

**EFFECTS OF GAMIFICATION AND BLANK-QWERTY-TOUCH  
METHODS ON PERFORMANCE OF BUSINESS EDUCATION  
STUDENTS IN KEYBOARDING IN FEDERAL COLLEGE  
OF EDUCATION, KANO, NIGERIA**

**BY**

**Auwalu ADO**

**DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION,  
AHMADU BELLO UNIVERSITY, ZARIA, NIGERIA**

**MAY, 2017**

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**BY**

**Auwalu ADO  
(B. Ed. Business Education (2011, ABU Zaria)  
P14EDVE8089**

**A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE  
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**DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION  
AHMADU BELLO UNIVERSITY, ZARIA, NIGERIA**

**MAY, 2017**

## **DECLARATION**

I declare that the work in this dissertation titled Effects of Gamification and Blank-QWERTY-touch methods on Performance of Business Education Students in Keyboarding in Federal College of Education, Kano, Nigeria, has been carried out by me in the Department of Vocational and Technical Education. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this dissertation was previously presented for another degree or diploma at this or any other institution.

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**Auwalu ADO**

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**Date**

## CERTIFICATION

This dissertation titled EFFECTS OF GAMIFICATION AND BLANK-QWERTY-TOUCH METHODS ON PERFORMANCE OF BUSINESS EDUCATION STUDENTS IN KEYBOARDING IN FEDERAL COLLEGE OF EDUCATION, KANO, NIGERIA, by Auwalu ADO meets the regulation governing the award of the Master of Business Education Degree of the Ahmadu Bello University, and is approved for its contribution to knowledge and literary presentation.

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Dr. S. Ibrahim  
Chairman, Supervisory Committee

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Date

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Dr. S. S. Amoor  
Member, Supervisory Committee

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Date

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Dr. S. Ibrahim  
Head, Department of Vocational  
& Technical Education

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Date

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Prof. S.Z. Abubakar  
Dean, School of Postgraduate Studies

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Date

## **DEDICATION**

This research work is dedicated to my parents, Alhaji Adamu (Danjummai Tela) and Khadija, my late grandmother (Khadija – Gogo), my wife, Maryam, and my daughters, Zainab & Aisha (Humaira).

## ACKNOWLEDGEMENT

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## OPERATIONAL DEFINITION OF TERMS

1. **Accuracy:** The extent of error-free typing.
2. **Blank-QWERTY-touch Method:** Method of teaching keyboarding whereby characters cannot be seen by the students.
3. **Gamification Method:** Method of teaching whereby teacher uses games software to teach keyboarding.
4. **Keyboard:** The set of keys on a computer or typewriter that a person can press in order to make or write something.
5. **Keyboarding:** A course offered by NCE I students at the college of education.
6. **QWERTY-touch Method:** Method of teaching keyboarding whereby characters (A – Z) can be seen by the students.
7. **Speed:** The rapidity of keying/typing a word without looking at the keyboard.
8. **Typing:** Keying or entering a character, word using keyboarding.
9. **WPM:** An acronym for Words Per Minute used in keyboarding to determine how many words an individual can type on one minute.

## **ABSTRACT**

The study was carried out to determine the effects of gamification and blank-qwerty-touch methods on performance of business education students in keyboarding in Federal College of Education, Kano, Nigeria. The study had five objectives, five research questions, and five null hypotheses which were formulated and tested at 0.05 level of significance. Quasi-experimental design was adopted for the study. The population of the study was 248 business education students who were admitted in 2015/2016 academic session in Federal College of Education, Kano, Nigeria. Ninety (90) students were used as a sample for the study. The instruments used to generate data for the study were two self-designed Keyboarding Skills Tests. Mean and standard deviations were used to answer the stated research questions. Simple Regression (SR) was used to test null hypotheses one and two, while t-test statistic was employed in testing null hypotheses three to five. From the results of the study, hypotheses one to three were rejected while hypothesis four and five were retained. The summary of the study showed that students in gamification and blank-QWERTY-touch teaching methods performed better than those in the conventional (QWERTY-touch) method, and gender did not show any significant difference in the performance of students in both gamification and blank-QWERTY-touch methods. It is concluded therefore that, gamification teaching method has an effect on students' performance, blank-QWERTY-touch teaching method also has a positive effect on students performance particularly at beginning of keyboarding training. Based on the findings, five recommendations are postulated, among which were that, in order to make students develop high speed and accuracy, keyboarding teachers should use gamification method when it comes to speed and accuracy development. And teachers should use the blank-QWERTY-touch method at a beginning of keyboarding training so as to ensure key position memorization at beginning.

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background to the Study

Kano state is located in North-west Geo-Political Zone, Nigeria. The state was created on May 27, 1967, from the then Northern Region. The state shares border with Katsina State to the North-west, Jigawa state to the North-east, Bauchi state to the South-east and Kaduna state to the South-west. The capital city of Kano state is Kano. Kano state covered a geographical area of 20,131 km<sup>2</sup> (Kanogovt., 2015) with estimated population of 9,383,682 as at 2006 census (National Population Commission, 2006). The state had forty-four local government area councils with two Federal Colleges of Education which consisted of Federal College of Education, Kano and Federal College of Education (T) Bichi.

Federal College of Education (FCE) Kano is the first college of education in the state. The college started in 1961 as Advance Teacher's College (ATC) ABU at Gwale Senior Primary school with 34 students, later in 1965, the Nigeria Certificate in Education program was introduced in the college. The college achieved autonomy in running of pre-NCE, remedial certificate, diploma, and NCE certificate. There are five schools available in FCE, Kano made up of the school of education, school of vocational and technical education, school of languages, school of sciences and school of art and social sciences.

The business education program is an area of study that exposes its recipients to diversify curricula, Ibrahim (2008), viewed it as that type of education that inculcates in its recipients' attitudes, knowledge, skills, and values that are required in the business world. This is a means of producing a healthy, literate self-reliant citizen that would create wealth for human development, when they become self-employed, thereby resulting to sustainable nation's development at large. According to Adeshina (2007), business education is a primary education for vocation. It is an integral part of vocational and technical education. It is a training system that encourages the

beneficiary to acquire skills that fit into the world of work. Business education encompasses attitude, knowledge, and skills needed for any level employment and advancement in a broad range of business careers.

Keyboarding is one of the fundamental subjects in business education. The National Commission for Colleges of Education (NCCE) recognised keyboarding as an important business education subject particularly in regard to achievement of objective five of NCE business education which targeted “to equip NCE graduates with the right skills that will enable them to engage in a life of work in the office as well as for self-employment” (NCCE, 2012 revised). Keyboarding is a purely manipulative skill whereby hands and fingers are trained to respond correctly and without conscious effort of the keyboard operator to key in written or spoken words. With the introduction of the personal computer in an educational setting, interest in the area of keyboarding skills in Nigerian Colleges of Education increased significantly. As a skill based subject, keyboarding is typically discussed by researchers in terms of working on a computer. Bartholome (2013) opined that keyboarding is the act of placing information into various types of equipment through the use of a typewriter-like keyboard. Keyboarding is thought of as the ability to input data (letters, symbols and numbers) into a specific software application via a keyboard. Wetzel in Yohanna (2012) suggested that increased efficiency in keyboarding skills allows students to concentrate on problem-solving or composing, rather than on the process of finding letters on the keyboard. NCE graduates having effective keyboarding skills are able to type well in offices and business centers.

However, one major problem faced by students today is not what the teachers teach, but how they teach them. Students’ ability to keyboard well depends on teachers’ ability to use meaningful way in teaching the students. Nicholes, (2007) stated that educationists have made an effort at developing psychological rational essential for answering the question “how school subjects are taught to ensure effective and meaningful learning?” there are several assumptions that meaningful learning occurs when learners are actively in the knowledge-getting process. This includes the use of learner-centered methods. These methods ensure an absolute shift of learning

from the class teacher domination to learner self-guided learning process. To this regard, the teacher remains an active facilitator in knowledge inquiry and skill acquisition. To teach keyboarding, therefore, learner friendly methods should be used by keyboarding teachers in teaching the subject.

There are numerous methods of teaching keyboarding like hunt-and-peck (Sight method), touch method, demonstration, Almena, guided discovery and other at disposal of business education teachers. But, especially, studies on methods to improve students' performance in keyboarding suggested that, use of gamification and blank-QWERTY-touch methods might increase students' performance in keyboarding than traditionally used methods. Khaled (2011) and Chua (2014) opined that, for effective keyboarding skills acquisition especially in this contemporary age of the computer, teachers have to emphasize on learner friendly methods such as Gamification method and blank-QWERTY-touch method, because they increase self-dependency, motivation and reduce learning boredom in learners.

QWERTY is a keyboard layout for Latin Script. The name comes from reading the first six keys appearing on the top left letter row of keyboard (QWERTY). The QWERTY design was based on layout created by Sholes and Glidden typewriter in 1873. Today, almost all computer and typewriter keyboards including cell phones had QWERTY keyboard layout. Hence, QWERTY-touch is a method of teaching keyboarding whereby a teacher uses keyboard with the QWERTY layout in which all characters will be seen by students. Using this method in teaching keyboarding is termed as the conventional way of teaching. This comprised the use of a QWERTY keyboard, demonstration, guided discovery, touch method and hunt-and-peck (sighting) methods.

Gamification is a method of teaching using game software to teach keyboarding. It is a strategy of using computer game software such as Mavis Beacon, typing master and others to teach keyboarding skills. It is the use of game software application that is incorporated with typing games to increase students' keyboard learning skill (Khaled, 2011). However, Perrotta (2013) mentioned that 'Gamification' is about using 'elements' derived from video games design, which is then

deployed in a variety of contexts to teach skills, rather than about using individual video games for pleasure purpose only.

Gamification is an important teaching and learning strategy. The strategy was introduced to the teaching of keyboarding using gamed-based program software that is designed to teach typing as a tactic to encourage students' positive behaviours and increase motivation and engagement towards effective keyboarding skills acquisition (Chua, 2014). The major goal for gamification method is to create in students the ability to type-touch with pleasure and avoid boredom while engaged in the keyboarding activity. Currently, gamification software such as Mavis Beacon deluxe 1 – 5, typing master, learn2type and others are used to teach keyboarding skills.

The blank-QWERTY-touch method is the use of blank keyboard to teach keyboarding. The method stimulates touch keying of characters by the keyboard operator. In order to stimulate students' ability to type well, a blank-QWERTY-touch method is used to accelerate students' typing skills without looking at the keyboard. With using blank-QWERTY-touch, students learn a gross motor skill and character position memorization by engaging into physically trained fingers without depending on keyboard characters. This is developing better learning in students and increase remembrance. Fingers are trained up headedly in a systematic way to the extent that students take the positions of A – Z letters without knowing their painted structures on the keyboard into their memories. The teacher teaches the students only with a specimen model of QWERTY in the classroom at the same time guiding them to identify the positions of the keys on the keyboard. The main purpose of the blank-QWERTY-touch method is to boost in learners the ability to key in the data with his/her eyes off the keyboard, but, fixed on the manuscript (Hallows, 2002).

Performance refers to what students achieve in their studies and how they cope with or accomplish different learning experiences given to them by their teachers. Ibrahim (2011) reported that in an educational institution, success is measured by academic performance, or how well students meet standards set out by the institution. All the described variables constituted the background upon which this study was conducted on the effects of gamification and Blank-

QWERTY-touch methods on the performance of business education students in keyboarding in Federal College of Education, Kano, Nigeria.

## **1.2 Statement of the Problem**

Keyboarding is a core subject to all office students, and there is a strong relationship between keyboarding and objectives of office education especially the goal of assuring all persons an opportunity to gain marketable skills prior to graduation. Keyboarding skills are designed to achieve successful mastery of keyboard – starting from manning home keys through the entire keyboard up to speed and accuracy as well as having the ability to type a readable and mailable document. Amoor (2014) stated that, these days’ typewriting that involve manipulation, construction and demonstration is losing its values in the hierarchy of other business course like economics, accounting, and marketing to the extent that students are no longer speaking favorably about them. To what extent do keyboarding teachers understand its marketable importance to students at NCE level is difficult to understand due to unencouraging skills displayed by students prior to graduation from colleges of education. Several types of research had shown that students’ poor performance in keyboarding in Federal College of Education, Kano, Nigeria is attributed to ineffective use of teaching methods. However, some researches were conducted on teaching methods of keyboarding, but their findings did not improved the performance of students in keyboarding in colleges of education, and what could be the reason is yet to be ascertained.

It was observed that, the performance of students in keyboarding in colleges of education was steadily deteriorating. This was so because data collected by the researcher from the college under study showed that, the analysis of business education students’ performance in keyboarding for the period of five years (2010 – 2015) affirmed this statement. For instance, in 2010/2011 session, 50.4% of NCE I students failed to score credit and above in keyboarding. In 2011/2012 and 2012/2013 61% and 56.2% respectively failed to score credit grade in keyboarding, in 2013/2014 session, the result also indicated that 50.3% did not scored credit grade and in 2014/2015 session, out of 241 NCE I students, only 32.2% scored credit, and out of 212 NCE II students only 40.3%

scored credit in keyboarding. Probably, other colleges of education in Nigeria might be experiencing the same problem.

On another hand, many people had perceived that keyboarding is a gender neutral, while some perceived that keyboarding is only a profession for female. That is why female were found mostly in secretariat cadre than their counter male. The researcher went on to interact with both male and female graduates where it was observed that most of the female students developed anxiety in keyboarding training especially when using methods that deals with a computer application. Whereas some female students were observed performing better, their counter male students were observed to be having anxiety in both computers related keyboarding training and traditionally based ways. Some researchers like Lind, Morash and Stevens (2001) stated that keyboarding is not a gender neutral but a female profession. What is the actual fact about this perception especially in regards to use of methods is also yet to be ascertained.

The researcher observed that keyboarding is losing its image to the extent that many teachers are not really good in teaching keyboarding competence which in turn making students losing interest in the subject. Also, the researcher went on to interact with business education students from colleges of education in Jigawa, Kano, and Zaria, and found that about 70% of these students could not display well-keyboarding skills prior to their graduation, one among the reasons given by the students was that teachers used inappropriate way of teaching keyboarding. Apart from the researcher's personal observation and interaction with keyboarding students, some empirical studies by past researchers showed the same trend. For instance, Yohanna (2012) claimed that, most of the poorly displayed keyboarding skills by students were attributed to inappropriate use of methods while teaching. The uncertainty of which method of teaching keyboarding shall be appropriate to make students master keyboarding shall be a major concern of every keyboarding teacher particularly in Federal College of Education, Kano. Hence, the research is worried about the reported low performance of the college of education students in keyboarding and wonders if the adoption of gamification and blank-QWERTY-touch methods could lead to an improvement of

students' performance in the subject. It is based on these problems, therefore, the researcher carried out a research on effects of gamification and Blank-QWERTY-touch methods on the performance of business education students in keyboarding in Federal College of Education, Kano with aim of ascertaining their effects as newly developed methods.

### **1.3 Objectives of the Study**

The general objective of this research work was to find out the effects of gamification and blank-QWERTY-touch methods on the performance of business education students in keyboarding in Federal College of Education, Kano, Nigeria. The specific objectives were to;

1. determine the effect of gamification method on the performance of business education students in keyboarding in Federal College of Education, Kano, Nigeria.
2. determine the effect of the blank-QWERTY-touch method on the performance of business education students in keyboarding in Federal College of Education, Kano, Nigeria.
3. ascertain differences in the mean performance of business education students taught using gamification method and those taught using the blank-QWERTY-touch method in Federal College of Education, Kano, Nigeria.
4. compare the differences in the mean performance of male business education students taught using gamification method and those taught using blank-QWERTY-touch method in Federal College of Education, Kano, Nigeria.
5. compare the differences in the mean performance of female business education students taught using gamification method and those taught using blank-QWERTY-touch method in Federal College of Education, Kano, Nigeria.

### **1.4 Research Questions**

The following research questions were formulated to guide the study:

1. what is the effect of gamification method on the performance of business education students in keyboarding in Federal College of Education, Kano, Nigeria?

2. what is the effect of the blank-QWERTY-touch method on the performance of business education students in keyboarding in Federal College of Education, Kano, Nigeria?
3. what is the difference in the mean performance of business education students taught keyboarding using gamification method and those taught using the blank-QWERTY-touch method in Federal College of Education, Kano, Nigeria?
4. what is the difference in the mean performance of male business education students taught keyboarding using gamification method and those taught using the blank-QWERTY-touch method in Federal College of Education, Kano, Nigeria?
5. what is the difference in the mean performance of female business education students taught keyboarding using gamification method and those taught using the blank-QWERTY-touch method in Federal College of Education, Kano, Nigeria?

### **1.5 Research Hypotheses**

The following null hypotheses were formulated for the study.

- H0<sub>1</sub>: there is no significant effect of gamification method on performance of business education students in keyboarding in Federal College of Education, Kano, Nigeria
- H0<sub>2</sub>: there is no significant effect of blank-QWERTY-touch method on performance of business education students in keyboarding in Federal College of Education, Kano, Nigeria
- H0<sub>3</sub>: there is no significant difference in the mean performance of business education students taught keyboarding using gamification method and those taught using blank-QWERTY-touch method in Federal College of Education, Kano, Nigeria
- H0<sub>4</sub>: there is no significant difference in the mean performance of male business education students taught using gamification method and those taught using blank-QWERTY-touch method in Federal College of Education, Kano, Nigeria
- H0<sub>5</sub>: there is no significant difference in the mean performance of female business education students taught keyboarding using gamification method and those taught using the blank-QWERTY-touch method in Federal College of Education, Kano, Nigeria.

## **1.6 Significance of the Study**

The findings of this study were expected to be beneficial to keyboarding students, keyboarding teachers, parents, business education curriculum planners, colleges of education administrators, government, keyboarding personal users and researchers in keyboarding.

With the use of appropriate method to teach keyboarding, students will benefit by improving their performance and their interest toward keyboarding will increase. Keyboarding teachers will also benefit from the result of this study in the sense that, it will help them to select and use an appropriate method of teaching keyboarding that will enhance the students' performance. Parents are also among the beneficiaries of this study because, the performance of their children is always their concern in education. Because they believe that good performance will provide good career and jobs opportunity to their children after graduation. Also, colleges of education administrators will have an insight as to which appropriate method they will advise for teaching keyboarding at colleges of education.

Business education curriculum planners will benefit from the result of this study in the sense that it will help them to adequately plan and suggest a relevant methods for training keyboarding in business education at all levels, particular for the beginning keyboarding at the N.C.E I. Government is always investing in education sector especially in a tertiary institution in Nigeria. When the performance of students improved and be encouraged through the use of the appropriate and effective method, this will help the government in achieving its objective of the investment in the education sector in Nigerian colleges of education. Similarly, Personal keyboard users at home, offices and business centers will benefit from this research work in understanding appropriate techniques to learn to keyboard. Finally, the study is expected to be used by further researchers as reference materials and empirical studies by other researchers in keyboarding.

## **1.7 Assumptions of the Study**

For the purpose of this study, the following assumptions were made;

1. It is assumed that the use of gamification method to teach students keyboarding may likely enhance students' performance in keyboarding than the use of the conventional method in Federal College of Education, Kano, Nigeria.
2. It is also assumed that the use of a blank-QWERTY-touch method to teach students keyboarding may likely enhance students' performance in keyboarding than the use of the conventional method in Federal College of Education, Kano, Nigeria.
3. It is similarly assumed that NCE I business education students will have the ability to use the keyboard.

