AN ADAPTIVE EDUCATIONAL MODEL FOR FLIPPED CLASSROOM

A MASTER'S THESIS

IN

COMPUTER ENGINEERING

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BY

AISHA ABDULAALI ABDULLA AHMED

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IN

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Approval of the Graduate School of Natural and Applied Sciences, Atılım University.

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Prof. Dr. İbrahim Akman
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I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science.

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Prof. Dr. İbrahim Akman

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This is to certify that we have read the thesis "**An adaptive Educational Model For Flipped Classroom**" submitted by "**AISHA ABDULAALI ABDULLA AHMED**" and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Science.

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ABSTRACT

An Adaptive Educational Model for Flipped Classroom

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M.S., Computer Engineering Department

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March 2017, 110 pages

This study aimed to develop a flipped classroom demonstrate utilizing versatile innovations for primary school understudies and identify the individual contrasts among the third-grade basic understudies in the English Language in Libya by a versatile method in flipped learning, and customary training at three levels recalling, comprehension and applying of Bloom's Taxonomy independently.

This study attempted to answer the following question:

Are there any differences between traditional style of education, flipped learning , and adaptive technique in flipped learning in achievement tests according to Bloom's Taxonomy (Remembering, Understanding, and Applying) for understudies in the third grade of essential in English ?

To accomplish the targets of the review and answer its question, three tests were constructed and afterward ensure its earnestness and steadiness in proper ways, and selected the study sample and divided it randomly into three gatherings:-

1. The experimental group (1) educated by adaptive technique in flipped learning.
2. The control group (1) instructed through customary training.
3. The control group (2) (The trial bunch (2)) instructed by flipped learning.

The review presumed that in the pre-test the gatherings were homogeneous; however, in midterm test and post- test, there were contrasts measurably huge for the experimental assembly (1).

Keywords: Adaptive Technique, Flipped Learning, Bloom's Taxonomy, Adaptive Technique In Flipped Learning .

ÖZET

Ters Yüz Edilmiş Sınıf İçin Uyarlamalı Eğitim Modeli

Ahmed, Aisha Abdulaali Abdulla

Bilgisayar Mühendisliği Bölümü, Yüksek Lisans

Danışman: Yrd. Doç. Dr. MELTEM ERYILMAZ

Mart 2017, 110 sayfa

Bu çalışma ilköğretim okulu dersleri için çok yönlü yenilikler kullanarak ters yüz edilmiş bir sınıf geliştirmeyi ve Libya'daki üçüncü sınıf İngilizce eğitimleri arasındaki bireysel zıtlıkları ters yüz edilmiş öğrenim içerisindeki çok yönlü bir metodla tanımlamayı ve geleneksel eğitimi Bloom Taksonomisi'nin üç aşamasında bulunan hatırlama, anlama ve uygulama aşamaları içinde bağımsız bir şekilde belirlemeyi amaçlamıştır.

Çalışma aşağıdaki sorulara yanıt bulmaya çalışmıştır:

Üçüncü sınıf temel İngilizce dersleri için, Bloom'un Taksonomisi'ne (Hatırlama, Anlama ve Uygulama) göre, başarı testlerinde geleneksel tip eğitim, ters yüz edilmiş öğrenim ve ters yüz edilmiş öğrenimdeki uyarlamalı teknik arasında farklılıklar var mıdır?

Bu araştırma amaçlarına ulaşmak ve sorulara yanıt vermek için, üç test düzenlenmiş, bu testlerin ciddiyetini ve devamlılığını uygun yollarla garanti etmiş ve bir çalışma örneği seçerek bunu rastgele bir biçimde üç ayrı toplanma parçasına bölmüştür:

1. Ters yüz öğrenim içindeki uyarlamalı teknik ile eğitim verilen deneysel grup (1)

2. Geleneksel eğitim yoluyla eğitim verilen kontrol grubu (1)

3. Ters yüz edilmiş öğrenim ile eğitim verilen kontrol grubu (2) deneme topluluğu (2)

Araştırma test öncesi toplanmaların homojen olduğunu ortaya çıkarmış, bununla birlikte ara testte ve test sonrasında deneysel sonuçlar için fark edilebilir büyüklükte çelişkiler olmuştur.

Anahtar Kelimeler: Uyarlamalı Ters Yüz Edilmiş Öğrenme Tekniği, Bloom Taksonomisi Ters Yüz Edilmiş Öğrenmede Uyarlamalı Teknik

DEDICATION

To My Parents, the reason of what I become today.Thanks for your great support and continuous care.

ACKNOWLEDGMENTS

I express sincere appreciation to my supervisor Asst. Prof. Dr. Meltem Eryılmaz for her guidance and insight throughout the research.

I also sincerely thank to Asst. Prof. Dr. Murat Koyuncu for his help and his ongoing support us.

I would also like to thank my husband, Naje; I offer sincere thanks for his continuous support and patience during this period.

To my parents sincere thanks for their continuous support and patience during this period.

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LIST OF ABBREVIATIONS

ATIF - Adaptive Technique in Flip

ALS - Adaptive Learning Systems

FL - Flipped Learning

LMS - Learning Management System

AEHS - Adaptive E-Learning Hypermedia System

AEH - Adaptive Education Hypermedia

SLOs - Student Learning Outcomes

mAI - The micro-Adaptive Instruction

ARTFL - Adaptive Review Technology for Flipped Learning

SQL - Structured Query Language

SPSS - Statistical Package for the Social Scie

CHAPTER 1

INTRODUCTION

The world in several years back has seen numbers of new technologies in many areas, mostly in the education sector, the use of these new technologies are essential for reforming the education and coping with the development system, by these It requires to submit an initiative to benefit from technology in the teaching processes in order to boost output where many countries are racing to reform its education system in order to prepare its citizens for a new world. To be able to reform education for better from what it is now and to develop the abilities and skills of the learner and to build character, and also to be able to interact with the variables of age and be capable of making a new life it's a must to develop the traditional education in the curricula and the educational activities, that are necessary today. Students have different ways of learning. Because of some can be absorb knowledge better when they receive the audio-visual or through another sense (YTamura, TYamamuro, TOkamoto, 2006). Conventional ways of teaching tend to use one of these offers more than others (P Kanaksabee, MP Odit, A Ramdoyal, 2011). It is practically not possible for a teacher to apply all the teaching strategies in the classroom. Presently, an adaptive technique in flip learning (ATIF) has provided new ways to improving student learning and get out of the traditional educational models (Daniel Szafir & Bilge Mutlu, 2013). Adaptive learning systems (ALS) aim to convert the learner from passive receivers of information to cooperate in the educational process (Paramythis & Reisinger, 2014).

1.1. Purpose of the Study

The study aims to answer the following questions:

1. Are there any differences between adaptive technique in flipped learning ATIFL and traditional learning TL in three achievement tests according to Bloom's Taxonomy (understanding, remembering, and applying)?

2. Are there any differences between ATIFL and flipped learning FL in three achievement tests according to Bloom's Taxonomy (understanding, remembering, and applying)?

3. Are there any differences between FL and TL in three achievement tests according to Bloom's Taxonomy (understanding, remembering, and applying)?

4. Are there any differences between ATIFL itself in achievement tests according to Bloom's Taxonomy (understanding, remembering, and applying)?

1.2. Problem Description

The study bases on the English Language as the subject that is mostly in need of ATIF. In a traditional classroom, students would be asked to stand idly by while the teacher delivers a lecture. Students' focus will be limited to taking notes without absorbing modern concepts and this will make them to Lack the ability to develop their skills and ideas, failure to achieve the goal of scientific material and lack to practice in the classroom because of their focus on presentation more than practice. From these results, they have to find a way out to help students to get information and understand them and do many exercises and activities with the use of many types of the tools in ATIF. Therefore, this study was used to determine the impacts of teaching using ATIF in collectable the third-grade elementary students in the subject of English language compared with the traditional way and FL.

1.3. Questions about the Research in the Study

This study has answered the following questions:-

1. Are there factually critical variety at the standard of importance (α =0.05) between the mean scores of exploratory and control groups in the pre test before beginning the experiment to the level of achievement in the light

Of Bloom's Taxonomy, that is already mentioned and of (Remembering, Understanding, Applying) for students in the third class of the primary in the English language?

2. Are there any statistically significant variation on the standard of significance (α =0.05) between the mean scores of the exploratory and control bunches during the experiment after fifth week of experiment, according to Taxonomy Bloom (Remembering, Understanding, Applying) for students in the third class of primarily in the English language?
3. Are there any statistically significant variation on the standard of significance (α =0.05) between the mean scores of the exploratory and control bunches after the tenth week of the experiment, according to Taxonomy Bloom (Remembering, Understanding, Applying) for students in the third class of the primary in the English language?
4. Are there statistically significant variation on the standard of significance (α =0.05) between the mean scores of the exploratory group itself before & after the experiment, according to Taxonomy Bloom (Remembering, Understanding, Applying) for students in the third grade of the primary in the English language?

1.4. **Thesis Outline**

The thesis content is arranged as follows: Chapter 2 incorporates a writing survey Chapter 3 incorporates the center and technique of this postulation. Chapter 4 incorporates the experiments and the results obtained from the experiments and discuss them. Finally, Chapter 5 Closes and synopses the most essential purposes of this theory, proposed future activities.

CHAPTER 2

2. LITERATURE REVIEW

This chapter reviews the literature base on three objects: Studies on adaptive E-learning, studies on flipped learning, studies on adaptive technique in flipped learning, and discuss previous studies.

Through a review of studies on adaptive technique in flipped learning, it has been seen to be divided into the following themes:

2.1 Adaptive E-learning

These studies include:

According to Zrakić Despotović, A., Marković, Z, Bogdanović., Baarać, D., & Krčo, S. (2012). They depicted a way to deal with giving versatility in the e-learning courses. The essential point is to upgrade the e-learning-based system, the LMS Moodle, involving a way to create courses to adapt to, and compared its effectiveness. The information for such analysis comes from a test specimen of 318 understudies at the University of Belgrade, Faculty of Organizational Sciences. The trial gather made up of 218 and a control assembles made out of 100 understudies. An experiment involving total three instruments: a) Pre-testing, b) Post- testing, and c) and also survey of students' behaviour about online courses they adapted. Understudies got hold of the pre-test for each of the test assemble and the control amass after the fundamental class. Pre-test managed the subject instructed in the prefatory course. The post-test has been acknowledged subsequent to completing of adjusting an online course for understudies in the test aggregate and not adjusted course for the understudies in the control assemble. The objective of the post-test to determine if there have been significant differences in the result that have been achieved by the students that are in the experimental group and control group. To identify statistical significance when comparing the average degree of assessment, t-tests were conducted. The t-test comes about demonstrated that the contrast between the aftereffects of the exploratory and control aggregate made in the pre-testing stage is not measurably huge ($DF = 316$, $p > 0.05$). The t-test comes about demonstrated that the distinction between the consequences of the exploratory and control

aggregate made in the post-testing stage is measurably huge (t = 1.700, DF=316, $p<0.05$). The outcome of samples t-test show that the students in experimental group and control group had obtained same results in pre-testing, but results that are obtained in the post-testing is the best in test bunch.

Much University in the world began theirs online education administration system. Semantic web based education management system, which is adaptive E-Learning. This kind of LMS that allow learners to determine their ways of education. (M.FaridaBegam and GopinathGanapathy, 2013).

The researchers observed that students in distance learning courses which require e-learning to adapt got higher scores than the ones in traditional classrooms (1997 Bartllett; Bothunn 1998; Hulse& Heines 1996; Kabatt & Friedel 1990; Schute 1996; Souder, 1993)

Study Eltigani Yasir Ali Mustafa 1, 2 and Mohamed Sami Sharif 1 (2010), the study title is" A way to deal with Adaptive E-Learning Hypermedia System in view of Learning Styles (AEHS-LS): Implementation and assessment" . The experiment between two sets of students (the experimental group who study the adaptive learning. The control group who study without adaptive education) has been conducted to assess the impact on academic achievement.

The examination information were thought about utilizing self-ruling example t-test by Statistical Package for the Social Sciences (SPSS) programming. Experimental results show that students taught using an adaptive learning much better in educational attainment ($\alpha<0.05$) of students studying the same article without adaptive education style.

Study Herman DWI Surjono (2006), the study title is “Improvement and Evaluation of an Adaptive Hypermedia System Based on Multiple Student Characteristics”.

The framework was assessed in exploratory research that includes 67 understudies in the Department of Electronics at the University of Yogyakarta. Understudies were separated into two gatherings at arbitrary one of the gathering called the exploratory while the other called the control bunch. The experimental group taught through adaptive educational hypermedia (AEH) and the control group taught through nonadaptive hypermedia (AEH). The results showed that students who have learned using AEH system performance best many of those who have learned to use NON-AEH system.

Study Vogt F, Rogalla M (2009), the study title is “Developing Adaptive Teaching Competency through coaching”. Vogt F, Rogalla M examined teaching skills to adapt of Swiss primary and secondary school teachers, and the efficiency impact of adaptive teaching had to students' learning. They organised two collections, It has includes 32 teachers and 623 students in the experimental group and 18 teachers and 353 students in the control bunch. The group adopted a series of pre-test, we are asking teachers to react to a vignette to test the efficiency of planning to adapt, and they took part in a video test to evaluate the efficiency of the implementation of their own adjustment. After the pre-test, the experimental group took part in a seminar for two days about the efficiency of teaching to adapt and nine hours of coaching hearings, which concentrate on content. The outcomes demonstrated an ascent in proficiency of wanting to adjust for educators in the exploratory gathering contrasted with the instructors in the control aggregate. The Outcome of tests of scientific reading and writing for students showed that both groups of students stepped up their science knowledge over nine months. However, students in the experimental group acquired additional achievements than the students of the control group.

Adaptive e learning is able to achieve effective learning for students through the support of learning paths and support materials to suit the needs of learners. (Brusilovsky. Bra, &Houben,; Blochl, Mallak, 2001, Rumetshoofer, &Wobb, 2003). The first time, the idea of learning, personal; introduced officially by (Kumi, 1994). He did mixed media based versatile instruction organization framework in which PC gives individualized control and intelligence.

2.1. Flipped Learning

Flipped education includes the employ of digital technology, such as video, to dilate direct teaching new notion leaving the classroom. Students go to lessons with having a prior grasp of the subject. (Suzanne Straw, Oliver Quinlan, Jennie Harland, Matthew Walker, 2015).

Study Hamad (2016), the study title is " An EFL Flipped Classroom Teaching Model: Effects on English Language Higher-Order Thinking Skills, Student Engagement, and Satisfaction". This research was accomplished in the second semester of the 2014/2015 academic year at Taif University in KSA. The study

sample included (67)females. Randomly placed into two groups an experimental group (n = 33) and control group (n = 34). They were graduate students who study General English language course. They were roughly of the same age. The control group was learned by using the traditional style, whereas the experimental group learned by making use of the (EFL-FCTM).The results showed that experimental group has overtaken the control group significantly at ($\alpha < 0.01$).

Study Sarah S. Al-Harbi1 & Yousif A. Alshumaimeri (2016), the study title is" The Flipped Classroom Impact in Grammar Class on EFL Saudi Secondary School Students' Performances and Attitudes". The purpose of this treatise is to apply to teaching English grammar the flipped classroom strategy to and study their goal on the performance of high school students. Twenty students were in the experimental group. They were taught by watching the video so that they learn on their own. They also have practised what they have learned under the direction of a teacher. A number of students in control group were twenty -three students. They were taught by traditional teaching so that they learned grammar lessons without the assistance of any videos. News Statistic analysis of the outcome post-test demonstrated that adoption of the flipped classroom strategy seems to have its own impact in strengthening the students' performances in the Grammar, while the experimental group score is averagely higher than that of control group, However, that disparity was not showed a statistically significant in the replies to the survey and semi-structured that their position towards the use of students flipped classroom strategy in EFL category positive.

Study Tseng, Miao-fen, Broadstock, Maan, Chen, Henny (2016), the study title is" An Investigation of the Design of a Four-stage Flipped Classroom in Mandarin Chinese ". The goal of this research was to identify the effectiveness of a flipped classroom in a dense Chinese language program. The number of the sample is 13 females of and 7 males. They are a mixture of several classrooms Including five students in 9th grades, seven students in 10 the grades, four students in the 11th grade, and four students in 12th grades. They put in two categories based on previous learning experiences and learning styles, age, and sex. This result showed that watching videos of flipped classroom has helped students to realise the content and result from best on tests.

Study MARIE WEBB, EVELYN DOMAN (2016), the study title is" Does the Flipped Classroom Lead to Increased Gains on Learning Outcomes in ESL/EFL Contexts?". The actual purpose of this research is to a compare between the US who were exposed to a flipped classroom against a traditional classroom and the student learning outcomes (SLOs) of ESL/EFL students in Macau. Overall, of 64 students take part in this experience. An empirical group was in Macau and there was an empirical group in the US, that forms full of thirty nine (39) students which taught by flipped learning. There were also two control groups, one of them in Macau while the other in the US, totaling 25 students and which taught by traditional way. Findings from this research point out that the flipped classroom supported students in fulfilling their SLOs in grammar. Not just that the fulfillment was improved between flipped learners, but they also feels more restful, with convinced in their skills in the English grammar.

Study Atasi Mohanty, Dipti Parida (2016), the study title is "Exploring the Efficacy & Suitability of Flipped Classroom Instruction at School Level in India: A Pilot Stud". The major goal of this research is the comparison of the influences of the flipping style with that of the traditional style of education, on the learning outcomes for children in history and science. It was assigned 90 students in the elementary schools of Odisha (India) randomly, to either control the (traditional education) or experiments (flipped education). A number of students are 90 students of Class-8 from Kendriya Vidyalaya, Unit-1, Bhubaneswar, Odisha, India was chosen at random and put in Flipped and conventional method of education (students' number= 45 at every class). The findings suggest that there are no significant differences between groups in the pre-test differences but there were significant differences in the post-test for the experimental group.

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2.2. Adaptive Technique in Flipped Learning

Study S.*K.E.* Kakosimos (2015), the study title is "Example of a micro-adaptive instruction methodology for the improvement of flipped classrooms and adaptive-learning based on advanced blended-learning tools". The main objective of this study is to compare the effect of the micro-adaptive instruction (mAI) with the traditional style of education, on the education outcomes of the Chemical Engineering (CHEN

304) course at Texas A & M academy at Qatar. The researcher has implemented the process for two sequential terms that is (2013 and 2014) on CHEN 304 which was divided into group A and group B and comparable to a course, (PETE 314) which serves as the control group. 17 students Falls in 2013 and 20 Falls in 2014. The quantitative results show a slight improvement, but cannot lead to the conclusion safe for the following reasons:

- The sample size was small.
- Groups CHEN 304 (A & B) may not be exactly equivalent to the control group of PETE 314.
- Within the groups (A & B) of the same course, there was no clear change with and without mAl.

Study Daniel Szafir, Bilge Mutlu (2013), the study title is" ARTFuL: Adaptive Review Technology for Flipped Learning". The aim of this study to explore the design space afforded by these new educational models and to the development of technology for improving student teaching. There were 24 female students and 24 male students in the program. All students were native English speakers from the University of Wisconsin. To explore the effects of adaptive content review on educational results, they implemented three alternative education systems designed around different methods of providing a content review.The first styling provides no content review, the second provides maladaptive content review established for reviewing notion to which students initially paid the most interest, and the third provided a full review of all lesson concepts.

The results confirmed the following:

1. An adaptive review significantly increased reminiscence and knowledge gains compared with the no review baseline, while students who received maladaptive review did not get cognitive performance gains over the baseline in these measures.

2. Their results found no variance in learning or recall between the full and adaptive conditions, while a significant difference was found between full review and maladaptive review in terms of recall. However, their results reported only a marginally significant difference between a full review and maladaptive review in terms of learning.

3. Simply reviewing material is not enough to improve student learning. They found no difference between the no review and maladaptive review conditions.

The outcomes confirm that simply reviewing material is not sufficient to progress student learning. They found no variation between the no review and maladaptive review conditions.

2.3. Discussions about Previous Studies

Through a review of previous studies, researcher managed to record the following observations:

1. There are many studies about adaptive learning and about flipped learning. However, there are few studies about adaptive technique in flipped learning.
2. Most of these studies applied the experimental method, and this shows that the experimental method is best suited to studies of adaptive technique in flipped learning, an approach that has been followed in this study.
3. The diversity of educational levels dealt with in previous studies; which indicates the possibility of applying the adaptive technique in flipped learning at all educational levels starting from the primary level through the university level.
4. Most previous studies in literature review have used achievement test (t-test) which indicate that the most appropriate in such studies, including the current study.
5. Variations in the sample size, including small size, the medium-sized, and large ones, the current study is one of the studies that had a large sample.
6. When considering the previous studies, there were few studies about adaptive technique in flipped learning within the limits of informed of the researcher and this gives the importance of this study.
7. Students' level varies from student to student; that mean there are individual differences between students' educational levels, so you must take into account these differences, and from previous studies note that there is no initial assessment of levels students in order to be guiding each student to the appropriate level of educational abilities, while it found in the study current, where after the student enters the data required student's level will be evaluated, and directed to the appropriate level by evaluation test.

