then, with the comic strip collected and the text passed on, read the text for seven minutes. Participants of During-reading group read the comic strip along with the text at the same time for ten minutes. Participants of Post-reading group first read the text for seven minutes, then, with the text collected and the comic strip passed on, read the comic strip for three minutes. As soon as time was up, they had to stop reading with the text or the comic strip collected.

After finishing reading the text and the comic strip, all four groups of participants immediately answered a five-level Likert scale perception questionnaire for five minutes, then, with the questionnaire collected, wrote a free-recall for fifteen minutes. When doing the free-recall, participants were reminded orally to write down everything they could understand and remember in Chinese. Table 1 below shows the whole procedure of the experiment conducted in the classroom.

Table 1

The Whole Experiment Procedure

	Control	Pre	During	Post
Reading Phase	Text-only	(1)Comic-3mins.	Text + Comic	(1) Text-7 mins.
	10 mins.	(2)Text-7mins.	10 mins.	(2) Comic-3mins.
Questionnaire Phase	5 mins.	5 mins.	5 mins.	5 mins.
Recall Phase	15 mins.	15 mins.	15 mins.	15 mins.

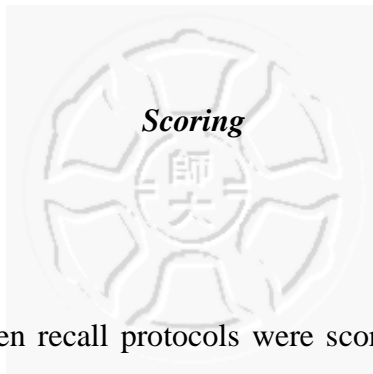
Note. Control = Control Group; Pre = Pre-reading Group;

During = During-reading group; Post = Post-reading Group

Right after the recall phase, five participants randomly selected from the three Experimental groups were interviewed individually by the researcher in researcher's office. Each student was interviewed for about two minutes. There were totally fifteen participants interviewed, so the total interview took about 30 minutes to complete. All their responses were tape-recorded for further analysis.

Data Analysis

The data collected in this study were analyzed quantitatively and qualitatively to answer the research questions. Two Parts were presented in this section: (1) Scoring and (2) Statistical Analysis.



Scoring of Written Recall

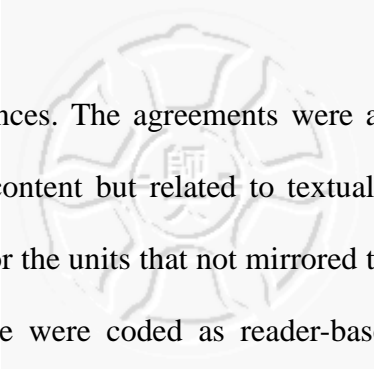
The participants' written recall protocols were scored using pausal unit system suggested by Johnson (1970) and Bernhardt (1991). Pausal units are determined when one starts and ends with a pause when reading aloud the text. Each pausal unit is regarded as a semantic unit. Participants' reading comprehension was thus evaluated against this pausal unit system to see how many semantic units they could recall based on the text content.

Two native speakers of English read the text aloud to themselves. When they read, they marked the places in the text where they took a breath. Then, researcher herself and another English teacher in the same school compared the markers and identified the units of the text. When resolving the differences, the narrower units were chosen in all cases for scoring. The number of resulting semantic units for the text was 52 (See Appendix H). The two raters scored all the copies of participants' recall protocols blind based on the presence or absence of each unit. Each unit was given one point. No partial point was given. The inter-rater reliability was .97.

Scoring of Inference Generation

The idea units that failed to mirror the text content were further classified as inferences and analyzed into two types: *text-based inferences*---those representing textual information, and *reader-based inferences*---those relating to readers' prior knowledge.

After scoring the participants' recall of retention, the researcher and another English teacher marked the inferences in each recall and categorized the inferences into two types based on the same criteria. The criteria were made by the same two



raters before scoring inferences. The agreements were as follows: (1) For the units that not mirrored the text content but related to textual information were coded as text-based inferences. (2) For the units that not mirrored the text content but related to readers' personal experience were coded as reader-based inferences. (3) Incorrect units that misrepresented the text so that the meaning of the text was distorted were excluded for coding. One proposition was given one point. The inter-rater reliabilities for text-based and reader-based inferences were .88 and .92 respectively.

The underlined words in the following were the examples of text-based inferences and reader-based inferences in our study. Example 1 and 2 showed the examples of text-based inferences while Example 3 and 4 showed the reader-based ones.

Example 1:

Joe Tompson 是一個 18 歲的年輕人。

Example 2:

20 分鐘後，消防隊來了，用升降梯上去，消防隊員說「腳先下來，慢慢來」。

Example 3:

有一天，他很得意的開著他的寶貝車在陸上行走，但是不料在經過十字路口的時，因為沒有注意到前方的車就撞上了。

Example 4:

他本人也飛出去，卡在電線桿上，簡直就是不幸中的大幸。

Appendix I provided a sample of scoring student's recall so that the process of coding pausal units, text-based inferences, and reader-based inferences could be clearly shown (See Appendix I, p.104)



Statistical Analysis

A Standard Version of the Statistical Package for the Social Sciences (SPSS) for Windows, Version 12.0, was utilized to quantitatively compare group differences from their written recall, inferences, and perception questionnaire.

Statistical Analyses of Written Recall

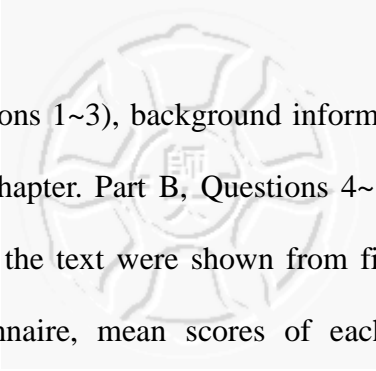
To answer the first and second research questions, the numbers of pausal units recalled from the participants in four groups were compared using one-way ANOVA to test the effect of comic strips on their reading comprehension. In addition, the numbers of pausal units recalled from all three groups were further compared using one-way ANOVA to test the effect of the sequencing of comic strip presentation on reading comprehension in the written recall. The independent variable was Group and the dependent variable was Recall.

Statistical Analyses of Inferences

As to research questions three and four, ANOVA were used to analyze the frequency of two types of inferences: text-based and reader-based inferences from their recalls respectively. Two rounds of one-way ANOVA were therefore performed on each type of inference, with Group as independent variable, with Inference as dependent variable.

Statistical Analyses of Written Questionnaire

The data of participants' perceptions from the written questionnaires were compared quantitatively, using ANOVA on each question while their responses from the interview were analyzed qualitatively to answer the fifth research question. Part A



in the questionnaire (Questions 1~3), background information, were described in the participant section in this chapter. Part B, Questions 4~11, participants' perceptions toward the comic strip and the text were shown from five-level Likert Scale. After collecting students' questionnaire, mean scores of each question were compared question by question, therefore 8 times of one-way ANOVA were run.