## **1.8 Delimitation of the Study**

The study was delimited to effects of gamification and blank-QWERTY-touch methods on the performance of business education students in keyboarding in Federal College of Education, Kano, Nigeria because it is among the oldest college of education where business education training first started as its foundation in northwest zone. Also, the study was delimited to NCE I students that did not have keyboarding background and who were at 2015/2016 academic session. The students are selected because they are beginners in keyboarding with no previous knowledge in keyboarding and the students have not yet formed any keyboarding habits. Thus, their initial habit has been shaped without much problem. The study is further delimited to the topic Basic keyboarding operations.

## CHAPTER TWO

### REVIEW OF RELATED LITERATURE

This chapter reviewed related literature on effects of gamification and blank-QWERTY-touch methods on performance of business education students in keyboarding, students' performance in keyboarding and methods of teaching keyboarding. The chapter was presented under the following sub-headings:

#### 2.1 Theoretical Framework

##### 2.1.1 Cognitive theory of Multimedia learning

##### 2.2.1 Concept of Keyboarding

###### 2.2.1.1 The QWERTY Keyboard

###### 2.2.1.2 The QWERTY-touch method

##### 2.2.2. Concept of Gamification

###### 2.2.2.1 Importance of Gamification method in keyboarding practice

###### 2.2.2.2 Gamification Software

###### 2.2.2.3 Concept of Blank-QWERTY-touch

##### 2.2.4 Concept of Performance

#### 2.3 Gamification Method of teaching keyboarding

#### 2.4 Blank-QWERTY-touch Method of teaching keyboarding

#### 2.5 Review of Empirical Studies

#### 2.6 Summary of Reviewed Literature

### **2.1 Theoretical Framework**

#### **2.1.1 Cognitive Theory of Multimedia Learning**

Developing skilled learning has been a major concern of educational psychologists; one important learning theory to guide this research work is the cognitive theory of multimedia learning theory by Mayer in 1971.

In this theory, there is principle known as “multimedia principle” which stated that “people learn more deeply from words and pictures than from words alone”. However, simply adding words to pictures is not an effective way to achieve multimedia learning. The goal is to instructional media in the light of how human mind works. This is the basis for Mayer’s cognitive theory of multimedia learning. This theory proposed three main assumptions when it comes to learning with multimedia:

1. **Dual-Channel Assumption;** - Human possesses separate information processing channel for visually represented materials.
2. **Limited Capacity Assumption:** - Humans are limited in the amount of information that can process each channel at one time.
3. **Active Processing Assumption:** - Humans engaged in active learning by attending to relevant incoming information, organizing selected information into coherent mental representations and integrate the mental representation with other knowledge.

The relationship between this theory and this research work is that keyboarding skills acquisition, particularly in relation to the use of gamification and blank-QWERTY-touch methods, are based on the use of words, pictures, and mental images. Students learning strategies are based upon the three (3) assumptions stipulated. Use of Gamification method which is a combination of words and pictures is helping in stimulating students’ effort and seize students’ larger attentions to keyboards and written words on manuscripts. Likewise, applying blank-QWERTY keyboard may enhance students’ ability to process the mental images of Alpha and Numerical characters of keyboard without visualizing them on their real or actual form (Dual-channel), by the time students have mental images of characters into their memory, ability to recall in connection with mastery of key positions trained to the fingers shall help in proper keyboarding skills development. This may lead them to the next stage, where students might have a little capacity of separating point-of-stop thinking of the key positions before typing (Limited Capacity Assumption). At the end, Active

Processing will take place when students completely take into their memory the key positioning with no point-of-stop thinking to type with conscious about the alphabets.

### **2.2.1 Concept of Keyboarding**

Keyboarding is defined as a purely manipulative skill whereby hands and fingers are trained to move correctly and spontaneously with little or no conscious effort of an operator to key-in typewritten or spoken words. It involves manipulation of keys on a standard typewriter keyboard with emphasis on typed copy or output. The output is produced on paper at the same time as the input is provided. With the advent of personal computers, typewriters began to become wiped out. In fact, electric typewriters are partially in use. Electronic typewriters had an era of influence in the 1980s which is gradually decreasing, and virtually all input on a keyboard-like device in today's world is on a computer. The one remaining aspect is that, the computer keyboard is almost the same as the typewriter keyboard.

According to Khan, in Nicholas (2007), the placement of letters of the alphabet, commonly used punctuation marks, numbers, and symbols on a computer keyboard are almost exactly the same as the placement on the typewriter keyboard. Thus, the skill of inputting or keyboarding, on the typewriter is very similar to the skill of inputting or keyboarding, on a computer. Typewriting included the production of documents including memos, letters, reports and essays. Nowadays, the production of these documents is done with some kind of a word processing program, but formatting, appropriate use of grammar, spelling, and punctuations are the same as when documents were produced on typewriters. The difference is that, word processing packages are easier than typewriters used to produce documents. Keyboarding is generally defined as the act of placing information into various types of equipment through the use of a typewriter-like keyboard.

Okoduwa (2009) noted that keyboarding is the process of learning the correct manipulation of the computer or typewriter keyboard and using that keyboard for basic data input. It is a cumulative psychomotor skill involving touch method of input into the keyboard. To this consideration, therefore, keyboarding is a psychomotor skill that develops like any other motor

skill, through cognitive, associative and autonomous stages. The main objective of the keyboarding study is to allow students to become more skillful in a computer or typewriter usage. The goal of keyboarding instruction is to enable students to make use of computer keyboard more efficiently and effectively and to avoid lengthy re-teaching when students have acquired improper keyboarding techniques.

With an increasing number of computers in business education, there has been an increased need for keyboarding skills. One of the most obvious benefits of acquiring keyboarding skills particularly at NCE level is the ability to utilize a computer using more effective and efficient method so as to produce words on a keyboard at a faster rate. To effectively use the computer for writing purposes, a student should be able to keyboard at least at the same rate that he or she can write with a pen (Yohanna, 2012). Bullock (2013) suggested that, keyboarding requires less physical and cognitive demands than handwriting and should be taught before handwriting. He further stated that students with adequate keyboarding abilities possess a greater ability to concentrate on matters involving problem-solving and composing rather than on the mechanics of typing.

Teaching and learning of keyboarding cannot be accomplished in the absence of some basic instructional materials and equipment. According to Gartside in Esene (2008), for keyboarding instruction to succeed, typewriters/computers, electric typewriters, desks and chairs, demonstration stand and above all, visual aids need to be available.

According to Tonne, Popham, and Freeman (2000);

*The traditional teacher is a manager in teaching learning situation; he does this function by teaching students by moving from simple to complex. He is the coach of the students, both as a group and as individuals. His prime responsibility is to develop and later protect from deterioration. Good technique in every typing situation needs this practice. Everything that he does should emphasize the habits and motions that comprise the pattern of the expert and de-emphasize all activities that hamper building and maintaining good techniques.*

To do this, Ndinechi, in Esene (2014) suggested that, keyboarding teacher should position himself in front class using demonstration stand. He should watch his students' technique both when they are in the class and when he analyze their papers. He should surround his classes with examples of good techniques at all times, his own demonstrations, the sound of the typing of a superior student, bulletin-board examples of good work, charts showing correct techniques, and films illustrating expert performance. In keyboarding instruction, there are essentially three kinds of machine operation technique drills. They are keyboard operation drills, machine-parts-operation drills, and special operating technique drills.

In keyboard operation drills, the teacher helps students to develop good key striking, that is, correct hand and arm positions and correct sound. In special operating technique drills, activities are meant to improve the student's basic skill such as a drill. Keyboarding on another, though, refers to touch-typing, special key functions, uses of the mouse, and numerical operations. Students learn appropriate key-reaching techniques to build speed and accuracy. These keyboarding skills provide the students with knowledge of correct finger placement and efficiency when typing on a keyboard or using other devices.

For the purposes of this study, the researcher may use the terms typewriting and keyboarding interchangeably. This was because the researcher talks about the ability to input information on a typewriter-like keyboard using the gamification and blank-QWERTY-touch methods of teaching keyboarding.

### **2.2.1.1 The QWERTY Keyboard**

The keyboard is a set of keys on the computer or typewriter that a person presses in order to write a text on paper or enter information. The QWERTY layout was devised and created in the early 1870s by Christopher Latham Sholes, a newspaper editor, and printer who lived in Milwaukee, Wisconsin. In October 1867, Sholes filed a patent application for his early writing machine he developed with the assistance of his friends Carlos Glidden and Samuel W. Soulé.

The first model constructed by Sholes used a piano-like keyboard with two rows of characters arranged alphabetically as follows:

**- 3 5 7 9 N O P Q R S T U V W X Y Z**

**2 4 6 8 . A B C D E F G H I J K L M**

The construction of the "Type Writer" had two flaws that made the product susceptible to jams. Firstly, characters were mounted on metal arms or typebars, which would clash and jam if neighboring arms were pressed at the same time or in rapid succession. Secondly, its printing point was located beneath the paper carriage, invisible to the operator, a so-called "up-stroke" design. Consequently, jams were especially serious, because the typist could only discover the mishap by raising the carriage to inspect what had been typed. The solution was to place commonly used letter-pairs (like "th" or "st") so that their typebars were not neighboring, avoiding jams. Contrary to popular belief, the QWERTY layout was not designed to slow the typist down, but rather to speed up typing by preventing jams. There was also evidence that aside from the issue of jamming, placing often-used keys far apart increases typing speed, because it encourages alternation between the hands. There was another origin story in the Smithsonian that the QWERTY keyboard was made for telegraph operators and has this layout to make it easy for the telegraph operator to work. On the other hand, in the German keyboard, the Z has been moved between the T and the U to help type the frequent bigraphs TZ and ZU in that language. Almost every word in the English language contains at least one vowel letter, but on the QWERTY keyboard, only the vowel letter "A" is located on the home row, which requires the typist's fingers to leave the home row for most words.

Sholes struggled for the next five years to perfect his invention, making many trial-and-error rearrangements of the original machine's alphabetical key arrangement. The study of bigram (letter-pair) frequency by educator Amos Densmore, brother of the financial backer James Densmore, was believed to have influenced the arrangement of letters but was later called into question. Others suggest instead that the letter arrangement evolved from telegraph operators' feedback.

In November 1868 he changed the arrangement of the latter half of the alphabet, O to Z, right-to-left. In April 1870 he arrived at a four-row, upper case keyboard approaching the modern QWERTY standard, moving six vowel letters, A, E, I, O, U, and Y, to the upper row as follows:

**2 3 4 5 6 7 8 9 -**  
**A E I . ? Y U O ,**  
**B C D F G H J K L M**  
**Z X W V T S R Q P N**

In 1873 Sholes's backer, James Densmore, successfully sold the manufacturing rights for the Sholes & Glidden Type-Writer to E. Remington and Sons. The keyboard layout was finalized within a few months by Remington's mechanics and was ultimately presented as follows:

**2 3 4 5 6 7 8 9 - ,**  
**Q W E . T Y I U O P**  
**Z S D F G H J K L M**  
**A X & C V B N ? ; R**

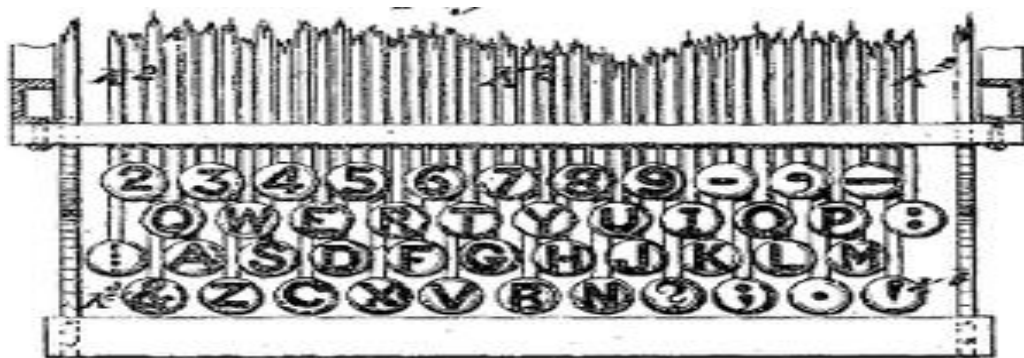
After they purchased the device, Remington made several adjustments, creating a keyboard with essentially the modern QWERTY layout. These adjustments included placing the "R" key in the place previously allotted to the period key. It has been claimed that this change was made to let salesmen impress customers by pecking out the brand name "TYPE WRITER QUOTE" from one keyboard row. This claim was not formally substantiated, but the odds of this occurring by chance were incredibly small. Additionally, there were only five English ten-letter words that can be spelled using just the letters in the top row: perpetuity, pre-require, proprietor, repertoire, and typewriter. Vestiges of the original alphabetical layout remained in the "home row" sequence DFGHJKL.

The modern (QWERTY) layout was:

**1 2 3 4 5 6 7 8 9 0 - =**  
**Q W E R T Y U I O P [ ] \**  
**A S D F G H J K L ; ' ,**  
**Z X C V B N M , . /**

The QWERTY layout became popular with the success of the Remington No. 2 of 1878, the first typewriter to include both upper and lower case letters, using a shift key.

QWERTY has since been adapted to the modern computer keyboard that we know today. The history of computer keyboards was first thought about in the 1960's when a couple called Bob and Joan Crozier found that there was a pressing need to apply computerized technology to many kinds of business. At this time, of course, the small personal computer that we take for granted was not available, though there were much larger mainframe computers in operation. The product that the Crozier's produced featured keyboard switches, showing that they were well aware of the potential advances in computer and keyboard technology. The complete



**Figure 1: Christopher Sholes' QWERTY Keyboard**

### **2.2.1.2 The QWERTY-touch method**

QWERTY-Touch keyboarding is a method of professional typing whereby typist keys in the information (data) with eyes off the QWERTY keyboard and fixed on the copy or manuscript. Technically defined, QWERTY-touch keyboarding is the keeping of both hands on home row position at the keyboard and reaching with proper home row fingers to press all other appropriate keys. This needs proper keyboarding techniques. Keyboarding Technique as to how proper a typist's or secretary's techniques is depended greatly on how she/he is taught. The improper techniques are those keyboarding habits that are likely to result in a low typing speed improvement. Such habits are prone to cause physical fatigue over time, repetitive stress syndrome, neck or eye strain (Sholes, 2008). The method of keyboarding which minimizes the risk of physical fatigue to the person keyboarding and open path to lifelong improvement is keying speed and accuracy

through practice is the proper keyboarding technique. Teaching keyboarding using QWERTY-touch method involves the use of QWERTY-keyboard. And teachers must maintain certain techniques for the proper set-up to gain good keyboarding skills. Hallows (2002) mentioned some contributing factors for helping students succeed in keyboarding as having a proper position, memorization of keys by students and provision of motivation to students.

**Positioning:** She further maintained that to develop proper keyboarding skill, correct sitting position (ergonomic) must be taken into consideration. The learner has to position the chair or bench at the correct distance from the keyboard by sitting up straight with arms at sides and hands in lap. While in this natural and comfortable position, the student should lift the hands straight up and then measure how far the seat or keyboard should be moved to align fingers with the home keys with arms still in this natural position. Hands and wrists should be placed over the home keys at a natural angle. The angle should be the same as if the person was standing or walking with hands at their sides. Hands position should be symmetrical with wrists flat and relaxed, preferably not resting on the keyboard frame or counter. Resting the wrists definitely, restricts finger movement and reach. The bump key should be identified along with correct finger placement. The legs upper leg (thigh) position should be symmetrical (not crossed). The lowered leg (from knees down) position doesn't seem to affect symmetry (crossing is okay). The monitor should be positioned so eyes are looking straight ahead and neck straight, not bent too far forward or back.

**Memorization:** Learning to touch type is necessary to develop speed beyond the speed of handwriting (about 10-20 words per minutes) and requires memorization of the keyboard. Most keyboard programs have a definite sequence for memorization of the keyboard. Most keyboarding programs have a definite sequence for memorizing the keys, some work better than others for different individuals. Here are some tried and true ideas;

First Idea; having students close their eyes and try to find the correct finger placement on the keyboard by locating and putting the correct fingers on the bump keys. Secondly, use a keyboard chart to explain the layout of the keyboard to students (finger placement in diagonal

columns, reach etc). A photocopy of a keyboard works well to have students label keys in the diagonal columns and color coded them using colored pencils. Thirdly, use a fine-point marker to write the letters, numbers, or symbols that correspond with each finger. Practice spelling words or play a game with other words by pointing the correct finger that corresponds with each letter. Fourthly, students will progress more readily with touch-typing if their hands are covered while they perform the keyboarding lessons. This can be done easily with a piece of printer paper taped to the monitor so that it drapes over the hands (if students complain that the paper distracts them, remind them that all good typists have to learn to block out distractions). A more sophisticated cover can be made from cardboard, but students may pick under it. Covering the letters on the keys with sticky dots will work too, but frequently replacement may be required when students pick them off.

**Motivation:** Keyboarding teachers should prize student when he shows good attempt. Music/metronome should be provided. This will keep the student in a steady typing towards proper keyboarding skill gain. Hallows (2002) postulated that, when students are learning to type, they sometimes struggle to build enough speed to make typing worth it. Small classroom rewards each time a lesson or goal is completed work well to keep them plugging away. Teachers should give awards at assemblies or other times during the year or even at the end of the year. A perpetual plaque could be hung in the computer lab with the name of the fastest most accurate keyboarder in the school engraved on it so others who see it has a goal to beat.

### **2.2.2 Concept of Gamification**

Gamification is the use of game software to teach keyboarding skills. Gamification is the concept of applying game mechanics and game design techniques to engage and motivate people to achieve their goals. Gamification taps into the basic desires and needs of the user's impulses which revolve around the idea of Status and Achievement.

The term gamification was first coined in 2003 by Pelling but did not gain popularity until 2010. The term gamification began to gather interest in 2010 when companies such as Badgeville started using it to describe their behavior platforms.

Chua (2014) declared that, gamification is the use of game-related elements and mechanics in non-gaming contexts as a means to increase engagement and motivation in skill acquisition process. The term has been used in corporate, entertainment as well as educational settings. This idea has been used successfully in many skilled based and web based business teachings to increase students' engagement.

In education, it was suggested that gamification can work with both methods of education delivery. It can put out the experience one has with instructor-led courses by introducing a level of interactivity and practice (Badgeville, 2015). This reduces the burden on the instructor a little bit to keep the attendees motivated and involved. In teaching skills, gamification is needed to introduce one level of skill before the next.

According to Khaled (2011), gamification is defined as incorporating game elements into a non-gaming software application to increase user experience and engagement. However, in the keyboarding context, gamification method is the use game software application that incorporated with typing games to increase students keyboarding learning skills and engagement.

In support of this, Fabricatore and Lopez (2014) affirmed that, there is a positive correlation between gamified learning experience and students' academic performance. Lee and Hammer (2011) also were of the opinion that games are motivating because of their impact on the cognitive, emotional and social areas of players; and so, gamification in education should focus on those three areas. In the cognitive area, a game provides a complex system of rules along with series of tasks that guide players through a process to master those rules. These tasks are designed as cycles of expertise (Gee, 2003).

Keyboarding is an important psychomotor skill that all students need to learn, but that fact is not being recognized (Educationworld, 2015). By training students to keyboard with mere manuscripts, many students might never be good at composing straight to the computer because they can't take their eyes off the keyboard and keep them on the monitor or text, but, with keyboard gaming software, a teacher might not have full control in nurturing the students to right skills development, rather they partly develop the skills by themselves.