CHAPTER 3

3. METHODOLOGY

The methodology of this thesis is discussed in this chapter. First, it has been proposed adaptive methods of the system in flipped learning environment (that are adaptive presentation methods and adaptive navigation methods). Second, the proposed design, which contains two main parts (teacher and student), was presented.Third, details about adaptive learning techniques that used in the beginning level and advanced level of design.

3.1. Adaptive Technologies

Adaptive learning environment receives students' related information and attempts to establish a new structure based on their interests and needs, and then individualise the system for every student (Smith, A.S ,1999). These environments enrich learning processes and present alternative means for the students in their learning process. According to Brusilovsky (2001), there are two fundamental techniques for putting adaptation into practice: Adaptive presentation and adaptive navigation (Brusilovsky, 2001).

3.1.1. Adaptive Presentation

- The purpose of this technique is to adapt the content offered in each hypermedia according to student objectives.
- The information is offered, in various ways, such as text, images, and video. In this study, the Fragment Variants technique has been used as adaptive presentation. In this technique, same contents have been prepared from different materials like text, images, and videos.

3.1.2. Adaptive Navigation

- The aim of this method is to support the student to find an effective way during navigation, Esichaikul, 2011. In addition, link generation technique has been used in the quiz module.

3.2. Development and Tools

The design of the study contains two main parts: Teacher and the student.

3.2.1. Teacher

A database was designed using SQL language with apache server (see Figure 3.1).

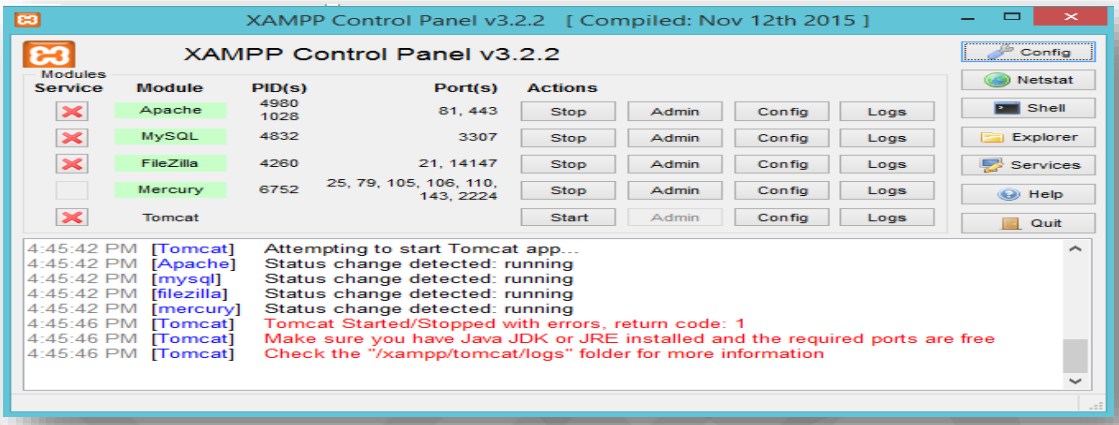

Figure 3.1. Apache Server and SQL Language

The teacher is the person who can control the database, whereas he/she can enter the students' information, which are Students' names, surname, identity numbers, and passwords. Also, he/she can see, modify and update students' marks at the first evaluative exam, and the number of students' attempts, just allowed five times to enter evaluation exam. After five attempts teacher may give another chance (see Figure 3.2).

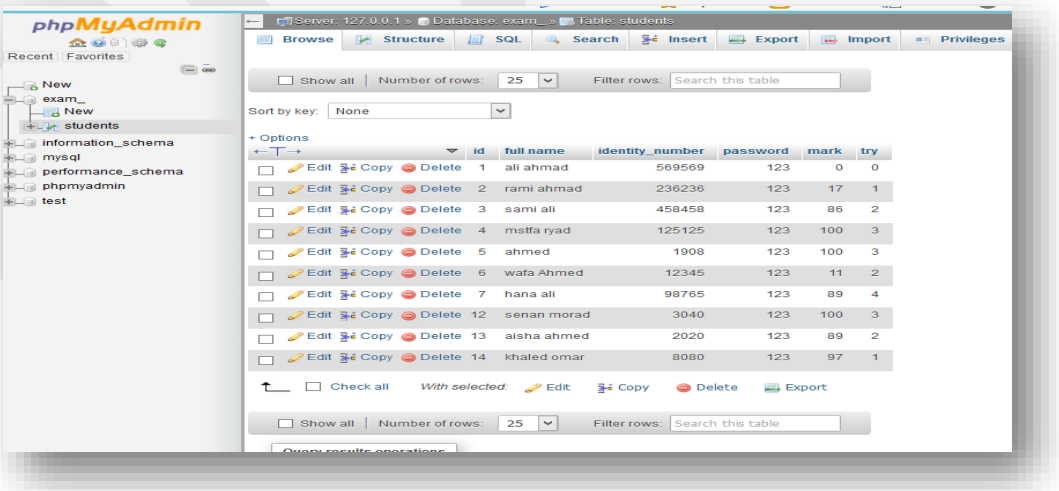

Figure 3.2. Database

3.2.2. The student

This page was created by XHTML and JavaScript language. A student can enter his/her personal information with an identity number and password (see Figure 3.3). If there is any wrong information, a warning message can be shown on the screen.

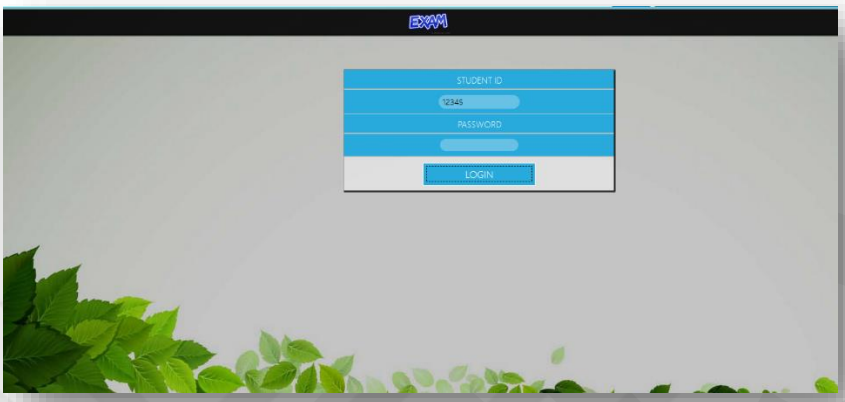

Figure 3.3. Login Page

Steps on how the student entry to the educational content (see Figure 3,4).

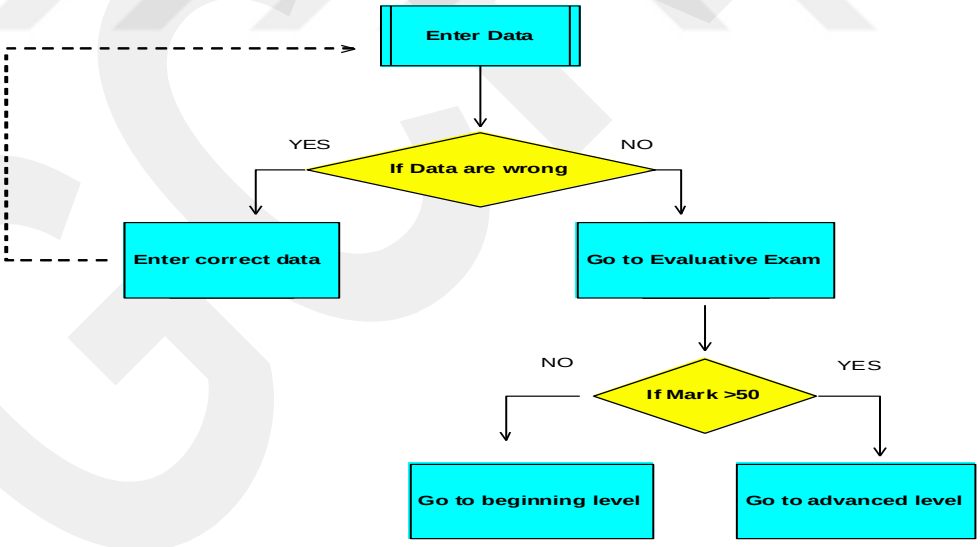

Figure 3.4. Steps Entry to the Educational Content

By taking evaluation test, Students' level can be evaluated before entering the course. Their scores will determine whether he/she can continue with beginning level or advanced level. After entering their right information, the system will

automatically check through the database and shows whether he/she has passed the exam or not with a number of attempts.

In case they did not pass the examination or he/she just did four attempts but did not pass, they can find multiple evaluation questions created in XHTML, Javascript, and PHP languages. Their name has been taken from the database and has being printed on the examination sheet (see Figure 3.5).

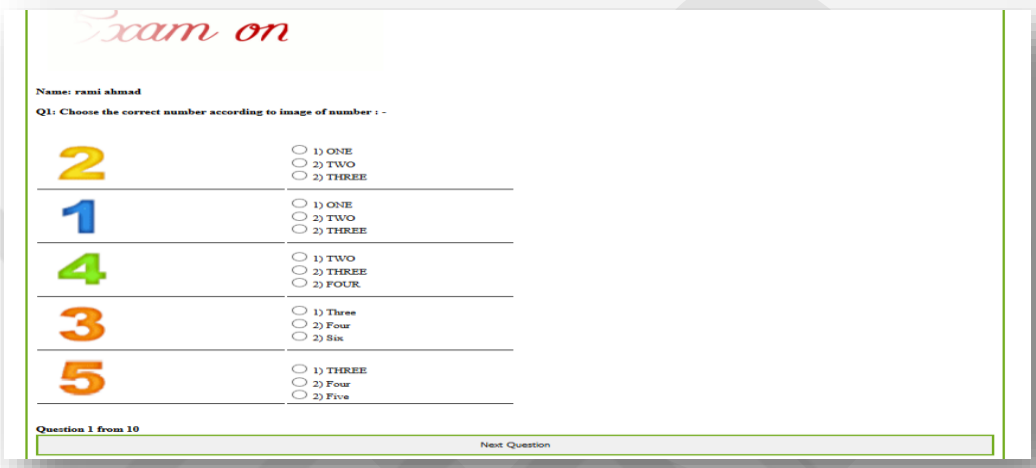

Figure. 3.5. Evaluation Test

If the student leaves a question and neglected it without an answer, he/she could find it difficul to navigate to another question. A warning message will come pointing him/her to answer the question (see Figure 3,6).

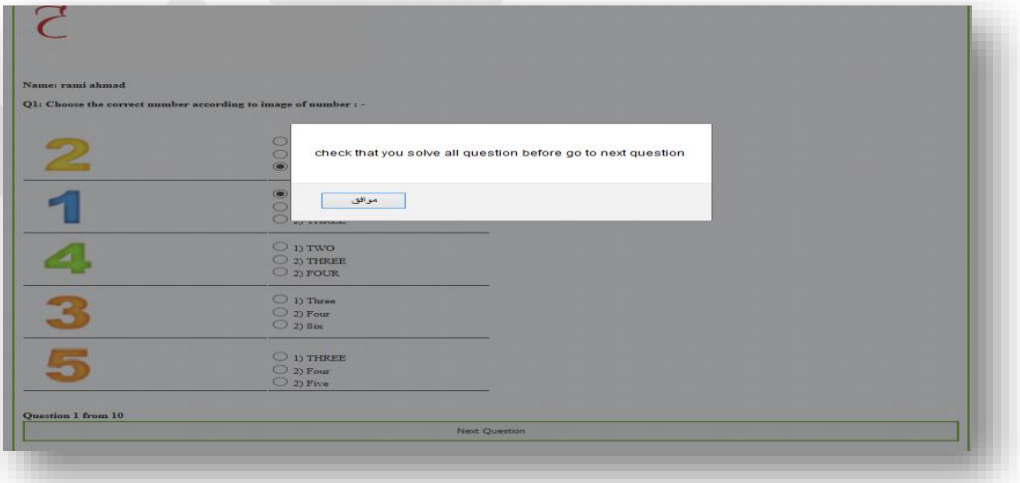

Figure 3.6. A warning Message

When all the questions has being answered by a student a dialog box will display to explain whether the student has not passed the examination if he/she has got less than 50 (see Figure 3,7), which releases automatically in the database at the end of the test (See Figure 3,8).

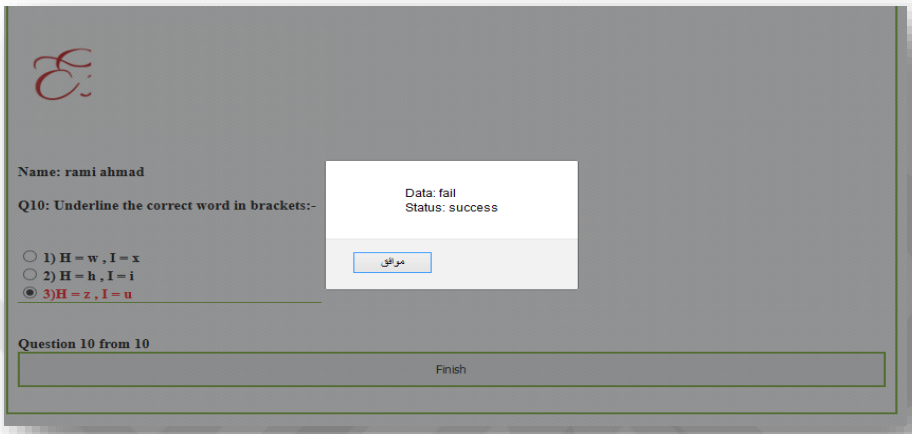

Figure 3.7. Failing to pass the Examination

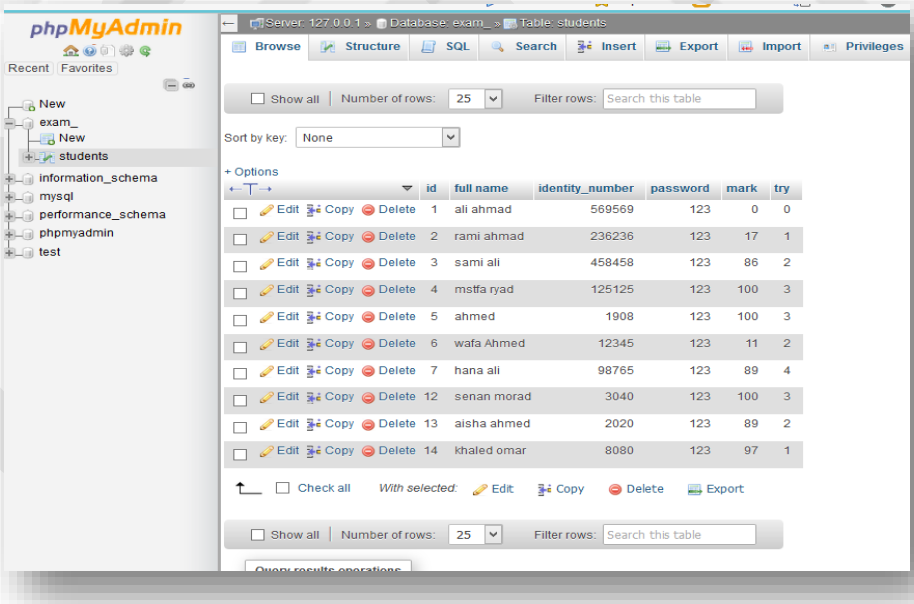

Figure 3.8. Result of Assessment Exam in Database

In this case, the student will be navigated to the beginning level. A student can repeat this test later. The beginning level designed by Java script and XHTML language. Some tools and techniques that are useful for the students to understand the educational content were exist in this page either by reading, listening, speaking and writing. (See Figure 3,9). In the beginning level, the course content includes the basic concepts.

Figure 3.9. Main Page of Beginning Level

If the student passes the examination successfully, a dialog box will display to explain that he/she has passed the test because he/she has got more than 50 marks (see Figure 3.10), which will be automatically release on the database at the end of the examination (see Figure 3.11).

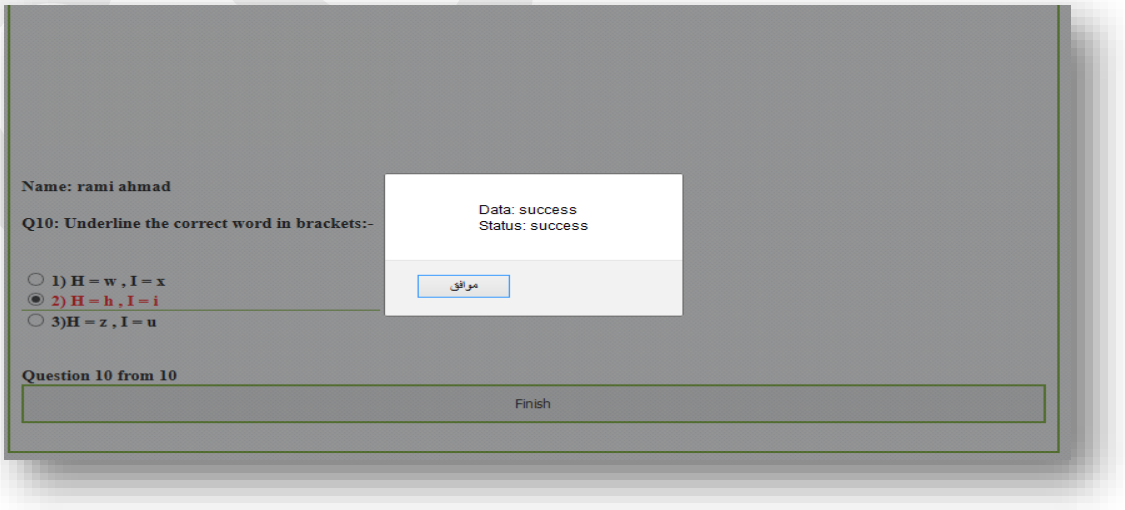

Figure 3.10. Case of Passing the Examination

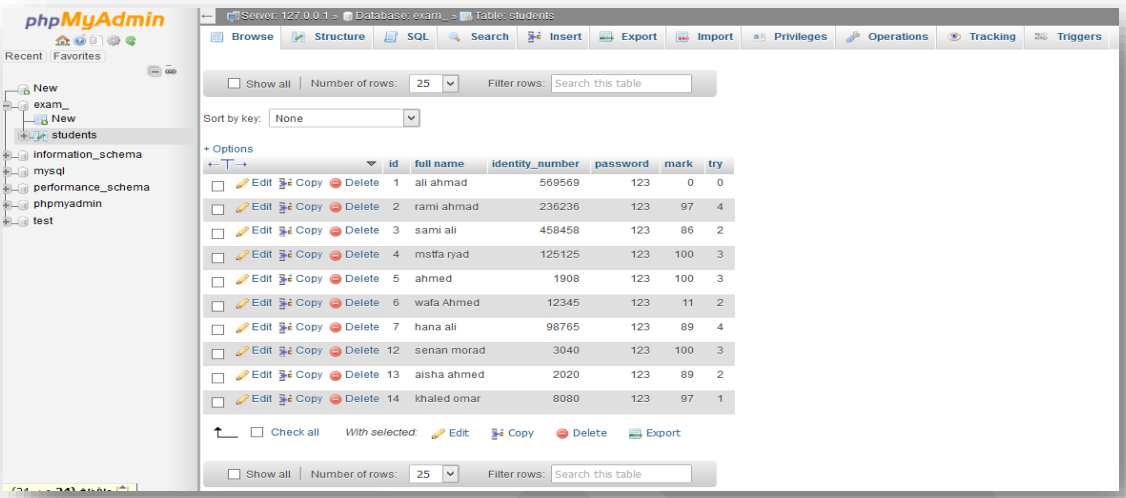

Figure. 3.11. Result of Assessment Exam in Database

The student can navigate to the advaned level (see Figure 3.12, Figure 3.13, and Figure3.14). This level were designed by XHTML and Java Script language. The -level contains many useful techniques for helping them to understand the educational content for the English language, either by writing, speaking, listening and reading. In the advanced level, the course content includes advanced concepts.

