

CHAPTER III

RESEARCH METHODOLOGY

This chapter provides a description of the research methodology used in the research. The design and methodology are presented in six sections as follows:

1. Participants of the Study
2. Research Design
3. Research Instruments
4. The Construction of the Instruments
5. Research Procedure
6. Data Analysis

1. Participants of the Study

The sample in this research consisted of 27 sophomore English minor students who enrolled in the course 411201 (English for Minor). The sample was chosen by purposive sampling technique. This group of students was chosen for three reasons: (1) Minor English students are considered upper intermediate level students; (2) they would have more opportunities to be exposed to English; and (3) learning with computers would benefit them on communication skills as well. In addition, since they would be watching movie soundtrack so, learning idioms from “Friends” through the CALL would motivate them.

Before the session started, a contextual study was done through the pre-questionnaire. A pre-questionnaire was developed in order to gain students’ existing movie watching behavior and idioms learning strategy. They were distributed to students before the use of the CALL program in order to investigate students’ background information and idioms learning behaviors through the media. The questionnaire included checklist and open-ended types. The questionnaires were consisted of three main parts. Part 1 dealt mainly with students’ general background and behavior in learning English. Part 2 investigated students’ watching movie behavior. Part 3 was geared toward students’ idiom learning strategies.

In part 1, the sample were six male students (22.22%) and twenty-one female students (77.77 %) majoring in Spanish, Chinese, Information Science, French, Thai and Japanese. There were fifteen students (55.55%) who have learned English for at least 16 years and 12 students (44.45%) have learned English for 18 years.

Most of the students (100%) reported that they had used three self-learning methods which were then ranked in order of frequency of use from the first to third most frequent. The most popular self-learning method among students was surfing on the internet and watching movie. The second most popular was listening to music and the third most popular was reading books.

Also, the pre-questionnaire investigated skills that students found most difficult. It showed that grammar and idioms were ranked as the most difficult part of English. Vocabulary was ranked the second most difficult part of English.

Consequently, the content that needed to be improved most were grammar idioms and vocabulary respectively.

As for part 2 focusing on students' movie watching behavior, the results revealed that every student (100%) had experience in using movies as tool in learning English. Twenty two (81.48%) students watched English movies two times a month. Two students (7.40%) watched English movies once a week and only one student (3.70 %) watched 2-3 times a week. Another two students (7.40%) watched English movies once a month.

This part of questionnaire showed the reasons that students watching English movies as a tool for learning English. Students ranked the reasons from 1 to 4 according to their experience. The top choice was because they would like to listen the native speaker's accent. The reason for the second ranking was that they found English movies enjoyable. As for the third ranking, they thought it was better to listen to the real English soundtrack than Thai dubbing. Enhancing their learning of idioms was ranked as the fourth reason for students. Moreover, "to gain the culture knowledge" came as the last reason.

Students' behavior while watching English movie was also investigated. The data analysis revealed that more than half of the students (55.56 %) used reading English captions method. The rest of the students chose to read Thai captions (25.93 %) and read synopsis in advance (18.52%) read synopsis in advance.

As for the students' idiom learning strategies, the results revealed that the speaking skill was ranked as the most necessary skill in learning idioms. The listening skill and reading skill came to the second and third most important skills respectively. The least necessary skill was writing skill.

Students were also asked about the reasons they felt knowing idioms was important, students could range the reasons from the one to five according to their opinion. The results are presented in the Table 1 below:

Table 1 Ranking of the importance of idioms

Reasons of the idioms' importance	Rank no.
Indicator of English competency	1
To facilitate understanding in communication	2
Being privilege	3
To help reading comprehension	4
To help understand English songs and movies	5

From the Table 1, students viewed indicator of English competency was the first reason and to facilitate understanding in communication came next. Being privilege was the third ranking.

This part of questionnaire investigated that in which resources enabled students to gain idiomatic knowledge, students could range from the one to five according to the frequency, the data is presented in Table2:

Table 2 Ranking of sources of idiomatic knowledge

Sources of idiomatic knowledge	Rank no.
Movies and songs	1
Internet	2
Talking to foreigners	3
Classroom	4
Magazines	5

From the Table 2, movies and songs were the most popular resource in learning idioms. Internet and talking with foreigners were the second and third ranking respectively.

Also, strategies used in learning new idioms were also investigated. Students could rank from one to three according to the frequency of used. The result is shown in Table 3:

Table 3 Ranking of strategies used in learning new idioms

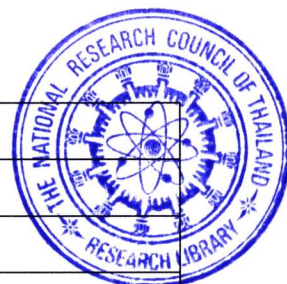
Strategies used	Rank no.
Guessing from the context	1
Looking up from the dictionary	2
Asking from friends	3

From the Table 3, students used guessing from the context most and looking up from the dictionary came next. Asking from friends was the third ranking.

The last part of questionnaire investigated in which situations students used idioms. Students could rank from one to six, the results were presented in the Table 4 below:

Table 4 Ranking of situations that students used idioms

Idioms used situations	Rank no.
Chatroom	1
Classroom	2
E-mail correspondents	3
Talking with foreign friends	4
Talking with Thai friends	5
No chance to used idioms	6



From the Table 4, it showed that students had the most chance using idioms in chatrooms. The second ranked situation was in the classroom. Other situations that enabled students to use idioms were in e-mail correspondence.