Gamification method can create a state of flow and increase learners' intrinsic motivation. It is reasonable to expect that learners would be more motivated to engage in the educational content, thereby increasing their academic performance. This method has been incorporated with commercial success into platforms, especially social ones, as a way to create narrow relationships between the platform and the users and to drive viral behaviors on them to increase platform popularity. Lee et al (2011) stated that, the success of using gamification method in a commercial context has made some researchers theorized that it could also be used in education as a tool to increase student engagement and to drive desirable learning behaviors on them. Attending to its technological nature, one of the fields where gamification may have a greater impact in Keyboarding. According to Liaw (2008), the potential benefits of gamification method may address well-known issues as, for example, the lack of student motivation due to the limited capacity of interaction with teacher inappropriate use of the method of instruction to suit learning situations.

The main objective of gamification method in education is to apply some of these ideas when designing educative initiatives and their contents in an attempt to make them more motivating. The fact that technology is necessary to implement, most of the exposed mechanisms makes keyboarding platforms an ideal environment for experimentation. In addition, Ryan, Rigby, and Przybylski (2006) postulated that, games in teaching foster feeling of competence (i.e., self-efficacy) through feedback and rewards, and support feeling of relatedness through social connection, competition, and cooperation. They further added that gamification is a very practical technique to take advantage of almost many educational areas like keyboarding. He further stressed

that a gamification is a powerful tool for motivating students to gain better performance, driving their ability to resist in keyboarding, and generating a competitive advantage in classrooms.

Keeping keyboarding learners motivated is a challenge in keyboarding training. By similarity, use of games can easily stimulate keyboarding game players' interests and get them to commit time and efforts and develop more exciting skills than ever. According to Kochi (2013), a considerable amount of research has provided evidence that gamification, i.e., applying engaging game elements to other contexts can increase the users' desire to focus constantly on the task at hand and thus to improve their performance. In other words, people might be more motivated to participate in a gamified task than nonvisually-like skills requiring materials.

Moreover, Finley (2012) stated that, use of gamification particularly in educational skill, needed set up may have great potentials in traditional education where we often find students demotivated and lecturers failing to engage them in learning activities. Gamification in education is "a serious approach to accelerate the experience curve of learning, teaching complex subjects and systems thinking" (Kapp, 2012). Another relevant fact is that, keyboard gamification is based on technology, and it is almost always applied on computers. With the introduction of game playing software to type such as Mavis Beacon Typing deluxe and Learn to type, most of the keyboarding hitches were done away. Students that are engaged in game playing keyboarding might seem to develop more accurate keyboarding skills, because of the type of pleasure and self-motivated learning they found themselves in. In line with this, Kochi (2013) stressed that, students who completed a gamified experience got better scores in practical assignments and in overall score than those that did not. Erenli (2013) stated that, in order for gamification to work, gaming scenarios must be created in everyday classrooms to simulate gaming. These scenarios include the use of a variety of games in teaching skills.

### **2.2.2.1 Importance of Gamification Method in Keyboarding Practice**

Games are motivating because of their impact on cognitive, emotional, and social pleasure of keyboarding students. Lee et al (2011), stressed that, Good gamification design should have “special meaning for the keyboarding learners, the ability to inspire the keyboarding learner to master the topic and it should be autonomous, by providing a feeling of free choice”. Gamification method concerns social aspects which can be incorporated into course design by allowing keyboarding learners the opportunity to earn more skills through social interactions while learning (Haaranen, Ihantola, Hakulinen, & Korhonen, 2014). Emotionally, gamification method impacts learners through feelings of success and failure, as well as frustration and anxiety (Dominguez, 2013). A well-designed keyboarding gamification environment allows learners to experience all of these emotions. High levels of frustration or anxiety should be avoided by carefully designing tasks and learning activities with appropriate levels of challenge (Dominguez, 2013). In line with this, the careful sequence of the progression of learning helps to ensure that learners do not experience high levels of frustration (Stott & Neustaedter, 2013).

Another importance of gamification method is that, it gives instant feedback in terms of scores, speed level, the level of accuracy (errors-free) and at the same time displaying courageous expression words of congratulations to the learners. This makes them develop a sense of courage and talent. Chatfield (2010) stated that, advances in information and communication technology have enriched games by endowing them with instant feedback and instant connection with other players. One of the motivations in playing games is that, they are fun. Gamification method is designed to introduce elements of gameplay into learning keyboarding skills. Despite its importance, O’Donovan, Gain, and Marais (2013) stressed that “if gamification method is not properly used, the method may result in diverting students’ attention to the non-skill acquisition. In line with this, Prince (2013) and Deterding, (2014) stipulated that, poorly used gamification method can result in learners being forced to play the part of the games which is not fun. More so, Gasland (2011) and Deterding (2014) stated that, another challenge associated with using gamification

method are that the introduction of game elements alone does not make skills acquisition process fun.

#### **2.2.2.2 Gamification Software**

Gamification software is good typing program that will allow students to develop their typing skills with keyboard quickly without losing motivation to use the computer. Following are Gamification Softwares available for touch typing;

##### **a) Typing master Software invented by typing innovation Group Ltd**

Is game-based keyboarding Software that teaches speed and Accuracy to students. The programs include different typing games, typing tests for evaluation of speed and accuracy, finger positioning and customization of the type of skills needed to be taught at the particular time. It has typing meter which counts speed and accuracy levels of student typist and detects typing errors (Typingmaster, 2015)

##### **b) Mavis Beacon Teaches Typing Software invented by Brunner Brand**

This is typing software for beginning, intermediate and advanced typing skill development. The software is comprised of typing games, typing instruction, typing tests, speed and accuracy meter and typing history and progress programs that help students and teachers in keyboarding teaching and learning process (Brunner, 2015)

##### **c) Rapid typing Software invented Rapidtyping Company**

This is typing software for beginning, intermediate and advanced typing skill development. The software is game-based instructions programs that help students and teachers in keyboarding teaching and learning process (Rapidtyping, 2015)

##### **d) Dorothy Penso invented Wiley Publishers Ltd**

Is a Keyboarding skills software for children with disabilities, some professionals has advocated it as methods of teaching keyboarding for its therapeutic value for children with disabilities. The software was invented based on vertical keyboarding method.

**e) English type Junior/Senior invented by IANSYST Englishtype Ltd**

Is keyboarding software designed to use in teaching children with the dyslexic and dyspraxic problem. This program has a clear and neat display and structure. It is Linked to the English National Curriculum, and options allow students to choose a level (Key stage 1, 2 or 3) It uses real words as soon as possible and has a mix of exercises, practice and games. There is good sound support with a real UK English voice. Teacher/parent options allow users to be monitored, for goal accuracy targets to be adjusted and for new lessons to be accessed where a student needs to be moved on (Iansyst, 2015).

**f) TypeQuick Software invented by Inclusive Technology Company Ltd**

This program comes from Australia and follows the adventures of a Kuala bear. The graphics and the adventure-story element of the program make it appealing for many children, though each lesson takes between 20-30 minutes which for some is too long. Each lesson must be completed in order to record speed and accuracy progress. There are 10 lessons in total. The program is funny and very motivating to children. However, the onscreen display of the keyboard and hands is not the best during the exercises and for some, the encouragement to go faster (Inclusive, 2015).

**g) Iota Touch Type Software invented by Inclusive Technology Ltd**

Iota Touch type provides a clear and neat screen. Options allow the text size and style to be changed and the program also speaks the next letter to be typed. The program itself provides a sequence of simple exercises; there is no “fun” element to this software title. It keeps a record of speed and accuracy which can be printed off. The program also saves the user’s position, though it is possible to skip (Inclusive, 2015).

**h) Keyboard Crazy invented by Keyboard Crazy limited**

Is a board game “keyboard Crazy”, is being used in some schools to introduce the keyboard through literacy activities (Crezy, 2015)

Other online keyboarding softwares currently available are Typeracer, typing Maniac, Keybr.com, Touch typing study and learn Typing.

### **2.2.3 Concept of Blank-QWERTY-touch method**

The Blank-QWERTY-touch method is a method whereby a teacher uses the blank keyboard to teach keyboarding. The concept of the blank-QWERTY-touch method was first initiated by Paul Shorey on January 20, 2015. The idea came up in order to improve an “eye up teaching keyboarding strategy”. Naturally, many new typing students wanted to stare at their fingers constantly while typing. The founder was convinced that many teachers engaged on constant cautioning and shouting “eyes up” or worse “don’t look at your fingers” to students’ countless times. Generally speaking, these promptings have little effect on outcomes and only serve to agitate the class and make teaching very boring. The rationale behind avoiding the phrase “don’t look at your fingers” was because, as a teacher, it is almost always better to focus on the positive behavior to expect rather than the negative behavior attempting to eliminate.

Schorey (2015) emphasized that, watching the finger by students reached for new keys helps make connections in the brain and will aid in developing the muscle memory that is trying to achieve. However, after the new keys are introduced, students need to be quickly weaned off of staring at their fingers so that they can focus on the text being written. The use of traditional keyboard prompted students to look up when they are seen staring at their fingers. Allowing students to continue practicing this attitude is not horrible if a teacher has high energy and able to roam the classroom constantly. But, for easiness, Schorey taught of the better alternative of using painted keyboarding method. The idea of hiding the letters but still allowing the teacher to observe students typing was what was needed to do. So, it was decided that the only option was to spray paint on the keyboards. Schorey cut out a template in the shape of the alphabetic keys and bought a CAN of plastic type spray paint and painted all the keyboards used for training, and also ensured that the keyboards were nice and clean to avoid having permanent gunk painted onto the keys.



**Figure 2: Blank-QWERTY Keyboard (All letters A – Z cannot be seen)**

After having over a hundred students taught using painted keyboards he found them to be remarkably effective. The vast majority of the students did not look at their fingers and were also using the correct fingers.

#### **2.2.4 Concept of Performance**

Performance is the outcome of education. It is the extent to which a student, teacher or institution has achieved their educational goals. To students, in particular, performance is the extent to which students achieved certain goals during their educational training (Annie, Stoker & Mildred, 2015). In agreement with this, Ibrahim (2011) sees performance as what students achieved in their studies and how they cope with or accomplish different learning tasks given to them by their teachers. Otoo (2007) stated that, performance is the capacity to achieve when one is tested on what he has been taught. Performance is the real outcome of educational training. Abdulsalam (2006) asserted that, performance is commonly measured by examination or continues assessment or cumulative grade point average (CGPA) of students. At the same time, Gouch (2009) opined that academic performance refers to the way and manner student's deals with their studies and how they cope with or accomplish different tasks given to them by their teachers. In agreement with this, Ibrahim (2011) stated that, success is measured by performance in educational institutions or how well a student meets the standards set out by the institution.

### **2.3 Gamification Method of teaching keyboarding**

Gamification method is a method whereby a teacher uses game software applications that are incorporated with typing games to teach keyboarding. Students are assigned to computers where the games software (Mavis Beacon, Typing Master & Rapid Typing) are already installed. The teacher will then teach the students all the features of the software and different games incorporated with the software. After which he will guide the students on how to use the software by going around to each computer and ask the student(s) to open the software first. After every student opens the software, the teacher will give a set of exercise depending on what he prefers to teach and ask the students to put in the software box provided to exercise to practice (depending on the software type). While the students typed the required exercise, a box requiring the students to select the type of game to be played will appear. After the student selects the game, the game will automatically change the typing exercise. And ask the students to start. For typing game software like typing master, a typing meter will appear on the screen to count the number of words typed at all, the time spent for typing, the number of words per minute (WPM) and the number of errors committed per minute. With this meter, the teacher will now go round and take the summary of each computer which will be used to detect the students' performance in keyboarding. With familiarity, students' keyboarding learning skills will increase. And the students will type more with enjoyment than typing with no gaming environment. Khaled (2011) stated that, there is a positive correlation between gamified learning experience and academic performance. He further postulated that games are motivating because of their impact on the cognitive, emotional and social areas of players; and so, gamification in education should also focus on those three areas. In the cognitive area, a game provides a complex system of rules along with series of tasks that guide players through a process to master those rules. In addition, Kapp (2012) postulated that, Gamification method consists of the careful application of game thinking to solving problems and encouraging learning using all the elements of games that are appropriate.

Gamification method is a technique use by a teacher to set principles, tools using video games playing software to teach keyboarding. In this method of teaching, reality, rules, and principles of typing are set. Students are allowed to select the type of game to play, only that what the game will contain is given by the teacher. This makes students to eagerly engage in skill learning activities that they used to find boring, unrewarding or too difficult to become friendly to them. Therefore, keyboarding teachers has to be using gamification method as a strategy to improve teaching, learning, and assessment. At its simplest, gamification method of teaching keyboarding could mean using game-based keyboarding software to encourage competition and self-improvement among students in the classroom. Similarly, it could mean employing video-based keyboarding game software to replace traditional keyboarding classroom activities and makes students engage more in learning how to type manuscript or printed material well.

Gamification method is an important teaching and learning strategy. The strategy was introduced to the teaching of keyboarding using gamed-based program software that was designed to teach typing as a tactic to encourage students' positive behaviours and increase motivation and engagement towards effective keyboarding skills acquisition. As a good teaching method for accelerating the experience curve of learning, Breuer, and Bente (2010) asserted that, the main goal of games in education is entertainment, but their universal applicability gave games extra functions in various aspects of everyday life such as training and knowledge sharing in all walks of life. The goal for gamification method in keyboarding is to create in students the ability to touch-type with pleasure and avoid boredom while engaged in the keyboarding activity.

#### **2.4 Blank-QWERTY-touch Method**

The blank-QWERTY-touch method is a method whereby a teacher uses the blank keyboard to teach touch typing. The blank-QWERTY keyboard is a keyboard that has no character paint. Touch typing or touch keyboarding is the keeping of both hands in the home row position at the keyboard and reaching with the proper home row finger to press all other appropriate keys. In using this method, the teacher will use the blank keyboard so as to avoid students' reliance on watching

the character while typing. There is available blank keyboard today at market. The teacher or the school authority shall provide the blank keyboard or to be improvised by the teacher. This method can be used in order to stimulate students' ability to manipulate keyboard without looking the characters. When using the blank-QWERTY-touch method, students learn a gross motor skill by engaging into physically trained fingers to type effectively without visualizing the real paint of characters. This is developing better learning in students and increase remembrance key positions. Hallows (2002), defined blank-QWERTY-touch method as that type of teaching method whereby students are taught key positioning using blank keyboard by guiding them to learn how to type effectively. He further stressed that fingers are trained up headedly in a systematic way to the extent that students take into their memories the positions of letters A – Z without knowing their painted structures on the keyboard they place on their fronts. The teacher teaches the students only with a specimen model of the QWERTY keyboard in the classroom at the same time guiding the students to identify the position of keys.

Zeitz (2013) stated that, using the blank keyboard for teaching keyboarding skill is a popular strategy for touch typing, though there has not been much research on the effects of using the blank keyboard when students are learning to keyboard. Overall, Schorey (2015) stated that, students who can't see the characters of their keyboards when keyboarding learning will learn significantly faster than those who did not use. Learning to key without looking at or seeing the Alpha/Numerical characters of the keyboard is a difficult thing to do. This is especially difficult if the learners have taught themselves how to type and developed bad habits. One of the most prominent bad habits that novice keyboarders learn is staring at the keyboard while typing. Therefore, to contribute in removing such bad habits in keyboarding students, some companies like Speed Skin Company developed a blank keyboard and keyboard covers (or skins) which hide the letters on the keys from students. Interestingly enough, Lois (2004) stressed that students who use the blank-QWERTY keyboard to learn touch typing learned to keyboard significantly faster than those who use a normal keyboard. This indicated that covered keyboard can be helpful when

learning to keyboard. Use of plastic in covering keyboard letters is a way of teaching students to keyboard at best, with technological improvements, different keyboard inventing companies provided Plastic Perfection's Keyboard Cover as a substitution to initially blank produced keyboard. The Plastic Perfection's keyboard cover is a wonderful typing strategy. The cover hides the keyboard letters, helping students on how to learn to type without looking. The keyboard cover is an extremely effective typing approach to education particularly in the United State of America.

Blank keyboard improves touch typing speed and accuracy. This is because the touch typist never looks at the keyboard. The fingers hit the right keys by force of habit. The typist is entirely focused on the text being typed, reading the words and phrases as the fingers type the text reflexively since he loses character visualization expectancy. Byers (2010) postulated that, use of blank-QWERTY keyboard improves mastery of keyboarding and it involves learning the technique (physical positioning and movement), ergonomics (safe and comfortable keyboard interaction), and key location. In line with this, Roger (2006) postulated that, learning key location requires a sequential introduction of the keys along with a great deal of repetition and reinforcement to develop the kinesthetic memory leading to keyboarding automaticity. Mastering keyboard helps students develop touch typing and to the extent that accuracy and a good display of work are shown as an interesting determinant factor to good keyboarding training. In line with this, Lubbe, Monteith, and Mentz (2006) believed that, keyboarding skills are necessary skill. If it is mastered in the form of touch-typing, it can greatly improve productivity of computer users, since they will not be continually searching for the letter keys on the keyboard whilst keying in data. He further stated that, while teaching with blank keyboard, key location is taught in the cumulative sequence where new keys are integrated with previously-learned skills and highly motivational activities are provided to encourage and reinforce practices. Keyboarding is a psychomotor activity that needs to be taught through the introduction, repetition, and reinforcement. Key/letter locations should be introduced at a time in a sequential format with repetitive activities that begin to build the kinesthetic memory traces that will link each letter with the appropriate finger and key. These

activities must be designed to guide the learner toward successful completion and reinforce accomplishment. If such can be achieved, therefore, keyboarding teachers shall emphasize on using a blank-QWERTY-touch method so as to make students learn touch typing in its simplest form. Hajic (2008) opined that, keyboarding success will increase as student's opportunity to practice keyboarding skills increases. Consequently, additional practice in keyboarding requires students to participate in much concern on skills not what he typed. This means that students who are learning to keyboard must have specific target to the skill of keyboarding if their performance remains the key concern for the training. A less-guided choice but potentially helpful activity in improving students' performance would be to engage students in using non-character visual keyboards. Therefore, blank-QWERTY-touch methods shall appropriately be inspired by student typist to assure skills development.

According to Crews, North and Erthal, (2006), Mastering keyboarding involves more than just practice but learning the locations of keys. The foundation for masterful keyboarding is technique. However, learning key location involves a sequential process beginning with letters followed by punctuation, numbers, and symbols. In addition, for effective and efficient keyboard learning, students should be provided with models of the keyboard for learners assuming good posture as they typed. More specifically, correct hand placement should be demonstrated and explicitly discussed not just leaving them to develop concern of what they type. This should be followed by instruction on proper key stroking. Keystroking is more than pressing keys. Crews et al (2006) postulated that, rapid keyboarding required that, the keys are addressed with a quick finger action. If the finger-action is quick, then keyboarding speed will increase at the time keystrokes reduced. Speed and accuracy are built upon well-developed technique, which should be taught at the beginning and then developed through on-going reinforcement. By using the blank keyboard to teach students how to type, therefore, students should learn to place fingers on their right keys without much depending on the visual form of the keyboard which does nothing but encourage pick typing. For one to achieve the best touch keyboarding skills, he or she must take into memory the

layout of the keyboard, positions of letters and muscle endurance. According to Parr, in Lubbe (2006) “ineffective keyboarding skills inhibit learners' thought process and the fluency with which they type because they are uncertain about the position of the letter keys”. In line with this, Crews et al (2006) described three stages of learning that keyboarding student experiences while using a blank keyboard. These three stages include Cognitive Phase (Key Introduction), Associative Stimulus Phase (Kinesthetic Memory Traces), and Autonomous Muscle Response Phase (Automaticity).

**Cognitive Phase (Key Introduction):** This initial stage involves the students deliberately thinking about the rules of technique (body, arm and hand position; key stroking; and ergonomics). The beginning typist is consciously thinking about the position of each individual key. Entering lines of text involves seeing, processing and tapping of characters separated periodically by spaces.

