

Kode/ Rumpun Ilmu : 742/ Pendidikan Bahasa Inggris

LAPORAN AKHIR PENELITIAN



SMARTPHONE APPLICATION AND ITS EFFECT TOWARD FIRST GRADE
NURSING STUDENTS' KNOWLEDGE ON ENGLISH HEALTH PROBLEMS AND
THE SYMPTOMS

TIM PENGUSUL

Fitri Handayani, S.Pd, M.Pd. NIDN : 1017048602 (Ketua)

PROGRAM STUDI PENDIDIKAN BAHASA INGGRIS
FAKULTAS KEGURUAN DAN ILMU PENDIDIKAN
UNIVERSITAS MAHAPUTRA MUHAMMAD YAMIN SOLOK

2020

HALAMAN PENGESAHAN

Judul : **Smartphone Application and Its Effect toward First Grade Nursing Students' Knowledge on English Health Problems and the Symptoms**

Peneliti/Pelaksana Nama Lengkap : **Fitri Handayani, S.Pd., M.Pd**

NIDN : **1017048602**

Jabatan Fungsional : **Lektor**

Program Studi : **Pendidikan Bahasa Inggris**

Fakultas : **Fakultas keguruan dan Ilmu Pendidikan**

Perguruan Tinggi : **Universitas Mahaputra Muhammad Yamin**

Tahun Pelaksanaan : **2020**

Sumber Dana : **DIPA UMMY**

Biaya Tahun Berjalan : **2020**

Biaya Keseluruhan : **Rp. 5.700.000, - (UMMY)**

Solok, 15 Desember 2020

Mengetahui,
Dekan Fakultas Keguruan dan Ilmu Pendidikan



(Afrahamiryano, S.Pd., M.Pd.)
NIDN. 1009048501

Peneliti,



(Fitri Handayani, S.Pd., M.Pd.)
NIDN. 1017048602

Menyetujui,

Kepala LP3M UMMY



(Dr. Wahyu Indah Mursalini, SE., MM.)
NIDN. 1019017402

TABLE OF CONTENTS

	Page
TABLE OF CONTENT	i
RINGKASAN	ii
 CHAPTER 1. INTRODUCTION	
A. Background of the Problem	1
B. Identification of the Problem.....	3
C. Limitation of the Problem	4
D. Formulation of the Problem	4
E. Research Question	4
F. Purpose of the Research	4
G. Significance of the Research	5
 CHAPTER II. REVIEW OF RELATED LITERATURE	
A. Smartphone Application.....	6
B. English Medical Applications.....	7
C. Relevant Studies.....	10
D. Conceptual Framework.....	10
E. Hypothesis.....	11
 CHAPTER III. RESEARCH METHOD	
A. Design of the Research	12
B. Population and Sample	12
C. Procedure of the Research	13
D. Instrumentation.....	14
E. Technique of Data Collection.....	17
F. Technique of Data Analysis	17
G. Schedule of the Research	19
 CHAPTER IV. RESEARCH FINDINGS	
A. Data Description	21
B. Data Analysis.....	22
 CHAPTER V. CONCLUSION AND SUGGESTION	
A. Conclusion	26
B. Suggestion	26

RINGKASAN

Permasalahan dalam penelitian ini adalah masih rendahnya kemampuan siswa dalam memahami materi-materi yang berkaitan dengan bahasa Inggris keperawatan. Hal ini dipicu oleh masih rendahnya kemampuan siswa dalam menguasai bahasa Inggris secara umum. Disamping itu, materi yang dipelajari dalam bahasa Inggris keperawatan menggunakan kosakata dan terminologi yang baru dan belum begitu familiar bagi mereka. Oleh karena itu, penelitian ini bertujuan untuk memberikan salah satu alternatif solusi untuk meningkatkan kemampuan siswa dalam memahami materi bahasa Inggris keperawatan melalui penggunaan Smartphone Application. Tujuan dari penelitian ini adalah untuk melihat pengaruh penggunaan Smartphone Application terhadap kemampuan mahasiswa keperawatan dalam memahami materi yang berkaitan dengan bahasa Inggris keperawatan. Penelitian ini dilakukan pada mahasiswa tahun pertama Poltekes Kemenkes Padang Prodi DIII Keperawatan Solok tahun ajaran 2017/2018. Metode yang di gunakan dalam penelitian ini adalah penelitian eksperimen. Sedangkan populasi dalam penelitian ini adalah seluruh mahasiswa tahun pertama Prodi DIII Keperawatan Solok. Dalam penelitian ini, instrument yang digunakan adalah comprehensive test dalam bentuk multiple choice. Materi yang diujikan dalam tes sesuai dengan kurikulum dan silabus yang telah dipelajari oleh mahasiswa keperawatan. Penelitian ini diharapkan dapat memberikan salah satu media terbaru dalam pengajaran bahasa Inggris keperawatan kepada mahasiswa secara lebih menarik dan kreatif. Sehingga, kemampuan berbahasa Inggris mahasiswa keperawatan bisa ditingkatkan melalui penggunaan Smartphone Application dengan baik, dan mahasiswa lebih termotivasi dalam belajar bahasa Inggris.

Kata Kunci: Smartphone Application, bahasa Inggris Keperawatan

CHAPTER I

INTRODUCTION

A. Background of the Problem

For nursing students, having good English knowledge becomes one of requirement to be completed on their study. Having good English is not only just a subject to be achieved in their course, but also is beneficial for their nurse career life in the future. It might become a valuable knowledge which makes them able to communicate in English with patients, doctors, and family in the context of health and at the same time, they also know how to demonstrate on using medical tools properly. Indeed, this knowledge automatically becomes urgent for them to support their performance in doing their job such as attending an international conference and visiting foreign doctors or nurses for professional development. Because of that, it can not be neglected that English is one of important subjects to be taken by nursing students.