2. Research Design

The design of the study was one-group test-retest design. This design is considered as common in the educational field because of its simple characteristics. The sample group firstly did the pretest. Then, they interacted with designed materials through the CALL program and Moodle. At the end of the 15-week period, they took a posttest. After one month duration, students took a posttest again to check their learning retention.

Test-retests are often used to examine test reliability and trait stability. Generally, the participants are measured on a test and then, after some interval of time, the same participants are measured again using the same test. Test-retest data are normally collected over a short period of time to examine the reliability of the test.

As mentioned earlier, the process of organization, meaningfulness, and emotional content of an item plays a crucial role in its retention into long term memory. It was important to check if the CALL program included those criteria. Therefore, after a one month interval, the target group took a test again to check their learning retention of idiomatic expressions.

3. Research Instruments

In order to serve the objective of this study, the research instruments of the present study comprised with 1) questionnaires; 2) a constructed CALL program which was linked to exercises on Moodle (an e-learning course supported by KKU); 3) the pretest and posttest (which were used twice); and 4) journal entries. They are described below: Each research instrument was expected to get data as shown in Table 5:

Table 5 Expected data from the research instruments used in the study

No	Research Instrument	Data
1.	Pretest (base-line test)	Students' learning of idioms before using CALL program
2.	CALL program / Journal Entries	Learning experience, problems while using
3.	Questionnaire	Opinion towards CALL program use and Moodle course
4.	Post-test1 (Achievement test)	Students' learning of idioms after using CALL program
5.	Post-test2 (Checking retention)	Students' learning of idioms after using CALL program after one-month interval

3.1 Questionnaire, a questionnaire was distributed to students asking their opinion toward the CALL program in terms of design, idiomatic lessons, and other sections featuring in the CALL program. The Likert scale questionnaire was created by the researcher.

3.2 The computer assisted language learning program (CALL) covered eight main sections: Introduction, Instruction, the Lesson on idiomatic expressions, Objective of the program, Soundtrack of "Friends", Did-you-know? section, Jigsaw game section and Dictionary section.

3.3 The pretest-posttest: This was given in order to study the progress of students' achievement after they finish learning idiomatic lessons.

3.4 Journal entry: These were done by students in order to gain the data on problems that they encountered during the sessions and activities they have completed in the CALL program. Also, data on what they have learnt in the session were collected.

All of the research instruments were conducted in chronological order, which was discussed further in the construction of instruments.

4. The Construction of Instruments

There were four kinds of instruments used in this study. They were the CALL program, the pretest-posttest, journal entries, and the questionnaires. The construction of these instruments are described as follows:

4.1 The CALL program was divided into 3 main sections which were the component of the CALL program, the validity of the CALL program and the design of the CALL program.

4.1.1 The component of the CALL program: the CALL program was comprised eight main sections instructing about 142 idiomatic expressions. All the idiomatic expressions were presented in the 17 episodes of the “Friends” series in 10th season (the last season). The 10th season was chosen because of these following reasons:

4.1.1.1 It was the last season thus, everything had come to conclusion. That would be more interesting for the students.

4.1.1.2 10th season was good in terms of bonus features, acting and storyline.

4.1.1.3 It was the latest seasons, so the language used in this season was current.

The CALL program was comprised with eight main sections: 1) introduction, 2) objective, 3) introduction, 4) did-you-know?, 5) idiomatic lessons, 6) soundtrack of “Friends” series, 7) jigsaw game, 8) dictionary. The diagram of the CALL program is shown in Figure 1.

1) *Introduction section*: this section was designed to stimulate the students with a virtual interactive world surrounding the characters of the “Friends” series. Since the idiomatic expressions instructed in the CALL program were derived from season 10. In order to make students understand more about “Friends” series, the short synopsis and characteristics of each character were provided in this section. In this way, the students who had never seen this series before, would be more comfortable while learning the CALL program.

2) *Instruction section*: students were taught how to use the CALL program effectively. This section helped students go through the CALL program smoothly. Step by step guidelines were provided in this section. The seven

sections in the CALL program were clarified and in order to make the most of the program, an orientation session was held to help students become familiar with the program and series itself.

3) *The Did-you-know section*: to give the students more insight into “Friends” series, all the questions were created to test their general knowledge of “Friends” series. The students were given a chance to test how well they knew the “Friends” series.

4) *The Objective section*: to clarify the students why CALL program was created.

5) *The idiomatic lessons*: the lessons were classified into 17 lessons according to the number of episodes in “Friends” series season 10. Also included were samples of the sentences with idiomatic expressions and their explanation. All of idiomatic expressions were recorded by a native speaker. The students had a chance to hear the voice of the native speaker as well. This method was also effective according to the auditory learner theory. Auditory learners would prefer to hear content. They become excited and engaged when class offers watching movies or video. They learn better this way. However, the number of idiomatic expressions in each group was more than 10 words