**In Associative Stimulus Phase (Kinesthetic Memory Traces):** On-going practice through exercises and activities that are of high interest, high motivation, and high activity can motivate learners to engage in the repetition necessary to facilitate “kinesthetic memory traces.” Through this process, students learn to connect the recognition of the character position with the action of striking the corresponding key. Starr (2001) stated that developing kinesthetic memory traces is part of the psychomotor learning process. According to Bloom in Zeitz (2013), “the goal of teaching keyboarding is to familiarize students with the keyboard to a point where they develop automaticity”. Automaticity is a level of proficiency where the learner is able to complete a task as a whole without devoting attention to each individual component task. Keyboarding automaticity requires facility in typing to the point where the operator is keying without thinking of the individual keys. In fact, if an accomplished keyboard student tries to think about what each finger is doing, the entire typing process would collapse. Keyboarding teachers should, however, stress the use of blank keyboard if students are to do without looking.

## 2.5 Review of Empirical Studies

Study on methods of teaching keyboarding has recently received a lot of attention by Business Educators. Lubbe et al (2006) wrote on “relationship between keyboarding skills and self-regulated learning”. The population of the study consisted of 396 male and female students who attended 2<sup>nd</sup>-semester keyboarding. The researcher used quasi-experimental design, and developed questionnaire as the instrument for the data collection and answering the three (3) research questions. Lubbe et al (2006), recommended among others that, moment learners shall be to use computer keyboarding and programs to avoid hunt-and-peck methods in teaching keyboarding.

The current research work is related to Lubbe et al (2006)'s research work because it was carried out on keyboarding students. But they differ entirely in the instrument used for data collection. The past researcher selected 396 students as sample population which was too large for quasi-experiment; the present research work will use only 90 students for the experiment. In the past research work, only 3 research questions, the present work used 5 research questions. In the same vein, the past researcher did not conduct any pilot test, having no statistical tools used in answering the research questions and did not raised any null hypothesis, while the present research work conducted a pilot testing and ensured the reliability coefficient using test-re-test reliability of the instrument, and will use mean, standard deviation for answering the 5 research questions and t-test and ANOVA to answer the 5 research hypotheses.

Oyedele (2007) also conducted a research on “Comparative Analysis of two methods of Teaching Keyboarding Skills in Secondary Schools in Kwara State”, the study had three specific objectives among which were; comparing the performance of the students in hunt-and-peck and teacher demonstration method of teaching keyboarding skills. The researcher raised four research questions and formulated four null hypotheses in line with the specific objectives. The researcher adopted quasi-experiment as the research design, and he also used keyboarding test for pre-test, post-test for the experimental and control groups. The population of his study comprised of eight hundred and twenty (820) students and a sample of sixty (60) students was purposively selected.

The data collected were analyzed using mean and standard deviation for the research question and t-test statistic was used to test the hypotheses at 0.05 level of significance. Based on the data analyzed the researcher found that students in hunt-and-peck groups performed better than those in teacher demonstration method and that hunt-and-peck method is the most effective method for teaching keyboarding. The researcher further recommended that typewriting teachers should give preference to the teaching method that gives a better result.

The present research work is similar to the past research study because, they both concentrate on keyboarding teaching methods, quasi-experiment was the research design for the two research works, and they both pilot tested using pre-test and post. The mean and standard deviation was used in analyzing the data from the research questions in the past research work, and the present work will use mean and standard deviation to answer its research questions. In the past research work, a t-test was used in answering the null hypotheses, also the present work will also use a t-test to answer null hypotheses 3 – 5. The past research work is relevant to the present work because it will help the present work in literature development. However, despite their similarities, these research works differ to the extent that the previous research work was conducted in Kwara State, but the present work will be conducted in Federal College of Education Kano, Nigeria, hence, they differ in location. The previous researcher formulated only three research objectives which were so scanty to achieve the actual comparative effects of the two keyboarding teaching methods, while the present work will analyze 5 research questions. The previous work used only t-test in testing the Null hypothesis, but this research work will add with Simple Logistic Regression Analysis in analyzing the effects of the variables. Moreover, the previous researcher failed to mention any statistical tool used in pilot testing, this work used Kuder-Richardson formula in determining the reliability coefficient.

In a related research conducted by Amadi (2009) on the strategies for effective teaching of typewriting in Colleges of Education in Enugu State, the researcher raised four specific objectives among which was determining the strategies for teaching typewriting in Colleges of Education and finding the effect of the strategies on students' performance in typewriting. Four Research questions and four null hypotheses were formulated in line with the objectives. Descriptive survey design was used for the study. The study involved a population of two thousand four hundred and thirty-two (2,432) students and twelve (12) typewriting teachers. A sample of one hundred and thirty-two (132) students and all the teachers were used for the study. Questionnaire was the instrument used to gather data from the respondents. The data collected from the respondents were analyzed using mean and percentages for the research questions and the null hypotheses were tested using chi-square. The null hypotheses were tested at 0.05 level of significance. Based on the data analyzed, the following findings were made that; demonstration methods, hunt-and-peck method, touch method, self-directed methods are the major strategies for teaching Keyboarding. It was also found that sight and touch methods are the effective methods in teaching typewriting. The researcher recommended, among others, that teachers shall use the two most effective methods (sight and touch) in teaching typewriting.

The current research work is related to the study of Amadi (2009) because they both studied method of teaching Keyboarding. Both the works concentrated on keyboarding at the college of education level. Yet they differ in the following areas; the past researcher developed descriptive survey design in conducting the study, while the present researcher will develop quasi-experiment. The 2432 students used as the population and 132 sample size of the study were too large. This research work will select only 90 students for the study. The previous research work used t-test and chi-square in analyzing the null hypotheses raised while the present research work will use Simple Logistic Regression and t-test.

The previous research work is useful to the current research because it explained some concepts which the current research used some of them to develop literature. Moreover, the past researcher failed to mention any method used in selecting the sample size of the study. This research work will use purposive sample technique to select the sample size of the study.

Another study was conducted by Byers (2010) on “Comparative effect of covered and uncovered keyboarding instruction on students’ typing proficiency and typing technique in Valdosta State University, USA. The study had five research questions and adopted observational research design. The population of his study comprised of twenty-two (22) grade 7 male and female students and the entire population was selected as sample due to scanty nature of the population. Based on the data analyzed, the researcher found that, students that used covered keyboard displayed more typing errors and those who typed using the uncovered keyboard. The previous research work is similar to the present research in the following ways; the past research was conducted on covered and uncovered, one variable (Covered) under study in the current research work. Even though the past research work was good, but they differ in location; where the past work was conducted in the United States of America, the present research work shall be conducted in North-west Geo-Political zone in Nigeria. The past research adopted observational research design while the present work shall adopt quasi-experiment. The 22 grade 7 male and female students’ population of the study was too scanty in Nigerian standard; this research work will use 248 NCE I students. Likewise, ninety (90) samples size will be used in the present research work. The past research work will help the present in the sense that the present researcher shall use some literature particularly that concerned Covered keyboard to add to its literature. However, the past research work did not mention any specific objective(s) and Null Hypotheses used and no tool for statistical analysis. This research work shall use 5 specific objectives and 5 null hypotheses, and Simple Logistic Regression and t-test will be used to test the null hypotheses.

Yohanna (2012) conducted a research on “the Comparative study of touch and sight methods of teaching keyboarding skills to business education students in colleges of education in Kaduna and Kano States”. The researcher formulated four specific objectives, four research questions, and four Null hypotheses. One of them includes; to what extent does the keyboarding speed of college of education students taught using sight method differ from those that are taught using touch method. One of the Null hypotheses included: there is no significant difference between the mean score in typewriting speed of students taught using sight and touch methods of teaching keyboarding skills. The equating experimental design was used on the two methods with a population of 739 students and a sample size of 120 from the four colleges of education; two from Kaduna state and two from Kano state. The researcher analyzed the data using t-test and found that the touch group performed better than the sight group with a mean score difference of 10.92. He concluded that, students performed better under the touch keyboarding method than in the sight keyboarding method. The study recommended among others that, typewriting teachers should use more of touch method in teaching speed and accuracy skills in keyboarding than sight method.

Blazek (2015) conducted a research on evaluation of two (Coded Keyboard and Learn to type software) approaches for developing keyboarding skills in children with cognitive disabilities. The researcher developed five research questions, five research hypotheses for the study. 19 students with cognitive disabilities from 6 developmental classrooms were the population for the study and these students automatically formed the sample size for the study. The researcher employed a quasi-experimental design for the research study. The scores used in the analysis were derived from a teacher-designed test that consisted of a timed test with students keyboarding specific sets of letter sequences. The qualitative segment of the study consisted of focus group interviews with the participating teachers to determine the method perceived to be effective in teaching keyboarding skills to children with intellectual disabilities. Decisional statistics were performed to determine which program was more effective in teaching the selected students keyboarding skills. The findings revealed that, there was no significant difference in the pretest and

posttest means of the two programs, possibly due to the large standard deviations caused by the wide variances of scores. Some students scored zero on their pretest whereas others scored thirty. There was a significant gain in the combined elements of spacing, capitalization, and punctuation that was probably related to the statistical significance in the spacing components in both programs. Overall, there was a significant amount of progress within the CCK© program.

This research is significant to the current research work because it will be used develop literature, particularly on the keyboarding software. Also, the previous research work is similar to the current research work in the sense that it was conducted on two methods of teaching keyboarding – one computer-based learning method and the other non-computer based, both research works developed a quasi-experimental design for the study. Despite their similarities, the previous research work is different from the current research work. Because, the previous research work was conducted at the university of Tennessee whereas the present research work will be conducted in the Federal College of Education, Kano, Nigeria. The sample size used for the study was too low to be representative, whereas the present research work will use 90 students for generalization.

Zeitz (2015) conducted a research work on learning to touch type by covering the keys on a computer keyboard. The researcher raised two research objectives and 2 research questions. The population of the study was 4<sup>th</sup>-grade students from different schools in northern Iowa, and 17 students were selected from each school as a sample size for the study. The researcher adopted the quasi-experimental design for the study. The overall findings indicated that students who cannot see their keyboard characters while they use keyboard software to learn to keyboard learned significantly than those who did not use covers.

The current research is related to Zeitz (2015) work as both the works determined effects of two methods of teaching keyboarding. But they differ in the scope used. Where the past research work was conducted in Schools in Northern Iowa the current research work will be conducted in North-western Nigeria. The past researcher did not mention any statistical tool used in data

analysis, while the present research work will use Simple Logistic Regression analysis and t-test. The past research work is important to the research work because the present work will use some of the literature reviewed. Yet, the past researcher failed to compare the results of the newly studied methods and the conventional method. This research work will compare students' performance on the 2 new methods and the conventional one. These gaps are what the current research work tends to fill.

## **2.6 Summary of Reviewed Literature**

In the course of this study, different kinds of literature related to the work under study were reviewed under several sub-headings. The study was based upon the Cognitive theory of Multimedia learning. Different concepts that made up the study were examined in steps and sub-steps as endorsed by different authors and authorities. From what was been studied, many authors were found having coming focus on the concept of keyboarding and its nature of skills acquisition. Also, the review glanced at concepts of keyboarding, gamification, and blank-QWERTY, Technological changes in Keyboarding, definitions of gamification method overviewed by a specialist in gamification, invented keyboarding software and their futures, the definition of blank-QWERTY-touch Method were all examined.

After reviewing related literature, it was observed that most of the researchers recommended the use of most effective, new methods and computer keyboarding programs for teaching keyboarding to avoid hunt-and-pecking. Despite all the literature reviewed, to the best of the researcher's knowledge, none is found on effects of gamification and blank-QWERTY-touch methods on the performance of business education students in keyboarding in Federal College of Education, Kano, Nigeria. This was the major gap that this study tried to bridge.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

This chapter described the design and procedures employed in carrying out the study. The chapter was organized under the following sub – headings:

- 3.1 Research Design
- 3.2 Population of the Study
- 3.3 Sample Size and Sampling Procedure
- 3.4 Instrument for Data Collection
  - 3.4.1 Validity of the Instrument
  - 3.4.2 Pilot Testing
  - 3.4.3 Reliability of the Instrument
- 3.5 Procedure for Data Collection
- 3.6 Procedure for Data Analysis

#### **3.1 Research Design**

A quasi-experimental design with pre-test, post-test, and control group was adopted for this study. The design involved selecting groups upon which a variable is tested without any random selection (Richards, 1981). The design was therefore selected because the selection of groups for experiment lacks randomization. Any NCE I student that had keyboarding background was not selected.

#### **3.2 Population of the Study**

The population of the study was 248 male and female NCE I business education students who were admitted in 2015/2016 academic session in Federal College of Education, Kano, Nigeria. The breakdown of the population by gender is given in table 1.

**Table 1: Population of the Study**

<b>Class</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
NCE I	170	78	248
<b>Total</b>	<b>170</b>	<b>78</b>	<b>248</b>

**Source: Business Education Departmental Record Offices, FCE, Kano, 2016**

### **3.3 Sample Size and Sampling Procedure**

The sample size was 90 NCE I male and female business education student in Federal College of Education, Kano, Nigeria. The sample size comprised of 62 males and 28 females NCE I students. The summary of the sample selection is presented in table 2 below.

**Table 2: Sample Size**

<b>Method</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
Gamification method	21	9	30
Blank-QWERTY-touch method	21	9	30
QWERTY-touch method	20	10	30
<b>Total</b>	<b>62</b>	<b>28</b>	<b>90</b>

**Source: Field Survey, 2016**

Purposive Sampling Technique was used to select only 90 NCE I students who do not have keyboarding background. The Selection was necessary because, the college had no available functional computers and typewriters to accommodate all. In selecting the ninety (90) students, the researcher wrote 62 ‘YES’ and 108 ‘NO’ for male students; and 28 ‘YES’ and 50 ‘NO’ for female students on pieces of paper and asked the 248 students to pick one each. Those who picked ‘YES’ formed the sample size for the study. Each of the 3 groups comprised of 30 students as seen in table 3.2. The use of thirty (30) students per group were based on the recommendation given by NCE Business Education Minimum Standard (2012 revised) that a minimum of 30 students shall be used per keyboarding class. In line with this, Roscoe (1975) suggested a small sample size from the target population in an experimental research. Also, Gay and Dieh (1992) suggested that a sample of thirty (30) students per group in an experimental research is effective.

### **3.4 Instrument for Data Collection**

The instrument for data collection was self-designed Keyboarding Skills Test (KST). The test had two parts; A and B. Part A was pre-test (Appendix II), and part B was a post-test (Appendix IV). Both the pre-test and the post-test comprise of two (2) parts, part A and B. Part A was a warm up exercise which encompassed a combination of keyboard letters and punctuations, while part B contained exercise on sentences that comprised keyboard letters and punctuations as well. The researcher relied on contents of Keyboarding topic (Basic Keyboarding skills) taught in NCE I. The pre-test (Appendix II) was administered to the students before giving the treatment. The test lasted for 15 minutes. The purpose of the test was to ascertain the entry behavior of the students in Keyboarding whether they are on the same level or not.

For the gamification group, Typing Master software was used for the training and answering the pre-test and the post-test. The Typing Master software is software comprised of games that are set based on preferred activity to teach keyboarding. While for the blank-QWERTY-touch group, a blank keyboard was used by students for the training and answering the pre-test and the post-test. The instruments were scored based on speed and accuracy (Appendices III & V). A total score of 100% which were divided into 75% for speed and 25% for accuracy was used for marking the instruments (Appendix III & V). The choice of speed and accuracy was because it was believed that speed and accuracy determined keyboarding skill and mastery. The instruments (Pre-test & Post-test) consisted of 154 words which the students were required to type twice within 10 minutes. That was, 308 words making 30 wpm in 10 minutes ( $308 \div 10$ ) as endorsed by National Commission for Colleges of Education (NCCE 2012 revised), (See Appendices II & IV).

#### **3.4.1 Validation of the Instrument**

The instrument designed for the study was subjected to both face and content validity for it to be consistent and fit for use in gathering data from the respondents. The drafted pre-test and post-test exercises (Appendices II and IV) had been vetted by four (4) research experts in research and methodology from Measurement and Evaluation, Department of Psychology and Counseling,

Faculty of Education, Ahmadu Bello University, Zaria, and the two (2) researcher's supervisors. All the suggestions and modifications made on the items of the test were effected before the final copy was produced. This was in agreement with Sukon and Jawahir, in Moradeyo (2015) who said that validity of research instrument must be done before its administration.

### **3.4.2 Pilot Testing**

A pilot testing was conducted using thirty NCE I students of the business education department, Federal College of Education, Zaria. A microteaching was organized to the students. The researcher divided the students into three (3) groups of gamification group (GG), blank-QWERTY-touch group (GB) and QWERTY-touch group (QG) for two weeks. The College was selected because its population had the same characteristics with that of the college under study.

### **3.4.3 Reliability of the Instrument**

The reliability of the instruments was determined using Kuder-Richardson method of testing reliability. The method was selected because, according to Uzoagulu (2011), "Kuder-Richardson Formula will be used when administering a single form of test to a group of test takers". The reliability coefficient calculated was 0.73. This reliability coefficient was high, and, therefore the instrument was adjudged stable and reliable as postulated by Olayiwola, (2007) that "a reliability estimate of 0.65 and above is good".

### **3.5 Procedure for Data Collection**

The researcher collected a letter of introduction as in Appendix I from Department of Vocational and Technical Education, Ahmadu Bello University, Zaria, which indicated that the researcher was truly carrying out a research in the study area. The lesson period lasted for five (5) weeks using three hours lesson (thirty minutes for the lesson and two and half hour (2½) for practical) per week. The first thirty (30) minutes of the first week was used for introduction, familiarity and creating a rapport between the researcher and the students. The researcher used ten (10) minutes to administer the pre-test (Appendix II). The pre-test score served as a basis for comparing students' performance and level of understanding in Keyboarding before the treatment

was given. The researcher used the remaining four weeks to effectively teach each of the three groups using the topic “Basic Keyboard Operations” up to the coverage of Keyboard skill.

In the second week, the researcher taught the students ‘Home keys’ (ASDF ; LKJ) and gave them exercise to practice (Appendices VI, VII, and VIII). In the third week, the research proceeded to the next level and taught G, H keys, and the students combined them with the first home keys (ASDF : LKJ) as in appendices IX, X, and XI. In the fourth week, the researcher taught the two experiment groups and the control group upper row keys (QWERT for left fingers and POIU for right fingers) and combined the keys with middle row keys (ASDFGHJKL:) as well as the down row keys (ZXCVB for left fingers and /., mn for right fingers) and combined them with the other home and upper row keys (Appendices XII, XIII and XV). In the fifth week, the students repeated the fourth-week exercises for one hour. All the lessons from the second week to the fifth week lasted for thirty minutes two hours –thirty minutes (2½) for practical exercises. In the fifth week of the experiment, the researcher used ten (10) minutes to administer a post-test to each group (Appendix IV) and marked the test using the post-test making scheme (Appendix V).

### **3.6 Procedure for Data Analysis**

In analyzing the data collected, the bio-data of the respondents was analyzed using frequency and percentage. The five (5) research questions were analyzed using mean and standard deviation. Null hypotheses I and II were tested using Simple Regression (SR). Null hypotheses III to V were tested using t-test. The t-test was selected because, according to Christian (2012), the t-test is the best parametric statistical tool used to test a null hypothesis about the difference between two groups. The entire null hypotheses were tested at 0.05 level of significance.