The nursing curriculum offers courses of English language at two subsequent levels; English for Nurse 1 and English for Nurse 2. Through these subjects, the students learn to speak in a variety of genres, including oral presentations, interviews, and both formal and informal conversations. Besides that, they also learn to listen to instructions, inform others, ask questions, take care patients, and translate technical information into simplified language for patients. Finally, they also learn to write summary and report related to language in medical use. Later, it is expected that after taking the course the students can have good English competence in verbal production skill and written skills to interact with a patient, patient's family, doctors and other health professionals in a professional capacity.

In fact, gaining knowledge on medical English is not easy to be achieved by nursing students. A lot of complexities and challenges found during the teaching and learning process. During the course, they tend to have difficulty in using academic English and the technical language of healthcare (Handayani, 2017). It involves difficulties in figuring out the meaning of particular words, pronouncing certain words correctly, diagnosing symptoms and health problem, and writing health problems' report. Besides that, the students experienced difficulties with speaking and

comprehending both classroom and clinical situations with patients and health personnel (Shakya and Horsfall, 2000).

In addition, the challenges and obstacles are also faced by nursing students of Poltekes Kemenkes Padang Prodi DIII Keperawatan Solok. As the researcher experience during the teaching process, it is still found that understanding English medical materials still becomes one obstacle in learning English for nurse. They are still quite hard to figure out health problems and symptoms in English. They are also difficult to express the patient condition and describe it in English appropriately. These language barriers make the classroom activity run very slow.

From the difficulties above, there are some causes made the nursing students difficult on learning English on medical use. First, most of the students come from low basic English skill. They are not good enough to have English basic skill. Lack of knowledge on English basic skill made them hard to follow the course. As a result, they feel frustrated in learning medical English.

Second, learning English for specific purposes such as English for nurse is very different with usual English course. There are so many new medical terminology and vocabularies that they are not familiar with. They never heard those words before and it is quite hard for them to figure it out. Diagnosing health problems and the symptoms, for instance, is one of materials that are difficult for them to acquire. These materials serve them a bunch of new terminologies that they never know before. Besides, they also triggered to analyze kinds of symptom to make it suitable with the health problem. Because of that, they always got stuck during the learning process

One way to cope the students' challenge in language learning is benefiting from technology. With the advanced technology, integration of materials in language classroom has become widespread (Vanderplank, 2010). The development of technology gives a great effect for teaching language. It provides lecturer on using tool to be appropriate and creative based on students' need. Moreover, students also blend with the technology itself. They are aware to use technologies in their daily life activities. It is important to follow these trends of new technologies –especially if they are popular with young people- and to reflect how they can potentially be applied to teaching methods and contributes to computer-mediated communication for language learning and teaching (Ahmed, 2015). For now, many technological devices are

available to be used by teachers to enhance classroom learning. Personal digital assistants, tablet computers, Smartphone, and laptops are the devices examples which can support teaching and learning process.

The Smartphone is one of the devices teachers and students are familiar with. It is handheld telecommunication devices that combine miniaturized hardware of a personal computer and a mobile phone with a relatively large touch screen. (Kulendran, 2014). From its feature, the Smartphone has added functionality of a personal digital assistant (PDA), wireless Internet access, a compact digital camera, global positioning system, and a high-resolution touch screen. This sophisticated tool can be used by teachers in delivering English medical material for nursing students. As a learning aid, the Smart phone can make ‘smart students smarter’ by providing 10,275 unique applications labeled under ‘Medical’ and ‘Healthcare and Fitness’ categories (Gavali, 2017). Thus, Smartphone applications have encouraged exciting opportunities for nursing students with flexible access to learning materials anytime and anywhere.

Therefore, Smartphone is a good tool in the teaching language. Lecturer can use Smartphone as an alternative solution to gain students’ knowledge on health problems and the symptoms. Thus, the researcher wants to know the effect of using Smartphone application to enhance nursing students’ knowledge on English health problems and the symptoms.

B. Identification of the Problem

Based on the background of the problems above, it can be identified that the nursing students face difficulties in understanding English medical materials which make them hard to follow teaching and learning process. It involves the difficulty in knowing and understanding health problems and the symptoms, medical vocabularies, and English nursing communication. These difficulties are caused by lack of ability in English skill and unfamiliarity with technical English use for clinical situations.

Smartphone application is one tool that can be used to support teaching English for nursing students. For now, a lot of English medical materials are available in the Smartphone application. It creates the opportunity for the students to learn English everywhere and anytime. Moreover, they will be motivated since they have already accustomed to use their gadget everyday. Therefore, the use of Smartphone can

enhance the learning process and nursing students' language skill, as well as improve their English achievement.

C. Limitation of the Problem

Based on the background of the problems above, the research is limited on the use of Smartphone application and its effect to enhance nursing students' knowledge on English health problems and the symptoms at first grade students of Poltekes Kemenkes Padang Prodi DIII Keperawatan Solok.

D. Formulation of the Problem

Based on the limitation of the problem above, the researcher formulates the problem as follow: "Is Smartphone application effective to enhance nursing students' knowledge on English health problems and the symptoms at first grade students of Poltekes Kemenkes Padang Prodi DIII Keperawatan Solok?"