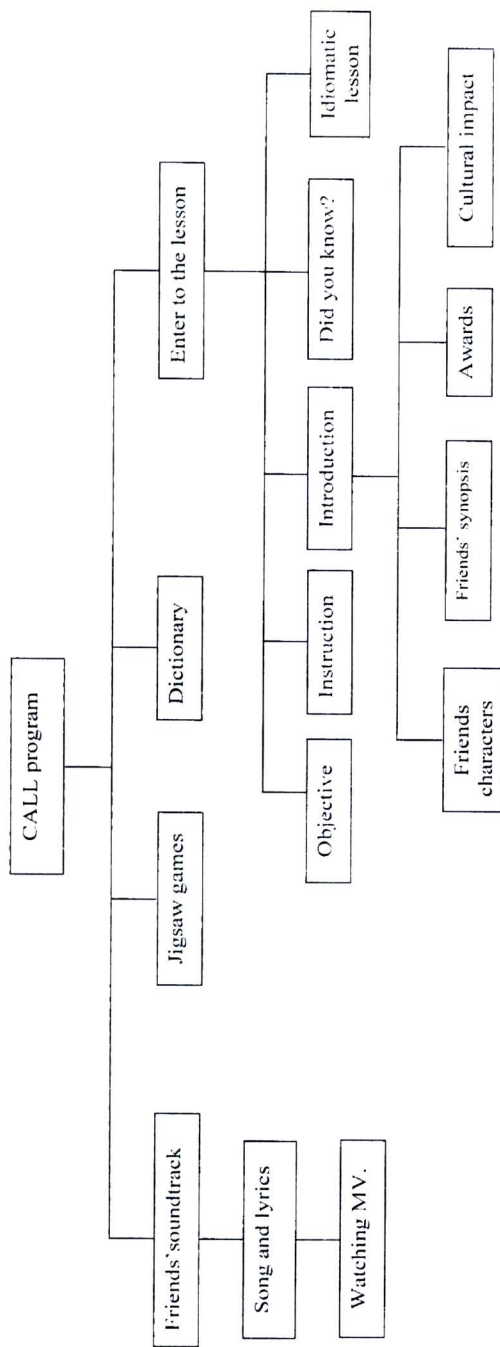


Figure 1 The diagram of the CALL program

The idiomatic lessons, or learning part included four activities: 1) watching the certain episodes, 2) learning the idiomatic expressions occurred in those episodes, 3) checking students' understanding on "Friends" from each episode, 4) doing exercises in the Moodle (e-learning course). The diagram of the idiomatic lessons is shown in Figure 2. All four activities are described as follows:

1. After they finished watching "Friends" series on video embedded in the CALL program, the students learned the idiomatic lessons. In the lesson, they could click to hear how the language was used in the series. As the students were watching the "Friends" series, the script was provided to them. This helped them have better understanding of the series.

2. After the students finished watching "Friends" series, they got access to the idiomatic lessons. Students learned each idiomatic expression with definitions and sentence samples. Also, they were given the option to listen to the sounds read by native speakers. In addition, they could refamiliarize themselves to the language again by clicking a picture of the speaker in order to listen to how the idiomatic expressions were used in the episode they previously watched.

3. After they finished learning in each lesson, they checked their understanding of each episode that they have just watched through an exercise. The exercise consisted of 10 multiple choice items. In order to encourage the students, feedback was also given when they answered correctly.

4. They completed the exercise to reinforce what they had learned in the learning part. The set of exercises were in multiple choice form, matching idioms with situation, and sentence construction. The set of exercises were excluded from CALL program and embedded in Moodle as part of the online 411201 course. However, it was directly linked to the website from the CALL program. The exercises were excluded from the CALL program for 3 reasons as follows:

4.1 To help reduce the expense of instruction of the CALL program.

4.2 To serve the policy of university in using Moodle for e-learning.

4.3 To increase students' familiarity with IT.

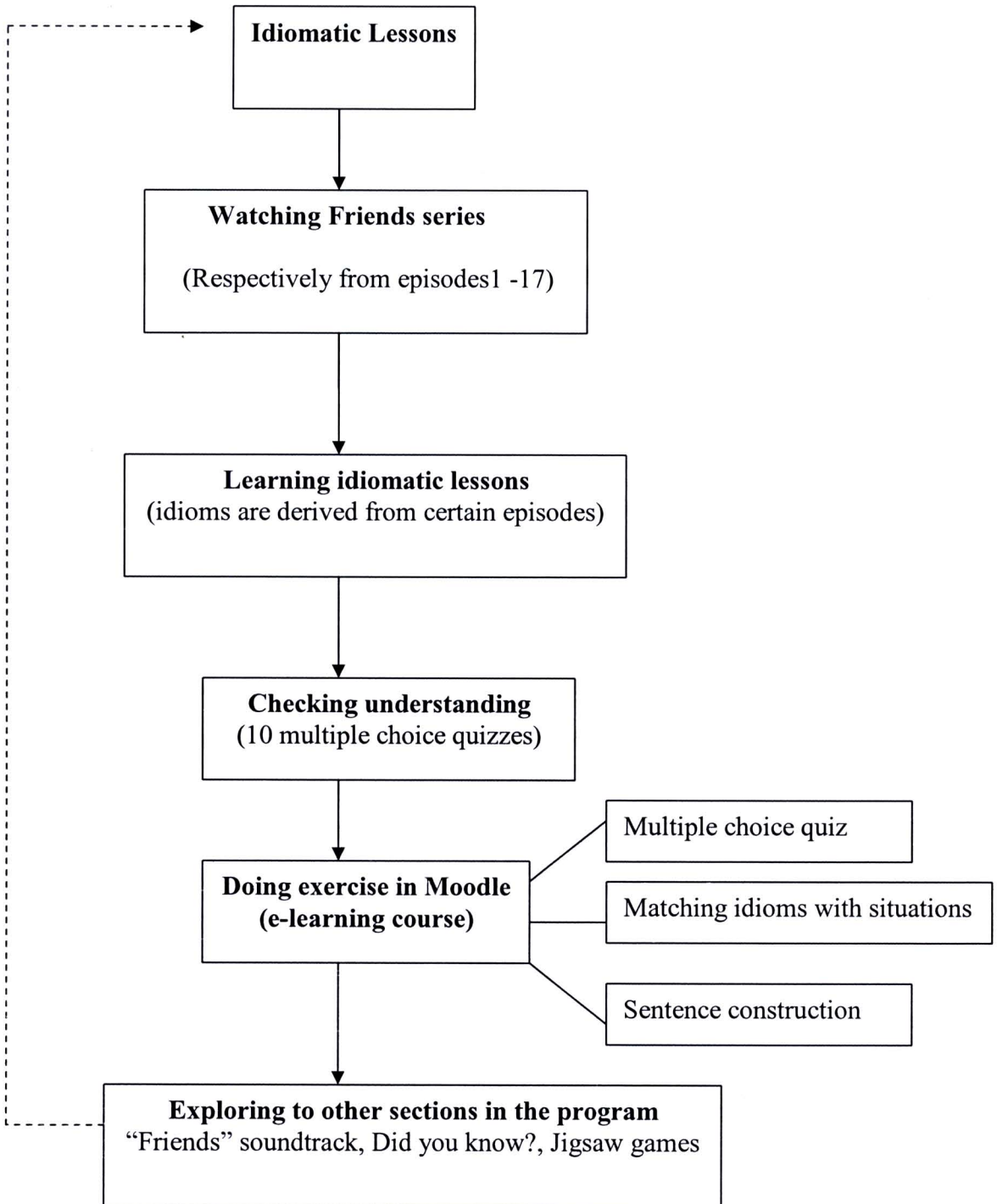


Figure 2 The diagram of the idiomatic lessons (learning part)

To strengthen students' idiomatic learning, an activity was designed to reinforce their learning of those idiomatic expressions. The activities required students to construct the sentences using the expression they have learnt. The activity contained three small assignments which aimed at measuring students' learning of idioms.

1. *Soundtrack of "Friends" section*: was comprised of the original soundtrack of "Friends" series and lyrics were provided as well. This was more entertaining for the student while using the program.

2. *Jigsaw game*: students had a chance to play a jigsaw game.

3. *Dictionary*: dictionary was provided for students when students needed to look up vocabulary meaning.

To sum up, the CALL program on idiomatic expression was constructed using Macromedia Flash 8.0. This program was chosen because it served most appropriate in terms of gaining students' attention. It integrated graphics, sound, animation, text, and video. It could also provide easy and relaxing environment for the students. The CALL program objectives were to help second-year English minor students to remember, understand, and be able to use idiomatic expression more effectively. The CALL program consisted of 170 frames comprising eight sections as shown in the Table 6.

Table 6 Types and number of frames in the CALL program

Types of Frames	Number of Frames
Introduction	48
Idiomatic lessons	90
Soundtrack of "Friends" series	4
Did you know?	12
Jigsaw game	8
Instruction	4
Objective	4

4.1.2 The design of the CALL program

The front page was designed to motivate students and capture students' attention. The front page was accompanied with cartoon animation, music etc. All the section features appeared in the main menu as well. However, students were required to click on the instruction and objective respectively because students needed to clearly understand how to use the CALL program. This design of the program would serve the good quality of CALL program in terms of positive impact and the practicality as they captured students' interest. Students could also decide their learning process, plan their learning activity. The quality of the purposed CALL program is shown in the Figure 3.