**Decision rule:** For the research questions, the passing mark for the test scores was 50%. For research questions, one and two, a mean score for any one of the two experimental methods (gamification and blank-QWERTY-touch) that were greater than the mean score of the control method (QWERTY-touch), was considered as effective. For the research question three, a mean score of one of the two experimental methods (gamification method or blank-QWERTY-touch

method) that was higher, was considered as more effective. For the research question four, a mean score of male students in one of the two experimental methods (gamification and blank-QWERTY-touch) that was higher, was considered as more effective for male students. For the research question five, a mean score of female students in one of the two experimental methods (gamification and blank-QWERTY-touch) that was higher, was considered as more effective for female students. The null hypotheses were retained when the calculated value was greater than or equal to the alpha value ( $P \geq 0.05$ ), and the hypotheses were rejected, when the calculated value was less than the Alpha value ( $P < 0.05$ ).

## CHAPTER FOUR

### PRESENTATION AND ANALYSIS OF DATA

In this chapter, the researcher presented the results of the data collected for analysis and discussion. The presentation was done under the following sub-headings:

4.1 Demographic Data of Respondents

4.2 Answers to Research Questions

4.3 Testing the Null Hypotheses

4.4 Summary of Major Findings

4.5 Discussions of Major Findings

#### 4.1 Demographic Data of the Respondents

Analysis of the bio-data of the respondents by group is as presented in table 4.1

**Table 3: Analysis of Respondents by Group**

<b>Group</b>	<b>Frequency</b>	<b>%</b>
Gamification method	30	33.3
Blank-QWERTY-touch method	30	33.3
Conventional (QWERTY-touch) method	30	33.3
<b>Total</b>	<b>90</b>	<b>100</b>

**Source: Field Work, 2016**

The analysis of respondents by group methods presented in table 3 indicated that, thirty (30) students representing 33.3% were in gamification, blank-QWERTY-touch and conventional (QWERTY-touch) method group respectively. The implication is that, the three groups were equally represented with an equal number of students.

**Table 4: Analysis of Respondents by Gender**

Group	Frequency		%	
	Male	Female	Male	Female
Gamification	21	9	34	32
Blank-QWERTY-touch	21	9	34	32
QWERTY-touch	20	10	32	36
<b>Total</b>	<b>62</b>	<b>28</b>	<b>100</b>	<b>100</b>

**Source: Field Work, 2016**

The analysis of respondents by gender presented in table 4 indicated that twenty-one (21) male students representing 34% were for gamification and blank-QWERTY-touch group respectively, twenty (20) male representing 32% were in QWERTY-touch group. While nine (9) females representing 32% were in gamification and blank-QWERTY-touch groups respectively. And ten (10) females representing 36% were in QWERTY-touch group.

#### **4.2 Answers to Research Questions**

The results of data used to answer the five research questions were presented in tables 5 to 9.

#### **Research Question One: What is the effect of gamification method on the performance of business education students in keyboarding in Federal College of Education, Kano, Nigeria?**

The analysis of data used to answer the research question one is presented in table 5.

**Table 5: Mean and Standard Deviation of Effect of Gamification Method on Performance of Business Education Students in Keyboarding**

Variable	N	$\bar{x}$	SD.	Mean Difference
Gamification method	30	57	6.77	5%
QWERTY-touch method	30	51	4.93	

**Source: Field Work, 2016**

The results of table 5 showed the effect of gamification on the performance of business education students in keyboarding. The analysis revealed 30 Keyboarding students with a mean score of 57% and standard deviation of 6.77 for gamification method, and 30 students with a mean score of 51% and a standard deviation of 4.93 for QWERTY-touch method. This indicated a mean difference of 5% showing that, gamification method had 5% difference effect over the QWERTY-touch method. The summary of this result showed that, gamification method had an effect on students' performance in keyboarding. This means that, gamification method affects students' performance in keyboarding with an increased 5% effect. Therefore, it is indicated that gamification method is effective in teaching keyboarding students.

**Research Question Two: What is the effect of Blank-QWERTY-touch method on the performance of business education students in keyboarding in Federal College of Education, Kano, Nigeria?**

The analysis of data used to answer the research question two is presented in table 6.

**Table 6: Mean and Standard Deviation of Effect of Blank-QWERTY-touch Method on the Performance of Business Education Students in Keyboarding**

Variable	N	$\bar{x}$	SD.	Mean Difference
Blank-QWERTY-touch method	30	53	5.08	
QWERTY-touch method	30	51	4.93	2%

**Source: Field Work, 2016**

The results of table 6 showed the effect of blank-QWERTY-touch method on the performance of business education students in keyboarding. The analysis revealed 30 Keyboarding students with a mean score of 53% and standard deviation of 5.08 for the blank-QWERTY-touch method, and 30 students with a mean score of 51% and a standard deviation of 4.93 for the QWERTY-touch method. This indicated a mean difference of 2% showing that blank-QWERTY-touch method had 2% difference effect over the QWERTY touch method. The summary of this result showed that, blank-QWERTY-touch method had an effect on students' performance in keyboarding. This means that, blank-QWERTY-touch method affects students' performance in keyboarding with an

increased 2% effect. Therefore, it is indicated that Blank-QWERTY-touch method was effective in teaching keyboarding students.

**Research Question Three: What is the mean performance of business education students taught Keyboarding using Gamification method and those taught using the Blank-QWERTY-touch method in Federal College of Education, Kano, Nigeria?**

The analysis of data used to answer the research question three is presented in table 7.

**Table 7: Mean and Standard Deviation of Performance of Business Education Students Taught Keyboarding Using Gamification method and those Taught Using Blank-QWERTY-touch Method**

Variable	N	$\bar{x}$	SD.	Mean Diff.
Gamification method	30	57	6.77	4%
Blank-QWERTY-touch method	30	53	5.08	

**Source: Field Work, 2016**

The results of table 7 showed the difference in the mean performance of students taught keyboarding using gamification method and those taught using the blank-QWERTY-touch method. The analysis revealed 30 students in gamification group with a mean score of 57% and standard deviation of 6.77 and a mean score of 53% with standard deviation of 5.08 for the blank-QWERTY-touch method. The summary of the results showed that the calculated mean of 57% (gamification) is higher than the mean score of 53% (blank-QWERTY-touch) with a mean difference of 4%, indicating that, gamification method had more effect on students' performance with an increase of 4% than blank-QWERTY-touch method. This means that, gamification method was more effective for teaching keyboarding than blank-QWERTY-touch method.

**Research Question Four: What is the Difference in Mean Performance of Male Business Education students taught Keyboarding using Gamification method and those taught using the Blank-QWERTY-touch method in Federal College of Education, Kano, Nigeria?**

The analysis of data used to answer the research question four is presented in table 8.

**Table 8: Mean and Standard Deviation of Performance of Male Business Education Students Taught Keyboarding Using Gamification Method and Male Students Taught Keyboarding Using Blank-QWERTY-touch Method**

Model	N	$\bar{x}$	SD	Mean Difference
Gamification (Male)	21	67	4.76	
Blank-QWERTY-touch (Male)	21	54	5.03	13%

**Source: Field Work, 2016**

The results of table 8 revealed the difference in the mean performance of male business education students taught keyboarding using gamification method and male students taught using the blank-QWERTY-touch method. The table revealed that male students taught keyboarding using gamification method had a mean score of 67% with standard deviation of 4.76, while male students taught keyboarding using blank-QWERTY-touch have a mean score of 54% with standard deviation of 5.03. The summary of the result revealed that, male students taught keyboarding using gamification method had higher mean percentage than their counter male taught keyboarding using blank-QWERTY-touch method (57% > 54%) with an increased 13% effect. This means that, gamification method was more effective for male students than blank-QWERTY-touch method.

**Research Question Five: What is the difference in mean performance of female business education students taught keyboarding using Gamification method and those taught using the Blank-QWERTY-touch method in Federal College of Education, Kano, Nigeria?**

The analysis of data used to answer the research question five is presented in table 9.

**Table 9. Mean and Standard Deviation of Performance of Female Business Education Students Taught Keyboarding Using Gamification Method and Female Students Taught Keyboarding Using Blank-QWERTY-touch Method**

Model	N	$\bar{x}$	SD	Mean Difference
Gamification (Female)	9	68	8.41	
Blank-QWERTY-touch (Female)	9	58	16.10	10%

**Source: Field Work, 2016**

The results in table 9 indicated the difference in the mean performance of female business education students taught keyboarding using gamification method and female students taught keyboarding using the blank-QWERTY-touch method. The result revealed that, female students

taught keyboarding using gamification method had a mean score of 68% with standard deviation of 8.41, while female students taught keyboarding using blank-QWERTY-touch method has a mean score of 58% with standard deviation of 16.10. The summary of the results revealed that, female students taught keyboarding using gamification method have higher mean percentage than their counter female students taught keyboarding using blank-QWERTY-touch method (68% > 58%) with an increased 10% effect. This means that, gamification method was more effective in teaching female students keyboarding skills than blank-QWERTY-touch method.

### 4.3 Test of Null Hypotheses

Results of the test of the five null hypotheses were presented in tables 10 to 14.

**Null Hypothesis One: Gamification method has no significant effect on the performance of Business education students in Keyboarding in Federal College of Education, Kano, Nigeria.**

Regression analysis used to test null hypothesis one is as presented in table 10.

**Table 10: Regression Analysis on Effect of Gamification Method on the Performance of Business Education Students in Keyboarding**

Model	$\beta$	Stand. Error	t	r-cal	$r^2$	Adj.r	Sig.
Gamification method (Constant)	30.155	6.877	4.385	0.503	0.253	0.226	0.000
QWERTY-touch method	0.367	0.119	3.081				

**P<.05**

The regression analysis on table 10 was to determine the effect of gamification method on the performance of business education students in keyboarding. The result revealed a constant Beta value (gamification method) of 30.155 with the t-value of 4.385 against the coefficient value of 0.367 (QWERTY-touch method) and t-value of 3.081. The r-value was 0.503 with  $r^2$ -value of 0.253 and adjusted-r of 0.226 with a p-value of 0.000. The result indicated that, gamification method had a variance of 25% ( $r^2$  0.253 x 100) effect on students' performance in keyboarding. This means that, for each single increase in gamification practice, there was an increase of students' performance of 25%. The observed P=0.000 was less than  $\alpha$  value (0.05) indicating a significant effect. This implies that gamification method had a significant effect on the performance of

students in keyboarding in Federal College of Education, Kano, Nigeria. Hence, the null hypothesis was rejected.

**Null Hypothesis Two: Blank-QWERTY-touch method has no significant effect on the performance of Business education students in Keyboarding in Federal College of Education, Kano, Nigeria.**

Regression analysis used to test null hypothesis two is as presented in table 11.

**Table 11: Regression Analysis on Effect of Blank-QWERTY-touch Method on Performance of Business Education students in Keyboarding**

Model	$\beta$	Stand. Error	t	r-cal	$r^2$	Adj.r	Sig.
Blank-QWERTY-touch method (Constant)	22.365	8.179	2.734	0.556	0.309	0.285	0.001
QWERTY-touch method	0.539	0.152	3.541				

**P<.05**

The regression analysis on table 11 was to determine the effect of blank-QWERTY-touch method on the performance of business education students in keyboarding revealed a constant Beta value (blank-QWERTY-touch method) of 22.365 with the t-value of 2.734 against the coefficient value of 0.539 (QWERTY-touch method) and t-value of 0.152. The r-value was 0.556 with  $r^2$ -value of 0.309 and adjusted-r of 0.285 with a p-value of 0.000. The result indicated that, gamification method had a variance of 31% ( $r^2$  0.309 x 100) effect on students’ performance in keyboarding. This means that for each single increase in blank-QWERTY-touch method practice, there was an increase of students’ performance of 31%. The observed P=0.000 was less than the  $\alpha$  value (0.05) indicating a significant effect, therefore blank-QWERTY-touch method had a significant effect on the performance of students in keyboarding in Federal College of Education, Kano, Nigeria. Hence, the null hypothesis was rejected.

**Null Hypothesis Three: There is no significant difference in the mean performance of business education students taught keyboarding using gamification method and those taught using Blank-QWERTY-touch method in Federal College of Education, Kano, Nigeria**

Analysis used to test null hypothesis three is as presented in table 12.

**Table 12: t-test Analysis on Performance of Business Education Students Taught Keyboarding Using Gamification Method those Taught Using Blank-QWERTY-touch Method**

Variable	$\bar{x}$	SD	Df	t-cal	Sig. (2tailed)
Gamification method	57	6.77	28	2.546	0.014
Blank-QWERTY-touch method	53	5.08	28		

**P<.05**

In table 12, an independent sample t-test was conducted to compare the difference in the mean performance of business education students taught keyboarding using gamification method and those taught using blank-QWERTY-touch methods. The analysis revealed the mean (57) and standard deviation (6.77) for gamification method against the mean (53) and standard deviation (5.08) for a blank-QWERTY-touch method with a degree of freedom of 28 respectively. The t-value (2.546) with a p-value (0.014) was less than the significant value (0.05). The result, therefore, indicated that significant difference existed between the mean performance of students taught keyboarding using gamification method and those taught using blank-QWERTY-touch method. Hence, the null hypothesis was rejected.

**Null Hypothesis Four: There is no significant difference in the mean performance of male business education students taught keyboarding using gamification method and those taught using Blank-QWERTY-touch method in Federal College of Education, Kano, Nigeria**

Analysis used to test null hypothesis four is as presented in table 13.

**Table 13: t-test Analysis on Performance of Male Business Education Students Taught Keyboarding Using Gamification Method and Male Students Taught Using Blank-QWERTY-touch Method**

Model	$\bar{x}$	SD	df.	t-cal	Sig (2-tailed)
Gamification method (Male)	57	4.05	19	1.418	0.164
Blank-QWERTY-touch method (Male)	54	5.03	19		

**P >.05**

In table 13, an independent t-test was conducted to compare mean difference between the performance of male students taught keyboarding using gamification method and those taught using blank-QWERTY-touch method. The analysis revealed the mean (57) and standard deviation (4.05) for gamification method against the mean (54) and standard deviation (5.03) for blank-QWERTY-

touch method with degree of freedom of 19 respectively and the t-value (1.418) with a p-value (0.164) which was greater than the significant value (0.05). The result, therefore, indicated that, significant difference did not exist between the mean performance of male students taught keyboarding using gamification method and those taught using the blank-QWERTY-touch method. Hence, the null hypothesis was retained.

**Null Hypothesis Five: There is no significant difference in the mean performance of female business education students taught keyboarding using Gamification method and those taught using Blank-QWERTY-touch method in Federal College of Education, Kano, Nigeria**

Analysis used to test null hypothesis five is as presented in table 14.

**Table 14: t-test Analysis on Performance of Female Business Education Students Taught keyboarding Using Gamification Method and those Taught Using Blank-QWERTY-touch Method**

Model	$\bar{x}$	SD	df.	t-cal	Sig (2-tailed)
Gamification method (Female)	68	8.41	7	1.486	0.157
Blank-QWERTY-touch method (Female)	59	16.10	7		

**P > .05**

In table 14, an independent t-test was conducted to compare mean the difference between the performance of female students taught keyboarding using gamification method and those taught using the blank-QWERTY-touch method. The analysis revealed the mean (68) and standard deviation (8.41) for Gamification method against the mean (59) and standard deviation (16.10) for blank-QWERTY-touch method with degree of freedom of 7 respectively and the t-value (1.486) with a p-value of 0.157 which was greater than the significant value (0.05). The result, therefore, indicated that significant difference did not exist between the mean performance of female students taught keyboarding using gamification method and those taught using the blank-QWERTY-touch method. Hence, the null hypothesis was retained.

#### 4.4 Summary of Major Findings

From the data analysis, the following are the summary of the major findings:

1. The result of research question one and null hypothesis one revealed that gamification method had an effect on students' performance in keyboarding with a mean of 57% and r-cal (0.503). This means that an increase of gamification practice increases students' performance over QWERTY-touch method with 25% variation. ( $p = 0.000 < 0.05$ ).
2. The result from research question two and null hypothesis two revealed that blank-QWERTY-touch teaching method had an effect on students' performance in keyboarding ( $p=0.014 < 0.05$ ) with a mean of 53%, the standard deviation of 5.08 and r-cal (0.556) indicating an increase of performance of students with 31% over QWERTY-touch teaching method. ( $p = 0.001 < 0.05$ ).
3. The result from research question three and null hypothesis three revealed that there exists a difference in the mean performance of students who were taught keyboarding using gamification teaching method and those taught using the blank-QWERTY-touch method with a mean of 57%, for gamification teaching method and 53% for blank-QWERTY-touch teaching method and t-cal 2.546. This showed a slight mean performance difference of 3% over the blank-QWERTY-touch teaching method. ( $p=0.014 < 0.05$ ).
4. The result from research questions four and null hypothesis four revealed a mean of 57% and 53% with t-cal of 1.418 for gamification teaching method and blank-QWERTY-touch teaching method having a slight mean difference of 4%. This indicated that there was no significant difference in performance of male students taught keyboarding using gamification method and those taught using blank-QWERTY-touch method ( $p = 0.164 > 0.05$ ).
5. The outcomes of research question five and null hypothesis five revealed a mean of 68% for gamification teaching method and 59% for blank-QWERTY-touch with t-cal of 1.486. This showed a slight mean difference of 7% which indicated that performance of female students who were taught using gamification method does not have any significant difference from

female students who were taught keyboarding using blank-QWERTY-touch method ( $p = 0.157 > 0.05$ ).

#### **4.5 Discussions of Major Findings**

The findings of research question one and null hypothesis one showed that gamification method had a positive effect on students' performance in keyboarding with a mean of 57%, standard deviation of 6.77 and  $r^2=0.253(24\%)$   $\{p=0.000\}$ . This means that, an increase of gamification practice increases students' performance over QWERTY-touch method with 25% variation. This finding is in agreement with that of Van Eck (2006) who observed that gamification method is effective for learning because of its meaningful context in learning; also, O'Donnel, Grain and Marrais (2013) affirmed that, gamification method is most effective method in attaining keyboarding skill; Liu (2014), Moreno (2012) also affirmed that Gamification method is effective in promoting keyboarding skills. Batson and Feinberg (2006) and Papasteriou (2009) also found that, gamification method has boost students' performance more often than a non-gamified teaching method. Fabricatore and Lopez (2014) affirmed that, there is a positive correlation between gamified learning experience and students' academic performance. This might be due to the nature of gamification in providing an entertainment to students while keyboarding. Ryan, Rigby, and Przybylski (2006) also found that, game playing method in teaching foster feeling of competence which leads to high academic performance than the non-game method. Mekler (2013) found that, gamification significantly increased the performance of students in attaining highest grades because of its high level of edutainment capacity. De-Marcos, Dominquez, Saene, de-Nararrete and Pages (2014) affirmed that students in gamification group perform better ( $M=87.73$ ,  $SD=18.61$ ) than those in the traditional group ( $M=52.86$ ,  $SD=26.11$ ) because the method is student friendly.

In contrary, Goehle (2013) found out that, students who participated in gamified learning environment had evidence of negative impact on students' performance because of its attractive nature which made students skipped out the actual learning context. In line with this also, Fengfeng (2008), Annetta (2009), Beach (2011) and Ya-Tang (2012) had found that, gamification method has

no impact on the overall academic achievement of students in skilled based learning. David (2013) found that, students in QWERTY-touch teaching method performed better than those in the gamification group on an assignment about word processing ( $p=.001$ ) likewise in the final exam. He added that the only important part of gamification is that, it gave room for resistance in keyboarding training. This also agreed with Gee (2013) who found that, students who followed traditional methods in doing exercise performed in overall scores than those who followed gamification method in doing exercise.

The result of the study revealed that blank-QWERTY-touch method had a positive effect on students' performance in keyboarding with a mean of 53%, standard deviation of 5.08 and  $r^2=0.309$  (31%) { $p=0.001$ }. This finding is in line with that of Schorey (2015) who found that, students who can't see the characters of their keyboards when keyboarding learned significantly faster than those who did not use. Lois (2004) also found that, students that used blank/covered keyboard to learn touch typing, learned to keyboard significantly faster than those who used a normal keyboard. He further reported that blank/covered keyboard was helpful in learning to the keyboard than otherwise.