E. Research Question

The research questions can be formulated as follow:

1. Is there a significant difference on nursing students' knowledge on English health problems and symptoms between students who use Smartphone application as a tool in their learning process and those students who do not use Smartphone application at first grade students of Poltekes Kemenkes Padang Prodi DIII Keperawatan Solok?
2. Is there a significant difference between the pretest and the posttest scores on the development of nursing students' knowledge on English health problems and the symptom by using Smartphone application at first grade students of Poltekes Kemenkes Padang Prodi DIII Keperawatan Solok?

F. Purpose of the Research

The purpose of this study is to discover the difference on nursing students' knowledge on English health problems and the symptoms between students who use Smartphone apps in their learning process and those who do not and whether Smartphone application has an effect to enhance nursing students' knowledge on English health problems and the symptoms.

G. Significance of the Research

This research brings to light on the Smartphone application as a tool in teaching English health problems and the symptoms and its effect on nursing students' knowledge. Theoretically, the research result can be used as a source of information in using Smartphone application in the teaching English for nursing students. It informs lecturers on how to develop certain activities in teaching English by using Smartphone application. Practically, integration of Smartphone application as a tool in teaching English for nurse is effective in improving students' knowledge on English medical use. Finally, the result of this research can be disseminated in scientific publication, especially scientific forum of English lecturer. It may be also as a proceeding in local, national or international seminar.

CHAPTER II

REVIEW OF RELATED LITERATURE

A. Smartphone Application

The Smartphone is a handheld device which provides a constant connection to the internet via email, text messaging, video-conferencing and social networking software, often integrated with additional functions such as a camera; the devices can also be used to access multimedia content such as podcasts and video (Wallace, 2012). A typical Smartphone has a high-resolution touch screen display, WiFi connectivity, Web browsing capabilities, and the ability to accept sophisticated applications. This device would enable teachers to serve teaching materials variously. The Smartphone can be in educational activities to access course content, acquire information related to students' performance, and to encourage discussion and sharing between students and teachers.

There are some reasons why a Smartphone is appropriate for language learning. According to Pesce (2007), Smartphone is suitable for language learners because of some reasons; (1) Convenience – The mobility of these devices provides students with the chance to study/review any day, anytime, without the need to remember to bring their books or class materials, (2) Efficiency – Most apps are tremendously user-friendly and well-organized into topics. This means students don't waste any time looking for what they want to practice, (3) Engagement – Language learning apps are the ideal tool to engage learners who are very tech-minded and naturally enjoy using gadgets.

In line with this, Zilber (2013) adds that Smartphone have suited to the delivery of certain kinds of English language learning and practice because of some reasons; (1) familiar and easy to use, (2) personal, private and carried everywhere, (3) a natural environment for speaking and listening, (4) equipped with microphone, speakers, and special speech processing hardware and software, (5) network connected fully-capable computing devices, and (6) becoming ubiquitous.

B. English Medical Applications

There are thousands of applications available in a wide range of categories including some tailored to specific medical fields, and the number is increasing rapidly. These apps are available mobile operating systems (OS) used by modern Smartphone include Google's Android, Apple's iOS, and Research in Motion's Blackberry OS. The applications are able to work with or without internet access. Internet access is only needed when a user logs in for the very first time in order to download the lessons to the device.

Before using applications in the classroom, the lecturer needs to consider several things. Firstly, the lecturer needs to make the application appropriate to the students' ability. It means that the range of difficulty provided in the apps is nearly same with the students' condition. So, they might feel that the apps are quite helpful for them to support their learning process. Second, the apps must be created by native English speakers so the students can truly get authentic materials in learning medical English. Finally, the apps are designed in small segments, engaging, entertaining and addictive.

There are many smartphone-based applications containing primarily as educational material for nursing students. According to Handayani (2017) there are some simple applications which can be used by the lecturer in delivering English medical materials for nursing students. The applications can be discussed below:

1. Disease dictionary

Disease dictionary is one of complete application which offers students a long list of illnesses and conditions nurses are apt to encounter, along with symptoms and preferred treatments. From this application, students can get type in the symptom and a list of possible diseases that will appear. They will get comprehensive information about how to deal with symptoms/how to prevent the disease and how to improve knowledge about diseases.

By using this application, the lecturer can explore materials on students' reading comprehension meaningfully. Teachers might use this application to teach students on getting knowledge of illnesses and its symptom. Besides that, texts provided in the application are useful as learning the material in teaching reading skills.

2. Nursing Procedure

Nursing Procedures focuses largely on providing nurses the best resources before they begin a procedure in medical health. Generally, the contents are divided into three main categories; general nursing, psychiatric nursing, and midwifery. For nursing students, this application is useful in providing them details steps in doing medical procedure practically.

3. Mini Nurse Lite

This application offers valuable information about nursing skills. It consists of six main categories which include medical terminologies, abbreviations (suffixes and prefixes), drug calculations, lab values, medical facts, skills and news. The content from this 'cool' application are beneficial for gaining students' knowledge in learning medical English. The students are served English medical use meaningfully.

4. Nursing Training Video

To improve students' ability in speaking English, lecturers can use this nursing training video application. The application contains a lot of video related on medical activity. By using the video, lecturer can show language use properly related on context and situation. Besides that, students also can learn how to pronounce words correctly and listening to the conversation clearly.

In addition, Mosa (2012) provides some applications which can be beneficial for nursing students. The application are I-Surgery Notebook, Eponyms, Netter's Atlas of Human Anatomy, Netter's Anatomy Flash Cards, Blausen Ear Atlas, Oxford Handbook of Clinical Specialties, Dissection, Cranial Nerves, iSilo, Mobipocket Reader, and Instant ECG. The description for each application can be explained in the following:

1. I-Surgery Notebook

Students can use I-Surgery Notebook on their iPhone or Android phone during their surgical sessions to log surgical cases including procedure, pre-operative and post-operative diagnosis, list of involved surgeons, and type of anesthesia used.