Figure. 3.12. Main Page of Advanced Level

Figure. 3.13. The Sub-Page of the Advanced Level

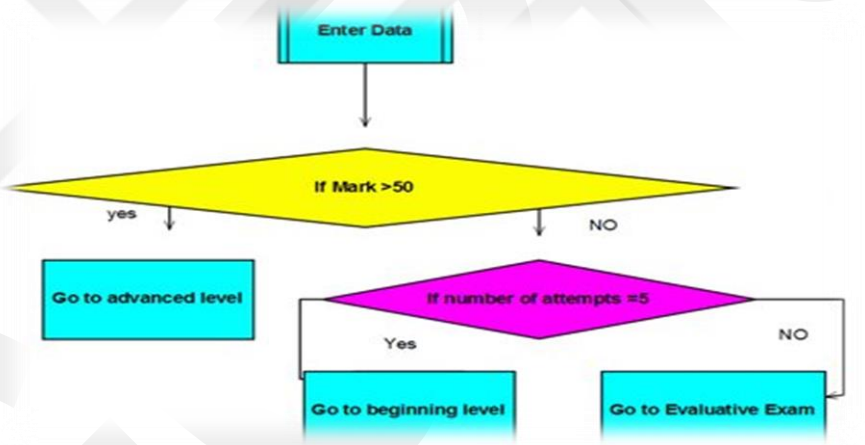

Figure. 3.14. The Steps on how go to the Advanced Level or the Beginning Level

Next, the student will just need to enter the password and the identification number, and he/she will automatically navigate to the advanced level without the need to pass this test again (see Figure 3.15).

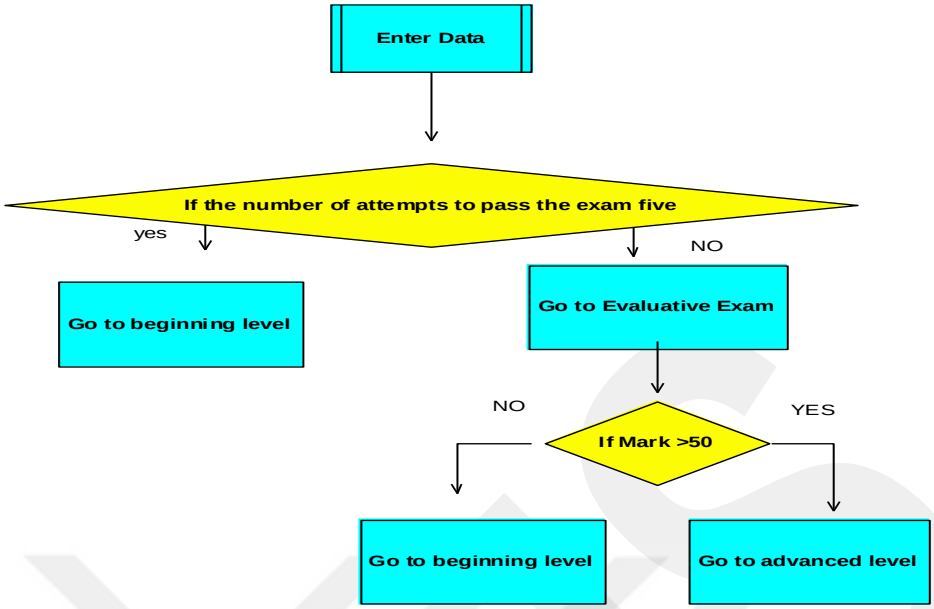

Figure. 3.15. The Steps for the Number of Attempts to Pass the Evaluation Exam

The Software code used to perform these steps is as follows:

```
<? php
}else if($mark_db>$mark_success){
        echo "<script>
        window.location.href='fristadvan.html'</script>";
}else if($try_db>=$max_try){
        echo "<script>
        window.location.href='firstbeginning.html'</script>";
}
else{
        echo "check that u enter correct pass and user";
}
?>
```

3.3. Adaptive Learning Techniques That Used in Beginning Level and Advanced Level

3.3.1. Reading

In order for the student to understand the educational content through reading, an educational adaptive electronic book has been designed by flipbook maker. (See Figure 3.16 and Figure 3.17). The purpose of making that is to develop the classical book from static book to adaptive, with several educational techniques put into it like sound, video, flash educational games and moving pictures

Figure 3.16. Example of Reading in Beginning Level

Figure 3.17. Example of Reading in Advanced Level

3.3.2. Listening

Listening pages were designed in XHTML and JavaScript language. In order for the students to understand the educational content through listening while this is consider an attractive way, and different techniques have been inserted into the pages such as video, sound, and educational flash (see Figure 3.18, Figure 3.19).

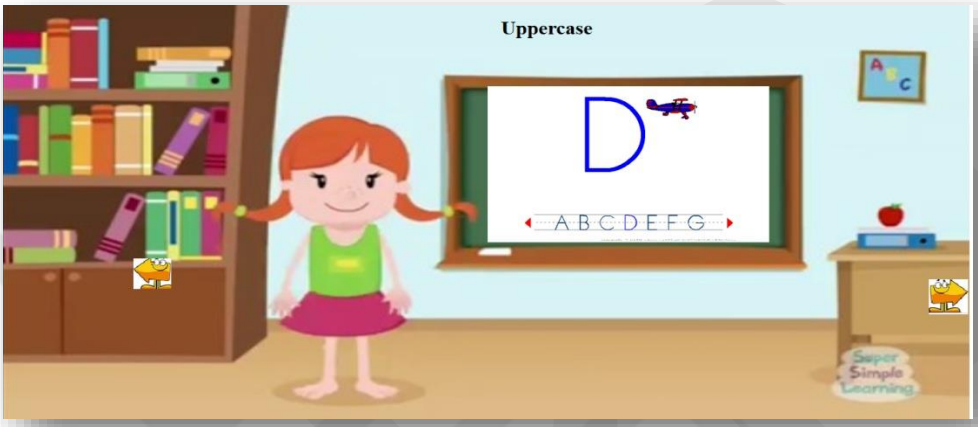

Figure.3.18. Example of Listening in Beginning Level

Figure 3.19. Example of Listening in Advanced Level

3.3.3. Writing

Writing pages were also designed by XHTML, JavaScript, and CSS language. These pages contain several useful lessons that helps students to write. They can also navigate between different lessons by pressing on any lesson icon (see Figure 3.20, Figure 3.21, Figure 3.22, Figure 3.23 and Figure 3.24).

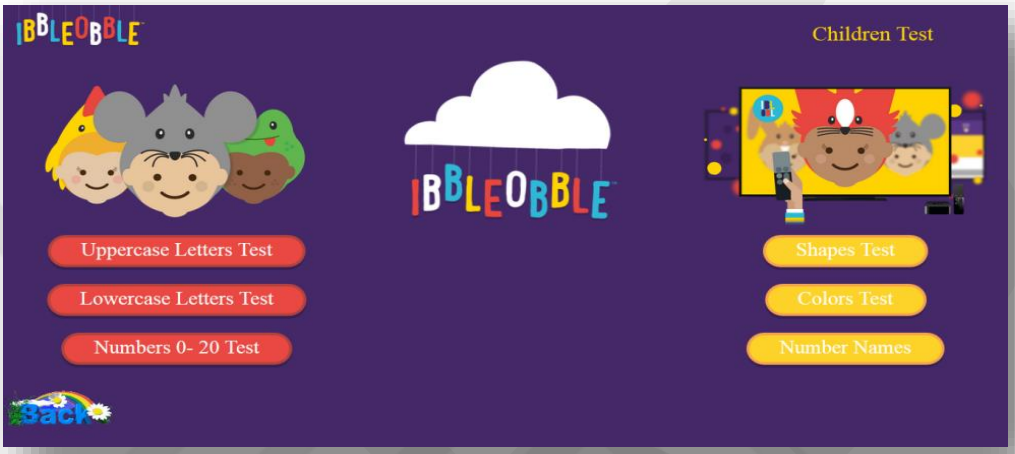

Figure 3.20. Main Page of Writing Pages in Beginning Level

Figure (3.21) explains the key steps on writing capital letters. There are some tools that are useful for students to write as pencil, eraser.

Figure.3.21. Example 1 of Writing in Beginning Level

Flash technique is also added to help student on how to write (see Figure 3.22).

Figure 3.22. Example 2 of Writing in Beginning Level

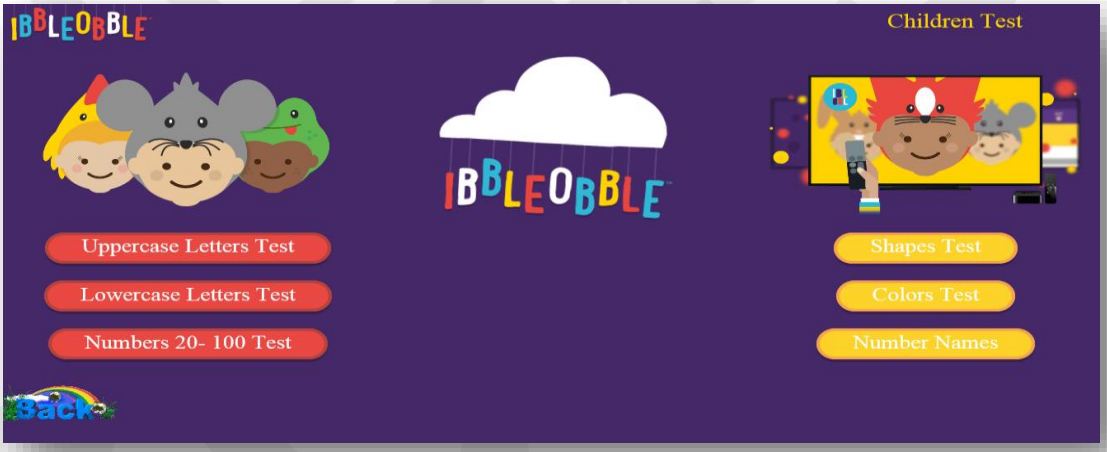

Figure 3.23. Main Page of Writing Pages in Advanced Level

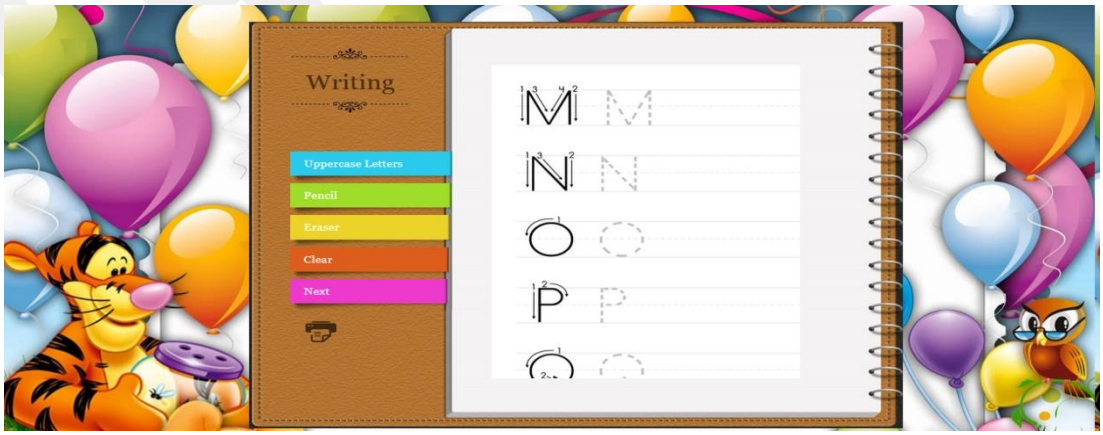

Figure.3.24. Example of Writing in Advanced Level

3.3.4. Speaking

In order for the student to understand the educational content through conversation, a number of conversation frames were also created by ”Cartoon story maker program” New connection code is inside it in order to connect it with the main page (see Figure 3.25 and Figure 3.26).

Figure 3.25. Example of Conversation in Beginning Level

Figure 3.26. Example of Conversation in Advanced Level

3.3.5. Electronic Test

There is also an electronic test taking after each lesson. The multi questions electronic test has been made by wondershare quiz creator programmer (see Figure 3.27). A specific time was also given to answer the questions and the voice technique is to help students to understand the questions better was also included. Successful degree and failing were classified.

Figure 3.27. Electronic Test in Beginning Level

İt is not possible for a student to move to the next question without attempting the current question. In addition, if the student choose the wrong answer, it will appear in this form (see Figure 3.28).

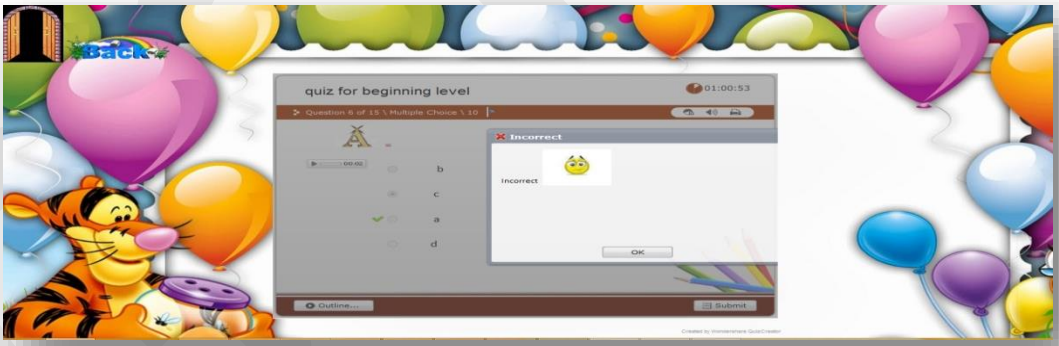

Figure 3.28. Selection Incorrect Answer

However, if the student chooses the correct answer, it will appear in this form (see Figure 3.29). New connection code is inside this electronic test in order for it to go back to lessons. After attempting all the questions, a dialog box will appear which will display the marks that were obtained by the student.

Figure 3.29. Selection Correct Answer

In the case that a student fails the test, he/she will have the opportunity to repeat the test as many times as possible (see Figure .3.30).

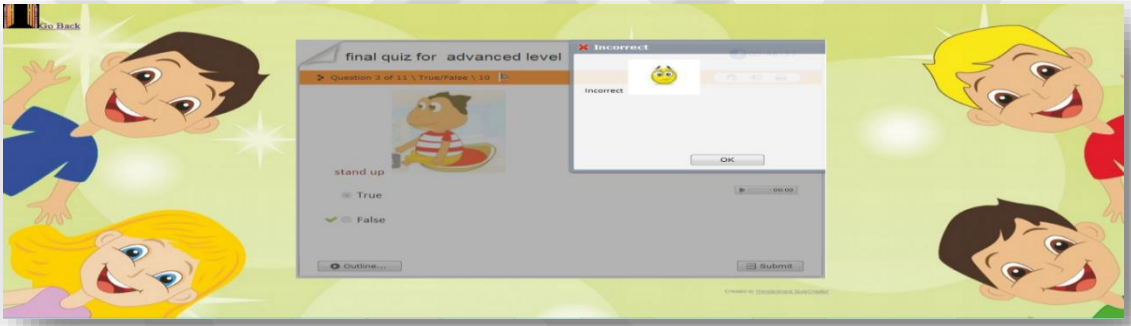

Figure 3.30. Electronic Test in Advanced Level

3.3.6. Course Lab

There are different techniques, which have been inserted by Course Lab that may help the students to increase their understanding in the educational content like video and sound (see Figure 3.31, Figure 3.32 and Figure 3.33).

Figure 3.31. First Page of Course lab in Beginning Level

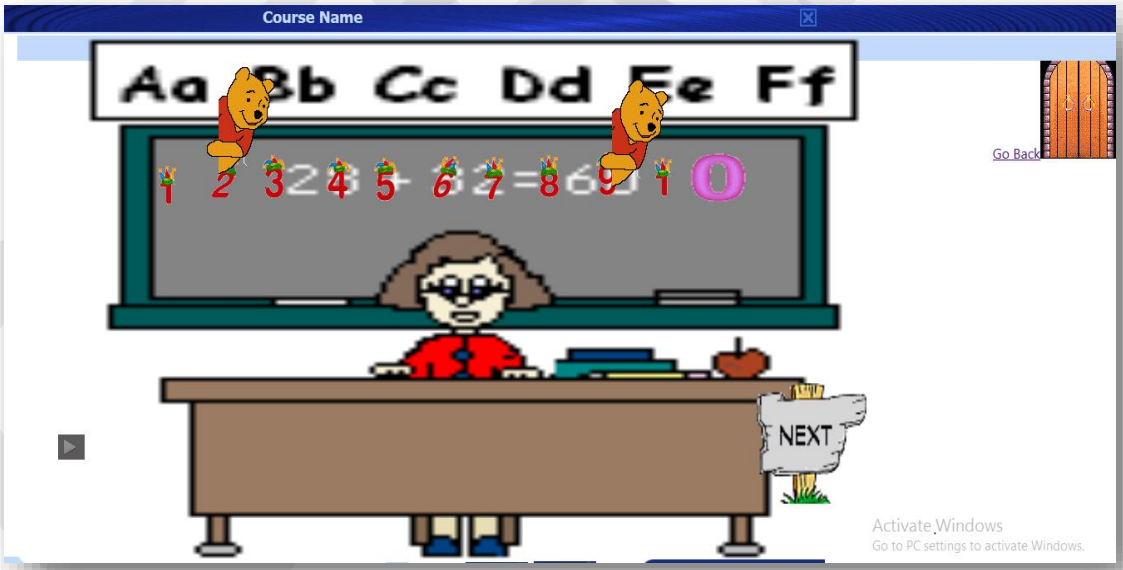

Figure 3.32. Example of Course lab

Figure 3.33. Course lab in Advanced Level

An educational program that is also entertaining that is similar to the program, "who wants to be a millionaire" has been created. If the student chooses the correct answer, a dialog box will be displayed to show that he choose the right answer. After that, he/she will be able to move to the next question, but if he/she chooses the wrong answer, it will be difficult to continue (see Figure 3.34).

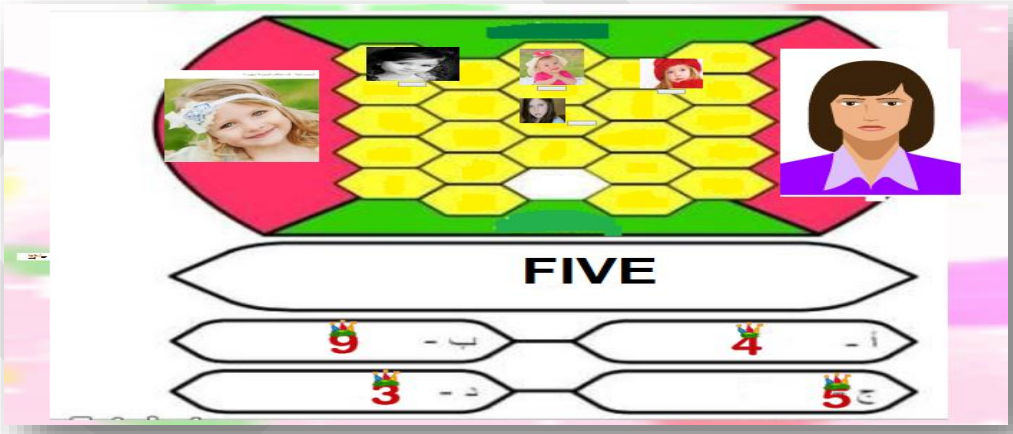

Figure 3.34. An educational Program and Entertaining

3.3.7. Interactive Questions

Various questions were created in JavaScript and XHTML language. The main purpose of the interactive questions was to increase the students to be interact with educational content (see Figure 3.35 and Figure 3.36).

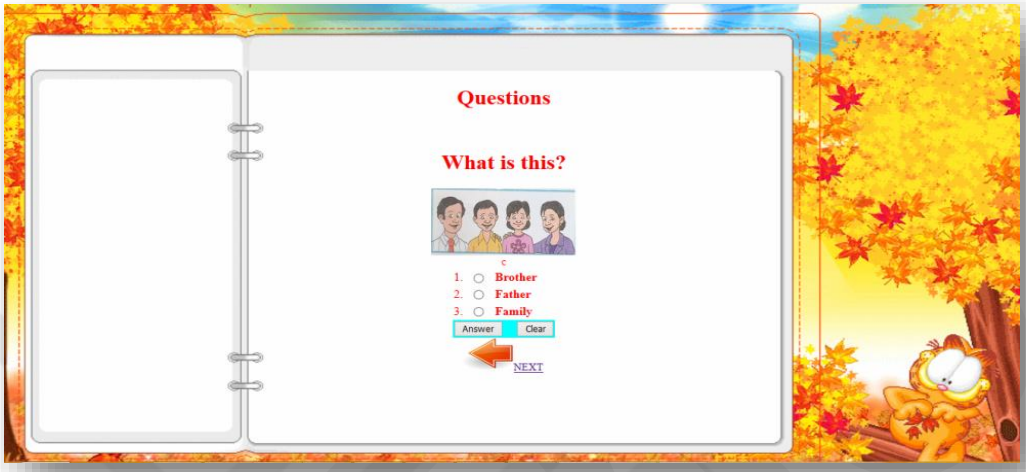

Figure 3.35. Example of Interactive Question in Beginning Level

Figure 3.36. Example of Interactive Question in Advanced Level

3.3.8. Educational Games

The purpose of the educational games is for the student to be able to get the information without feeling bored, for example, the following educational games explain information to the student about colours and family (see Figure 3.37 and Figure 3.38).