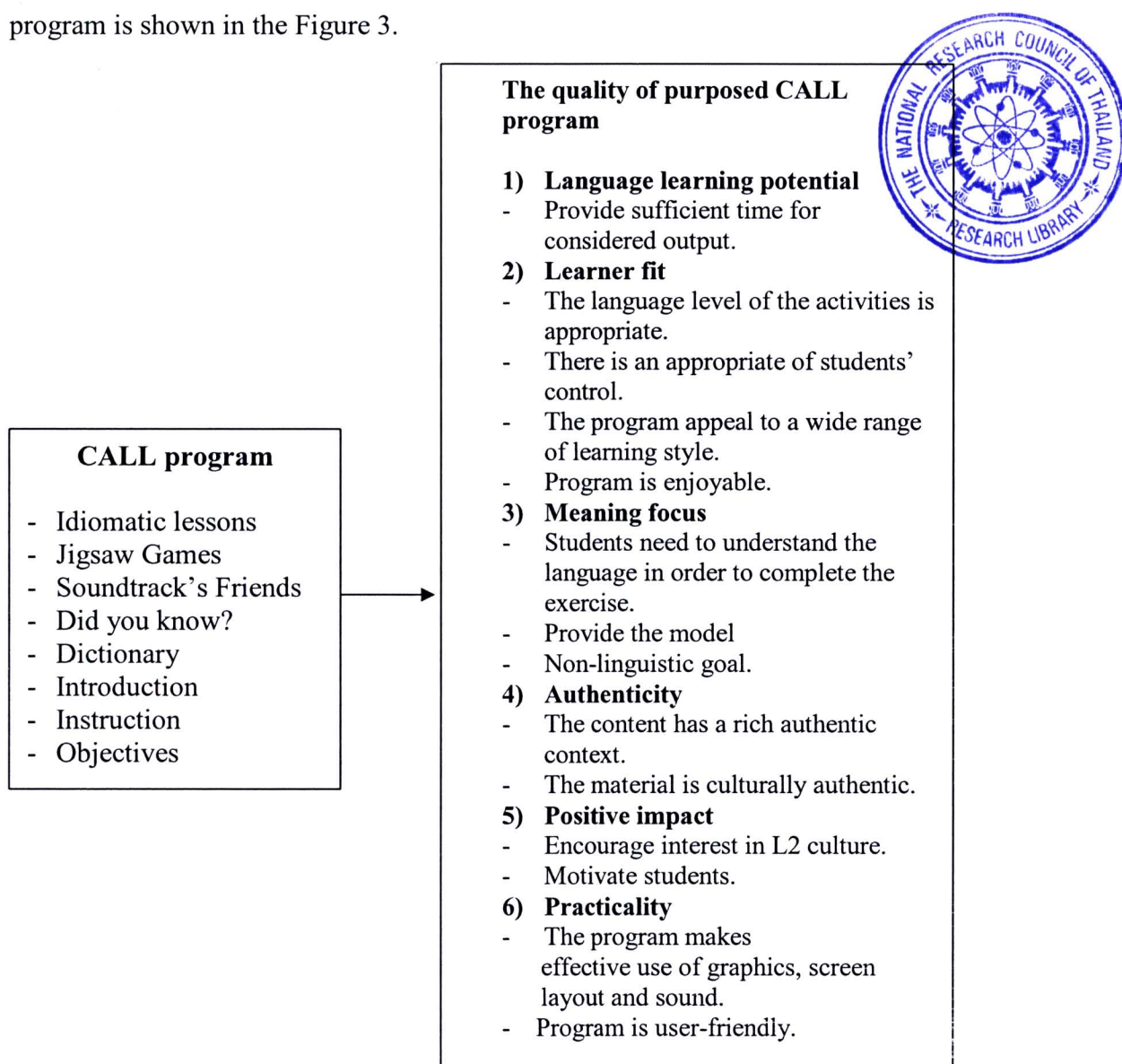


Figure 3 The diagram of the purposed CALL program included in the design

Since the “Friends” series used in the CALL program included only the last season (season 10), students initially had the orientation session in order to make students feel comfortable and more familiar with the “Friends” series and the CALL program. “Friends” series in the beginning seasons were introduced to the students. Students had a chance to watch the earlier seasons, so they understood more about the characters on “Friends” and stories in latter season. The orientation activities included with watching “Friends” series, checking students’ understanding of “Friends” and expressing opinions on the stories of the “Friends” series.

After students had reviewed the instructions and objectives, they had an option to skip the introduction and go directly to the lesson. The soundtrack of “Friends” series, “Did you know?” and the Jigsaw game section were also available to the students as warm up recreation activity while using the CALL program. All these sections of the program could create the relaxing atmosphere, this aspect would serve the quality of CALL in terms of learner fit and positive impact.

In the learning part, all 17 episodes were arranged for the students. They were required to learn about each episode respectively. The diagram of students’ activities in sessions is shown in Figure 4. When they finished watching the “Friends” series, they had a chance to learn the idiomatic lessons which all the idioms were derived from the series they had just watched. Then, they checked their understanding in the certain episode. After that, they went to the online exercise session on Moodle. After they finished the exercise in Moodle, they were given three options: to watch the video again, continue another lessons until they finish all of the episodes or go to other sections to relax themselves while using program. In this section, it could meet students’ learning style because they could choose to read the script first before watching movie. All in all, the learning part served the CALL quality in terms of authenticity, learner fit. As the native speaker’s model and example sentences were provided in the program, this aspect could serve in meaning focus criteria as well.