2. Eponyms

Eponyms application provides details signs and diseases which can be used by nursing students in identifying symptoms and health problems.

3. Netter's Atlas of Human Anatomy

Netter's Atlas of Human Anatomy contains more than 532 colored anatomic illustrations that are mainly designed for educational purpose.

4. Netter's Anatomy Flash Cards

Netter's Anatomy Flash Cards version contains 300 interactive flash cards that are mainly designed for educational purpose.

5. Blausen Ear Atlas

A set of ear-related video animations including cochlear implants, ear pressure, ear tubes, hearing loss, hearing tests, and otitis media are available in the Blausen Ear Atlas.

6. Oxford Handbook of Clinical Specialties

The printed version of the Oxford handbook of Clinical Specialties, which includes 12 books, is available as handheld version on Smartphone.

7. Dissection

Dissection is an anatomy tool that displays dissection of the human head and neck.

8. Cranial Nerves

Cranial Nerves is a learning tool that includes interactive visualization along with textual information about cranial nerves and the skull base, based on high-resolution CT scans.

9. iSilo

Silo is a fee-based program that stores text in a highly compressed format and facilitates text search within a document or set of documents.

10. Mobipocket Reader

Mobipocket Reader is available for free and includes a library of all eBooks stored in local media, with the ability to annotate, high-light, or bookmark any part of the eBook, and lookup any word in several dictionaries.

11. Instant ECG

Instant ECG is a basic ECG tutorial application that includes ECG electrophysiology, myocardial action potential, associated waveforms, and intervals and segments.

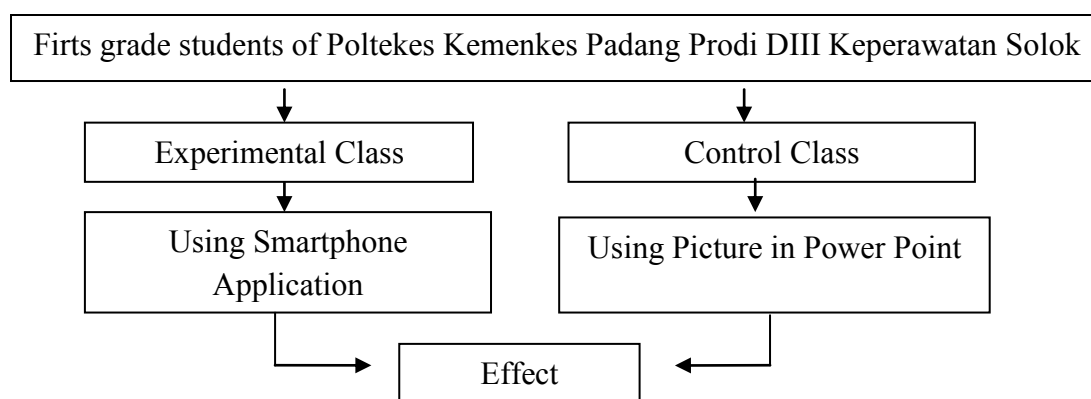
C. Relevant Studies.

There are some researches which had been conducted about using Smartphone in language learning. First, Kim (2012) entitled “Exploring Smartphone applications for effective mobile-assisted language learning.” From the research, it was found that the ESL apps seem effective in that they provide a personal and learner-centered learning opportunity with ubiquitously accessible and flexible practices. However, they need to be improved by realizing mobility as a more situated, field-dependent, and collaborative form of learning. The effective design and use of ESL mobile applications should continue to be studied in order to suggest the right direction to effective MALL.

Next researcher is Luo (2015) is Second, entitled “Using Smartphone to Facilitate English Communication and Willingness to Communicate in a Communicative Language Teaching Classroom.” This research was to investigate the effects of using a Smartphone application in a Communicative Language Teaching context. Specifically, a web-based application called Let's Talk was designed to facilitate an Information Gap activity in an English language class. Results showed that Let's Talk-facilitated Information Gap activities led to better performance in vocabulary and structure but not comprehension. Also, a lower level of state anxiety was reported when mobile devices were used.

Those researches are relevant with this research that have same variable of using Smartphone in language learning. However, in this research, the researcher wants to find out the use of Smartphone application and its effect on nursing students' knowledge of English health problems and the symptoms at the first grade students of Poltekes Kemenkes Padang Prodi DIII Keperawatan Solok.

D. The Conceptual Framework



E. Hypothesis

According to Gay (2000:71) hypothesis is a researcher's tentative prediction or assumption of the research findings. The hypotheses in this research are as follows:

H_0 = There is no effect on nursing students' English knowledge taught by using Smartphone application .

H_1 = There is positive effect on nursing students' English knowledge taught by using Smartphone application .

CHAPTER III

RESEARCH METHOD

A. Design of the Research

Design of the research was quasi experimental research. Sugiyono (2012: 114) states that quasi experimental design is the research where the sample is not randomly selected. The researcher used pre-test –post-test control group design. Subjects were assigned to the experimental and control groups by random assignment and were given pre-test on dependent variable. The treatment was introduced only to the experimental subjects. In this research, the researcher measured the use of Smartphone application and its effect to enhance nursing students' knowledge on English health problems and the symptoms at first grade students of Poltekes Kemenkes Padang Prodi DIII Keperawatan Solok..

B. Population and Sample

1. Population

The population of this research was first grade students Poltekes Kemenkes Padang Prodi DIII Keperawatan Solok. The data of the population in this research can be seen on table 1 follow:

Table 1. Population of the Research

No	Class	Number of Students
1	Nursing Students IA	30
2	Nursing Students IB	30
	Total	60

2. Sample

In choosing the sample for experimental class and control class, the researcher used purposive sampling technique. It is chosen by some considerations; students' ability almost equal and they are taught by the same lecturer.