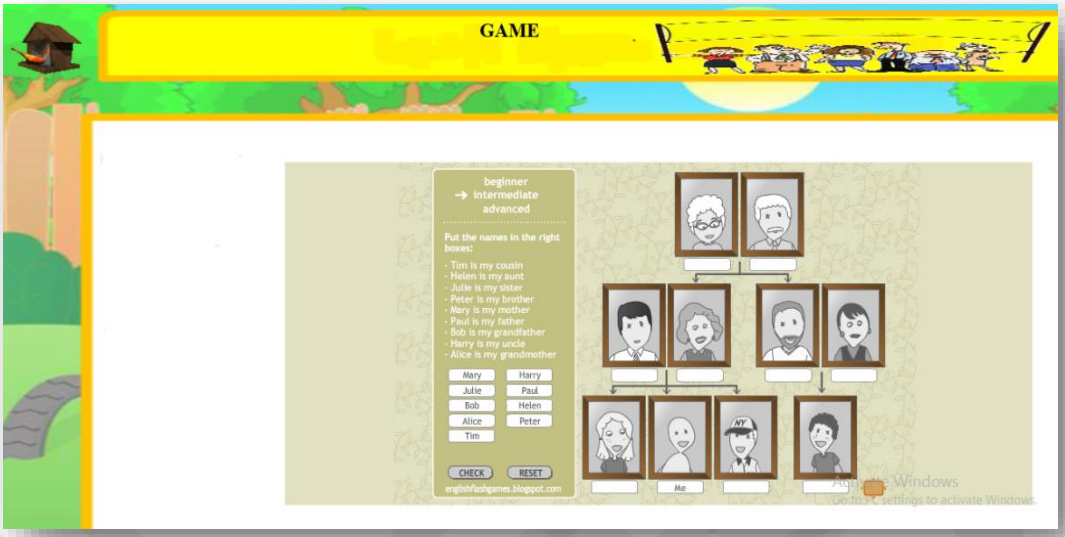

Figure 3.37. Example of Educational Games in Beginning Level

Figure 3.38. Example of Educational Games in Advanced Level

3.3.9. Painting and Coloration

Some pages in XHTML language, which contained flash technique, were created. The reason for this is to help the student in other to concentrate and to know colours, which will be, consider as one of his/her lessons (see Figure 3.39 and Figure 3.40).

Figure 3.39. Example of Painting and Coloration in Beginning Level

Figure 3.40. Example of Painting and Coloration in Advanced Level

CHAPTER 4

4. IMPLEMENTATION AND RESULTS

In this chapter, we will find the experiments and findings of the study, and to statistically collect and process data, and also discuss and interpret, and this chapter includes survey results.

4.1 The Study Measures

4.1.1. The Setup for the Experiment

The setup for the experiment includes:

- Choosing a unit of study
- Selection of the study population
- Select a sample study
- Identification Study Approach
- Prepare study tool
- Checking if the equal groups.

4.1.2. Apply of the Experiment

Apply of the experiment is as follow:

- Apply the pre-test.
- Apply the experiment.
- Apply the midterm-test during the experiment after the fifth week of the study.
- Apply the post- test after the completion of the experiment, and specifically after the tenth week of the start of the experiment.
- Student is Satisfaction**.**

4.1.3. Determine the appropriate Statistical Method

4.1.1.1. Study Approach

Been used the experimental method of (an adaptive technique in flipped learning) and designing an educational book that contains the same information as it's on the content of education adaptive, but in a traditional way and provide several tutorials, and videos, and divided the sample into three major groups as following:

1. The experimental group (1) taught by (ATIFL)
2. The control group (1) taught in the traditional way, through the traditional explanation.
3. The experimental group (2) (a control group (2)) taught by (FL).

After starting the experiment specifically after the fifth week and the tenth week of starting the experiment there was a comparison between the groups, and then calculate the average achievement tests between the groups, which are as following

Design (1)

The Control group (1) and experimental group (1) that was divided via evaluation examination into two groups (the beginning level group and the advanced level group).

Design (2)

The Control group (2) and experimental group (1) (the beginning level and the advanced level).

Design (3)

The Control group (1) and experimental group (2).

There are three experiments and the experimental design for each experiment as follows:-

1. The experimental design (1) as in the following table (4.1).

Groups	**User teaching style**	**Test before the experiment (pre-test)**	**The test in the fifth week of the experiment**	**The test after experiment in the tenth week of the experiment(post-test)**
G1 Experimental group (1) (beginng level, advanced level)	By adaptive technique in flipped learning	T11	T12	T13
G 2 Control group (1)	By traditional way"book"	T21	T22	T23

Table 4.1. The experimental Design (1) of the study

2. The experimental design (2) as in the following table (4.2). Her flip learnng is the control group (2).

Groups	**User teaching style**	**Test before the experiment (pre-test)**	**The test in the fifth week of the experiment**	**The test after experiment in the tenth week of the experiment(post-test)**
G1 Experimental group (1) (beginng level, advanced level)	By adaptive technique in flipped learning	T11	T12	T13
G 3 Control group (2)	By flipped learning	T31	T32	T33

Table 4.2. The Experimental Design (2) of the Study

3. The experimental design (3) as in the following table (4, 3).

Her flip learning is the experimental group (2) while the traditional teaching is the control group (1).

Groups	**User teaching style**	**Test before the experiment (pre-test)**	**The test in the fifth week of the experiment**	**The test after experiment in the tenth week of the experiment(post-test)**
G3 Experimental group (2)	By flipped learning	T31	T32	T33
G 2 Control group (1)	By traditional way”book”	T21	T22	T23

Table 4.3. The experimental Design (3) of the study

4.1.1.2. The Study Population

These includes all primary school students third grade at an elementary school in the state of Libya for the first semester of their academic year 2016 \ 2017 P, where the number of the third grade students in the same year is (2900) students.

4.1.1.3. The Study Sample

This is limited to elementary schools in Bani Walid, and of which there are 114 schools, according to statistics information center in Education Administration in Bani Walid for the academic year 2016 \ 2017.

The school that was selected is Ali bin Abi Talib to represent a sample of the study, and to give the possibility of the establishment of the experiment represented in computer labs and classrooms that is sufficient for the number of students.

After addressing it informally to the school director a sample of the study of third-grade students in the elementary school was selected randomly. Appendix (1) . The sample consisted of a random form of (90) students distributed as follows-: (30) students for the experimental group (1), which was divided into (20) students represents the experimental group (1) (Beginning Level), (10) students represents the experimental group (1) (Advanced Level), (30) students represents the control group (1), and experimental group (2) was represented by (30) students (control group (2)), as shown in the tables.

Groups	Number of students
G1 Experimental group (1)(beginning level, advanced level)	30
G 2 Control group (1)	30
Total	60

Table 4.4. The Preparation of the Study Sample Distributed on G1 and G2

Groups	Number of students
G1 Experimental group (1)(beginning level,advanced level)	30
G 3 Control group (2)	30
Total	60

Table 4.5. The Preparation of the Study Sample Distributed on G1 and G3

Groups	Number of students
G3 Experimental group (2)	30
G 2 Control group (1)	30
Total	60

Table 4.6. The Preparation of the Study Sample Distributed on G3 and G2

4.1.1.4. Unit of the Study

In order to teach the English language for the third grade of the first semester, a traditional book was created, to be scientific content, that will be taught through the control group (1), provide several educational videos ,include educational content, to be scientific content which will be taught through the experimental group (2) (control group (2)), and the creation of an adaptive instructional design which contains multiple adaptive tools, that will be taught during the experimental group (1).

4.1.1.5. The Study Tool.

They built the achievement tests in the light of their content with their behavioral goals, and it was the focused in the design of tests on the rules of objective tests based on multiple choice, each question consists of an introduction and four options, while only one option is the correct answer, and was followed by the next steps in constructing test.

4.1.1.5.1. Identify the Objective or Purpose of the Tests.

The first achievement test prepared in order to:

- Use it as a pre-test to measure what have the third-grade students (sample) of advance information on English letters, numbers, colours, shapes, names of animals, the family tree, and parts the body that contains it the content subject of the study.
- Use it as post-test after the completion of the experiment and specifically after the tenth week to measure the effectiveness of the program after applied of the experience.

The second achievement test prepared in order to:

- Use it as a midterm test, and specifically after the completion of the fifth week of the study, which contains the information that has been studied from the first week to fifth week only.
- Use Results in the validation of study hypotheses.

The pre-test was used to identify the extent to which the objectives and effectiveness of the program, this is done by applying the first achievement test before the experiment on the study sample (the experimental group (1), the control group (1) and the control group (2) (the experimental group (2)), Then apply it after submission or teaching the content in the traditional manner for the control group (1), submission or teaching the content by (flipped learning) for the control group (2)((the experimental group (2)), and the teaching the content through (adaptive technique in flipped learning) for the experimental group (1) after the tenth week of the beginning of the experiment. The second achievement test used to identify the extent to which the objectives and effectiveness of the program after passing the five weeks of the experiment, this is done by applying test after the fifth week of the start of the experiment on the study sample (the experimental group (1), the control group (1), and the control group (2) (the experimental group (2)), and through processing the results statistically could measured the change in achievement. The limited test on the first three of the cognitive levels aspect of Bloom's Taxonomy, namely: (remembering, understanding, and applying).

4.1.1.5.2. Build the Test

Steps to build the achievement test include:

- Determine the behavioural goals of the test.
- Determine the type of test.
- Determine the type of vocabulary.
- The wording of the vocabulary of the test.
- Wording the instructions of the test.
- The sincerity test.

4.1.1.5.2.1. Determine the Behavioral Goals of the Test

Select the researcher and the development of behavioral objectives of the educational content to be taught and that is created. Appendix (2).

4.1.1.5.2.2. Determine the Type of Test

Tests' kind of objective tests, which are easy to design and characterized by the possibility of use in the evaluation and by which to answer the many questions during a relatively short (كاظم وزكي,1988,ص399).

4.1.1.5.2.3. Determine the Type of Vocabulary

After reviewing the many references and studies on evaluation methods in general and in particular the objective tests and the conditions to be fulfilled in a good test (سالم امحمد, 2013), has been drafted questions tests in multiple choice style, which is considered one of the best types of objective tests are the most common and widely used consists of each item of an introduction and four options which are the only correct one option.

4.1.1.5.2.4. The Wording of the Vocabulary of Test.

During the drafting of the test vocabulary were taken into account:

- Present the question in a direct way and be answering one of the four answers that follow the question. This number was chosen in order to reduce the guesswork.
- Measures one of the levels (remembering, understanding, and applying).
- Phrases and graphics are clear.
- Order the correct answers at random irregular.

4.1.1.5.2.5. Wording the Instructions of the Test

Test instructions the purpose of which is to illustrate to the student how to record the correct answer in the desired place and to be written in true, accurate, and simple way, so do not affect the student's response to the change of the test results, the test instructions on the front page of questions. Appendix (6).

4.1.1.5.2.5.1. Grading and Method of Correction

Have been taking into account that gives one degree for each correct answer, and nothing for each wrong answer. The answer key of the test has been created to facilitate debugging. Appendix (7).

4.1.1.5.2.6. The Sincerity Test

Achievement tests done in the local image on a form of arbitrators, appendix (3), and appendix (4) via a questionnaire prepared for that purpose appendix (5) so as to judge it educationally and scientifically in the following aspects:

- The ratio of the clarity of the test vocabulary.
- Each question being measured to its level.
- The ratio of link the test vocabulary of the content.

After, accepting the views of the arbitrators and their guidance the grammar of the test was rewritten in its final form and become ready for applying on the exploratory sample.

4.1.1.5.3. Tests in their Final Form

One of the tests choosen in its final form includes 20 questions which was divided into content in educational topics while the rest of the test includes 12 questions which was divided into content in educational topics as well.

The test also made up of a number of questions papers and paper the FAQ to guide the student/participant, and another paper was provided individually in order to answer. Appendix (6)

4.1.1.6. Verify the Equivalence of the Groups

The achievement test has been done prior to the experiment on both the experimental group (1) and the control group (1) with the experimental group (2) (control group (2)), so as to verify the equivalence of the groups. The time allowed for the test is 45 minutes. The following table, indicate the pre-test results.

The level of significance	Value (T)	Standard deviation	Average	The number	Groups	The level of achievement
Is not significance	.318 .318	1.24106	2.6667	30	Experimental(1)	Remembering
		1.19434	2.5667	30	Control(1)	
Is not significance	.238 .238	1.14269	2.7333	30	Experimental(1)	Understanding
		1.02833	2.6667	30	Control(1)	
Is not significance	.425 .425	1.30472	2.4333	30	Experimental(1)	Applying
		1.11880	2.3000	30	Control(1)	
Is not significance	.450 .450	3.24143	7.9000	30	Experimental(1)	Total
		3.07081	7.5333	30	Control(1)	

Table 4.7. Values (T) and the Statistical Significance level of the Variance in the pre-test within the Experimental Group (1) and the Control Group (1).

Of the table (4,7) it is obvious that when the Bloom's Taxonomy of the first three achievement levels (remembering, understanding, applying) does not have significant statistics variance in the control group (1) and the experimental group (1), in the measurement before the experiment. This point to the similarity of the groups in the first measurement of all the levels required and measured in this study.

The level of significance	Value (T)	Standard deviation	Average	The number	Groups G1 AND G3	The level of achievement
Is not significance	.318 .318	1.24106	2.6667	30	Experimental(1)	Remembering
		1.19434	2.5667	30	Control(2)	
Is not significance	.318 .318	1.30472	2.4333	30	Experimental(1)	Understanding
		1.12444	2.3333	30	Control(2)	
Is not significance	.356 .356	1.14269	2.7333	30	Experimental(1)	Applying
		1.03335	2.6333	30	Control(2)	
Is not significance	.455 .455	3.24143	7.9000	30	Experimental(1)	Total
		3.00268	7.5333	30	Control(2)	

Table 4.8. The values (T) and the Statistical Significance level of the Variance in the pre-test between the Experimental Group (1) and the Control Group (2).

Of the table (4.8) is obvious that when the Bloom's Taxonomy of the first three achievement levels (remembering, understanding, applying) does not have significant statistics variance between the control group (2), and the experimental group (1), in the measurement before the experiment.This points to the similarity of the groups in the first measurement of all the levels required and measured in this study.

The level of significance	Value (T)	Standard deviation	Average	Number	Groups G2 AND G3	The level of achievement
Is not significance	.000	1.19434	2.5667	30	Control(1)	Remembering
	.000	1.19434	2.5667	30	Experimental(2)	
Is not significance	.125	1.02833	2.6667	30	Control(1)	Understanding
	.125	1.03335	2.6333	30	Experimental(2)	
Is not significance	-.115	1.11880	2.3000	30	Control(1)	Applying
	-.115	1.12444	2.3333	30	Experimental(2)	
Is not significance	.000	3.07081	7.5333	30	Control(1)	Total
	.000	3.00268	7.5333	30	Experimental(2)	

Table 4.9. The values (T) and the level of Statistical Significance of the differences between the control Group (1) and the Experimental Group (2) In the pre-test

Of the table (4.9) it is obvious that when the Bloom Taxonomy of the first three achievement levels (remembering, understanding, applying) does not have statistically significant variance between the control group (1), and the Experimental group (2) in the measurement before the experiment.This points to the similarity between the groups in the first measurement of all levels required and measured in this study.

4.1.2. Apply the Experiment

Application of the experiment includes-

4.1.2.1. Apply the Pre-test

The motive is to measure what have been groups (sample) from an initial information on what the study is all about. At the time the test was conducted, it took 45 minutes.

4.1.2.2. Apply the Experience

Prior to the application of the experience, several important steps were followed to attain the correct results includes:-

- Providing the required hardware for the experience and as such, a school was selected Ali bin Abi Talib because there was an integrated computer lab.
- A comfortable place well furnish to teach, which accommodate the growing number of students.
- Providing neccessary training for the teacher on the use an adaptive educational site and accessing the database to add or remove the modification of student in their statements and other assignments on the student information.
- Training the experimental group (1) on how to log into the educational unit and how to navigate between modules.

After the completing, the necessary equipment that will be used to carry out the experiment has been interviewing a teacher who will teach experimental and the control groups, for an alert to some of the instructions for the experiment. Let the research on the experimental groups start in line with the time plan that was prepared by a teacher, and in a parallel line, let the teacher began teaching the same unit for the control group (1) and the experimental group (2) (the control group (2)). Researcher intentionally does not teach students/participant by himself to avoid bias in the experiment.

4.1.2.3. Apply the Test During the Experiment after the Fifth Week of the Study

The test was carried out effectively for the (control group (1), achievement, the experimental group (2) which is the (control group (2)) and the experimental group (1) that were divided into two groups (beginning level group, and advanced level group) and time of the test took 45 minutes.

4.1.2.4. Apply the Test after the Completion of the Experiment, and Specifically after the Tenth Week of the Start of the Experiment

The test was carried out effectively for achievement of (the control group (1), the experimental group (2) (the control group (2)) and the experimental group (1) that was divided into two groups (beginning level group, and advanced level group) and time of the test lasted for 45 minutes.

4.1.2.5. Student's Satisfaction

The questionnaire was administered for the benefit of all the experimental group (1) in order to evaluate students' satisfaction of the (ATIF) after the experiment and the differences between the participation of students before and after the experiment.

The questionnaire has 6 points, ranging from (Very Dissatisfied, Dissatisfied, Neutral, Satisfied, Very Satisfied, and N/A) (Appendix 9).

Student satisfaction is described, as an attitude consider okay towards the teaching and learning experiences cum activities conducted in an adaptive educational model for flipped classroom. The results are displayed and each question in the survey evaluation are represented in pie charts.

The outcome of the Survey show that the students are satisfied with the experiment, it was admitted that the adaptive technique used in flip learning will help them to improve their knowledge on this topic. Appendix (10).

4.1.3. Determine the Appropriate Statistical Method

The statistical methods used the following methods:-

- T-TEST was used so as to state the differences between the achievement and performance of each group.
- Each group use Standard Deviation for degrees: To see the deviation and differences in the performance of each group or stage from the average.
- The arithmetic average of the scores each group so as to express the values of each of the groups of the study via a single value it represents.
- A program was used for data processing (Spss**).**

4.2. Results of the Study

View results, discussion, and interpretation.

4.2.1. View Results

After completing the experiment, we apply the experience, then carry out the post-test, outcome were analyzed in order to validate the study questions, and the results were as follows:-

First Question

The first question is the following:-

Are there any statistically/flactually significant variance at the standard of hugeness (α =0.05) between the mean scores of the gatherings (exploratory (1) and control (1)) in the pre-test to the level of accomplishment/achievement in the light of Bloom's Taxonomy, which has already been mentioned and of (remembering, understanding, applying) for students of the third grade in the English language?

In order to answer this question there is to calculate the arithmetic mean and standard deviation and calculate the value (T) of the control group (1), and experimental group (1) via the results obtained from the pre-test of the level of academic achievement and the results were as shown in Table (4.10).

The level of significance	Sig(2-tailed)	Value (T)	df	Standard deviation	Average	The number	Groups G1 AND G2	The level of achievement
Is not significance	.752	.318	58	1.24106	2.6667	30	Experimental(1)	Remembering
	.752	.318	57.915	1.19434	2.5667	30	Control(1)	
Is not significance	.813	.238	58	1.14269	2.7333	30	Experimental(1)	Understanding
	.813	.238	57.367	1.02833	2.6667	30	Control(1)	
Is not significance	.672	.425	58	1.30472	2.4333	30	Experimental(1)	Applying
	.673	.425	56.681	1.11880	2.3000	30	Control(1)	
Is not significance	.655	.450	58	3.24143	7.9000	30	Experimental(1)	Total
	.655	.450	57.831	3.07081	7.5333	30	Control(1)	

Table 4.10. Value of (T) and the level of Statistical Significance for the Comparison between the Experimental Group (1) and the Control Group (1) in the pre-test

Results of first question for the comparing between (adaptive+flipped) with traditional style, from the previous table (4.10) it turns out the following:-

There was no statistically significant variance at the standard of significance (α=0.05), this points to the similarity of the exploratory group (1) and the non-experimental group (1) for the students of the third-grade primary before the experiment.

Second Question

The second question is the following:-

Are there statistically significant variance at the standard of significance (α=0.05) between the scores of the mean of the groups (experimental (1) and control (2)) from the pre-test to the level of achievement in the light of Bloom's Taxonomy, which already mentioned and of (remembering, understanding, applying) for students of the third grade in the English language?

For answering this question, there is need for us to calculate the arithmetic mean and the standard deviation and calculate the value (T) of the control group (2), and experimental group (1) via the outcome obtained from the pre-test at the academic achievement level and the outcomes were shown in Table (4.11).