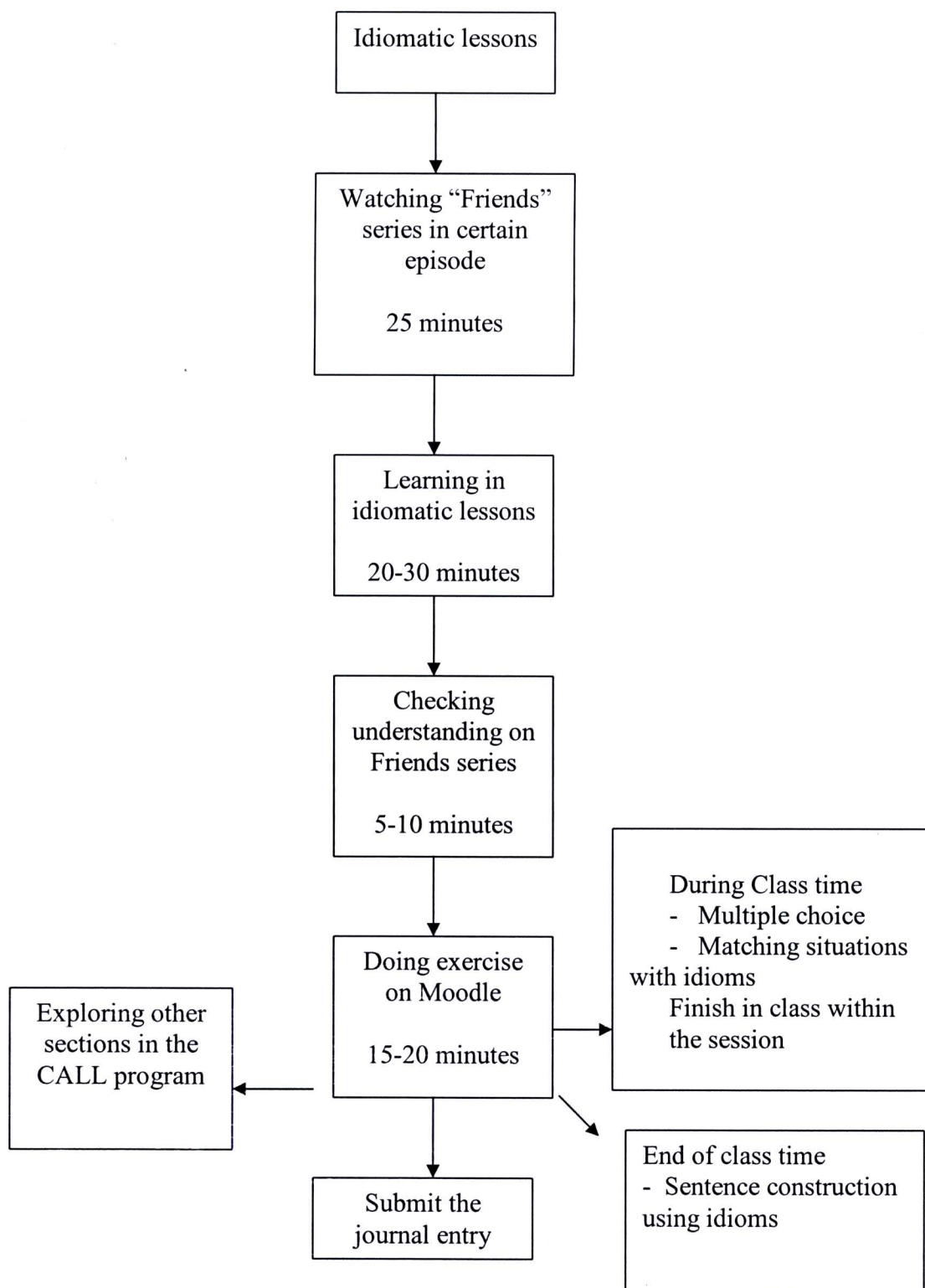


Figure 4 The diagram of the students' activities in sessions.

Since the students had a chance to watch movie first, this meant they could expose to the language used in real situation. Thus, authentic and practicality quality of the CALL program was concluded in the design also.

In the e-learning course or Moodle, the researcher constructed three sets of exercises; multiple choice, matching situation with idioms, and sentence construction.

Students generally spent 1.30 hrs. in total for each session. Mostly, they needed around 20 – 25 minutes to finish watching each episode of “Friends” series. For the idiomatic lessons, they took approximately 20 – 30 minutes for each lesson. Students were required to check their understanding of the series they had watched; this took them around five to two minutes to complete them. In the Moodle activities, they were assigned to do only 2 sets of exercise: multiple choice and matching situations with idioms. The two sets of exercise took about 10 to 15 minutes. Another exercise, sentence construction was assigned to be completed later out of class because it was a bit more difficult. In the Moodle activities, these could serve the aspects of language learning potential since the sufficient time was provided for students to consider their language output. Moreover, the level of difficulty of the exercise was suitable with students and the most difficult one was assigned to do later after the sessions. Also, meaning focus aspect was considered in this part since the students need to understand the language in order to complete the Moodle activity like in matching situation with idioms.

Generally, students took approximately 1.10 to 1.20 hours to complete the learning activities (approximately 50 minutes in idiomatic lessons on CALL program and 25 minutes in doing exercise on e-learning course (Moodle). When students finished all activities early, they were given a chance to go other sections in the CALL program.

In conclusion, the CALL program tried to serve the all qualities suggested by Chapelle (2001) as much as possible. However, all the components involved in learning could not meet all the needs of all kinds of learners. The CALL program provided students with authentic resources and learning activities on idiomatic expressions, linked to Moodle exercise. The CALL program also offered students sufficient opportunities to develop students’ English skills like listening,

reading, writing, and idiomatic expressions. Furthermore, many sections provided in the CALL program could create more motivating and relaxing atmosphere. It was hoped that students were able to make good use of the CALL program based on their needs and learning goals in these areas.

4.1.3 The validity of the CALL program: After the program had been completely constructed, it was checked by an expert, Assistant professor Dr. Ankana Thongpoon. Some suggestions made by the expert were as follows:

4.1.3.1 The menu of the program should be arranged in order, so that would not cause the confusion among the students.

4.1.3.2 In the “Did you know” section:

1) The navigator back or next should be included.

2) When students answer incorrectly, they should be given a chance to correct their mistakes by themselves.

4.1.3.3 In idiomatic lesson: the experiment should begin with students watching the “Friends” series then, students would have a chance to learn idiomatic expressions. There should be a connection between “Friends” series and the idiomatic lessons, and to make this more apparent, the researcher chose to include a speaker button in each idiomatic expression. Students could click on the button to listen to how certain idiomatic expressions were used in the “Friends” series.

4.1.3.4 In checking students’ understanding from “Friends” series: should allow students to correct their own mistakes before giving the answer to them.

Also, the CALL program was tried out with three non-sample students which were the sophomore students from Management Science Faculty. The researcher first gave a brief explanation about the CALL program and how to use it. Then students were asked to read the content of the program and to explain how they understand it. Moreover, they were asked to use the operation system for two hrs which took place in the laboratory. The non-sample students made some suggestion as follows:

1. The font in the idiomatic lessons should be enlarged.

2. The background music used in the idiomatic lessons should be removed because it irritated the students.

Regarding the operation system, it was found that students could easily use the program because they have experienced daily surfing on the internet with an operation system similar to the CALL program. They could also understand the icons and symbols used in the CALL program since they usually use some of them on the internet.

After the CALL program was checked by the expert and tried out with non-sample students, all the improvement were made according to the comments above. The expected standard criterion for effectiveness of the CALL program was 85/85.

4.2 The Pretest and Posttest

The researcher developed the test as multiple choice tests with four alternatives. The multiple choice test was appropriate with testing students' idiomatic knowledge. First, the test was written to include approximately 142 items, then they were divided into 2 groups according to the even and odd numbers from the first to the last item. So each pretest and posttest was comprised with 71 items. The test encompassed all the idiomatic expressions in the 17 episodes. Thus, the pretest and posttest covered all 17 episodes. This showed that pretest and posttest were paralleled. The tests were paper and pencil test because the students' computer competency could be the intervening variable.