In this research, the sample was two homogeneous classes that selected as experimental and control class after analyzing the students' score on preliminary test done by the lecturer. After that, the mean and standard deviation of students' score were

calculated. The mean of students' score were calculated by using formula proposed by Arikunto (2010) as follow:

$$\bar{X} = \frac{\sum X}{n}$$

Where:

\bar{X} = The mean of students' score
 $\sum X$ = Sum of students' score
n = The number of students

Then, the standard deviation of students' score were calculated by using formula as follow:

$$S = \sqrt{S^2}$$

Which:

$$S^2 = \frac{1}{n} \sum_{i=1}^n (x_i - \bar{x})^2$$

Where:

S = Standard deviation
 S^2 = Variance
 x_i = The student's score
 \bar{X} = The mean of students' score
n = The number of students

Finally, two classes that had the same or almost reached the same standard deviation were chosen as control and experimental class, the researcher got Nursing Students IA and Nursing Students IB respectively through lotting. The students' score on preliminary test done by the lecturer could be seen on Appendix 1 page 29.

C. Procedures of the Research

This research was done at first grade students Poltekes Kemenkes Padang Prodi DIII Keperawatan Solok by the following steps:

1. Preparation

The researcher did some preparations before doing the research. The first, the researcher prepared the syllabus, materials and the instrument that were used in this research. All the preparations above guided by the curriculum that has been used at Poltekes Kemenkes Padang.

2. Pre-test

The researcher conducted pre-test on Tuesday, 27th February 2018 to control class, and Thursday, 1st March 2018 to experimental class. The instruments and items in the experimental class were the same with control class. The purpose of pre-test was to find out the students' ability before the treatment.

3. Implementation

This research was implemented in two classes as the sample. They were experimental class and control class. The same material of teaching was given to both of these classes. But, the different treatment was given to these classes. The experimental class was taught by using Smartphone application and the control class was taught by using picture on power point.

4. Post-test

After the researcher taught the material for both experimental and control class, the researcher examined those classes using post-test on Tuesday, 3rd April 2018 for control class and Thursday, 5th April 2018 for experimental class. The instrument and items in experimental class were the same with control class. Then, the researcher compared the score of the sample classes. At the end, researcher tested hypothesis to find out the effect of Smartphone application to experimental class.

D. Instrumentation

The instrumentation of this research was reading test. The test was delivered in a multiple choice form. There were three types of reading test as the instrument of this research. The first was try out pre and post test to other class in population. The second test was pre-test after getting the two homogeneous classes. After that, the researcher gave the treatment that had been prepared before. Finally, the researcher did post-test for both classes. The purpose was to know whether the given treatment is successful. The test checked and scored by the researcher to analyzed reliability of instrument. The criteria of the pre-test and post-test as the instrument of the research were valid and reliable.

1. Item Difficulty

Try out was used to analyze the item difficulty of the test. It was done to ensure the items of test were not too easy and too difficult. The researcher

analyzed item difficulty of the test by using the following formula in Arikunto (2010: 249) as follow:

$$P = \frac{B}{JS}$$

Where:

P = Items difficulty

B = the sum of students who answer correctly.

JS = the sum of students

Table 2. Difficulty Power Index Criteria

Difficulty index	Criteria
0,10 - 0,29	Difficult
0,30 - 0,69	Moderate
0,70 - 1,00	Easy

2. Item Discrimination

The researcher analyzed item discrimination to determine ability of the item in distinguishing between high level students and low level students. To determine item discrimination, the researcher used formula as follow:

$$D = \frac{BA}{JA} - \frac{BB}{JB}$$

Where:

D = items discrimination

BA = the sum of high group who answer correctly

BB = the sum of low group answer correctly

JA = the sum of high group

JB = the sum of low group

Table 3. Item Discrimination Criteria

Discrimination index	Criteria
0,70 – 1,00	Excellent
0,40 – 0,69	Good
0,20 – 0,39	Satisfactory
0,00 – 0,19	Poor

3. Validity

According to Gay (2000: 348), a test can be said valid when the test measure what is supposed to measure. This test is having the item validity if the item of the test constitutes a representative sample of the intended aspect.

Therefore, content validity is suitable for this research. Content validity refers to the extent to which the instrument represents the content of interest.

4. Reliability

Gay (2000: 169) says that reliability is degree to which a test consistently measures whatever it measure. It is expressed numerically usually as a coefficient; a high coefficient indicates high reliability. In this case, the researcher measured the reliability/stability of the test by using K - R. 21 formula that was proposed by Kuder and Richardson in Arikunto (2010: 232) as follow:

$$r_{11} = \left(\frac{k}{k-1} \right) \left[1 - \frac{M(k-M)}{kV_t} \right]$$

Which: $M = \frac{\sum X}{N}$ $V_t = \frac{\sum X^2 - \frac{(\sum X)^2}{N}}{N}$

Where:

- r_{11} = the reliability instrument
- k = the total number of items
- M = the mean of students' scores
- V_t = the total variances (S^2)
- $\sum x$ = the sum of the students' scores
- $\sum X^2$ = the sum square of the students' scores
- N = the sum of the students

Table 4: Value Interpretation of r_{11}

Value of r_{11}	Interpretation
0,800 - 1,00	Very high
0,600 - 0,790	High
0,400 - 0,590	Enough
0,200 - 0,390	Low
0,00 - 0,190	Very Low

As the result, the reliability of instrument of this research was **0,68**. It can be concluded that the reliability of the instruments of this research was high. It can be seen on appendix 5 page 35.