The level of significance	Sig. (2-tailed)	Value (T)	df	standard deviation	Average	The number	Groups G1 AND G3	The level of achievement
Is not significance	.752	.318	58	1.24106	2.6667	30	Experimental(1)	Remembering
	.752	.318	57.915	1.19434	2.5667	30	Control(2)	
Is not significance	.723	.318	58	1.30472	2.4333	30	Experimental(1)	Understanding
	.724	.318	57.423	1.12444	2.3333	30	Control (2)	
Is not significance	.752	.356	58	1.14269	2.7333	30	Experimental(1)	Applying
	.752	.356	56.763	1.03335	2.6333	30	Control(2)	
Is not significance	.651	.455	58	3.24143	7.9000	30	Experimental(1)	Total
	.651	.455	57.664	3.00268	7.5333	30	Control(2)	

Table 4.11. Value of (T) and the level of Statistical Significance for the Comparison between the Experimental Group (1) and the Control Group (2) in the pre-test

Results of second question for the comparing between (adaptive+flipped) with flipped learning, from the previous table (4.11) it turns out the following:-

There was no statistically significant variance at the standard of significance (α=0.05), this is pointing to the similarity of the exploratory group (1) and the non-experimental group (2) for the students of the third-grade primary before the experiment.

Third Question

The third question is the following:-

Are there statistically significant variance at the standard of significance (α=0.05) between the mean scores of the groups (control (1), and experimental (2)) in the pre-test to the level of achievement in the light of Bloom's Taxonomy, which has already been mentioned as (remembering, understanding, applying) for students of the third grade in the English language?

For answering this question there is need to calculate the arithmetic mean and standard deviation and calculate the value (T) of the control group (1), and the experimental group (2) via the outcomes obtained from the pre-test of the level of academic achievement and the results were as shown in Table (4.12).

The level of significance	Sig. (2-tailed)	Value (T)	df	Standard deviation	Average	The number	Groups G2and G3	The level of achievement
Is not significance	1.000	.000	58	1.19434	2.5667	30	Control(1)	Remembering
	1.000	.000	58.000	1.19434	2.5667	30	Experimental(2)	
Is not significance	.901	.125	58	1.02833	2.6667	30	Control(1)	Understanding
	.901	.125	57.999	1.03335	2.6333	30	Experimental(2)	
Is not significance	.909	-.115 -.115	58	1.11880	2.3000	30	Control(1)	Applying
	.909		57.999	1.12444	2.3333	30	Experimental(2)	
Is not significance	1.000	.000	58	3.07081	7.5333	30	Control(1)	Total
	1.000	.000	57.971	3.00268	7.5333	30	Experimental(2)	

Table 4.12. Value of (T) and the level of Statistical Significance for the Comparison/Difference between the Non-experimental/Control Group (1) and the Experimental Group (2) in the pre-test

Results of third question for the comparing between (flipped learning) with traditional style, from the previous table (4.12) it turns out the following:-

There was no statistically significant variance at the standard of significance (α=0.05), this is pointing to the similarity of the experimental/exploratory group (2) and the control/non-experimental group (1) for the students of the third-grade primary before the experiment.

As it can be explained by the graph in, figure no (4.1).

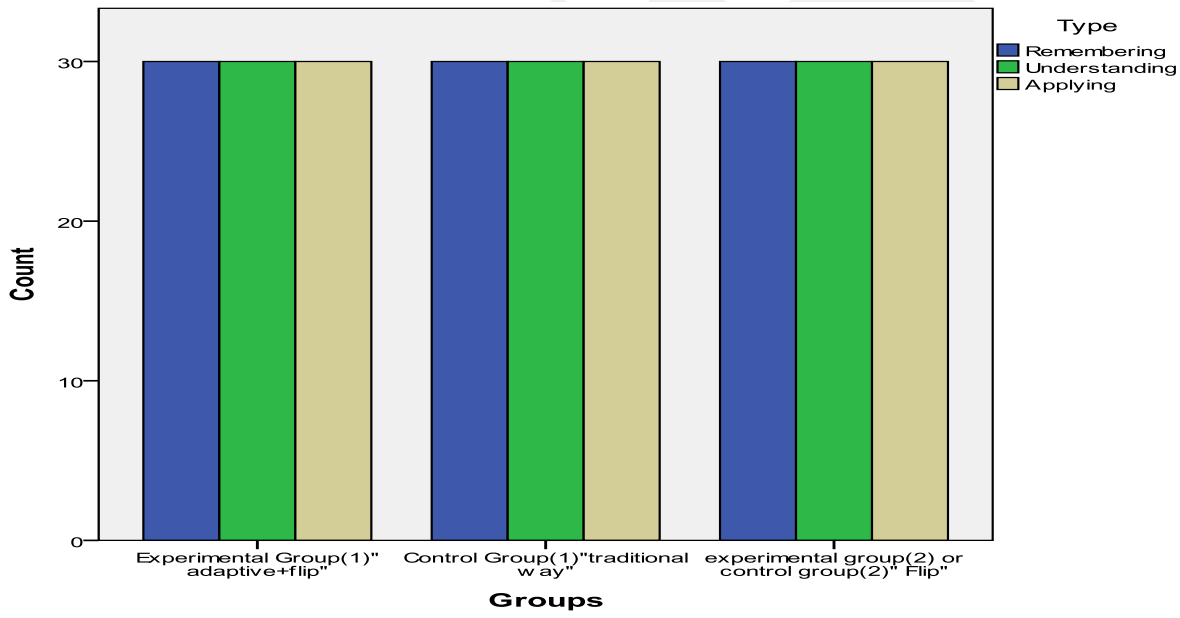

Figure 4.1. The Graphical Representation of the differences between the Experimental group (1), Experimental group (2), and Control Group (1) in the pre-test

Fourth Question

Are there statistically/flactually significant variance at the standard of significance (α = 0.05) between the scores of mean of the experimental group (1) (advanced level group) and the scores of mean of the experimental group (1) (beginning level group) during the experiment after the fifth week of the experiment, according to Bloom's

Taxonomy (remembering, understanding, applying) for students in the third grade of primary in English?

To answer this question, there is need for us to calculate the arithmetic mean and standard deviation and then calculates the value (T) using the mid-term test outcomes after the completion of the fifth week of the experiment between the experimental/exploratory group (1) (advanced level group, and beginning level group) and the results were as shown in Table (4.13).

The level of significance	Sig. (2-tailed)	Value(T)	df	Standard deviation	Average	The number	Groups G1	The level of achievement
Is not significance	.181	1.372	28	.51640	3.2500	20	Experimental (1)(beginning level)	Remembering
	.139	1.530	24.0	.71635	3.6000	10	Experimental (1)(advanced level)	
Is not significance	.651	.458	28	.48305	3.6000	20	Experimental (1)(beginning level)	Understanding
	.627	.492	21.9	.59824	3.7000	10	Experimental (1)(advanced level)	
Significance at the level of 0.05	.000	4.032	28	.48305	2.8000	20	Experimental (1)(beginning level)	Applying
	.000	4.377	22.5	.61559	3.7000	10	Experimental (1)(advanced level)	
Significance at the level of 0.05	.008	2.874	28	1.05409	9.7000	20	Experimental (1)(beginning level)	Total
	.007	3.020	20.6	1.21828	11.0000	10	Experimental (1) (advanced level)	

Table 4.13. Values of (T) and the level of Statistical Significance, and the Difference in Results between the Experimental Groups (1) (Advanced Level Group and beginning-level group), in the Midterm Test

Results of fourth question for the comparing between (adaptive+flipped) itself, from the previous table (4.13) it turns out the following:-

Value (T) did not become significant statistically at two levels of Bloom level (remembering ,understanding) but, value (T) became statistically significant at one level of Bloom level (applying), meaning there are significant contrasts in the normal accomplishment test in one level for the experimental group (1) (Advanced Level Group). Seven students from the experimental group (1) and in the beginning level, passed the mid-term test, and this enabled them to move to the study at the advanced level.

Fifth Question

The fifth question is the following:

Are there statistically/flactually significant variance at the standard of significance ($\alpha = 0.05$) between the scores of mean of the experimental group (1) (advanced level group) and the scores of mean of the control group (1) amid the trial after the fifth week of the experiment, according to Bloom's Taxonomy (remembering, understanding, applying) for students in the third grade of primary in English?

For answering this question, we need to calculates the arithmetic mean and standard deviation and calculates the value (T) via the mid-term test outcomes after the completion of the fifth week of the experiment between the experimental/exploratory group (1) (advanced level group) and control group (1) and the results were as shown in Table (4.14).

The level of significance	Sig. (2-tailed)	Value(T)	df	Standard deviation	Average	The number	Groups G1 AND G2	The level of achievement
Significance at the level of 0.05	.000	9.047	38	.51640	3.6000	10	Exploratory group (1)(advanced level)	Remembering
	.000	10.663	21.572	.71840	1.3667	30	Control group(1)	
Significance at the level of 0.05	.000	7.234	38	.48305	3.7000	10	Exploratory group (1)(advanced level)	Understanding
	.000	9.660	29.571	.89955	1.5333	30	Control group(1)	
Significance at the level	.000	6.803	38	.48305	3.7000	10	Exploratory group	Applying

of 0.05		9.752					(1)(advanced level)	
	.000		34.850	1.10433	1.2333	30	Control group(1)	
Significance at the level of 0.05	.000	8.763 12.541	38	1.05409	11.0000	10	Exploratory group (1)(advanced level)	Total
	.000		34.742	2.39756	4.1000	30	Control group (1)	

Table 4.14. Values of (T) and the Level of Statistical Significance, and the Difference in Results between the Exploratory Group (1) (Advanced Level Group) and the Control/non experimental Group (1), in the Midterm Test

Results of first question for the comparing between (adaptive+flipped) with traditional style, from the previous table (4.14) it turns out the following:-

Value (T) became significant statistically at three levels of Bloom levels (remembering, understanding, applying), importance there are huge contrasts in the normal accomplishment test for the Exploratory group (1) (Advanced Level Group).

Question Six

The sixth question in the following:-

Are there statistically significant variance at the standard of significance (α=0.05) between the mean scores of the experimental group (1) (Advanced Level Group) and the mean scores of the control group (2) during the experiment after the fifth week of the experiment, according to Bloom's Taxonomy (remembering, understanding, applying) for students in the third grade of primary in English?

In order to answer this question, we need to calculate the arithmetic mean and standard deviation and calculates the value (T) via the mid-term test outcomes after the completion of the fifth week of the experiment between the experimental group (1) (advanced level group) and control group (2) and the results were as shown in Table (4.15).

The level of significance	**Sig. (2-tailed)**	**Value(T)**	**df**	**Standard deviation**	**Average**	**The number**	**Groups G1 and G3**	**The level of achievement**
Significance at the level of 0.05	.000	4.163	38	.51640	3.6000	10	Experimental group(1)(advanced level)	Remembering
	.000	4.741	19.939	.66868	2.6333	30	Control group(2)	

Significance at the level of 0.05	.000	5.129	38	.48305	3.7000	10	Experimental group(1)(advanced level)	Understanding
	.000	6.088	21.940	.68229	2.5000	30	Control group(2)	
Significance at the level of 0.05	.000	5.827	38	.48305	3.7000	10	Experimental group(1)(advanced level)	Applying
	.000	6.639	19.959	.62606	2.4333	30	Control group(2)	
Significance at the level of 0.05	.000	6.861	38	1.05409	11.0000	10	Experimental group(1)(advanced level)	Total
	.000	8.056	21.380	1.45468	7.5667	30	Control group(2)	

Table: 4.15. Values of (T) and the Level of Statistical Significance, and the Difference in Results between the Exploratory Group (1) (Advanced Level Group) And the Non-experimental/Control Group (2), In the Midterm Test

Results of second question for the comparing between (adaptive+flipped) with flipped learning, from the previous table (4.15) it turns out the following:-

Value (T) became statistically significant at three levels of Bloom levels (remembering, understanding, applying), meaning there are significant differences in the average achievement test in favor of the experimental group (1) (Advanced Level Group).

The Seventh Question

The seventh question is the following:-

Are there measurably noteworthy change at the standard of importance (α=0.05) between the mean scores of the exploratory group (1) (Beginning Level Group) and the mean scores of the control group (1) amid the trial after the fifth week of the investigation, according to Bloom's Taxonomy (remembering, understanding, applying) for students in the third grade of primary in English?

In order to answer this question, there is need to calculate the arithmetic mean and standard deviation and calculates the value (T) via the mid-term test outcomes after the completion of the fifth week of the experiment between the exploratory/experimental group (1) (beginning level group) and the control group/ Non experimental (1) and the results were as shown in Table (4.16)

The level of significance	Sig. (2-tailed)	Value(T)	df	Standard deviation	Average	The number	Groups G1and G2	The level of achievement
At Significance level of 0.05	.000	9.092	48	.71635	3.2500	20	Exploratory group(1)(beginning level)	Remembering
	.000	9.097	40.957	.71840	1.3667	30	control group(1)	
At Significance level of 0.05	.000	9.016	48	.59824	3.6000	20	Exploratory group(1)(beginning level)	Understanding
	.000	9.757	47.998	.89955	1.5333	30	Control group(1)	
At Significance level of 0.05	.000	5.763	48	.61559	2.8000	20	Exploratory group(1)(beginning level)	Applying
	.000	6.417	46.812	1.10433	1.2333	30	Control group(1)	
At Significance level of 0.05	.000	9.627	48	1.21828	9.7000	20	Experimental group(1)(beginning level)	Total
	.000	10.862	45.416	2.39756	4.1000	30	Control group(1)	

Table: 4.16. Values of (T) and the Level of Statistical Significance, and the Difference in Results Between the Exploratory Group (1) (Beginning Level Group) and the Control or Non experimental Group (1), in the Midterm Test

Results of first question for the comparing between (adaptive+flipped) with traditional style, from the previous table (4.16) it turns out the following:-

Value (T) became statistically significant at three levels of Bloom levels (remembering, understanding, applying), meaning there are difference of significant in the average achievement/ accomplishment test for the exploratory group (1) (Beginning Level Group).

The Eight Question

The eight questions are the following:-

Are there measurable huge difference at the standard of essentialness (α=0.05) between the mean scores of the exploratory group (1) (Beginning Level Group) and the mean scores of the control group (2) during the experiment after the fifth week of the experiment, according to Bloom's Taxonomy (remembering, understanding, applying) for students in the third grade of primary in English?

In order to answer this question, it is compute the arithmetic mean and standard deviation and calculates the value (T) through the mid-term test results after the

completion of the fifth week of the experiment between the exploratory group (1) (beginning level group), control group (2) , and the results were as shown in Table (4.17).

The level of significance	Sig. (2-tailed)	Value(T)	df	Standard deviation	Average	The number	Group G1 and G3	The level of achievement
Significance at the level of 0.05	.003	3.105	48	.71635	3.2500	20	Experimental group(1)(beginning level)	Remembering
	.004	3.062	38.888	.66868	2.6333	30	Control group(2)	
Significance at the level of 0.05	.000	5.859	48	.59824	3.6000	20	Experimental group(1)(beginning level)	Understanding
	.000	6.018	44.376	.68229	2.5000	30	Control group(2)	
Significance at the level of 0.05	.047	2.042	48	.61559	2.8000	20	Experimental group(1)(beginning level)	Applying
	.047	2.049	41.354	.62606	2.4333	30	Control group(2)	
Significance at the level of 0.05	.000	5.410	48	1.21828	9.7000	20	Experimental group(1)(beginning level)	Total
	.000	5.607	45.407	1.45468	7.5667	30	Control group(2)	

Table: 4.17. Values of (T) and the Level of Statistical Significance, and the Difference in Results between the Exploratory Group (1) (Beginning Level Group) and the Control Group (2), in the Midterm Test

Results of second question for the comparing between (adaptive+flipped) with flipped learning, from the previous table (4.17) it turns out the following:-

Value (T) became statistically significant at three levels of Bloom levels (remembering, understanding, applying), meaning there are huge contrast in achievement test for experimental group (1) (Beginning Level Group).

Question Nine

Ninth question is the following:

Are there statistically significant variance at the standard of significance (α=0.05) between the mean scores of the control group (1) and the mean scores of the experimental group (2) during the experiment after the fifth week of the experiment, according to Bloom's Taxonomy (remembering, understanding, applying) for students in the third grade of primary in English?

In order to answer this question, it is calculate the arithmetic mean and standard deviation and calculates the value (T) through the mid-term test results after the completion of the fifth week of the experiment between the control group (1) and the experimental group (2) and the results were as shown in Table (4.18).

The level of significance	Sig. (2-tailed)	Value(T)	df	Standard deviation	Average	The number	Groups G2 and G3	The level of achievement
Significance at the level of 0.05	.000	-7.069	58	.71840	1.3667	30	Control group (1)	Remembering
	.000	-7.069	57.704	.66868	2.6333	30	Experimental group (2)	
Significance at the level of 0.05	.000	-4.690	58	.89955	1.5333	30	Control group (1)	Understanding
	.000	-4.690	54.070	.68229	2.5000	30	Experimental group (2)	
Significance at the level of 0.05	.000	-5.178	58	1.10433	1.2333	30	Control group (1)	Applying
	.000	-5.178	45.896	.62606	2.4333	30	Experimental group (2)	
Significance at the level of 0.05	.000	-6.771	58	2.39756	4.1000	30	Control group (1)	Total
	.000	-6.771	47.803	1.45468	7.5667	30	Experimental group (2)	

Table: 4.18. Values of (T) and the Level of Statistical Significance, and the Difference in Results between the Control Group (1) and the Experimental Group (2), in the Midterm Test

Results of third question for the comparing between flipped learning with traditional style, from the previous table (4.14) it turns out the following:-

Value (T) became statistically significant at three levels of Bloom levels (remembering, understanding, applying), meaning there are huge contrasts in the achievement test for Experimental gathering (1).

As it can be illustrated by the graph in Figure (4.2).

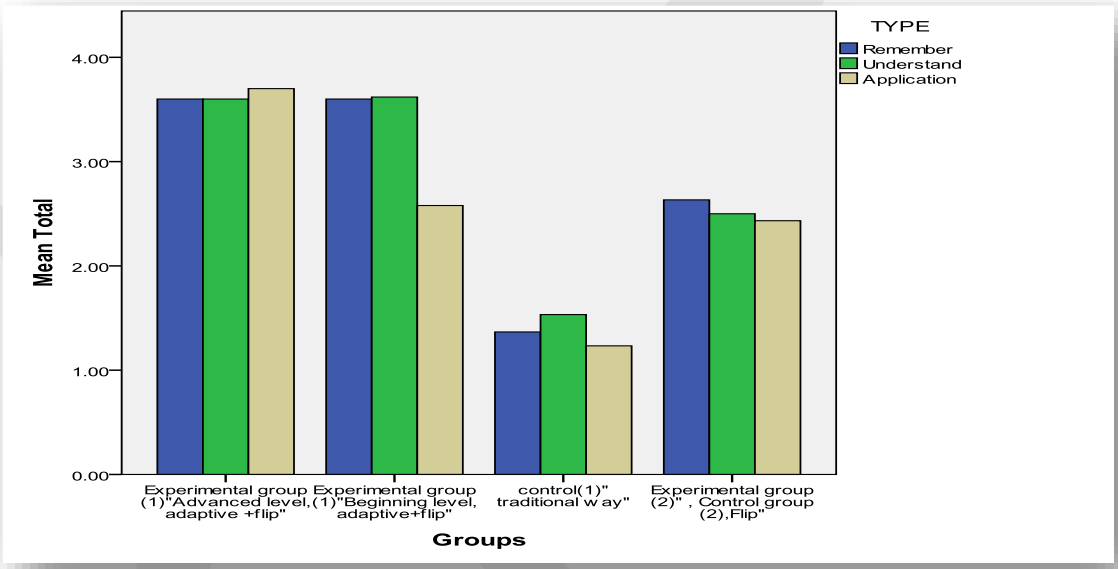

Figure: 4.2. The Graphic Representation of the Differences between the exploratory and non-experimental Groups in the Midterm Test

Question Tenth

The tenth question is of the following:

Are there factually critical difference at the standard of centrality (α=0.05) between the mean scores of the achievement test of experimental group (1) (Advanced Level Group) and the mean scores of the experimental group (1) (beginning level group) after the completion of the test after the tenth week of the experiment, according to Bloom's Taxonomy (remembering, understanding, applying) for students in the third grade of primary in English?

In order to answer this question calculate the standard deviation and the arithmetic average and the value (T) via the final test outcomes after the completion of the tenth

week of the experiment between the experimental group (1) (Advanced Level Group) and the average scores of the experimental group (1) (beginning level group), the results were as shown in table (4.19).

The level of significance	Sig. (2-tailed)	Value(T)	df	Standard deviation	Average	The number	Groups G1	The level of achievement
Significance at the level of 0.05	.031	2.278	28	.89935	5.0588	17	Experimental(1) (advanced level)	Remembering
	.037	2.219	23.031	1.09193	4.2308	13	Experimental(1) (beginning level)	
Significance at the level of 0.05	.054	2.013	28	1.39326	10.2353	17	Experimental(1) (advanced level)	Understanding
	.052	2.032	26.812	1.30089	9.2308	13	Experimental(1) (beginning level)	
Significance at the level of 0.05	.007	2.892	28	.69663	6.8824	17	Experimental(1) (advanced level)	Applying
	.014	2.722	18.964	1.11516	5.9231	13	Experimental(1) (beginning level)	
Significance at the level of 0.05	.001	3.667	28	1.46779	22.1765	17	Experimental(1) (advanced level)	Total
	.003	3.405	17.516	2.66266	19.3846	13	Experimental(1) (beginning level)	

Table 4.19. Values of (T) and the level of Statistical Significance, and the Difference in Output Between the Experimental Group (1) (Advanced Level Group) and the Experimental Group (1) (Beginning level group), in the Post-Test

Results of fourth question for the comparing between (adaptive+flipped) itself, from the previous table (4.19) it turns out the following:-

Value(T) became statistically significant at tree levels of Bloom level (Remembering, Understanding, Applying), meaning there are significant differences in the average achievement test in tree levels in favor of the experimental group (1) (Advanced Level Group).