The pretest and posttest were approved by a native teacher of English with more than ten years of experience. The tests were adapted in terms of the appropriateness of the language used in the items. Also, some multiple choices which could be ambiguous for the students were suggested to change. Some idiomatic expressions have more than one meaning, so the test items should be more specific to the expected answers as well.

4.3 Questionnaire

The questionnaire was developed in order to gain the students' opinions toward the CALL program. The questionnaire was divided into 3 parts: the students' personal information, their opinions toward CALL program, and their opinions toward the use of idiomatic lessons in CALL program and Moodle activity. The opinions toward idiomatic lessons through the CALL program would reveal how

helpful the CALL program was for the students. Three parts of the questionnaire were organized as follows:

4.3.1 The first section consisted of profiles of students and their experience with the CALL program.

4.3.2 The second section consisted of students' opinions on the use of computers in learning English. The questions were created in order to get the students' opinions on the use of the CALL program.

4.3.3 The third section consisted of students' opinions toward CALL program's ability to instruct on idioms from "Friends" series and Moodle. This aimed at finding out if the program or Moodle benefited them more or less in terms of understanding, graphics and animations used in the program. Also, the questionnaire investigated whether the CALL program was convenient to use and if it helped students learn idioms easily. Moreover, the questionnaire also investigated the problems involved in using the idiomatic lessons through CALL program and Moodle. The questionnaire allowed the students to express their ideas and offer suggestions about the CALL program instruction of idioms in an open-ended format.

In the second and third section, students were assigned to rate the level of their opinions on a scale of 1-5 as below: (2000, cited in Thongpoon, 2001)

Very high	=	5
High	=	4
Moderate	=	3
Low	=	2
Very low	=	1

The mean score derived is evaluated according to these ranges:

Very high	4.50 - 5.00,
High	3.50 - 4.49,
Moderate	2.50 - 3.49,
Low	1.50 - 2.49,
Very low	1.00 - 1.49.

The questionnaire was completed by the students after they finished all the idiom learning activities through the CALL program.

After the construction of the questionnaire, the process for validity was carried on. The content validity and wording of the questionnaire was approved by the advisor. Then, it was adjusted to make it more appropriate. Also, the questionnaire was tried out with three non-sample students. They pointed out that they could understand the wording in the questionnaire clearly and had no suggestions about how to change it.

4.4 Journal Entries

In this study, guided journal writing was included in order to collect the data on the activities that students had done and what they gained in the session, opinions on using the program, and problems they encountered while using the program. The researcher explained and demonstrated how to write the journals before asking students to write. Students were asked to write the journals after completing each lesson in the CALL program. In writing journal, the researcher helped prepare the journal forms for the students.

5. Research Procedure of the Data Collection

Data collection was carried out according to the steps as shown in the following diagram (Figure 5).