E. Technique of Data Collection

The data of this research was the students' reading comprehension test on health problems. The researcher collected the data by distributing a test to the students. The students were asked to choose the correct answer from the options given; the test was distributed about 60 minutes. After distributing the test, the researcher collected the students' answer and score the students' answer.

F. Technique of Data Analysis

After gathering the data, the researcher analyzed the data statistically. The data was analyzed as follows:

1. Normality Testing

This testing was used to determine the normality of the reading test's score between two groups of samples. The researcher measured the normality by using the lilliefors formula that proposed by Sudjana (2005: 99) as follow:

$$z_i = \frac{x_i - x}{S}$$

Where:

Z_1 : Normality of test

X_1 : Students' reading comprehension

X : Mean

S : Standard deviation

To calculate standard deviation the researcher used formula that was proposed by Sudjana (2005: 94) as follow:

$$S = \sqrt{\frac{n \sum X_i^2 - (\sum X_i)^2}{n(n-1)}}$$

Where :

S : Standard deviation

X : Mean

$\sum X_i^2$: Sum square of students' score

To calculate the mean the researcher used formula that was proposed by Arikunto (2010: 264) as follow:

$$\bar{X} = \frac{\sum X}{n}$$

Where :

X : The mean of students' score

$\sum x$: Sum of students' score

n : The number of students

2. Homogeneity Testing

Homogeneity testing was done to determine whether the data of two group samples have homogenous variance or not. The researcher used F ratio formula that proposed by Sudjana (2005: 249) as follow:

$$F = \frac{S_1^2}{S_2^2}$$

Where:

$S_1^2 =$ Variances of the higher score

$S_2^2 =$ Variances of the lower score

F = Ratio between two variables

The researcher compared the $F_{\text{calculate}}$ with F_{table} , with criteria if $F_{\text{calculate}} \leq F_{\text{table}}$, it means that distribution of the data has the same variances, nevertheless, when $F_{\text{calculate}} \geq F_{\text{table}}$. It means that the variances of the data distribution of the data were not same.

3. Hypothesis Testing

To test the null hypothesis whether it was rejected or received, the researcher used the t-test formula that was proposed by Sudjana (2005: 239) as follow:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{S \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

Where :

n_1 = the number of students in experimental group

n_2 = the number of students in control group

\bar{X}_1 = the mean scores of experimental group

\bar{X}_2 = the mean scores of control group
 S = Standard Deviation

To calculate standard deviation, the researcher used formula as follow:

$$S = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}$$

Where :

S = Standard deviation

n_1 = the number of students in experimental group

n_2 = the number of students in control group

s_1^2 = Variances of the higher score

s_2^2 = Variances of the lower score

The null hypothesis was received if $-t_{1-\frac{1}{2}\alpha} < t < t_{1-\frac{1}{2}\alpha}$ otherwise, null hypothesis was rejected if $-t_{1-\frac{1}{2}\alpha} > t > t_{1-\frac{1}{2}\alpha}$.

G. Schedule of the Research

Table 5. Schedule of the Research

No	Date	Activities
1	8 th -27 th January 2020	Completion of research proposal
2	30 th January 2020	Research proposal seminar
3	5 th – 10 th February 2020	Revising research proposal
4	13 th and 15 th February 2020	Preliminary test
5	19 th and 21 st February 2020	Try out at the other class
6	27 th February 2018 and 1 st March 2020	Pre-test at both samples
7	6 th March-29 th March 2020	Doing Research
		Experimental class (Smartphone Application) Control class (Picture on Power Point)
		Meeting 1
		8 th March 2020 at 13.30-15.30 6 th March 2020 at 13.30-15.30
		Meeting 2

		15 th March 2020 at 13.30-15.30	13 th March 2020 at 13.30-15.30
		Meeting 3	
		22 th March 2020 at 13.30-15.30	20 th March 2020 at 13.30-15.30
		Meeting 4	
		29 th March 2020 at 13.30-15.30	27 th March 2020 at 13.30-15.30
8	3 rd April 2020 and 5 th April 2020	Post-test	
9	9 th April- 28 th April 2020	Analyzing data of the research	
10	Mei - June 2020	Progress report and final report	

CHAPTER IV RESEARCH FINDINGS

A. Data Description

The data of this research was the students' score in reading test; pre-test and post-test. The researcher chose two parallel classes as the sample of this research. Before doing treatment at the class, the researcher had done pre-test to both of classes to know the basic knowledge of students' ability. This test was also used to see whether it has the same variances or homogenous. The analysis of students' pre-test score at experimental class and control class could be seen on appendix 9 page 40 and the data of pre-test could be seen on table, as follows:

Table 6: The Data of Students' Pre-test Score

Class	N	\bar{X}	Xmax	Xmin
Experiment	30	84,13	96	60
Control	30	79,60	92	64

Based on the data above, Nursing Students IA as experimental class with 30 students got 84.13 mean score. The highest score was 96 and the lowest score was 60. Meanwhile, Nursing students IB as control class got 79.60 mean score. The highest score was 92 and the lowest score was 64. The data above showed students basic abilities in understanding English medical materials.

After giving treatment, researcher gave post test to both classes. From the test, the researcher analyzed the mean score, standard deviations and the variance of the data. The analysis of students' post-test score can be seen on appendix 10 page 41. The data of students post test score can be seen on table as follows:

Table 7. The Data of Students' Post-test Score

Class	N	\bar{X}	Xmax	Xmin
Experiment	22	88,53	96	64
Control	22	82,27	92	64

Based on the data above, the mean score of experimental class that was taught by using Smartphone application was higher than the means score of the control class that was not taught by using Smartphone application.