Question Eleven

Question eleven is as follows:

Are there difference at the standard of centrality (α=0.05) between the mean scores of the achievement test of experimental group (1) (Advanced Level Group) and the mean scores of the control group (1) after the completing the test after the tenth week of the experiment, according to Bloom's Taxonomy (remembering, understanding, applying) for students in the third grade of primary in English?

Answering this question, calculate the standard deviation and the arithmetic average and the value (T) through the final test results after the completion of the tenth week of the experiment between the experimental group (1) (Advanced Level Group) also, the normal scores of the control group (1) , the outcomes were as appeared in table (4.20).

The level of significance	Sig. (2-tailed)	Value(T)	df	Standard deviation	Average	The number	Groups G1 and G2	The level of achievement
Significance at the level of 0.05	.000	13.179	45	.89935	5.0588	17	Experimental(1) (advanced level	Remembering
	.000	13.757	37.768	1.04826	1.0667	30	Control group(1)	
Significance at the level of 0.05	.000	18.204	45	1.39326	10.2353	17	Experimental(1) (advanced level	Understanding
	.000	17.995	32.223	1.33735	2.7333	30	Control group (1)	
Significance at the level of 0.05	.000	16.514	45	.69663	6.8824	17	Experimental(1) (advanced level	Applying
	.000	19.090	44.987	1.22428	1.5333	30	Control group(1)	
Significance at the level of 0.05	.000	19.478	45	1.46779	22.1765	17	Experimental(1) (advanced level	Total
	.000	23.659	42.915	3.37673	5.3333	30	Control group(1)	

Table 4.20. Values of (T) and the level of Statistical Significance, and the Difference in Output Between the Exploratory Group (1) (Advanced Level Group) and the non experimenatl Group (1), in the Post- Test

Results of first question for the comparing between (adaptive+flipped) with traditional style, from the previous table (4.20) it turns out the following:-

Value (T) became statistically significant at three levels of Bloom levels (remembering, understanding, applying), meaning that there are significant

differences in the average collection for the final test in favor of the experimental group (1) (Advanced Level Group).

Question Twelve

Question Twelve is as follows:-

Are there factually critical difference at the standard of centrality (α=0.05) between the mean scores of the exploratory group (1) (Advanced Level Group) and the mean scores of the control group (2) after the finishing of the test after the tenth week of the test, according to Bloom's Taxonomy (remembering, understanding, applying) for students in the third grade of primary in English?

In order to answer this question calculate the standard deviation and the arithmetic average and the value (T) via the final test outcomes after the completion of the tenth week of the experiment between the experimental group (1) (Advanced Level Group) furthermore, the normal scores of the control group (2) , the outcomes were as appeared in table (4.21).

The level of significance	Sig. (2-tailed)	Value(T)	df	Standard deviation	Average	The number	Groups G1 and G3	The level of achievement
Significance at the level of 0.05	.000	9.051	45	.89935	5.0588	17	Experimental (1) (advanced level	Remembering
	.000	9.334	36.512	1.00344	2.4000	30	Control group (2)	
Significance at the level of 0.05	.000	9.955	45	1.39326	10.2353	17	Experimental (1) (advanced level	Understanding
	.000	10.829	41.775	1.89373	5.0000	30	Control group (2)	
Significance at the level of 0.05	.000	12.205	45	.69663	6.8824	17	Experimental(1) (advanced level	Applying
	.000	13.741	44.199	1.08755	3.3000	30	Control group (2)	
Significance at the level of 0.05	.000	13.778	45	1.46779	22.1765	17	Experimental(1) (advanced level	Total
	.000	16.626	43.477	3.23931	10.7000	30	Control group (2)	

Table 4.21. Values of (T) and the Level of Statistical Significance, and the Difference in Output Between the exploratory Group (1) (Advanced Level Group) and the Non-experimental Group (2), in the Post- Test

Results of second question for the comparing between (adaptive+flipped) with flipped learning, from the previous table (4.21) it turns out the following:-

Value (T) became statistically significant at three levels of Bloom levels (remembering, understanding, applying), meaning that there are significant differences in the average collection for the final test for the exploratory gathering (1) (Advanced Level Group).

Question Thirteen

Question thirteen is the following:

Are there statistically/flactuually significant variance at standard of significance (α=0.05) between the mean scores of the experimental group (1) (Beginning Level Group) and the mean scores of the control group (1) after the completion of the test after the tenth week of the experiment, according to Bloom's Taxonomy (remembering, understanding, applying) for students in the third grade of primary in English?

In order to answer this question calculate the standard deviation and the arithmetic average and the value (T) through the final test results after the completion of the tenth week of the experiment between the experimental group (1) (Beginning Level Group) the average scores of the control group (1) , the results shown in table (4.22).

The level of significance	Sig. (2-tailed)	Value(T)	df	Standard deviation	Average	The number	Groups G1 and G2	The level of achievement
Significance at the level of 0.05	.000	8.979	41	1.09193	4.2308	13	Experimental(1) beginning level	Remembering
	.000	8.832	22.044	1.04826	1.0667	30	Control group(1)	
Significance at the level of 0.05	.000	14.748	41	1.30089	9.2308	13	Experimental(1) beginning level	Understanding
	.000	14.914	23.471	1.33735	2.7333	30	Control group(1)	
Significance at the level of 0.05	.000	11.078	41	1.11516	5.9231	13	Experimental(1) beginning level	Applying
	.000	11.503	24.988	1.22428	1.5333	30	Control group(1)	
Significance at the level of 0.05	.000	13.289	41	2.66266	19.3846	13	Experimental(1) beginning level	Total
	.000	14.606	28.772	3.37673	5.3333	30	Control group(1)	

Table 4.22. Values of (T) and the Level of Statistical Significance, and the Difference in Output between the exploratory or Experimental and non experimental or Control Groups in the Post – Test

Results of first question for the comparing between (adaptive+flipped) with traditional style, from the previous table (4.22) it turns out the following:-

Value (T) became statistically significant at three levels of Bloom levels (remembering, understanding, applying), meaning that there are significant contrasts in the normal gathering for the last test for the exploratory group (1) (beginning Level Group).

Question Fourteen

Question fourteen is the following:-

Are there statistically/factually huge change at the standard of significance (α=0.05) between the mean scores of the trial group (1) (Beginning Level Group) and the mean scores of the control bunch (2) after the culmination of the test after the tenth week of the trial, according to Bloom's Taxonomy (remembering, understanding, applying) for students in the third grade of primary in English?

In order to answer this question calculate the standard deviation and the arithmetic average and the value (T) through the final test results after the completion of the tenth week of the experiment between the experimental group (1) (Beginning Level Group) the normal scores of the control gather (2) , the outcomes were as appeared in table (4.23).

The level of significance	Sig. (2-tailed)	Value(T)	df	Standard deviation	Average	The number	Groups G1 and G3	The level of achievement
Significance at the level of 0.05	.000	5.352	41	1.09193	4.2308	13	Experimental(1) (beginning level	Remembering
	.000	5.172	21.214	1.00344	2.4000	30	Control(2)	
Significance at the level of 0.05	.000	7.317	41	1.30089	9.2308	13	Experimental(1) (beginning level	Understanding
	.000	8.466	32.735	1.89373	5.0000	30	Control (2)	
Significance at the level of 0.05	.000	7.210	41	1.11516	5.9231	13	Experimental(1) (beginning level	Applying
	.000	7.137	22.358	1.08755	3.3000	30	Control (2)	
Significance at the level of 0.05	.000	8.487	41	2.66266	19.3846	13	Experimental(1) (beginning level	Total
	.000	9.179	27.626	3.23931	10.7000	30	Control (2)	

Table 4.23. Values of (T) and the Level of Statistical Significance, and the Difference in Output between the exploratory or Experimental (1) and non experimental or Control Groups in the Post – Test

Results of second question for the comparing between (adaptive+flipped) with flipped learning, from the previous table (4.23) it turns out the following:-

Value (T) became statistically significant at three levels of Bloom levels (remembering, understanding, applying), meaning that there are significant differences in the average collection for the final test in favor of the experimental group (1) (beginning Level Group).

Question Fifteen

Question fifteen is the following:

Are there statistically significant variance at the standard of significance (α=0.05) between the scores of the mean of the control assemble (1), and the mean scores of the experimental bunch (2) after the completing the test after the tenth week of the experiment, according to Bloom's Taxonomy (remembering, understanding, applying) for students in the third grade of primary in English?

In order to answer this question calculate the standard deviation and the arithmetic average and the value (T) via the final test outcomes after the completing the tenth week of the experiment between the control group (1), and the average scores of the experimental group (2) , the results were as shown in table (4.24).

The level of significance	Sig. (2-tailed)	Value(T)	df	Standard deviation	Average	The number	Groups G2 and G3	The level of achievement
Significance at the level of 0.05	.000	-5.033	58	1.04826	1.0667	30	Control group (1)	Remembering
	.000	-5.033	57.890	1.00344	2.4000	30	Experimental group (2)	
Significance at the level of 0.05	.000	-5.355	58	1.33735	2.7333	30	Control group (1)	Understanding
	.000	-5.355	52.164	1.89373	5.0000	30	Experimental group (2)	
Significance at the level of 0.05	.000	-5.909	58	1.22428	1.5333	30	Control group (1)	Applying
	.000	-5.909	57.205	1.08755	3.3000	30	Experimental group (2)	
Significance at the level of 0.05	.000	-6.282	58	3.37673	5.3333	30	Control group (1)	Total
	.000	-6.282	57.900	3.23931	10.7000	30	Experimental group (2)	

Table 4.24. Values of (T) and the Level of Statistical Significance, and the Difference in Output between the exploratory or Experimental and non experimental or Control Groups in the Post - Test

Results of third question for the comparing between flipped learning with traditional style, from the previous table (4.24) it turns out the following:-

Value (T) became statistically significant at three levels of Bloom levels (remembering, understanding, applying), meaning that there are significant differences in the average collection for the final test in favor of experimental group (2).

The following figure illustrates the differences between the non-experimental or Control Groups (1), the control group (2) the exploratory or experimental group (2)), and the experimental group (1) (beginning level, Advanced Level) as a figüre (4.3).

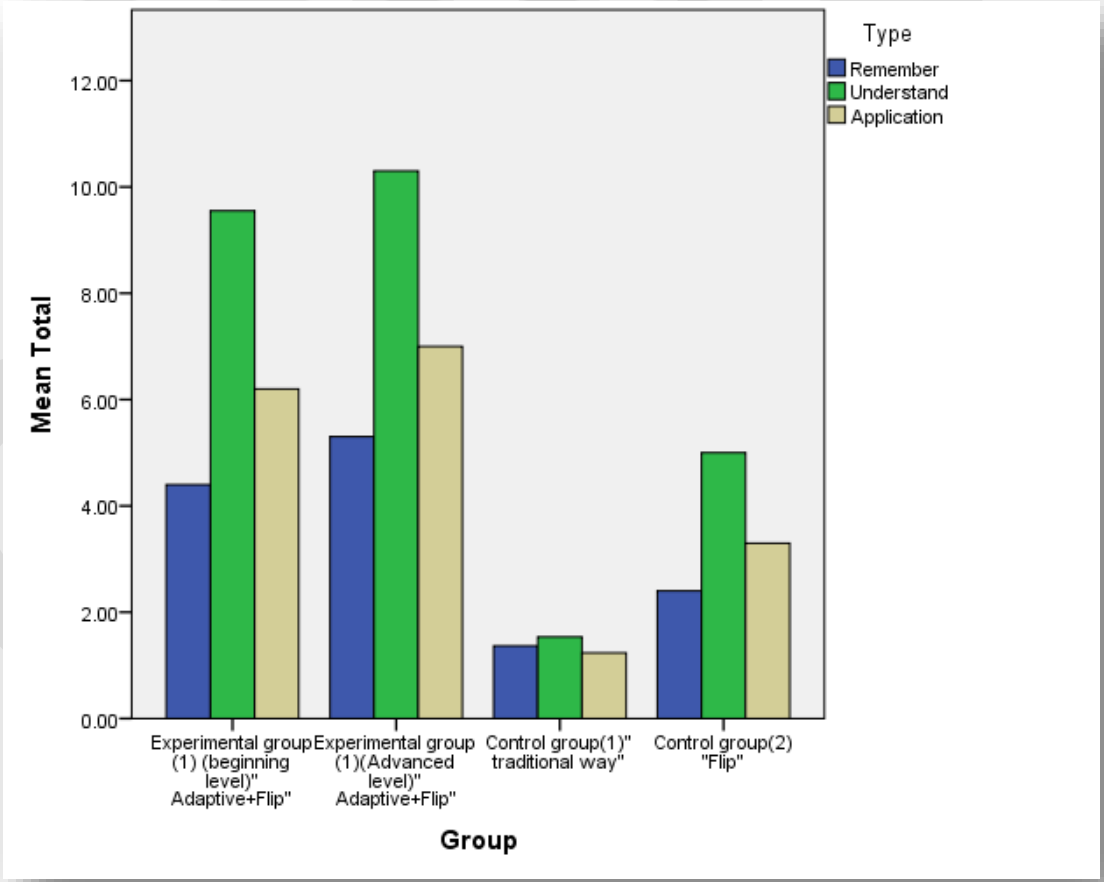

Figure 4.3. The Graphic Representation of the variances between the exploratory or Experimental and non experimental or Control Groups in the Post/reported - Test

Question Sixteen

Question sixteen is the following:

Are there statistically significant variance at the standard of significance (α=0.05) between the mean scores of the experimental group (1) itself after the completing the test after the tenth week of the experiment, according to Bloom's Taxonomy (remembering, understanding, applying) for students in the third grade of primary in English?

To answer this question calculate the arithmetic mean and standard deviation and calculate the value of (T) between first achievement and last of experimental group (1) (beginning level) and experimental group (1) (Advanced Level) according to Bloom's Taxonomy (remembering, understanding, applying), has been listed the results as shown in the tables (4.25 and 4.26).

The level of significance	Sig. (2-tailed)	Value(T)	df	Standard deviation	Average	The number	Metering	The level of achievement
Significance at the level of 0.05	.000	17.992	16	1.468	22.18	10	Pre	Remembering Understanding Applying
				2.856	9.18	17	Post	

Table 4.25. Values of (T) and the level of Statistical Significance of the experimental Group (1) for the advanced level before and after

Results of fourth question for the comparing between (adaptive+flipped) itself, from the previous table (4.25) it turns out the following:-

Value (T) became statistically significant at three levels of Bloom levels (remembering, understanding, and applying).

The level of significance	Sig. (2-tailed)	Value(T)	df	Standard deviation	SMA	The number	Metering	The level of achievement
Significance at the level of 0.05	.007	3.277	12	2.431	10.08	13	Post	Remembering Understanding Applying
				3.140	7.23	20	Pre	

Table 4.26. Values of (T) and the Level of Statistical Significance of the Experimental Group (1) for the Beginning Level before and after

Results of fourth question for the comparing between (adaptive+flipped) itself, from the previous table (4.26) it turns out the following:-

Value (T) became statistically significant at three levels of Bloom levels (remembering, understanding, and applying).

From the results found in the table (4.25 and 4.26) shows that the value of (T) statistically significant at three levels of the level of Bloom (remembering, understanding, applying) and therefore one might say that there are actually huge contrasts at the level (0.05) between the mean scores of the exploratory gathering (1) itself in the first metering and the last metering of the level of achievement and this was for the benefit of the last metering of the level of attainment.

The following figure (4.4) illustrates the dissimilarity between the experimental groups (1) itself.

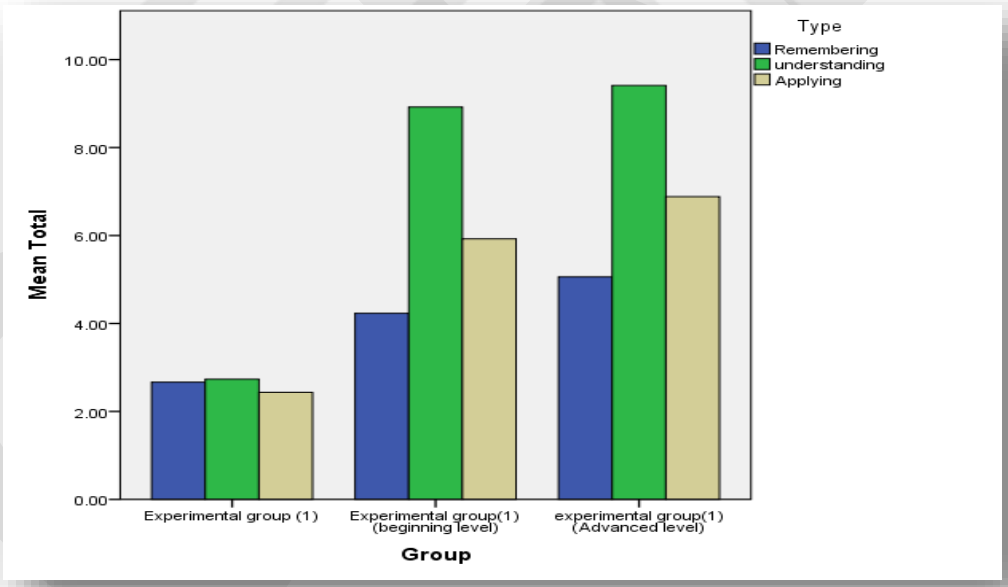

Figure 4.4. Differences between the Experimental Groups (1) Itself.

4.3. Discuss the Results

Results of the study concluded the following points:-

1. There are measurably huge fluctuation at the standard of hugeness between the mean scores the control, and the trial bunches at the level of (α=0.05) in the measurement before the experiment, during the experiment after the fifth week, and measurement after the experiment after the tenth week of the level of achievement according to the classification Bloom (remembering, understanding, applying) for the experimental group (1) of students in the third grade of primary in English.
2. As it turns out there are statistically significant variance at the standard of significance between the mean scores at the level (α=0.05) between the mean of the experimental group (1) itself in the measurement before the experiment and after the experiment to the level of achievement of English Language of the third grade of primary, where the result was in favor of the metering, which was after the experiment.

From the results obtained from this study, it is clear that adaptive technique in flip learning, which contains several new technologies have an impact on improving the three levels of learning (remembering, understanding, applying) and this has led to increased understanding and comprehension of students.

These results agree with many studies such as the studies: -

Bartlett, T (1997), Bothun, G. D. (1998),Heines, R. A., & Hulse, D. B. (1996),Kabat, E. J., & Friedel, J. (1990),Schutte, J. G. (1996),Souder, W. E. (1993).

These studies indicated that students in distance learning courses that demand on adaptive e-learning earned higher evaluations than those in the customary classroom setting.

Adaptive technique in flip learning led to changes on the students 'levels and this may be due to several factors positive was observed by the researcher, has directly influenced the student achievements, which include:

1) Adaptive technique in flip learning contains several interactive elements influenced the level of understanding and applying directly, such as sound effects and animated video games, Flash and other , these influences have

caused excitement in the mental abilities of the student and reflected a positive manner to increase achievement.

2) Provide a sense of fun to study and not feel bored with the students and this has led to increased demand for learning, which has had a positive impact on high academic achievement rate.
3) Provide the continuous assessment of students, where each lesson tutorial includes electronic tests and a variety of activities.
4) In addition to the presence of the teacher the student has the ability to exercise self-learning also means that there is an interaction between the student and the adaptive education

CHAPTER 5

5. CONCLUSION AND THE FUTURE WORK

Some of the important points contained in the above or previously discussed chapters were summarized and the future findings/work for expanding apply of adaptive technique in flipped learning at several levels of education was indicated.

5.1. Conclusion

In this study, an adaptive technique in flipped learning was offered to teach English for third-grade of primary education, trying to reduce the problems caused by traditional education and also in order to promote students' level of a negative level to a positive level.This thesis was started by posing challenges for the reform of the education system and discussed the goals that prompted to study this area. Furthermore, some of the problems faced by students during their studies of the English language through the traditional method were described in Chapter 1. Then, in Chapter 2, an overview of the several pieces of research was presented, and where only two studies included about ATIF an adaptive technique in flipped learning. In chapter 3, the core and the methodology of this thesis were interpreted; firstly, review adaptive methods of the proposed system. Then details about the design content have been provided which contains two main parts: teacher and the student, this chapter was finished by providing specifics about educational adaptive techniques used. After that, study's experiments was offered, and the results that have acquired and interpret them. The sample study was composed of 90 students and it was differentiated into total three groups, the number of each class/group = 30 students. The experimental group (1) learned through adaptive technique in flipped learning , the control group (1) learned by traditional education, and the control group (2) learned via Flipped learning .First is the control group (2) called the exploratory or experimental group (2) in the case of comparing it with the control group (1). Three tests were conducted for the groups to determine the effect of the accommodative or the adaptive technique in flipped learning on the level students.