In contrary, Amadi (2009) found that, demonstration method, hunt-and-peck method, touch method and self-directed methods are the major strategies for teaching Keyboarding skills. He further observed that sight and touch methods are the effective methods in teaching Keyboarding. Also, Byers (2010) found that students that used blank keyboard displayed more typing errors than those who typed using a normal keyboard. Byers, Anvey, and Zahner (2015) observed that, performance of students using covers for keyboarding was not encouraged because there was deterioration of students' ability in keyboarding proficiency.

The outcome of this study indicated that there existed a difference performance of students who were taught keyboarding using Gamification method and those taught using the blank-QWERTY-touch method. In regards to speed and accuracy, Gamification method had a slight mean performance difference of 4% ( $p=0.014$ ), over the blank-QWERTY-touch method. This is in

agreement with the report of Charles, McNeill, Bustard, & Black (2011) who found that, when gamification method was introduced to the teaching of keyboarding to first-year students at the college, there was a 12.9% reduction in a number of students' failures. Mayer and Johnson (2010) found that, gamification method made students learned faster and were found better able to transfer knowledge than those from non-gamified method learning situation. This increased students' attendance and class participation in keyboarding class. Adegoke, Salako, and Ayinde (2013) found in their study that, students increased attendance in Gamification class have shown a positive correlation with improved performance in keyboarding skills.

Conversely, de-Marcos (2014), Hanus and Fox (2015) found that, learners who participated in gamification learning environment had lower exam scores than those who participated in a mixture learning method. Haaranen (2014) and Whitten (2012) stated that, the entertainment features of games using Gamification method distracts learners from the main academic purpose and reduced the learners' efforts to process the material more deeply. This reduced students' performance with about 45%. Byers et al (2015) affirmed that, used of blank/covered keyboard did increase students' performance as confidence and proper students' techniques were significantly observed than those who used a different method.

The result of this study exposed that, there was no significance difference in the mean performance of male students taught keyboarding using Gamification method and those taught using the blank-QWERTY-touch method with 3% ( $p=0.164$ ) mean difference. This agreed with the finding of Miller and Robertson (2011) that, male students under gamified learning environment has no performance difference with those who are not taught using gamified learning environment. The same with findings of Deterding (2011), Dominguez (2013), Giannetto, Chao & Fontana (2013), de-Marcos (2014), and Hanus and Fox (2015) who found that, gamification method of teaching and traditionally used methods have increased user experience and engagement irrespective of gender category. In line with this, Jeniffer (2004) affirmed that, although there is competitive orientation when teaching children with gamification method, gender did not show any significant impact on

the students' performance. He also affirmed that gender differences and time of day preference were not found to have a significant effect on average words per minute typed between students taught under gamified learning environment and those taught under non-gamified learning environment.

In contrary, Whartson (2013) found that, male students practice more using typing tutor software, hence increased their keyboarding performance significantly with about 70% as against those who practice under a different method. Also, Leonard (2013) affirmed that performance of boy students under computer-based learning methods was found high with about 75% than their counter boys who were not because boys preferred instructional methods which involved using a computer than any other method.

Finally, the result from this study revealed that there was no significant difference in the mean performance of female students taught keyboarding using gamification method and those taught using blank-QWERTY-touch with a mean difference of 7% ( $p=0.157$ ). This is in line with result found by Lind, Morash, and Stevens (2001) that, women perform better in keyboarding skill no matter on what condition. Because keyboarding skill is not gender neutral. They further stated that, for long period, keyboarding skill have been considered as women's skills. Margaret, Lari, and Peter (2010) in their research found that, there was no significant difference on key stroking performance among female students who typed using a computer keyboard and those typed using typewriter keyboard. They further affirmed that females typing speed and accuracy were measured and found that, in the two (2) different groups (software based method and covered method) there was no significant variation in the performance among the students (1% variation). They also assured that, female students did not displayed any significant variation in speed ( $p = 0.39$ ) and accuracy ( $p = 0.34$ ) against their counter female in the other group ( $p = 0.36$  and  $0.34$ ). Also, Anna, Deryl, and Antti (2016) found that, no significant difference in input performance among female students in touch-typing and software based typing. They further affirmed that an average entry rate of 57.8 WPM and 58.9WPM of each participant was shown. Furthermore, they affirmed that in

measuring errors in the final input, no significant difference in the rate of errors with 0.76% and 0.47% for both groups respectively,

In contrary, Goehle (2013) found that, differences existed between the female students who learned to keyboard using gamification regularly versus female students who did not. Schottenbauer (2004) found that, women had experienced greater anxiety than men, particularly in technologically based learning. Then, their academic achievement might not be significant compared to those of different learning.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter was presented under the following sub-headings;-

- 5.1 Summary
- 5.2 Contribution to Knowledge
- 5.3 Conclusion
- 5.4 Recommendations
- 5.5 Suggestions for further study

#### **5.1 Summary**

This research work was on effects of gamification and blank-QWERTY-touch methods on performance of business education students in keyboarding in Federal College of Education, Kano, Nigeria. The study had five specific objectives, five research questions, and five null hypotheses. The researcher adopted quasi- experimental design with pre-test, post-test, and control group. The population of the study was two hundred and forty-eight (248) NCE I business education students who do not have keyboarding background and who were admitted in 2015/2016 academic session. Ninety (90) students were used as the sample size for the study. Two instruments (Keyboarding Skills Tests as pre-test and post-test) having the same features were used for data collection. The tests were marked using a drawn marking scheme (Appendix III and V). Mean score and standard deviation were used to answer the research questions. In the test of Null hypotheses, Simple Regression was used to test null hypotheses one and two, while t-test statistic was used to test null hypotheses three, four and five. All the null hypotheses were tested at 0.05 levels of significance. The study revealed that:-

1. Gamification method had a variance of the  $r^2$  value of 0.253 (25%) contribution to the performance of business education students in Keyboarding as determined by QWERTY-touch.

2. The blank-QWERTY-touch method had a variance of  $r^2$  value of 0.309 (31%) of the variability of performance of business education students in Keyboarding as determined by QWERTY-touch.
3. The performance of Students in Gamification method (M=58, SD=6.77) was better than their counterparts in blank-QWERTY-touch method (M=54, SD= 5.08). P =0 .014.
4. Male students that learned keyboarding skills using gamification method has not shown better performance over their male counterparts who used blank-QWERTY-touch method. P = 0.164.
5. Female students that learned keyboarding skills using gamification method has not shown better performance over their female counterparts who used blank-QWERTY-touch method. P = 0.157.

## **5.2 Contribution to knowledge**

The study established that;

1. Gamification teaching method had effect on the performance of business education students in keyboarding in the federal college of education, Kano (p = 0.000).
2. Blank-QWERTY-touch teaching method had effect on the performance of business education students in keyboarding in the federal college of education, Kano (p = 0.001).
3. There was difference between the performance of business education students who were taught keyboarding using gamification method and those taught using the blank-QWERTY-touch method in Federal College of Education, Kano (p = 0.014).
4. There was no difference between the performance of male students taught keyboarding using gamification method and those taught using the blank-QWERTY-touch method in Federal College of Education, Kano (p = 0.164).
5. The performance of female business education students who were taught keyboarding using gamification method did not had difference from their counter female business education students who were taught keyboarding using the blank-QWERTY-touch method in Federal College of Education, Kano (p = 0.157).

### **5.3 Conclusion**

Based on the outcome of this research work, the researcher concluded that the two methods (gamification and blank-QWERTY-touch) had positively affected students' performance in keyboarding skills. However, gamification method as computer-based learning method provided learners with opportunities to develop self-learning with confidence, joy, and resistance to practice. By this, gamification method had the power of stimulating students' effort to develop high speed and accuracy because of fear of a game over. Use of blank-QWERTY-touch method to teach keyboarding skills make students memorize right key position. So, the method is helpful to teach beginners of keyboarding.

### **5.4 Recommendations**

Based on the outcome of the study, the following recommendations were made.

1. In order to make students develop high speed and accuracy, keyboarding teachers should use gamification method when it comes to speed and accuracy development.
2. Blank-QWERTY-tough is good in teaching keyboarding at the very beginning of the course training. So, for proper key position memorization at the start, teachers should use the Blank-QWERTY-touch method at beginning of keyboarding training.
3. In order to promote the implementation of gamification method of teaching keyboarding effectively, colleges of education should ensure that computer laboratory was well equipped and keyboarding teachers should need to undergo a training course on the use of computer games particularly those related to keyboarding.
4. For blank-QWERTY-touch method to be effective, the administration of colleges of education should provide the ready-made blank-keyboard available in markets and or they should provide their computer laboratory(s) with Speed-skin cover (Keyboard cover for keys visualizing) so as to serve as a supplement to blank keyboards.

5. The National Commission for Colleges of Education (NCCE) should endeavor to include the use of gamification and blank-QWERTY-touch methods in the NCE business education curriculum so as to make the two newly developed methods lively and implemented.

### **5.5 Suggestions for Further Studies**

This study investigated the effects of gamification and blank-QWERTY-touch methods on the performance of business education students in keyboarding in Federal College of Education, Kano, Nigeria. However, the researcher suggested that following areas should be researched into:-

1. Effects of gamification and blank-QWERTY-touch methods on the performance of business education students in keyboarding in state college of education, in the North-west geopolitical zone, Nigeria.
2. Comparative study on speed and accuracy level of students taught keyboarding using gamification and those taught using the blank-QWERTY-touch method in colleges of education in the North-west geopolitical zone, Nigeria.
3. Comparative study on effects of gamification and conventional methods on students' mastery of keyboard in college of education in North-West Zone, Nigeria.

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APPENDIX I

LETTER OF INTRODUCTION



**DEPARTMENT OF VOCATIONAL & TECHNICAL EDUCATION**  
**AHMADU BELLO UNIVERSITY ZARIA, NIGERIA.**  
**FACULTY OF EDUCATION**

VICE CHANCELLOR: **Prof. Ibrahim Garba** (B.Sc., M.Sc. (ABU) Ph.D (London) D.I.C)

Telephone: 069-51755, 50692

HEAD OF DEPARTMENT: **Dr. E.E. Adamu**, OND (Kad Poly), B.Sc (Hons) ISU (USA) PGDE (ABU) M.ED (ABU) Ph.D. (ABU)

29<sup>th</sup> June, 2016

Your Ref: \_\_\_\_\_  
P14EDVE8089

Date: \_\_\_\_\_

Our Ref: \_\_\_\_\_

*Letter of Introduction*

**AUWALU ADO - P14EDVE8089**

This is to certify that the above mentioned name is a Postgraduate student (M.Ed Business Education) in the Department of Vocational and Technical Education, Faculty of Education, Ahmadu Bello University, Zaria, carrying out a research topic; ***Effects of Gamification and Black-QWERTY-TOUCH Methods on Performance of Business Education Students in Keyboarding in Federal College of Education, Kano, Nigeria.***

Please, kindly give him every assistance he may require.

  
29<sup>th</sup> June 2016

**Dr. E.E. Adamu**  
**HEAD OF DEPARTMENT**

**APPENDIX II  
PRE-TEST QUESTION**

**Serial No.:**.....

**Gender:** .....

**Date:** .....

**Instruction**

**Warm-up Exercise:**

Type the following passage **once** only

**Time Allowed:** 5 minutes

jkl; fdsa jkl; fdsa jkl; fdsa jkl; fdsa jkl; fdsa  
;lkj asdf;lkj asdf ;lkj asdf ;lkj asdf ;lkj asdf ;lkj asdf

jf kd ls ;a jf kd ls ;a jf kd ls ;a jf kd ls ;a jf kd  
jmfv jmfv jmfv jmfv jmfv jmfv jmfv jmfv jmfv jmfv

k,dc k,dc k,dc k,dc k,dc k,dc k,dc k,dc k,dc k,dc k,dc  
l.sx l.sx l.sx l.sx l.sx l.sx l.sx l.sx l.sx l.sx l.sx l.sx

;/az ;/az ;/az ;/az ;/az ;/az ;/az ;/az ;/az ;/az ;/az ;/az  
mjvf ,kcd mjvf ,kcd mjvf ,kcd mjvf ,kcd mjvf ,kcd

/;za .lxs /;za .lxs /;za .lxs /;za .lxs /;za .lxs /;za .lxs  
jnfb jnfb jnfb jnfb jnfb jnfb jnfb jnfb jnfb jnfb jnfb

Type the following passage **twice**

**Time Allowed:** 10 minutes

Sani told them that Ali is tall; Amoor asked him to say	11
Sani told them that Ali is tall; Amoor asked him to say	22
Sani told them that Ali is tall; Amoor asked him to say	33
Sani told them that Ali is tall; Amoor asked him to say	44
Sani told them that Ali is tall; Amoor asked him to say	55
Sani told them that Ali is tall; Amoor asked him to say	66
Sani told them that Ali is tall; Amoor asked him to say	77
Sani told them that Ali is tall; Amoor asked him to say	88
Sani told them that Ali is tall; Amoor asked him to say	99
Sani told them that Ali is tall; Amoor asked him to say	110
Sani told them that Ali is tall; Amoor asked him to say	121
Sani told them that Ali is tall; Amoor asked him to say	132
Sani told them that Ali is tall; Amoor asked him to say	143
Sani told them that Ali is tall; Amoor asked him to say	154

**APPENDIX III**  
**PRE-TEST MARKING SCHEME**

Speed and Accuracy 75%

Display of work 25%

**Major Errors Penalties**

Instruction is not followed 1 mark

Typographical Error ½ mark

The wrong line spacing ½ mark, 1 max. per exercise

**Minor Errors Penalties**

Jammed keys/letters ½ mark, 1 max. per exercise

Poor ruling ½ mark, 1 max.

**APPENDIX IV**  
**POST-TEST QUESTION**

**Serial No.:**.....

**Gender:**.....

**Date:** .....

**Instruction**

Type the following passage Once only

**Time Allowed:** 5 minutes

jkl; fdsa jkl; fdsa jkl; fdsa jkl; fdsa jkl; fdsa jkl; fdsa  
;lkj asdf ;lkj asdf ;lkj asdf ;lkj asdf ;lkj asdf ;lkj asdf

jf kd ls ;a jf kd ls ;a jf kd ls ;a jf kd ls ;a jf kd  
jmfv jmfv jmfv jmfv jmfv jmfv jmfv jmfv jmfv jmfv

k,dc k,dc k,dc k,dc k,dc k,dc k,dc k,dc k,dc k,dc k,dc  
l,sx l,sx l,sx l,sx l,sx l,sx l,sx l,sx l,sx l,sx l,sx l,sx

;/az ;/az ;/az ;/az ;/az ;/az ;/az ;/az ;/az ;/az ;/az ;/az  
mjvf ,kcd mjvf ,kcd mjvf ,kcd mjvf ,kcd mjvf ,kcd

/;za .lxs /;za .lxs /;za .lxs /;za .lxs /;za .lxs /;za .lxs /;za .lxs  
jnfb jnfb jnfb jnfb jnfb jnfb jnfb jnfb jnfb jnfb jnfb jnfb

Type the following passage **twice**

**Time Allowed:** 10 minutes

Sani told them that Ali is tall; Amoor asked him to say	11
Sani told them that Ali is tall; Amoor asked him to say	22
Sani told them that Ali is tall; Amoor asked him to say	33
Sani told them that Ali is tall; Amoor asked him to say	44
Sani told them that Ali is tall; Amoor asked him to say	55
Sani told them that Ali is tall; Amoor asked him to say	66
Sani told them that Ali is tall; Amoor asked him to say	77
Sani told them that Ali is tall; Amoor asked him to say	88
Sani told them that Ali is tall; Amoor asked him to say	99
Sani told them that Ali is tall; Amoor asked him to say	110
Sani told them that Ali is tall; Amoor asked him to say	121
Sani told them that Ali is tall; Amoor asked him to say	132
Sani told them that Ali is tall; Amoor asked him to say	143
Sani told them that Ali is tall; Amoor asked him to say	154

**APPENDIX V**  
**PRE-TEST MARKING SCHEME**

Speed and Accuracy 75%

Display of work 25%

**Major Errors Penalties**

Instruction is not followed 1 mark

Typographical Error ½ mark

The wrong line spacing ½ mark, 1 max. per exercise

**Minor Errors Penalties**

Jammed keys/letters ½ mark, 1 max. per exercise

Poor ruling ½ mark, 1 max.

**APPENDIX VI**  
**Lesson Plan of Conventional Method**  
**Week Two (2)**

**Date:** 5<sup>th</sup> July, 2016  
**Name of Teacher:** Auwalu Ado  
**Reg. Number:** P14EDVE8089  
**School:** Federal College of Education (FCE), Kano  
**Course Combination:** Business Education  
**Class:** NCE I  
**Average Age:** 18 - 21 years.  
**Subject:** Keyboarding  
**Topic:** Identification of Home row keys  
**Time:** 09:00am – 11:00am  
**Duration:** 2 hours  
**General Objective:** To teach the students correct keyboarding body posture and keyboarding home row keys.  
**Behavioral objectives:** At the end of this lesson, students should be able to:  
a) Identify the letter of the alphabet on the keyboard.  
b) Demonstrate correct posture and proper stroking on Home row keys.  
c) Keyboard Home keys (asdf ;lkj)  
**Methods of teaching:** Explanation and Demonstrate how to Type  
**Instructional material:** Computer, chalkboard and keyboarding Textbook  
**Previous knowledge:** Students have familiar with Keyboarding Machines.  
**Presentation:**

Approach	Teacher's Activities	Students' Activities
<b>Step I- Introduction</b>	The teacher explains the Home row keys and why they are home row keys.	The student listens to the teacher and demonstrates placement of left and right fingers on the home row keys.
<b>Step II</b>	The teacher goes further to explain proper keyboarding body posture and it's important to a typist.	The students listen to the teacher and display correct body posture while the teacher explains.
<b>Step III</b>	The teacher asks the students to key asdf ;lkj.	The students place their 8 fingers on the home row keys and start keying asdf ;lkj
<b>Step IV- Evaluation</b>	The teacher evaluates the student by asking the students to: <ul style="list-style-type: none"> <li>• Sit properly and relax on the keyboarding chair.</li> </ul>	The students sit on the keyboarding chair and relaxed. The students place their 8 fingers on the home row keys

	<ul style="list-style-type: none"> <li>• Properly place their 8 fingers on the home row keys</li> <li>• Key asdf ;lkj five times</li> </ul>	The student's key asdf ;lkj five times
<b>Summary</b>	The teacher briefly goes over the lesson showing the students the correct keyboarding body posture, finger placement on home row keys and keying asdf ;lkj.	This is students/teacher's activities as every student participates in the review of the lesson.
<b>Conclusion-Assignment</b>	The teacher concludes the lesson by appreciating the cooperation of the students and gives them an assignment to: Keyboard asdf ;lkj 20 rows as a drill.	The students also appreciate the efforts of the teacher and start preparing for the drill.