B. Data Analysis

In order to get the conclusion about the result of this research, the researcher used t-test statistical analysis. The data could be distributed normally and homogenously. In order to get the normality and homogeneity of the data, the researcher analyzed it by using some statistical analysis formulas.

1. Normality Testing

In order to analyze the normality of the data on students' ability on experimental class and control class, the researcher got the data from both of the classes. The normality testing could be seen on the following table:

Table 8. Result of Normality Testing of the Sample

Class	Test	(n)	(a)	Critical value of accounting (lo)	Critical value of table(Lt)	Distribution
Experimental	Pre test	30	0,05	0,1454	0,1610	Normal
	Post test			0,1492		
Control	Pre test	30	0,05	0,1041	0,1610	Normal
	Post test			0,1020		

In pre-test and post-test, from the experimental class it was gotten that the calculated normality coefficient were $L_0 = 0,1454$ and $0,1492$ respectively; the table normality coefficient was $L_t = 0,1610$ it means that $L_0 < L_t$. The data from the control class were $L_0 = 0.1041$ and $0,1020$ and $L_t = 0,1610$. It means that $L_0 < L_t$. According to the data analysis above the researcher concluded that the data from

both experimental and control class were distributed normally. The analysis of normality above could be seen on appendix 11 page 42.

2. Homogeneity Testing

In order to analyze the variance of the data of students' ability both in experimental class and control class, the researcher analyzed it by using homogeneity test. The result of homogeneity can be seen on the following table:

Table 9. Result of Homogeneity Testing in Pre Test

Class	N	\bar{X}	S	S ²	F _c	F _t	Variance
Experimental	30	84,13	7,82	61,22	1,38	1,84	Homogeneous
Control	30	79,60	6,67	44,52			

From the data above, it can be seen that $F_{\text{calculated}} = 1,38$ and $F_{\text{table}} = 1,84$, it means that $F_{\text{calculate}} \leq F_{\text{table}} (1,38 \leq 1,84)$. In the other word the variance of both classes in pre test were Homogeneous.

Table 10. Result of Homogeneity Testing at Experimental Class

Test	N	\bar{X}	S	S ²	F _c	F _t	Variance
Pre-test	30	84,13	7,82	61,22	1,19	1,84	Homogeneous
Post-test		88,53	7,18	51,57			

From the data above, it could be seen $F_{\text{calculate}} = 1, 19$, $F_{\text{table}} = 1,84$. ($1,19 \leq 1,84$), it means that $F_{\text{calculated}} \leq F_{\text{table}} (1,19 \leq 1,84)$. In the other word the variance of both tests at experimental class were Homogeneous.

Table 11. Result of Homogeneity Testing at Control Class

Test	N	\bar{X}	S	S ²	F _c	F _t	Variance
Pre-test	22	79,60	6,67	44,52	0,77	1,84	Homogeneous
Post-test		82,27	7,62	58,13			

From the data above, it could be seen $F_{\text{calculate}} = 0,77$, $F_{\text{table}} = 1,84$. ($0,77 \leq 1,84$), it means that $F_{\text{calculated}} \leq F_{\text{table}} (0,77 \leq 1,84)$. In the other word the variance of both tests at control class were Homogeneous.

Table 12. Result of Homogeneity Testing in Post-Test

Class	N	\bar{X}	S	S ²	F _c	F _t	Variance
Experimental	30	88,53	7,18	51,57	0,89	1,84	Homogeneous
Control	30	82,27	7,62	58,13			

From the data above, it can be seen that $F_{\text{calculated}} = 0,89$ and $F_{\text{table}} = 1,84$, it means that $F_{\text{calculate}} \leq F_{\text{table}}$ ($0,89 \leq 1,84$). It could be concluded that the variance of both classes in post-test were Homogeneous.

From the data above, the researcher concluded that all of $F_{\text{calculate}} \leq F_{\text{table}}$, it means that the variance of experimental and control class were **homogenous**. The analysis of homogeneity could be seen on appendix 17 page 48.

3. Hypothesis Testing

In order to know whether there was any differentiation of students' ability both in experimental and control class, the researcher did t-test statistical analysis. It could be seen on the following table:

Table 13. Result of t-Test Experimental and Control Class

Class	N	\bar{x}	S ²	(a)	t _{cal}	t _{table}	Reference
Experiment	30	88,53	58,13	0,05	3,14	1,67	Ho was received and Ha was rejected
Control	30	82,27	51,57				

The researcher got the data $T_{\text{cal}} = 3,14$ and $T_{\text{table}} = 1,67$. It means that $T_{\text{cal}} > T_{\text{table}}$, nursing students' ability taught by using Smartphone application was better than taught by using Picture in power point. In other words, there was a positive effect on nursing students' ability taught by using Smartphone application. Analysis hypothesis above could be seen on appendix 19 page 50.

C. Discussion

After conducting the research, it was found that applying Smartphone application has positive effect towards nursing students' knowledge on English health problems and the symptoms. It was proved by the high average of students post test

result. It can be seen from the data analysis that the mean score of the students who was taught by using Smartphone application was higher than students who was not taught by using Smartphone application. From the result showed that the difference of the students' mean score was improved from **84,13** at pre-test to **88,53** at post-test, with **4,40** improvement. It happens because Smartphone application has several prominences that can give positive influence to the students in learning English.