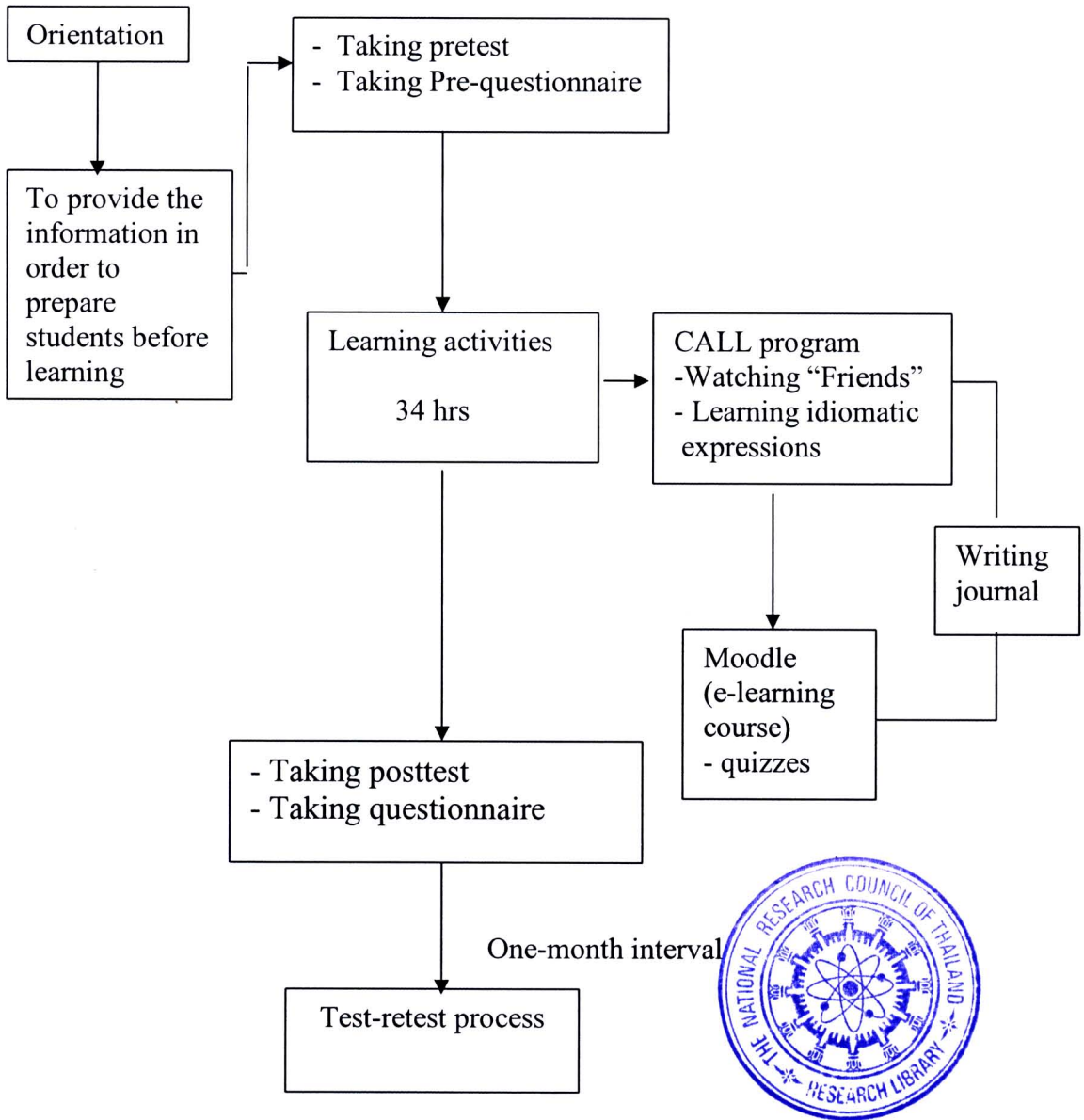


Figure 5 The diagram of the data collection

The step by step explanation of the diagram is described as follows:

Step one was the orientation session which conducted to the students in order to get them ready for the use of CALL. The session provided the instruction on using CALL program. Also, students had a chance to watch the watch the previous season on “Friends” series selecting from season one to nine. With this workshop, students became familiar with the program and the “Friends” series.

In step two, students took the pretest before using the CALL program and students were not allowed to use any dictionary or textbook during the test. Also, the pre-questionnaire was distributed to the students to investigate students’ existing movie watching behavior and idiom learning strategy.

In step three, students interacted with the CALL program in the sessions as a part of 411201 course. This meant 1.5 hours in class was provided as idiom learning session for students. However, there was still not enough time to collect the data. The researcher, therefore, had to make additional appointments with the students to cover the designed time. Because the students were in different majors, they had different schedules and routines. Thus, the most suitable time were chosen for extra hours in learning activities. Students spent about 40 minutes in learning activities (watching and learning idioms). After that, students spent about 5 to 10 minutes checking their understanding of the “Friends” series in certain episode, then they spent about 25 minutes doing two sets of exercises in Moodle. However, there was one exercise left (sentence construction) for students to do after class. In the entire process, the researcher accompanied the students to assist and facilitated the sessions. Journal writing was a method to collect three different data. This activity was done by the students, and they discussed the problems while using the program and what they learned from the session. The researcher asked the students to write and submit the journal after they finished learning each lesson in the CALL program.

In step four, students took the posttest and the questionnaire was distributed right after students finished the 34-hours sessions. The researcher explained students how to do it. Then, students filled out the questionnaire individually.

In the last step, after one-month interval, students were asked to do the re-test in order to check their retention.

6. Data Analysis

The data which was collected from the research instruments was analyzed by different statistical methods. This was because of the fact that each instrument provided different kinds of data. The data gained from research instruments and its statistical methods are described as follows:

6.1 Achievement test (Pretest and Posttest)

The analysis of the data from the pretest and posttest aimed at the change of students' learning of idioms before and after using CALL program. The scores from the pretest and posttest revealed the students' ability to use idiomatic expressions. Since the analysis focused on the change of students' learning of idioms, the pretest and posttest scores were compared. The statistical method used in order to compare was Wilcoxon signed rank test. Wilcoxon signed rank test was used to track the students' progress which derived from pretest and posttest. The t-test statistic could not be used in this experiment because an assumption was that there should be more than 30 samples in the experiment. Since there were 27 samples in conducting this experiment, the Wilcoxon signed rank test was chosen as it was the most suitable method.

6.2 Questionnaire

The data of the questionnaire were quantitative and qualitative. The quantitative data were presented in means and S.D. whereas the word data obtained from the open-ended questions were grouped and presented in topics.

6.3 Journal Entries

Journal entries were intended to provide three pieces of information: activities that students did in sessions, what they learned in the sessions, and the problems in the learning activities. The data from the journal was qualitative, so the data was presented by description.

6.4 Computer-Assisted Language Learning Program

In fact, the CALL program was not constructed to gain the data on students' learning of idioms. However, the data could be gained from the online exercises in Moodle which were linked from the CALL program.

The students' scores in three sets of exercises revealed the students' learning of idioms. The researcher analyzed the scores to check students'

development in learning of idioms while learning through the program. The analysis used the Wilcoxon signed rank test as in the pretest and posttest.

6.4.1 The Effectiveness of the CALL Program

The statistics for finding the effectiveness of the CALL program were E1/E2 (the efficiency) and E.I. (the effectiveness index).

$$E_1 = \frac{\frac{\sum x}{N}}{A} \times 100 \qquad E_2 = \frac{\frac{\sum F}{N}}{B} \times 100$$

E1 = The effectiveness of doing exercise

E2 = The effectiveness after studying (post-test)

N = The number of the students

$\sum x$ = The sum of the exercises the students get

A = The total scores of the exercises

B = The total scores of the post-test

$\sum F$ = The total scores the students get from doing the post-test

The standard criterion for the effectiveness of the CALL program is 85/85

The first 85 means the effectiveness of the learning process.

The last 85 means the effectiveness of the learning result.

The effectiveness index (E.I) is as follows:

$$E.I. = \frac{(Posttest\ Scores) - (Pretest\ Scores)}{(Maximum\ Possible\ Score) - (Pretest\ Scores)}$$