## APPENIX VII

### Lesson Plan of Gamification Method Week Two (2)

#### LESSON PLAN ONE

<b>Date:</b>	5 <sup>th</sup> July, 2016
<b>Name of Teacher:</b>	Auwalu Ado
<b>School:</b>	Federal College of Education (FCE), Kano
<b>Class:</b>	NCE I
<b>Average Age:</b>	18 - 21 years.
<b>Subject:</b>	Keyboarding
<b>Topic:</b>	Identification of Home row keys
<b>Time:</b>	11:00am – 2:00pm
<b>Duration:</b>	2 hours
<b>General Objective:</b>	To teach the students correct keyboarding body posture and keyboarding home row keys.
<b>Behavioral objectives:</b>	At the end of this lesson, students should be able to: <ol style="list-style-type: none"> <li>a) Identify the letter of the alphabet on the keyboard.</li> <li>b) Demonstrate correct posture and proper stroking on Home row keys.</li> <li>c) Keyboard Home keys (asdf ;lkj)</li> </ol>
<b>Methods of teaching:</b>	Typing master 10 software and Typing game One
<b>Instructional material:</b>	Computer, chalkboard and keyboarding Textbook
<b>Previous knowledge:</b>	Students have familiar with Keyboarding Machines.

**Presentation:**

Approach	Teacher's Activities	Students' Activities
<b>Step I- Introduction</b>	The teacher explains the Home row keys and why they are home row keys.	The student listens to the teacher and demonstrates placement of left and right fingers on the home row keys.
<b>Step II</b>	The teacher goes further to explain proper keyboarding body posture and it's important to a typist.	The students listen to the teacher and display correct body posture while the teacher explains.
<b>Step III</b>	The teacher asks to open the typing master keyboarding software 10 and open the game for asdf ;lkj.	The students open the software and place their 8 fingers on the home row keys and start keying asdf ;lkj
<b>Step IV- Evaluation</b>	The teacher evaluates the student by asking the students to: <ul style="list-style-type: none"> <li>• Sit properly and relax on the keyboarding chair.</li> </ul>	The students sit on the keyboarding chair and relaxed.  The students place their 8

	<ul style="list-style-type: none"> <li>• Properly place their 8 fingers on the home row keys</li> <li>• Key asdf ;lkj five times</li> </ul>	<p>fingers on the home row keys</p> <p>The student's key asdf ;lkj five times</p>
<b>Summary</b>	The teacher briefly goes over the lesson showing the students the correct keyboarding body posture, finger placement on home row keys and keying asdf ;lkj.	This is students/teacher's activities as every student participates in the review of the lesson.
<b>Conclusion-Assignment</b>	The teacher concludes the lesson by appreciating the cooperation of the students and gives them an assignment to: Keyboard asdf ;lkj 20 rows as a drill.	The students also appreciate the efforts of the teacher and start preparing for the drill.

## APPENDIX VIII

### Lesson Plan of Blank-QWERTY-touch Method Week Two (2)

#### LESSON PLAN ONE

<b>Date:</b>	6 <sup>th</sup> July, 2016
<b>Name of Teacher:</b>	Auwalu Ado
<b>School:</b>	Federal College of Education (FCE), Kano
<b>Class:</b>	NCE I
<b>Average Age:</b>	18 - 21 years.
<b>Subject:</b>	Keyboarding
<b>Topic:</b>	Identification of Home row keys
<b>Time:</b>	09:00am – 11:00am
<b>Duration:</b>	2 hours
<b>General Objective:</b>	To teach the students correct keyboarding body posture and keyboarding home row keys.
<b>Behavioral objectives:</b>	At the end of this lesson, students should be able to: <ol style="list-style-type: none"> <li>a) Identify the letter of the alphabet on the keyboard.</li> <li>b) Demonstrate correct posture and proper stroking on Home row keys.</li> <li>c) Keyboard Home keys (asdf ;lkj)</li> </ol>
<b>Methods of teaching:</b>	Blank (covered)-QWERTY keyboard, Typing master 10 software and Typing game One
<b>Instructional material:</b>	Computer, chalkboard and keyboarding Textbook
<b>Previous knowledge:</b>	Students have familiar with Keyboarding Machines.
<b>Presentation:</b>	

Approach	Teacher's Activities	Students' Activities
<b>Step I- Introduction</b>	The teacher explains the Home row keys and why they are home row keys.	The student listens to the teacher and demonstrates placement of left and right fingers on the home row keys.
<b>Step II</b>	The teacher goes further to explain proper keyboarding body posture and it's important to a typist.	The students listen to the teacher and display correct body posture while the teacher explains.
<b>Step III</b>	The teacher asks to open the typing master keyboarding software 10 and open the game for asdf ;lkj.	The students open the software and place their 8 fingers on the home row keys and start keying asdf ;lkj on Blank-QWERT keyboard
<b>Step IV- Evaluation</b>	The teacher evaluates the student by asking the students to: <ul style="list-style-type: none"> <li>• Sit properly and relax on the keyboarding chair.</li> </ul>	The students sit on the keyboarding chair and relaxed. The students place their 8 fingers on the home row keys of Blank-

	<ul style="list-style-type: none"> <li>• Properly place their 8 fingers on the home row keys using Blank-QWERT keyboard</li> <li>• Key asdf ;lkj five times</li> </ul>	<p>QWERT keyboard</p> <p>The student's key asdf ;lkj five times</p>
<b>Summary</b>	The teacher briefly goes over the lesson showing the students the correct keyboarding body posture, finger placement on home row keys and keying asdf ;lkj on Blank-QWERT keyboard	This is students/teacher's activities as every student participates in the review of the lesson.
<b>Conclusion-Assignment</b>	The teacher concludes the lesson by appreciating the cooperation of the students and gives them an assignment to: Keyboard asdf ;lkj 20 rows as drill using Blank-QWERT keyboard	The students also appreciate the efforts of the teacher and start preparing for the drill.

## APPENDIX IX

### Lesson Plan of Conventional Method for Week Three (2)

#### LESSON PLAN TWO

<b>Date:</b>	12 <sup>th</sup> July, 2016
<b>Name of Teacher:</b>	Auwalu Ado
<b>Reg. Number:</b>	P14EDVE8089
<b>School:</b>	Federal College of Education (FCE), Kano
<b>Course Combination:</b>	Business Education
<b>Class:</b>	NCE I
<b>Average Age:</b>	18 - 21 years.
<b>Subject:</b>	Keyboarding
<b>Topic:</b>	understanding G,H keys
<b>Time:</b>	09:00am – 11:00am
<b>Duration:</b>	2 hours
<b>General Objective:</b>	To teach students.
<b>Behavioral objectives:</b>	At the end of this lesson, students should be able to: <ol style="list-style-type: none"> <li>a) Identify G, H alphabets on the keyboard.</li> <li>b) Demonstrate fingers responsible for stroking G and H keys.</li> <li>c) Keyboard G, H using forefingers</li> </ol>
<b>Methods of teaching:</b>	Explanation and Demonstrate how to hunt-and-peck
<b>Instructional material:</b>	Computer, chalkboard and keyboarding Textbook
<b>Previous knowledge:</b>	Students have familiar with Keyboarding Machines.
<b>Presentation:</b>	

Approach	Teacher's Activities	Students' Activities
<b>Step I- Introduction</b>	The teacher explains the how to strike G, H keys	The student listens to the teacher and demonstrates placement of left and right forefingers on the G, and H keys.
<b>Step II</b>	The teacher goes further to key G, H keys using jh,fg, jh, fg, jh, fg .	The students listen to the teacher and display correct practice of G and H keys.
<b>Step III</b>	The teacher ask the students to keying jh, fg, jh, fg, several times	The students place their 8 fingers on the home row keys and start keying jh, fg, jh, fg using forefingers
<b>Step IV- Evaluation</b>	The teacher evaluates the student by asking the students to: <ul style="list-style-type: none"> <li>• Properly place their 8 fingers on the home row keys</li> </ul>	The students place their 8 fingers on the home row keys  The students display the

	<ul style="list-style-type: none"> <li>• Place their forefingers on the G and H keys.</li> <li>• Key jh, fg, jh, fg five rows</li> </ul>	<p>placement of forefingers on G and H key</p> <p>The students key jh, fg, five rows.</p>
<b>Summary</b>	The teacher briefly goes over the lesson showing the students the how to place their forefingers on G, and H keys. And type in addition to home keys.	This is students/teacher's activities as every student participates in the review of the lesson.
<b>Conclusion-Assignment</b>	The teacher concludes the lesson by appreciating the cooperation of the students and gives them an assignment to: Keyboard jh, fg, 20 rows as a drill.	The students also appreciate the efforts of the teacher and start preparing for the drill.

## APPENDIX X

### Lesson Plan of Gamification Method for Week Three (2)

#### LESSON PLAN TWO

<b>Date:</b>	12 <sup>th</sup> July, 2016
<b>Name of Teacher:</b>	Auwalu Ado
<b>Reg. Number:</b>	P14EDVE8089
<b>School:</b>	Federal College of Education (FCE), Kano
<b>Course Combination:</b>	Business Education
<b>Class:</b>	NCE I
<b>Average Age:</b>	18 - 21 years.
<b>Subject:</b>	Keyboarding
<b>Topic:</b>	Understanding G,H keys
<b>Time:</b>	11:00am – 2:00pm
<b>Duration:</b>	2 hours
<b>General Objective:</b>	To teach students.
<b>Behavioral objectives:</b>	At the end of this lesson, students should be able to: <ol style="list-style-type: none"> <li>a) Identify G, H alphabets on the keyboard.</li> <li>b) Demonstrate fingers responsible for stroking G and H keys.</li> <li>c) Keyboard G, H using forefingers</li> </ol>
<b>Methods of teaching:</b>	Typing master 10 software
<b>Instructional material:</b>	Computer, chalkboard and keyboarding Textbook
<b>Previous knowledge:</b>	Students have familiar with Keyboarding Machines.
<b>Presentation:</b>	

Approach	Teacher's Activities	Students' Activities
<b>Step I- Introduction</b>	The teacher explains the how to strike G, H keys using typing master 10 software	The students open the software and demonstrate placement of left and right forefingers on the G, and H keys.
<b>Step II</b>	The teacher goes further to key G, H keys using jh,fg, jh, fg, jh, fg .	The students listen to the teacher and display correct practice of G and H keys.
<b>Step III</b>	The teacher ask the students to key jh, fg, jh, fg, several times	The students place their 8 fingers on the home row keys and start keying jh, fg, jh, fg using forefingers
<b>Step IV- Evaluation</b>	The teacher evaluates the student by asking the students to: <ul style="list-style-type: none"> <li>• Properly place their 8 fingers</li> </ul>	The students place their 8 fingers on the home row keys The students display the

	<p>on the home row keys</p> <ul style="list-style-type: none"> <li>• Place their forefingers on the G and H keys.</li> <li>• Key jh, fg, jh, fg five rows</li> </ul>	<p>placement of forefingers on G and H key</p> <p>The students key jh, fg, five rows.</p>
<b>Summary</b>	<p>The teacher briefly goes over the lesson showing the students the how to place their forefingers on G, and H keys. And type in addition to home keys.</p>	<p>This is students/teacher's activities as every student participates in the review of the lesson.</p>
<b>Conclusion-Assignment</b>	<p>The teacher concludes the lesson by appreciating the cooperation of the students and gives them an assignment to:</p> <p>Keyboard jh, fg, 20 rows as a drill.</p>	<p>The students also appreciate the efforts of the teacher and start preparing for the drill.</p>

## APPENDIX XI

### Lesson Plan of Blank-QWERTY-touch method Week Three (3)

#### LESSON PLAN TWO

<b>Date:</b>	13 <sup>th</sup> July, 2016
<b>Name of Teacher:</b>	Auwalu Ado
<b>Reg. Number:</b>	P14EDVE8089
<b>School:</b>	Federal College of Education (FCE), Kano
<b>Course Combination:</b>	Business Education
<b>Class:</b>	NCE I
<b>Average Age:</b>	18 - 21 years.
<b>Subject:</b>	Keyboarding
<b>Topic:</b>	Understanding G,H keys
<b>Time:</b>	09:00am – 11:00am
<b>Duration:</b>	2 hours
<b>General Objective:</b>	To teach students.
<b>Behavioral objectives:</b>	At the end of this lesson, students should be able to: <ol style="list-style-type: none"> <li>a) Identify G, H alphabets on the keyboard.</li> <li>b) Demonstrate fingers responsible for stroking G and H keys.</li> <li>c) Keyboard G, H using forefingers</li> </ol>
<b>Methods of teaching:</b>	Blank (covered) QWERTY keyboard & Demonstration
<b>Instructional material:</b>	Typewriter, chalkboard, and keyboarding Textbook
<b>Previous knowledge:</b>	Students have familiar with Keyboarding Machines.
<b>Presentation:</b>	

Approach	Teacher's Activities	Students' Activities
<b>Step I- Introduction</b>	The teacher explains the how to strike G, H keys using Blank (covered) QWERTY keyboard	The students listen and demonstrate placement of left and right forefingers on the G, and H keys on Blank (covered) QWERTY keyboard
<b>Step II</b>	The teacher goes further to key G, H keys using jh,fg, jh, fg, jh, fg ..	The students listen to the teacher and display correct practice of G and H keys.
<b>Step III</b>	The teacher ask the students to key jh, fg, jh, fg, several times	The students place their 8 fingers on the home row keys and start keying jh, fg, jh, fg using forefingers
<b>Step IV- Evaluation</b>	The teacher evaluates the student by asking the students to: <ul style="list-style-type: none"> <li>• Properly place their 8 fingers on the home row keys</li> <li>• Place their forefingers on the G</li> </ul>	The students place their 8 fingers on the home row keys The students display the placement of forefingers on G and H key The students key jh, fg,

	<p>and H keys.</p> <ul style="list-style-type: none"> <li>• Key jh, fg, jh, fg five rows on Blank (covered) QWERTY keyboard</li> </ul>	<p>asdf ;lkj five rows on Blank (covered) QWERTY keyboard</p>
<b>Summary</b>	<p>The teacher briefly goes over the lesson showing the students the how to place their forefingers on G, and H keys. And type in addition to home keys on Blank (covered) QWERTY keyboard</p>	<p>This is students/teacher's activities as every student participates in the review of the lesson.</p>
<b>Conclusion-Assignment</b>	<p>The teacher concludes the lesson by appreciating the cooperation of the students and gives them an assignment to: Keyboard jh, fg, 20 rows as drill on Blank (covered) QWERTY keyboard</p>	<p>The students also appreciate the efforts of the teacher and start preparing for the drill on Blank (covered) QWERTY keyboard</p>

## APPENDIX XII

### Lesson Plan of Conventional Method for Week four (4) LESSON PLAN THREE

<b>Date:</b>	19 <sup>th</sup> July, 2016
<b>Name of Teacher:</b>	Auwalu Ado
<b>Reg. Number:</b>	P14EDVE8089
<b>School:</b>	Federal College of Education (FCE), Kano
<b>Course Combination:</b>	Business Education
<b>Class:</b>	NCE I
<b>Average Age:</b>	18 - 21 years.
<b>Subject:</b>	Keyboarding
<b>Topic:</b>	Understanding Upper Row keys
<b>Time:</b>	09:00am – 11:00am
<b>Duration:</b>	2 hours
<b>General Objective:</b>	To teach students how to strike the upper keys
<b>Behavioural objectives:</b>	At the end of this lesson, students should be able to: <ol style="list-style-type: none"> <li>a) Identify upper keys (QWERT &amp; POIUY) alphabets on the keyboard.</li> <li>b) Demonstrate fingers responsible for stroking QWER &amp; POIUY keys.</li> <li>c) Identify upper keys (QWERT &amp; POIUY) and down row (ZXCVC .,MN) keys using 8 home fingers alphabets on the keyboard.</li> </ol>
<b>Methods of teaching:</b>	Explanation and Demonstrate how to hunt-and-peck
<b>Instructional material:</b>	Computer, chalkboard and keyboarding Textbook
<b>Previous knowledge:</b>	Students have familiar with Keyboarding Machines.

**Presentation:**

Approach	Teacher's Activities	Students' Activities
<b>Step I- Introduction</b>	The teacher explains the how to strike upper keys	The student listens to the teacher and demonstrate stroking of left and right fingers to strike upper keys
<b>Step II</b>	The teacher goes further to key explain how to strike upper (QWERT & POIUY) keys and down row (ZXCVC .,MN) keys using 8 fingers	The students listen to the teacher and display correct practice of upper (QWERT & POIUY) and down the row (ZXCVC .,MN) keys stroking.
<b>Step III</b>	The teacher ask the students to key upper QWERT & POIUY and down row (ZXCVC .,MN) keys several times	The students place their 8 fingers on the home row keys and start keying

		QWERT & POIUY keys and down row (ZXCVCV .,MN) keys
<b>Step IV- Evaluation</b>	<p>The teacher evaluates the student by asking the students to:</p> <ul style="list-style-type: none"> <li>• Properly place their 8 fingers on the home row keys</li> <li>• Key upper QWERT &amp; POIUY and down row (ZXCVCV .,MN) keys five rows</li> </ul>	<p>The students place their 8 fingers on the home row keys</p> <p>The students key QWERT &amp; POIUY and down row (ZXCVCV .,MN) keys five rows.</p>
<b>Summary</b>	The teacher briefly goes over the lesson showing the students the how to key upper (QWERT & POIUY and down row (ZXCVCV .,MN)	This is students/teacher's activities as every student participates in the review of the lesson.
<b>Conclusion-Assignment</b>	<p>The teacher concludes the lesson by appreciating the cooperation of the students and gives them an assignment to:</p> <p>Keyboard aq, sw, fr, ;p, lo. ki, ju, 20 rows as a drill.</p>	The students also appreciate the efforts of the teacher and start preparing for the drill.

## APPENDIX XIII

### Lesson Plan of Gamification Method for Week four (4)

#### LESSON PLAN THREE

<b>Date:</b>	19 <sup>th</sup> July, 2016
<b>Name of Teacher:</b>	Auwalu Ado
<b>Reg. Number:</b>	P14EDVE8089
<b>School:</b>	Federal College of Education (FCE), Kano
<b>Course Combination:</b>	Business Education
<b>Class:</b>	NCE I
<b>Average Age:</b>	18 - 21 years.
<b>Subject:</b>	Keyboarding
<b>Topic:</b>	Understanding Upper Row keys
<b>Time:</b>	11:00am – 2:00pm
<b>Duration:</b>	2 hours
<b>General Objective:</b>	To teach students how to strike the upper keys
<b>Behavioural objectives:</b>	At the end of this lesson, students should be able to: <ul style="list-style-type: none"> <li>d) Identify upper keys (QWERT &amp; POIUY) alphabets on the keyboard.</li> <li>e) Demonstrate fingers responsible for stroking QWER &amp; POIUY keys.</li> <li>f) Identify upper keys (QWERT &amp; POIUY) and down row (ZXCV .,MN) keys using 8 home fingers alphabets on the keyboard.</li> </ul>
<b>Methods of teaching:</b>	Gamification method
<b>Instructional material:</b>	Computer, chalkboard and keyboarding Textbook
<b>Previous knowledge:</b>	Students have familiar with Keyboarding Machines.

**Presentation:**

Approach	Teacher's Activities	Students' Activities
<b>Step I- Introduction</b>	The teacher explains the how to strike upper keys	The student listens to the teacher and demonstrate stroking of left and right fingers to strike upper keys
<b>Step II</b>	The teacher goes further to key explain how to strike upper (QWERT & POIUY) keys and down row (ZXCV .,MN) keys using 8 fingers	The students listen to the teacher and display correct practice of upper (QWERT & POIUY) and down the row (ZXCV .,MN) keys stroking.