The pre-test was conducted before starting the experiment, it was observed that there is no difference between the students' levels ($\alpha > 0.05$). The midterm test was conducted after five weeks of starting the experiment, and the pro-test was conducted after ten weeks of starting the experiment, and it was observed that there is a difference between the students' levels in favor of experimental group (1) ($\alpha < 0.05$) .

5.2. Future Work

An update of what initiated the current study, the researcher suggests other studies including: -

1. Carry out more studies to check the effects of adaptive technique in flipped tutorials or education in the rest of the other subjects and in the various stages of education.
2. Work of the studies on the design foundations of adaptive technique in flipped learning and its impact on the education of people with special needs (deaf, blind, mentally handicapped)

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7. APPENDIXES

APPENDIX (1)

Official Correspondence

Date 14 / 6 / 2016

To/ the director of Ali Ben Abe Talib Primary School

S/ facilitate the task of researcher

The researcher / AISHA ABDULAALI ABDLLAH AHMED -higher education student (master)in Atlim university –apply on making a study entitled "The effect of using adaptive technique in flip learning to collect Iv third primary students in the subject of English language "

The study requires the application of the study tool on a sample of students, due to the availability of facilities available to make the experience of this school and facilitate the task of the researcher on implementing her study.

Date 16 / 8 /2016

To Whom It May Concern

I report note that the researcher / AISHA ABDULAALI ABDLLAH AHMED had finished a training session of sixty days from25.06.2016 to 26.08.2016 the third grade student of the primary school who are ninty male and female students at Ali Ben Abe Talib Primary School, were the teacher Ghazala Ramadan Mohammed accompanied her, in order to complete the training experience of knowing the extent of the students take advantage of the adaptive technique in flip learning.

The school administration

To/ the director of Ali Ben Abe Talib Primary School

We thank you to facilitate the task of the researcher/ **AISHA ABDULAALI ABDLLAH AHMED** in the application of her master experience entitled "The effect of using adaptive technique in flip learning to collect Iv third primary students in the subject of English language "which has a significant impact in the success of the experiment and clarity of the results.

APPENDIX (2)

The list of behavioral objectives for the organization and the coordination

Article: English Language

The classroom: - Primary third

n	Educational experiences andgoals	Behavioral goals	Level	
			Main	sub
1	Read the numbers (1-10)	The ability of the student to read the numbers from 10 to 20	Remembering	Understanding
2	Writing the Numbers(1-10)	The ability of the student to write the numbers from 10 to 20	Applying	Remembering
3	Read the Letters (A-L)	The ability of the student to read the letters from A to L	Remembering	Understanding
4	Write the letters (A-L)	The ability of the student to write the letters from A to L	Applying	Remembering
5	Read the numbers (10-20)	The ability of the student to read the numbers from 10 to 20	Remembering	Understanding
6	Writing the Numbers(10-20)	The ability of the student to write the numbers from 10 to 20	Applying	Remembering
7	Read the Letters (M-Z)	The ability of the student to read the letters from M to Z	Applying	Remembering
8	Writing the letters (M-Z)	The ability of the student to write the letters from M to Z	Applying	Remembering
9	Compare between the capital letters	The student distinguishes between uppercase and lowercase letters	Understanding	Remembering
9	Names of Animals	Know the names of the animals and t distinguish them.	Understanding	discrimination
10	Colours and Shapes	Know the names of the colours ,shap and to distinguish them	Increased focus	understanding
11	Writing the colours	The ability of the student to write the colors	Applying	Remembering
12	Family tree	Knowledge of family components	Understanding	Remember
13	In the classroom	Know how to deal in the Classroom	Applying	understanding
14	Parts the body	Knowledge of body parts	understanding	Remembering

APPENDIX (3)

The letter addressed to the masters arbitrators

Peace and mercy be upon you

Because of your great experience in the field of education, and given the importance of the achievement tests in educational research I hope you see the achievement test attached and express your opinion through the form of arbitration, and mention the observations and modifications that you can see it is suitable.

Note that the researcher will apply these tests on a sample of third grade students at a school in the city of Ali Ben Abe Talib in her study entitled “The effect of using adaptive technique in flip learning to collect IV third primary students in the subject of English language”.

Thank you for your cooperation

The researcher / AISHA ABDULAALI ABDLLAH AHMED

ID/0501011

APPENDIX (4)

The names of the arbitrators to tool of study

1. Dr.Asst .Tariq Mohammed Alsaker: Assistant Professor in department of English Language in Faculty of Education in Bani Walid.
2. Dr. Asst .Abdalhakem Abdullah Almankosh: Co-educational for the calendar in the Department of Psychology at Faculty of Education in Bani Walid.
3. Dr.Asst. Easa Amhammed kait :Assistant in the Department of Psychology at Faculty of Education in Bani Walid.
4. Dr.Asst.Fuzeya Abdalkader Abdalhamead : Assistant in the Department of Psychology at Faculty of Education in Bani Wali

APPENDIX (5)

Arbitration Form (final test)

Question number	The appropriateness of equation to the level of domain cognitive domain			The clarity of the wording of the question		Adjustment required
	Remembering	Understanding	Applying	Clear	Not clear	
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

Arbitration Form (midterm test)

Question number	The appropriateness of equation to the level of domain cognitive domain			The clarity of the wording of the question		Adjustment required
	Remembering	Understanding	Applying	Clear	Not clear	
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						

APPENDIX (6)

Governorate: Alnah
Educational Directorate : Baniwale
School: Ali Ben Abe Talib
Total degree: 24 degree

Exam time: 45 minites
Date: 2016-8-30
Subject: English language

Final Test

Quiz paper (1)

Achievement test in its final form

Test instructions

Dear Student:

The goal of this test is to measure the information obtained by the educational content that is presented to you, here some information about the test:

1- test for 45 minutes only
2- test consists of twenty questions of multi selection and one connecting question
3- for each question of multi selection test answer and only one true
4- in order to answer the question should tick √

In front of the question number and under the following options (a, b, c, d) in the answer sheet

Example:

5- Please do not write on a sheet of questions and answers on the guided allocated to the answer sheet
6- Don't answer until you are allowed to.

Thank you for your cooperation

QUIZ FOR THIRD GRADE ELEMENTRY SCHOOL

Question 1 **) Rearrange the COLORS:-**

1) R – D– E

……..…

2) B –U – L –E?

……...……

3) R – **E** -E – G.

……...……

4) B– A – L– C-K

.....

5) C-R-I-L-C-E

.....

Degree/5

Question 2 : Choose the correct answer:

2. F.....ther

1/d 2/ c 3/b 4/a

3. M....ther

1/d 2/ o 3/b 4/a

4. -Mo....er

1/df 2/ th 3/er 4/ht

5. -S....ster

1/i 2/r 3/q 4/w

6. .....rother

1/b 2/S 3/K 4/ e

7.  =

1/a 2/b 3/z 4/k

8.  =

1/n 2/m 3/b 4/f

9.  =

1/r 2/e 3/h 3/u

10.  =

1/d 2/z 3/s 4/c

11.  =

1/b 2/g 3/l 4/v

12.  =

1/w 2/d 3/z 4/q

13.  =

1/d 2/h 3/f 4/x

14. -10 is

1/ten 2/eight 3/twenty 4/seven

15. -20 is

1/ sixteen 2/ seventeen 3/ twenty 4/ one

16. How.....you

1/I 2/are 3/fine 4/ thanks

17. I ....FINE

1/am 2/thanks 3/what 4/ is

18. Blue

1/  2/  3/  4/ 

19. Stand up

1/  2/  3/  4/ 

20. Sit down

1/  2/  3/  4/ 

Answer Sheet of final test

Student's name..... Class.....
Group.....

Answer to the first question here

NO. Question	Correct Answer			
	1	2	3	4
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Governorate: Alnaher
Educational Directorate :Baniwaleed
School: Ali Ben Abe Talib
Total degree:12 degree

Exam time: 45 minites
Date: 2016-8-1
Subject: English language

Midterm test

Quiz paper (2)

Achievement test in its final form

Test instructions

Dear Student:

The goal of this test is to measure the information obtained by the educational content that is presented to you, here some information about the test:

1- test for 45 minutes only
2- test consists of twenty questions of multi selection and one connecting question
3- for each question of multi selection test answer and only one true
4- in order to answer the question should tick √

In front of the question number and under the following options (a, b, c, d) in the answer sheet

Example:

5- Please do not write on a sheet of questions and answers on the guided allocated to the answer sheet
6- Don't answer until you are allowed to.

Thank you for your cooperation

Degree/12

Choose the correct answer:

1. One =
    a. 1
    b. 2
    c. 3
    d. 4
2. Two =
    a. 3
    b. 5
    c. 2
    d. 6
3. Three =
    a. 5
    b. 3
    c. 8
    d. 9
4. Ten=
    a. 10
    b. 6
    c. 4
    d. 11
5. Twenty=
    a. 20
    b. 12
    c. 14
    d. 10
6. H=
    a. g
    b. h
    c. a
    d. e
7. W=
    a. q
    b. w
    c. f
    d. i
8. F=
    a. k
    b. f
    c. l
    d. m
9. 

a. Cat
b. Donkey
c. Cow
d. Monkey

10. 

a. Cow
b. Fox
c. Cat
d. Monkey

11. 

a. Cow
b. Cat
c. Fish
d. Donkey

12. 

a. Fox
b. Cat
c. Monkey
d. Fish

Answer Sheet of midterm test

Student's name..... Class.....
Group.....

NO. Question	Correct Answer			
	a	b	C	d
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Appendix (7)

Answer key of midterm

NO. Question	Correct Answer			
	a	b	c	d
1	■			
2			■	
3		■		
4	■			
5	■			
6		■		
7		■		
8		■		
9	■			
10		■		
11	■			
12				■

Answer key of final test

NO. Question	Correct Answer			
	1	2	3	4
2				■
3		■		
4		■		
5	■			
6	■			
7	■			
8		■		
9	■			
10		■		
11	■			
12				■
13			■	
14	■			
15			■	
16		■		
17	■			
18	■			
19			■	
20		■		

Appendix(8)

Results of Tests (Test-T)
The results of tests the experimental group (1) and control group (1) before starting the experiment

Group Statistics

	Ways	N	Mean	Std. Deviation	Std. Error Mean
Remembering	Experimental group(1)	30	2.6667	1.24106	.22659
	Control group(1)	30	2.5667	1.19434	.21805
Understanding	Experimental group(1)	30	2.7333	1.14269	.20863
	Control group(1)	30	2.6667	1.02833	.18775
Applying	Experimental group(1)	30	2.4333	1.30472	.23821
	Control group(1)	30	2.3000	1.11880	.20426
Total	Experimental group(1)	30	7.9000	3.24143	.59180
	Control group(1)	30	7.5333	3.07081	.56065

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					
									95% Confidence Interval of the Difference
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower
Remembering	Equal variances assumed	.021	.885	.318	58	.752	.10000	.31447	-.52947
	Equal variances not assumed			.318	57.915	.752	.10000	.31447	-.52949
Understanding	Equal variances assumed	.710	.403	.238	58	.813	.06667	.28067	-.49515
	Equal variances not assumed			.238	57.367	.813	.06667	.28067	-.49528
Applying	Equal variances assumed	.091	.764	.425	58	.672	.13333	.31380	-.49480
	Equal variances not assumed			.425	56.681	.673	.13333	.31380	-.49511
Total	Equal variances assumed	.001	.981	.450	58	.655	.36667	.81521	-1.26514
	Equal variances not assumed			.450	57.831	.655	.36667	.81521	-1.26525

Results of tests the experimental group (1) and control group (2) before starting the experiment

Group Statistics

	Ways	N	Mean	Std. Deviation	Std. Error Mean
Remembering	Experimental group(1)	30	2.6667	1.24106	.22659
	Control group(2)	30	2.5667	1.19434	.21805
Applying	Experimental group(1)	30	2.4333	1.30472	.23821
	Control group(2)	30	2.3333	1.12444	.20529
Understanding	Experimental group(1)	30	2.7333	1.14269	.20863
	Control group(2)	30	2.6333	1.03335	.18866
Total	Experimental group(1)	30	7.9000	3.24143	.59180
	Control group(2)	30	7.5333	3.00268	.54821

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Remembering	Equal variances assumed	.021	.885	.318	58	.752	.10000	.31447	-.52947	.72947
	Equal variances not assumed			.318	57.915	.752	.10000	.31447	-.52949	.72949
Understanding	Equal variances assumed	.578	.450	.356	58	.723	.10000	.28128	-.46304	.66304
	Equal variances not assumed			.356	57.423	.724	.10000	.28128	-.46316	.66316
Applying	Equal variances assumed	.198	.658	.318	58	.752	.10000	.31447	-.52947	.72947
	Equal variances not assumed			.318	56.763	.752	.10000	.31447	-.52976	.72976
Total	Equal variances assumed	.096	.757	.455	58	.651	.36667	.80670	-1.24812	1.98145
	Equal variances not assumed			.455	57.664	.651	.36667	.80670	-1.24832	1.98165

The results of tests the control group (1) and the experimental group (2) before starting the experiment

Group Statistics

	Ways	N	Mean	Std. Deviation	Std. Error Mean
Remembering	control group(1)	30	2.5667	1.19434	.21805
	Experimentalgroup(2)	30	2.5667	1.19434	.21805
Understanding	control group(1)	30	2.6667	1.02833	.18775
	Experimentalgroup(2)	30	2.6333	1.03335	.18866
Applying	control group(1)	30	2.3000	1.11880	.20426
	Experimentalgroup(2)	30	2.3333	1.12444	.20529
Total	control group(1)	30	7.5333	3.07081	.56065
	Experimentalgroup(1)	30	7.5333	3.00268	.54821

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Remembering	Equal variances assumed	.000	1.000	.000	58	1.000	.00000	.30838	-.61728	.61728
	Equal variances not assumed			.000	58.000	1.000	.00000	.30838	-.61728	.61728
Understanding	Equal variances assumed	.009	.927	.125	58	.901	.03333	.26616	-.49945	.56612
	Equal variances not assumed			.125	57.999	.901	.03333	.26616	-.49945	.56612
Applying	Equal variances assumed	.034	.855	-.115	58	.909	-.03333	.28960	-.61304	.54637
	Equal variances not assumed			-.115	57.999	.909	-.03333	.28960	-.61304	.54637
Total	Equal variances assumed	.097	.756	.000	58	1.000	.00000	.78413	-1.56961	1.56961
	Equal variances not assumed			.000	57.971	1.000	.00000	.78413	-1.56963	1.56963

The results of tests the advanced group and beginning group in experimental group (1) after fivth week from the experiment

Group Statistics

	Ways	N	Mean	Std. Deviation	Std. Error Mean
Remembering	advanced group	10	3.6000	.51640	.16330
	beginning group	20	3.2500	.71635	.16018
Understanding	advanced group	10	3.7000	.48305	.15275
	beginning group	20	3.6000	.59824	.13377
Applying	advanced group	10	3.7000	.48305	.15275
	beginning group	20	2.8000	.61559	.13765
Total	advanced group	10	11.0000	1.05409	.33333
	beginning group	20	9.7000	1.21828	.27242

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Remembering	Equal variances assumed	1.016	.322	1.372	28	.181	.35000	.25513	-.17260	.87260
	Equal variances not assumed			1.530	24.088	.139	.35000	.22875	-.12202	.82202
Understanding	Equal variances assumed	1.080	.308	.458	28	.651	.10000	.21835	-.34728	.54728
	Equal variances not assumed			.492	21.976	.627	.10000	.20305	-.32112	.52112
Applying	Equal variances assumed	.230	.636	4.032	28	.000	.90000	.22321	.44278	1.35722
	Equal variances not assumed			4.377	22.518	.000	.90000	.20562	.47413	1.32587
Total	Equal variances assumed	.357	.555	2.874	28	.008	1.30000	.45237	.37335	2.22665
	Equal variances not assumed			3.020	20.669	.007	1.30000	.43049	.40387	2.19613

The results of tests the advanced group and control group (1) after fivth week from the experiment

Group Statistics

	Ways	N	Mean	Std. Deviation	Std. Error Mean
Remember	advanced group	10	3.6000	.51640	.16330
	control group(1)	30	1.3667	.71840	.13116
Understand	advanced group	10	3.7000	.48305	.15275
	control group(1)	30	1.5333	.89955	.16424
Application	advanced group	10	3.7000	.48305	.15275
	control group(1)	30	1.2333	1.10433	.20162
Total	advanced group	10	11.0000	1.05409	.33333
	control group(1)	30	4.1000	2.39756	.43773

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Remember	Equal variances assumed	1.417	.241	9.047	38	.000	2.23333	.24685	1.73361	2.73306
	Equal variances not assumed			10.663	21.572	.000	2.23333	.20945	1.79846	2.66821
Understand	Equal variances assumed	5.392	.026	7.234	38	.000	2.16667	.29951	1.56034	2.77300
	Equal variances not assumed			9.660	29.571	.000	2.16667	.22429	1.70832	2.62501
Application	Equal variances assumed	8.966	.005	6.803	38	.000	2.46667	.36258	1.73267	3.20067
	Equal variances not assumed			9.752	34.850	.000	2.46667	.25295	1.95307	2.98027
Total	Equal variances assumed	7.337	.010	8.763	38	.000	6.90000	.78740	5.30599	8.49401
	Equal variances not assumed			12.541	34.742	.000	6.90000	.55020	5.78274	8.01726

The results of tests the advanced group and control group (2) after fivth week from the experiment

Group Statistics

	Ways	N	Mean	Std. Deviation	Std. Error Mean
Remembering	advanced group	10	3.6000	.51640	.16330
	control group(2)	30	2.6333	.66868	.12208
Understanding	advanced group	10	3.7000	.48305	.15275
	control group(2)	30	2.5000	.68229	.12457
Applying	advanced group	10	3.7000	.48305	.15275
	control group(2)	30	2.4333	.62606	.11430
Total	advanced group	10	11.0000	1.05409	.33333
	control group(2)	30	7.5667	1.45468	.26559

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Remembering	Equal variances assumed	1.364	.250	4.163	38	.000	.96667	.23220	.49660	1.43674
	Equal variances not assumed			4.741	19.939	.000	.96667	.20389	.54128	1.39206
Understanding	Equal variances assumed	3.042	.089	5.129	38	.000	1.20000	.23396	.72637	1.67363
	Equal variances not assumed			6.088	21.940	.000	1.20000	.19711	.79116	1.60884
Applying	Equal variances assumed	1.777	.190	5.827	38	.000	1.26667	.21737	.82662	1.70672
	Equal variances not assumed			6.639	19.959	.000	1.26667	.19078	.86865	1.66469
Total	Equal variances assumed	2.768	.104	6.861	38	.000	3.43333	.50041	2.42031	4.44636
	Equal variances not assumed			8.056	21.380	.000	3.43333	.42620	2.54796	4.31871

The results of tests the beginning level group and control group(1) after fivth week from the experiment

Group Statistics

	Ways	N	Mean	Std. Deviation	Std. Error Mean
Remembering	beginning group	20	3.2500	.71635	.16018
	control group(1)	30	1.3667	.71840	.13116
Understanding	beginning group	20	3.6000	.59824	.13377
	control group(1)	30	1.5333	.89955	.16424
Applying	beginning group	20	2.8000	.61559	.13765
	control group(1)	30	1.2333	1.10433	.20162
Total	beginning group	20	9.7000	1.21828	.27242
	control group(1)	30	4.1000	2.39756	.43773

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Remembering	Equal variances assumed	.023	.881	9.092	48	.000	1.88333	.20715	1.46683	2.29984
	Equal variances not assumed			9.097	40.957	.000	1.88333	.20703	1.46522	2.30145
Understanding	Equal variances assumed	4.697	.035	9.016	48	.000	2.06667	.22923	1.60577	2.52756
	Equal variances not assumed			9.757	47.998	.000	2.06667	.21182	1.64077	2.49256
Applying	Equal variances assumed	11.328	.002	5.763	48	.000	1.56667	.27185	1.02008	2.11325
	Equal variances not assumed			6.417	46.812	.000	1.56667	.24413	1.07549	2.05784
Total	Equal variances assumed	9.916	.003	9.627	48	.000	5.60000	.58169	4.43043	6.76957
	Equal variances not assumed			10.862	45.416	.000	5.60000	.51558	4.56184	6.63816

The results of tests the beginning level group and control group (2) after fivth week from the experiment