Moreover, the researcher found that the students at experimental class were so excited with the implementation of Smartphone application during the teaching process. It guided them to use all of their senses and could exchange their ideas about the information of the text in the group. The students became active when joining the games, they liked to see the video on the Smartphone and the students were easier answering the questions during discussion class. This is line with Cibulka & Crane-Wider (2010) who designed teaching strategies for nursing students using Smartphones clinical consult guide, a prescribing reference, and a differential diagnosis tool from Skyscape or Epocrates. The result found that the students used the software packages during their classes to access clinically relevant information and found very useful.

CHAPTER V

CONCLUSIONS AND SUGGESTIONS

A. Conclusions

Based on the findings and discussion on the previous chapter, it could be concluded that using Smartphone application gave a positive effect on the Nursing students' knowledge on health problems and the symptoms. Finally, the main findings of this research could be concluded as follow:

1. There is a difference on nursing students' knowledge on English health problems and the symptoms between students who use Smartphone application as a tool in learning process and those who do not use Smartphone application. It was found that the students' mean score on experimental class were higher than control class.
2. There a difference between the pretest and the posttest scores on the development of nursing students' knowledge on English health problems and the symptom by using Smartphone application. From the research result showed that the means score of nursing students' ability after giving treatment on posttest was higher than the mean score before giving treatment on pre test.

B. Suggestion

Based on the conclusions of the research above, it is suggested that the Nursing lecturer can use Smartphone application as one of media in teaching English and develop certain activities in teaching English for Nursing students. Meanwhile, there are also some challenges of using Smartphone-based healthcare which is needed to be considered. Those included limited battery life, small screen size, potentially erroneous data input, computer viruses including spyware, magnetic interference with medical devices, potentially inefficient patient-physician interactions, loss or theft, and breaches of data privacy and security.

BIBLIOGRAPHY

- Arikunto, S. 2010. *Dasar-dasar Evaluasi Pendidikan*. Jakarta: Bumi Aksara.
- Gavali, Monika Y, Deepak S. Khismatrao, Yogesh V Gavali, and K.B. Patil. (2017). Smartphone, the new learning aid amongst medical students. *Journal of clinical & Diagnostic Research* (pp. 1-11).
- Gay, L. R. Airisian. 2000. *Educational Research: Competences for Analysis and Application*, (6th Ed). Ohio: Merrill Publishing Company.
- Handayani, F. (2017). Smartphone Application : A Review of Potential Use for Nursing Students. *English Language Teaching and Research, 1 (1)*.
- Kim, Heyoung & Kwon, Yeonhee. (2012). Exploring smartphone applications for effective mobile-assisted language learning. *Multimedia-Assisted Language Learning*, 15(1), 31-57.
- Kulendran, Myutan, Marcus Lim, Georgia Laws, Andre Chow, Jean Nehme, Ara Darzi, and Sanjay Purkayastha. (2014) Surgical smartphone applications across different platforms: their evolution, uses, and users. *Surgical Innovation 21(4)* (pp. 427– 440).
- Luo, Bo Ru, Yu-Lin Lin, Nian-Shing Chen, Wei-Chieh Fang. (2015). Using Smartphone to Facilitate English Communication and Willingness to Communicate in a Communicative Language Teaching Classroom. *Advanced Learning Technologies (ICALT), 2015*.
- Mosa, A. S. M., Yoo, I., & Sheets, L. (2012). A systematic review of healthcare applications for smartphones. *BMC medical informatics and decision making*, 12(1), 67.
- Pesce, Claudia. *The 9 best mobile apps for your ESL students*. 2017
<http://busyteacher.org/12155-9-best-mobile-apps-for-esl-students.html>
- Shakya, A., Horsfall, J.M. (2000). ESL undergraduate nursing students in Australia: some experiences. *Nursing and Health Sciences 2* (pp.163-171)
- Sudjana. 2005. *Metode Statistika*. Bandung:Tarsito.
- Sugiyono. 1999. *Statistika untuk Penelitian*. Bandung: Alfabeta.
- Vanderplank, R. (2010) De javu? A decade of research on language laboratories, television and video in language learning. *Language Teaching 43* (pp.1-37).
- Wallace S, Clark M, White J. (2012). It's on my iPhone: attitudes to the use of mobile

computing devices in medical education, a mixed-methods study. *BMJ Open* 2012.

Zilber, Julie. (2012). Smartphones as a platform for English language learning. *In Proceeding TESL Ontario 2012* (pp.15-21)



UNIVERSITAS MAHAPUTRA MUHAMMAD YAMIN
Lembaga Penelitian dan Pengabdian Pada Masyarakat
Kampus I: Jl.Jenderal Sudirman No. 6 SolokTelp. (0755) 20565

SURAT TUGAS
NO. 11.12/ST-P/LP3M-UMMY/X-2020

Kepala Lembaga Penelitian dan Pengabdian Pada Masyarakat (LP3M) Universitas Mahaputra Muhammad Yamin Solok, dengan ini menugaskan kepada:

Nama : Fitri Handayani, S.Pd., M.Pd
NIDN : 1017048602
Tempat/Tanggal Lahir : Solok/ 17 April 1986
Pangkat/Golongan : Lektor
Program Studi : Pendidikan Bahasa Inggris
Fakultas : Fakultas Keguruan dan Ilmu Pendidikan (FKIP)

Untuk melaksanakan kegiatan penelitian dengan judul **“Smartphone Application and Its Effect toward First Grade Nursing Students’ Knowledge on English Health Problems and the Symptoms.”**

Demikian surat tugas ini dibuat untuk dapat dilaksanakan dengan baik dan penuh tanggung jawab

Solok, 10 Oktober 2020
Kepala LP3M UMMY

DR. Wahyu Indah Mursalini, SE. MM.
NIDN. 1019017402