<b>Step III</b>	The teacher ask the students to key upper QWERT & POIUY and down row (ZXCV .,MN) keys several times	The students place their 8 fingers on the home row keys and start keying QWERT & POIUY keys and down row (ZXCV .,MN) keys
<b>Step IV- Evaluation</b>	The teacher evaluates the student by asking the students to: <ul style="list-style-type: none"> <li>• Properly place their 8 fingers on the home row keys</li> <li>• Key upper QWERT &amp; POIUY and down row (ZXCV .,MN) keys five rows</li> </ul>	The students place their 8 fingers on the home row keys The students key QWERT & POIUY and down row (ZXCV .,MN) keys five rows.
<b>Summary</b>	The teacher briefly goes over the lesson showing the students the how to key upper (QWERT & POIUY and down row (ZXCV .,MN)	This is students/teacher's activities as every student participates in the review of the lesson.
<b>Conclusion- Assignment</b>	The teacher concludes the lesson by appreciating the cooperation of the students and gives them an assignment to: Keyboard aq, sw, fr, ;p, lo. ki, ju, 20 rows as a drill.	The students also appreciate the efforts of the teacher and start preparing for the drill.

## APPENDIX XIV

### Lesson Plan of Blank-QWERTY-touch Method for Week four (4)

#### LESSON PLAN THREE

<b>Date:</b>	20 <sup>th</sup> July, 2016
<b>Name of Teacher:</b>	Auwalu Ado
<b>Reg. Number:</b>	P14EDVE8089
<b>School:</b>	Federal College of Education (FCE), Kano
<b>Course Combination:</b>	Business Education
<b>Class:</b>	NCE I
<b>Average Age:</b>	18 - 21 years.
<b>Subject:</b>	Keyboarding
<b>Topic:</b>	Understanding Upper Row keys
<b>Time:</b>	09:00am – 11:00am
<b>Duration:</b>	2 hours
<b>General Objective:</b>	To teach students how to strike the upper keys
<b>Behavioural objectives:</b>	At the end of this lesson, students should be able to: <ol style="list-style-type: none"> <li>a) Identify upper keys (QWERT &amp; POIUY) alphabets on the keyboard.</li> <li>b) Demonstrate fingers responsible for stroking QWER &amp; POIUY keys.</li> <li>c) Identify upper keys (QWERT &amp; POIUY) and down row (ZXCVC ,MN) keys using 8 home fingers alphabets on the keyboard.</li> </ol>
<b>Methods of teaching:</b>	Blank-QWERTY-touch method
<b>Instructional material:</b>	Typewriter, chalkboard, and keyboarding Textbook
<b>Previous knowledge:</b>	Students have familiar with Keyboarding Machines.

**Presentation:**

Approach	Teacher's Activities	Students' Activities
<b>Step I- Introduction</b>	The teacher explains the how to strike upper keys	The student listens to the teacher and demonstrate stroking of left and right fingers to strike upper keys
<b>Step II</b>	The teacher goes further to key explain how to strike upper (QWERT & POIUY) keys and down row (ZXCVC ,MN) keys using 8 fingers	The students listen to the teacher and display correct practice of upper (QWERT & POIUY) and down the row (ZXCVC ,MN) keys stroking.
<b>Step III</b>	The teacher ask the students to key upper QWERT & POIUY and down row (ZXCVC ,MN) keys several times	The students place their 8 fingers on the home row keys and start keying

		QWERT & POIUY keys and down row (ZXCVCV .,MN) keys
<b>Step IV- Evaluation</b>	<p>The teacher evaluates the student by asking the students to:</p> <ul style="list-style-type: none"> <li>• Properly place their 8 fingers on the home row keys</li> <li>• Key upper QWERT &amp; POIUY and down row (ZXCVCV .,MN) keys five rows</li> </ul>	<p>The students place their 8 fingers on the home row keys</p> <p>The students key QWERT &amp; POIUY and down row (ZXCVCV .,MN) keys five rows.</p>
<b>Summary</b>	The teacher briefly goes over the lesson showing the students the how to key upper (QWERT & POIUY and down row (ZXCVCV .,MN)	This is students/teacher's activities as every student participates in the review of the lesson.
<b>Conclusion-Assignment</b>	<p>The teacher concludes the lesson by appreciating the cooperation of the students and gives them an assignment to:</p> <p>Keyboard aq, sw, fr, ;p, lo. ki, ju, 20 rows as a drill.</p>	The students also appreciate the efforts of the teacher and start preparing for the drill.

## APPENDIX XV

### REPETITION OF FOUR WEEK EXERCISES

#### Lesson Plan of Conventional Method for Week five (5)

#### LESSON PLAN THREE

<b>Date:</b>	26 <sup>th</sup> July, 2016
<b>Name of Teacher:</b>	Auwalu Ado
<b>Reg. Number:</b>	P14EDVE8089
<b>School:</b>	Federal College of Education (FCE), Kano
<b>Course Combination:</b>	Business Education
<b>Class:</b>	NCE I
<b>Average Age:</b>	18 - 21 years.
<b>Subject:</b>	Keyboarding
<b>Topic:</b>	Understanding Upper Row keys
<b>Time:</b>	09:00am – 11:00am
<b>Duration:</b>	2 hours
<b>General Objective:</b>	To teach students how to strike the upper keys
<b>Behavioural objectives:</b>	At the end of this lesson, students should be able to: <ol style="list-style-type: none"> <li>a) Identify upper keys (QWERT &amp; POIUY) alphabets on the keyboard.</li> <li>b) Demonstrate fingers responsible for stroking QWER &amp; POIUY keys.</li> <li>c) Identify upper keys (QWERT &amp; POIUY) and down row (ZXCV .,MN) keys using 8 home fingers alphabets on the keyboard.</li> </ol>
<b>Methods of teaching:</b>	Explanation and Demonstrate how to hunt-and-peck
<b>Instructional material:</b>	Computer, chalkboard and keyboarding Textbook
<b>Previous knowledge:</b>	Students have familiar with Keyboarding Machines.

**Presentation:**

Approach	Teacher's Activities	Students' Activities
<b>Step I- Introduction</b>	The teacher explains the how to strike upper keys	The student listens to the teacher and demonstrate stroking of left and right fingers to strike upper keys
<b>Step II</b>	The teacher goes further to key explain how to strike upper (QWERT & POIUY) keys and down row (ZXCV .,MN) keys using 8 fingers	The students listen to the teacher and display correct practice of upper (QWERT & POIUY) and down the row (ZXCV .,MN) keys stroking.

<b>Step III</b>	The teacher ask the students to key upper QWERT & POIUY and down row (ZXCV .,MN) keys several times	The students place their 8 fingers on the home row keys and start keying QWERT & POIUY keys and down row (ZXCV .,MN) keys
<b>Step IV- Evaluation</b>	The teacher evaluates the student by asking the students to: <ul style="list-style-type: none"> <li>• Properly place their 8 fingers on the home row keys</li> <li>• Key upper QWERT &amp; POIUY and down row (ZXCV .,MN) keys five rows</li> </ul>	The students place their 8 fingers on the home row keys The students key QWERT & POIUY and down row (ZXCV .,MN) keys five rows.
<b>Summary</b>	The teacher briefly goes over the lesson showing the students the how to key upper (QWERT & POIUY and down row (ZXCV .,MN)	This is students/teacher's activities as every student participates in the review of the lesson.
<b>Conclusion- Assignment</b>	The teacher concludes the lesson by appreciating the cooperation of the students and gives them an assignment to: Keyboard aq, sw, fr, ;p, lo. ki, ju, 20 rows as a drill.	The students also appreciate the efforts of the teacher and start preparing for the drill.

## APPENDIX XVI

### REPETITION OF WEEK FOUR EXERCISES

#### Lesson Plan of Gamification Method for Week five (5)

#### LESSON PLAN THREE

<b>Date:</b>	26 <sup>th</sup> July, 2016
<b>Name of Teacher:</b>	Auwalu Ado
<b>Reg. Number:</b>	P14EDVE8089
<b>School:</b>	Federal College of Education (FCE), Kano
<b>Course Combination:</b>	Business Education
<b>Class:</b>	NCE I
<b>Average Age:</b>	18 - 21 years.
<b>Subject:</b>	Keyboarding
<b>Topic:</b>	Understanding Upper Row keys
<b>Time:</b>	11:00am – 2:00pm
<b>Duration:</b>	2 hours
<b>General Objective:</b>	To teach students how to strike the upper keys
<b>Behavioural objectives:</b>	At the end of this lesson, students should be able to: a) Identify upper keys (QWERT & POIUY) alphabets on the keyboard. b) Demonstrate fingers responsible for stroking QWER & POIUY keys. c) Identify upper keys (QWERT & POIUY) and down row (ZXCV .,MN) keys using 8 home fingers alphabets on the keyboard.
<b>Methods of teaching:</b>	Gamification method
<b>Instructional material:</b>	Computer, chalkboard and keyboarding Textbook
<b>Previous knowledge:</b>	Students have familiar with Keyboarding Machines.

#### Presentation:

Approach	Teacher's Activities	Students' Activities
<b>Step I- Introduction</b>	The teacher explains the how to strike upper keys	The student listens to the teacher and demonstrate stroking of left and right fingers to strike upper keys
<b>Step II</b>	The teacher goes further to key explain how to strike upper (QWERT & POIUY) keys and down row (ZXCV .,MN) keys using 8 fingers	The students listen to the teacher and display correct practice of upper (QWERT & POIUY) and down the row (ZXCV .,MN) keys stroking.

<b>Step III</b>	The teacher ask the students to key upper QWERT & POIUY and down row (ZXCV ., MN) keys several times	The students place their 8 fingers on the home row keys and start keying QWERT & POIUY keys and down row (ZXCV .,MN) keys
<b>Step IV- Evaluation</b>	The teacher evaluates the student by asking the students to: <ul style="list-style-type: none"> <li>• Properly place their 8 fingers on the home row keys</li> <li>• Key upper QWERT &amp; POIUY and down row (ZXCV .,MN) keys five rows</li> </ul>	The students place their 8 fingers on the home row keys The students key QWERT & POIUY and down row (ZXCV .,MN) keys five rows.
<b>Summary</b>	The teacher briefly goes over the lesson showing the students the how to key upper (QWERT & POIUY and down row (ZXCV .,MN)	This is students/teacher's activities as every student participates in the review of the lesson.
<b>Conclusion- Assignment</b>	The teacher concludes the lesson by appreciating the cooperation of the students and gives them an assignment to: Keyboard aq, sw, fr, ;p, lo. ki, ju, 20 rows as a drill.	The students also appreciate the efforts of the teacher and start preparing for the drill.

## APPENDIX XVII

### REPETITION OF WEEK FOUR EXERCISES

#### Lesson Plan of Blank-QWERTY-touch Method for Week five (5)

#### LESSON PLAN THREE

<b>Date:</b>	27 <sup>th</sup> July, 2016
<b>Name of Teacher:</b>	Auwalu Ado
<b>Reg. Number:</b>	P14EDVE8089
<b>School:</b>	Federal College of Education (FCE), Kano
<b>Course Combination:</b>	Business Education
<b>Class:</b>	NCE I
<b>Average Age:</b>	18 - 21 years.
<b>Subject:</b>	Keyboarding
<b>Topic:</b>	Understanding Upper Row keys
<b>Time:</b>	09:00am – 11:00am
<b>Duration:</b>	2 hours
<b>General Objective:</b>	To teach students how to strike the upper keys
<b>Behavioural objectives:</b>	At the end of this lesson, students should be able to: <ol style="list-style-type: none"> <li>a) Identify upper keys (QWERT &amp; POIUY) alphabets on the keyboard.</li> <li>b) Demonstrate fingers responsible for stroking QWER &amp; POIUY keys.</li> <li>c) Identify upper keys (QWERT &amp; POIUY) and down row (ZXCV .,MN) keys using 8 home fingers alphabets on the keyboard.</li> </ol>
<b>Methods of teaching:</b>	Blank-QWERTY-touch method
<b>Instructional material:</b>	Typewriter, chalkboard, and keyboarding Textbook
<b>Previous knowledge:</b>	Students have familiar with Keyboarding Machines.

**Presentation:**

Approach	Teacher's Activities	Students' Activities
<b>Step I- Introduction</b>	The teacher explains the how to strike upper keys	The student listens to the teacher and demonstrate stroking of left and right fingers to strike upper keys
<b>Step II</b>	The teacher goes further to key explain how to strike upper (QWERT & POIUY) keys and down row (ZXCV .,MN) keys using 8 fingers	The students listen to the teacher and display correct practice of upper (QWERT & POIUY) and down the row (ZXCV .,MN) keys stroking.
<b>Step III</b>	The teacher ask the students to key upper QWERT & POIUY and down	The students place their 8 fingers on the home row

	row (ZXCVC .,MN) keys several times	keys and start keying QWERT & POIUY keys and down row (ZXCVC .,MN) keys
<b>Step IV- Evaluation</b>	<p>The teacher evaluates the student by asking the students to:</p> <ul style="list-style-type: none"> <li>• Properly place their 8 fingers on the home row keys</li> <li>• Key upper QWERT &amp; POIUY and down row (ZXCVC .,MN) keys five rows</li> </ul>	<p>The students place their 8 fingers on the home row keys</p> <p>The students key QWERT &amp; POIUY and down row (ZXCVC .,MN) keys five rows.</p>
<b>Summary</b>	The teacher briefly goes over the lesson showing the students the how to key upper (QWERT & POIUY and down row (ZXCVC .,MN)	This is students/teacher's activities as every student participates in the review of the lesson.
<b>Conclusion-Assignment</b>	<p>The teacher concludes the lesson by appreciating the cooperation of the students and gives them an assignment to:</p> <p>Keyboard aq, sw, fr, ;p, lo. ki, ju, 20 rows as a drill.</p>	The students also appreciate the efforts of the teacher and start preparing for the drill.

**APPENDIX XVIII**  
**PRE-TEST RESULTS**

S/N	QWERTY-TOUCH		GAMIFIC		BLANK-QWERT-TOUCH		QWERTY-TOUCH %		GAMIF. %		-QWERT-TOUCH %		QWERTY-TOUCH	GAMIF.	BLANK - QWERT-TOUCH
	S	A	S	A	S	A	S	A	S	A	S	A	TOTAL	TOTAL	TOTAL
1.	60	43	40	21	40	32	45	11	30	5	30	8	56	35	38
2.	50	29	45	36	30	19	38	7	34	9	43	7	45	43	50
3.	61	16	46	40	31	19	46	4	35	10	23	5	50	45	28
4.	60	50	48	40	40	28	45	13	36	10	30	7	58	46	37
5.	71	54	50	14	41	16	53	14	38	4	43	7	67	41	50
6.	57	41	37	18	42	20	43	10	28	5	43	7	53	32	50
7.	60	47	29	25	39	20	45	12	22	6	29	5	57	28	34
8.	54	29	30	21	44	22	41	7	23	5	33	6	48	28	39
9.	60	41	33	29	30	10	45	10	25	7	23	3	55	32	25
10.	35	27	45	38	50	21	26	7	34	10	38	5	33	43	43
11.	50	37	39	32	29	23	38	9	29	8	22	6	47	37	28
12.	47	21	31	40	26	13	35	5	23	10	20	3	41	33	23
13.	72	46	46	29	14	21	54	12	35	7	11	5	66	42	16
14.	66	37	33	32	43	19	50	9	25	8	32	5	59	33	37
15.	68	38	40	32	50	38	71	10	30	8	38	10	81	38	47
16.	72	39	39	21	38	37	54	10	29	5	29	9	64	35	38
17.	68	27	50	35	37	21	51	7	38	9	28	5	58	46	33
18.	42	40	40	41	51	16	32	10	30	10	38	4	42	40	42
19.	40	40	30	41	48	23	30	10	23	50	36	14	40	73	50
20.	48	26	45	32	54	39	41	7	34	8	41	10	48	42	50
21.	39	14	43	42	30	21	29	4	32	11	23	5	33	43	28
22.	60	41	41	24	30	31	45	10	31	6	23	7	55	37	30
23.	40	28	16	35	31	19	30	11	12	9	23	5	41	21	28
24.	70	41	51	42	28	21	53	14	38	11	21	5	67	49	26
25.	54	34	55	21	29	16	41	9	41	5	22	4	49	47	26
26.	48	27	52	22	43	17	36	8	39	6	44	4	44	45	48
27.	50	42	32	18	30	19	38	11	24	5	23	5	48	29	27
28.	55	20	32	23	33	14	41	5	24	6	25	4	46	30	28
29.	50	37	36	20	41	21	38	9	27	5	31	5	47	32	36
30.	40	31	40	19	33	11	30	8	30	5	25	8	38	35	33
<b>Total</b>	<b>1647</b>	<b>1043</b>	<b>1194</b>	<b>883</b>	<b>1105</b>	<b>647</b>	<b>1260</b>	<b>270</b>	<b>896</b>	<b>261</b>	<b>885</b>	<b>182</b>	<b>1530</b>	<b>1156</b>	<b>1067</b>

**APPENDIX XIX**  
**POST-TEST RESULTS**

S/N	QWERTY-TOUCH		GAMIFIC		BLANK-QWERT-TOUCH		QWERTY-TOUCH %		GAMIF. %		-QWERT-TOUCH %		QWERTY-TOUCH	GAMIF.	QWERT-TOUCH
	S	A	S	A	S	A	S	A	S	A	S	A	TOTAL	TOTAL	TOTAL
1.	68	54	80	25	60	40	51	14	60	6	45	10	65	66	55
2.	52	26	90	46	59	25	39	7	68	12	43	7	46	79	50
3.	64	14	68	65	64	13	48	4	51	16	48	3	52	67	51
4.	66	41	56	46	64	14	50	10	42	12	48	4	60	54	52
5.	80	54	64	14	59	25	60	14	48	4	43	7	74	52	50
6.	68	41	50	32	59	25	51	10	38	8	43	7	61	46	50
7.	68	54	56	46	45	33	51	14	42	12	34	8	65	54	42
8.	68	54	59	21	56	27	51	14	44	5	42	7	65	50	49
9.	68	54	60	42	64	14	51	14	45	11	48	4	65	56	52
10.	40	40	60	42	61	27	30	10	45	11	46	7	40	56	53
11.	68	41	67	32	60	40	51	10	50	8	45	10	61	58	55
12.	51	21	60	40	64	13	38	5	45	10	48	3	43	55	51
13.	95	46	65	39	60	42	71	12	49	10	45	11	83	59	56
14.	70	37	67	32	69	21	53	9	50	8	52	5	62	58	57
15.	94	38	67	32	60	40	71	10	50	8	45	10	81	58	55
16.	72	40	69	21	56	46	54	10	52	5	42	12	64	57	54
17.	61	27	65	39	59	25	46	7	49	10	44	6	53	59	50
18.	41	40	66	41	69	21	31	10	50	10	52	5	41	60	57
19.	45	40	66	41	60	28	34	10	50	50	45	14	44	60	59
20.	54	26	67	32	60	40	41	7	50	8	45	10	48	58	55
21.	64	14	60	42	61	27	48	4	45	11	46	7	52	56	53
22.	68	41	59	24	54	26	51	10	44	6	41	7	61	50	48
23.	77	42	65	39	69	21	58	11	49	10	52	5	69	59	57
24.	78	54	60	42	67	38	59	14	45	11	50	10	73	56	60
25.	66	41	69	21	69	21	50	10	52	5	52	5	60	57	57
26.	67	33	59	24	59	25	50	8	44	6	44	6	58	50	50
27.	56	46	50	37	52	26	42	12	38	9	39	7	54	47	46
28.	61	27	56	46	64	14	46	7	42	12	48	4	53	54	52
29.	60	40	81	39	76	50	45	10	61	10	57	13	55	71	70
30.	53	37	66	41	67	33	40	9	50	10	50	8	49	60	58
<b>Total</b>	<b>1943</b>	<b>1663</b>	<b>1927</b>	<b>1083</b>	<b>1846</b>	<b>840</b>	<b>1458</b>	<b>2915</b>	<b>1445</b>	<b>310.5</b>	<b>1381</b>	<b>219.5</b>	<b>1767</b>	<b>1722</b>	<b>1604</b>