Group Statistics

	Ways	N	Mean	Std. Deviation	Std. Error Mean
Remembering	beginning group	20	3.2500	.71635	.16018
	control group(2)	30	2.6333	.66868	.12208
Understanding	beginning group	20	3.6000	.59824	.13377
	control group(2)	30	2.5000	.68229	.12457
Applying	beginning group	20	2.8000	.61559	.13765
	control group(2)	30	2.4333	.62606	.11430
Total	beginning group	20	9.7000	1.21828	.27242
	control group(2)	30	7.5667	1.45468	.26559

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Remembering	Equal variances assumed	.009	.925	3.105	48	.003	.61667	.19859	.21737	1.01596
	Equal variances not assumed			3.062	38.888	.004	.61667	.20140	.20926	1.02408
Understanding	Equal variances assumed	.901	.347	5.859	48	.000	1.10000	.18773	.72254	1.47746
	Equal variances not assumed			6.018	44.376	.000	1.10000	.18279	.73170	1.46830
Applying	Equal variances assumed	.556	.460	2.042	48	.047	.36667	.17954	.00568	.72765
	Equal variances not assumed			2.049	41.354	.047	.36667	.17892	.00542	.72791
Total	Equal variances assumed	1.688	.200	5.410	48	.000	2.13333	.39433	1.34048	2.92619
	Equal variances not assumed			5.607	45.407	.000	2.13333	.38046	1.36724	2.89942

The results of tests the control group (1) and Experimental group (2) after fivth week from the experiment

Group Statistics

	Ways	N	Mean	Std. Deviation	Std. Error Mean
Remembering	control group(1)	30	1.3667	.71840	.13116
	Experimental group(2)	30	2.6333	.66868	.12208
Understanding	control group(1)	30	1.5333	.89955	.16424
	Experimental group(2)	30	2.5000	.68229	.12457
Applying	control group(1)	30	1.2333	1.10433	.20162
	Experimental group(2)	30	2.4333	.62606	.11430
Total	control group(1)	30	4.1000	2.39756	.43773
	Experimental group(2)	30	7.5667	1.45468	.26559

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Remembering	Equal variances assumed	.085	.771	-7.069	58	.000	-1.26667	.17919	-1.62534	-.90799
	Equal variances not assumed			-7.069	57.704	.000	-1.26667	.17919	-1.62538	-.90795
Understanding	Equal variances assumed	2.724	.104	-4.690	58	.000	-.96667	.20613	-1.37928	-.55405
	Equal variances not assumed			-4.690	54.070	.000	-.96667	.20613	-1.37992	-.55341
Applying	Equal variances assumed	12.735	.001	-5.178	58	.000	-1.20000	.23177	-1.66393	-.73607
	Equal variances not assumed			-5.178	45.896	.000	-1.20000	.23177	-1.66655	-.73345
Total	Equal variances assumed	7.261	.009	-6.771	58	.000	-3.46667	.51200	-4.49155	-2.44178
	Equal variances not assumed			-6.771	47.803	.000	-3.46667	.51200	-4.49622	-2.43711

The results of tests the advanced level group and beginning level group in experimental group (1) after ten week

Group Statistics

	Ways	N	Mean	Std. Deviation	Std. Error Mean
Remembering	Advanced group	17	5.0588	.89935	.21812
	beginning group	13	4.2308	1.09193	.30285
Understanding	Advanced group	17	10.2353	1.39326	.33792
	beginning group	13	9.2308	1.30089	.36080
Applying	Advanced group	17	6.8824	.69663	.16896
	beginning group	13	5.9231	1.11516	.30929
Total	Advanced group	17	22.1765	1.46779	.35599
	beginning group	13	19.3846	2.66266	.73849

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Remembering	Equal variances assumed	.774	.386	2.278	28	.031	.82805	.36346	.08353	1.57257
	Equal variances not assumed			2.219	23.031	.037	.82805	.37322	.05605	1.60006
Understanding	Equal variances assumed	.075	.786	2.013	28	.054	1.00452	.49903	-.01769	2.02674
	Equal variances not assumed			2.032	26.812	.052	1.00452	.49433	-.01009	2.01914
Applying	Equal variances assumed	2.919	.099	2.892	28	.007	.95928	.33165	.27992	1.63863
	Equal variances not assumed			2.722	18.964	.014	.95928	.35243	.22154	1.69702
Total	Equal variances assumed	6.240	.019	3.667	28	.001	2.79186	.76130	1.23240	4.35131
	Equal variances not assumed			3.405	17.516	.003	2.79186	.81981	1.06607	4.51764

The results of tests the advanced level group and control group (1) after ten week from the experiment

Group Statistics

	Ways	N	Mean	Std. Deviation	Std. Error Mean
Remembering	Advanced group	17	5.0588	.89935	.21812
	control group(1)	30	1.0667	1.04826	.19139
Understanding	Advanced group	17	10.2353	1.39326	.33792
	control group(1)	30	2.7333	1.33735	.24417
Applying	Advanced group	17	6.8824	.69663	.16896
	control group(1)	30	1.5333	1.22428	.22352
Total	Advanced group	17	22.1765	1.46779	.35599
	control group(1)	30	5.3333	3.37673	.61650

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Remembering	Equal variances assumed	.216	.644	13.179	45	.000	3.99216	.30292	3.38204	4.60228
	Equal variances not assumed			13.757	37.768	.000	3.99216	.29018	3.40459	4.57972
Understanding	Equal variances assumed	.068	.796	18.204	45	.000	7.50196	.41210	6.67195	8.33197
	Equal variances not assumed			17.995	32.223	.000	7.50196	.41690	6.65300	8.35092
Applying	Equal variances assumed	8.997	.004	16.514	45	.000	5.34902	.32391	4.69663	6.00141
	Equal variances not assumed			19.090	44.987	.000	5.34902	.28019	4.78468	5.91336
Total	Equal variances assumed	10.685	.002	19.478	45	.000	16.84314	.86474	15.10146	18.58481
	Equal variances not assumed			23.659	42.915	.000	16.84314	.71190	15.40736	18.27891

The results of tests the advanced level group and control group (2) after ten week from the experiment

Group Statistics

	Ways	N	Mean	Std. Deviation	Std. Error Mean
Remrmbering	Advanced group	17	5.0588	.89935	.21812
	Control group(2)	30	2.4000	1.00344	.18320
Understanding	Advanced group	17	10.2353	1.39326	.33792
	Control group(2)	30	5.0000	1.89373	.34575
Applying	Advanced group	17	6.8824	.69663	.16896
	Control group(2)	30	3.3000	1.08755	.19856
Total	Advanced group	17	22.1765	1.46779	.35599
	Control group(2)	30	10.7000	3.23931	.59141

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Remrmbering	Equal variances assumed	.843	.363	9.051	45	.000	2.65882	.29377	2.06714	3.25051
	Equal variances not assumed			9.334	36.512	.000	2.65882	.28485	2.08140	3.23625
Understanding	Equal variances assumed	1.870	.178	9.955	45	.000	5.23529	.52592	4.17604	6.29455
	Equal variances not assumed			10.829	41.775	.000	5.23529	.48345	4.25949	6.21110
Applying	Equal variances assumed	5.051	.030	12.205	45	.000	3.58235	.29351	2.99120	4.17350
	Equal variances not assumed			13.741	44.199	.000	3.58235	.26071	3.05698	4.10772
Total	Equal variances assumed	9.562	.003	13.778	45	.000	11.47647	.83293	9.79886	13.15409
	Equal variances not assumed			16.626	43.477	.000	11.47647	.69029	10.08481	12.86813

The results of tests the beginning level group and control group (1) after ten week from the experiment

Group Statistics

	Ways	N	Mean	Std. Deviation	Std. Error Mean
Remembering	beginning group	13	4.2308	1.09193	.30285
	Control group(1)	30	1.0667	1.04826	.19139
Understanding	beginning group	13	9.2308	1.30089	.36080
	Control group(1)	30	2.7333	1.33735	.24417
Applying	beginning group	13	5.9231	1.11516	.30929
	Control group(1)	30	1.5333	1.22428	.22352
Total	beginning group	13	19.3846	2.66266	.73849
	Control group(1)	30	5.3333	3.37673	.61650

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Remembering	Equal variances assumed	.194	.662	8.979	41	.000	3.16410	.35238	2.45246	3.87575
	Equal variances not assumed			8.832	22.044	.000	3.16410	.35825	2.42122	3.90699
Understanding	Equal variances assumed	.003	.958	14.748	41	.000	6.49744	.44056	5.60771	7.38716
	Equal variances not assumed			14.914	23.471	.000	6.49744	.43565	5.59722	7.39766
Applying	Equal variances assumed	.663	.420	11.078	41	.000	4.38974	.39626	3.58948	5.19000
	Equal variances not assumed			11.503	24.988	.000	4.38974	.38161	3.60379	5.17569
Total	Equal variances assumed	1.019	.319	13.289	41	.000	14.05128	1.05736	11.91590	16.18666
	Equal variances not assumed			14.606	28.772	.000	14.05128	.96200	12.08310	16.01947

The results of tests the beginning level group and control group (2) after ten week from the experiment

Group Statistics

	Ways	N	Mean	Std. Deviation	Std. Error Mean
Remembering	beginning group	13	4.2308	1.09193	.30285
	Control group(2)	30	2.4000	1.00344	.18320
Understanding	beginning group	13	9.2308	1.30089	.36080
	Control group(2)	30	5.0000	1.89373	.34575
Applying	beginning group	13	5.9231	1.11516	.30929
	Control group(2)	30	3.3000	1.08755	.19856
Total	beginning group	13	19.3846	2.66266	.73849
	Control group(2)	30	10.7000	3.23931	.59141

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Remembering	Equal variances assumed	.039	.845	5.352	41	.000	1.83077	.34205	1.13998	2.52156
	Equal variances not assumed			5.172	21.214	.000	1.83077	.35395	1.09515	2.56639
Understanding	Equal variances assumed	2.178	.148	7.317	41	.000	4.23077	.57817	3.06312	5.39842
	Equal variances not assumed			8.466	32.735	.000	4.23077	.49972	3.21377	5.24776
Applying	Equal variances assumed	.021	.886	7.210	41	.000	2.62308	.36383	1.88831	3.35784
	Equal variances not assumed			7.137	22.358	.000	2.62308	.36754	1.86155	3.38460
Total	Equal variances assumed	.660	.421	8.487	41	.000	8.68462	1.02328	6.61806	10.75117
	Equal variances not assumed			9.179	27.626	.000	8.68462	.94612	6.74540	10.62383

The results of tests the control group (1) and experimental group (2) after ten week from the experiment

Group Statistics

	Ways	N	Mean	Std. Deviation	Std. Error Mean
Remembering	Control group(1)	30	1.0667	1.04826	.19139
	Experimental group(2)	30	2.4000	1.00344	.18320
Understanding	Control group(1)	30	2.7333	1.33735	.24417
	Experimental group(2)	30	5.0000	1.89373	.34575
Applying	Control group(1)	30	1.5333	1.22428	.22352
	Experimental group(2)	30	3.3000	1.08755	.19856

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Remembering	Equal variances assumed	.146	.704	-5.033	58	.000	-1.33333	.26494	-1.86366	-.80300
	Equal variances not assumed			-5.033	57.890	.000	-1.33333	.26494	-1.86368	-.80298
Understanding	Equal variances assumed	3.701	.059	-5.355	58	.000	-2.26667	.42327	-3.11393	-1.41940
	Equal variances not assumed			-5.355	52.164	.000	-2.26667	.42327	-3.11596	-1.41738
Applying	Equal variances assumed	.813	.371	-5.909	58	.000	-1.76667	.29898	-2.36513	-1.16820
	Equal variances not assumed			-5.909	57.205	.000	-1.76667	.29898	-2.36531	-1.16802
Total	Equal variances assumed	.070	.792	-6.282	58	.000	-5.36667	.85431	-7.07676	-3.65658
	Equal variances not assumed			-6.282	57.900	.000	-5.36667	.85431	-7.07682	-3.65652

The results of tests the experimental group (1) (beginning level) after and before the experiment

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Post	10.08	13	2.431	.674
	Pre	7.23	20	3.140	.871

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Post - Pre	2.846	3.132	.869	.954	4.739	3.277	12	.007

The results of tests the experimental group (1) (advanced level) after and before the experiment

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Post	22.18	17	1.468	.356
	Pre	9.18	10	2.856	.693

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Post - Pre	13.000	2.979	.723	11.468	14.532	17.992	16	.000

Appendix (9)

Student Satisfaction Survey

Educational experience: Please rate your level of satisfaction with each of the following items below. If an item does not apply to you, please select "N/A."

	Very Dissatisfi	Dissatisfied	Neutral	Satisfied	Very Satisfied	N/A
How satisfied are you with your experience at [:Ali Ben Abe Talib]?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ -----
Availability of adaptive resources	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ -----
Exams and quizzes reflected important course aspects	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ -----
Quality of the teaching faculty	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ ------
I would recommend this course a this experiance to other students	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ -----
I would recommend that current experience continue to be used	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ ------

Appendix (10)

Survey Results

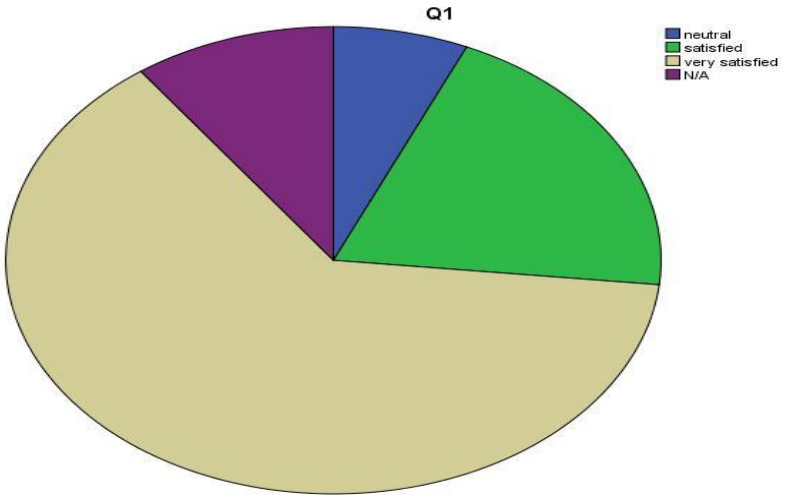

Figure .1. Result of Question 1 in Evaluation Survey

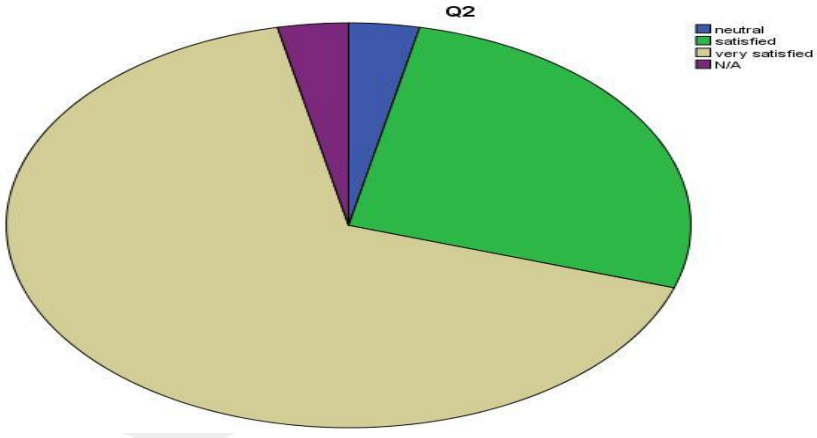

Figure .2. Result of Question 2 in Evaluation Survey

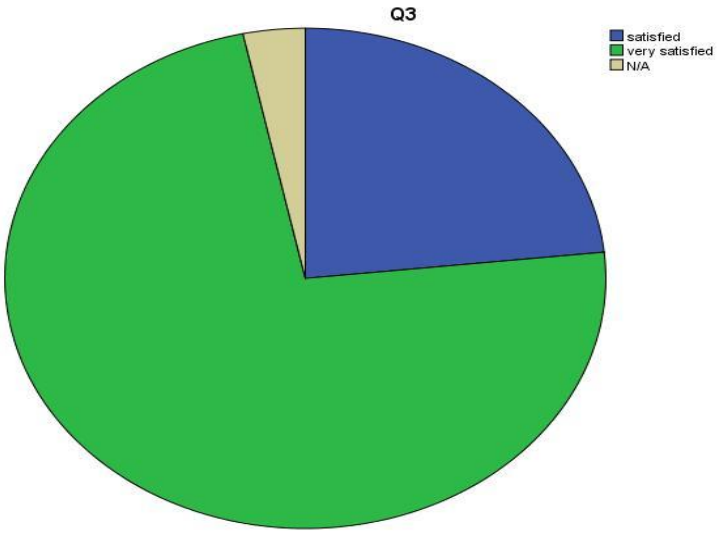

Figure .3. Result of Question 3 in Evaluation Survey

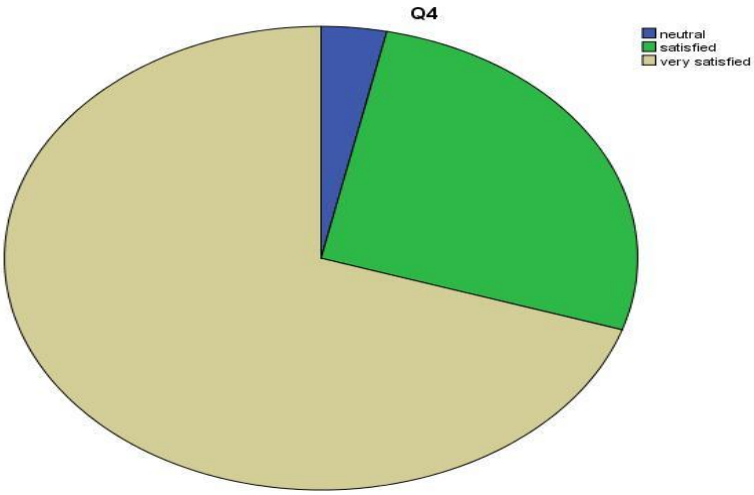

Figure .4. Result of Question 4 in Evaluation Survey

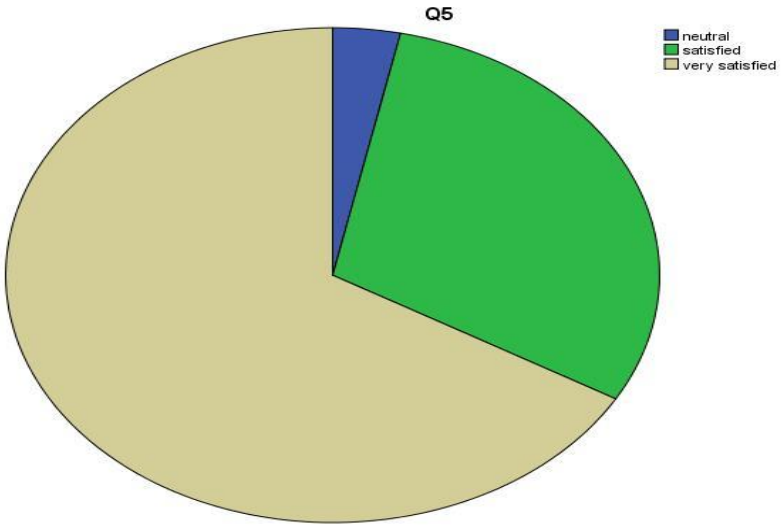

Figure. 5. Result of Question 5 in Evaluation Survey

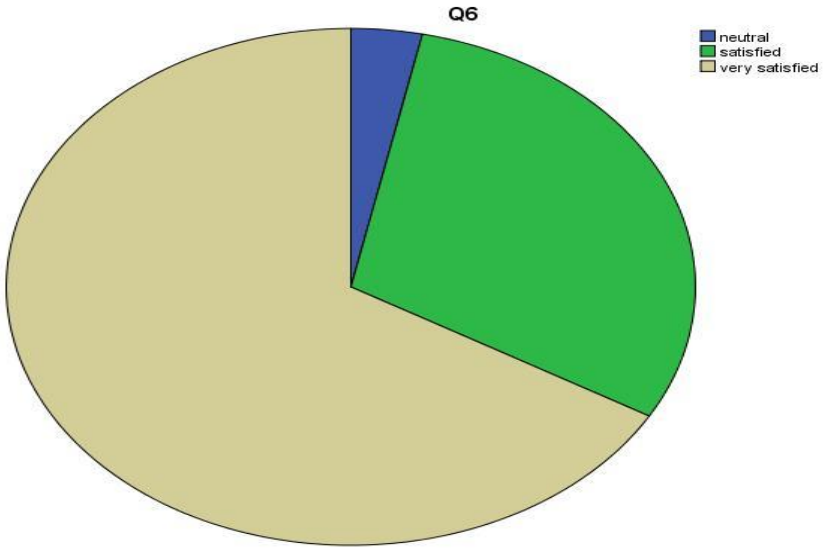

Figure .6. Result of Question 6 in Evaluation Survey