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<th>Serial No.</th>
<th>IBIEGU, VICTORIA OZO (MRS.) PG/Ph.D/08/48640</th>
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<td>Author 1</td>
<td>EFFECTS OF DIGITAL VERSATILE DISC CONTENT PACKAGE OF SECONDARY SCHOOL STUDENTS’ ACHIEVEMENT AND INTEREST IN SHORTHAND IN ANAMBRA STATE NIGERIA</td>
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<td>Author 2</td>
<td>DEPARTMENT OF ARTS EDUCATION</td>
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EFFECTS OF DIGITAL VERSATILE DISC CONTENT PACKAGE ON SECONDARY SCHOOL STUDENTS’ ACHIEVEMENT AND INTEREST IN SHORTHAND IN ANAMBRA STATE, NIGERIA

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CHAPTER ONE
INTRODUCTION

Background of the Study

Among all the myriad of components of the education process, curriculum seems to be the most ambiguous because as a concept it has many competing definitions. This is because curriculum reflects societal characteristics and trends. People therefore tend to look at the curriculum based on their educational aims and objectives, beliefs, and how these would be executed. People also gave many interpretations to curriculum. Okobiah (2009) gave the following people’s interpretations:

- Curriculum is content.
- Curriculum is a programme of studies or a course of study.
- Curriculum is everything that goes on within the school including extra class activities, guidance and interpersonal relationships.
- Curriculum is a series of experiences undergone by learners in school.
- Curriculum is that which an individual learner experiences as a result of schooling.

Curriculum is a vehicle used in transmitting all these interpretations. For Obi (2010) curriculum is the vehicle for the transmission of social values, norms and orientations.

Obetta and Okide (2011) see curriculum as a broad term meant to include the complete experience of the learner while under the guidance and direction of the school. Ezeliora and Eze (2000) define it as a set of opportunities to engage the learner in or outside the school under the guidance and direction of the school. In addition Offorma (2009) explains curriculum as course of study which is undertaken by learners in order to earn a certificate, diploma, degree or any other forms of academic awards. Curriculum is therefore the totality of experiences, opportunities, courses, subjects and activities which may be
academics or non-academics that school offers to the students. It is planned according to the educational objectives of a country. After passing through the experiences or the courses or the subjects as the case may be, the learners are issued certificates.

Shorthand is one of the subjects in secondary school curriculum. The 2004 edition of National Policy on education included Shorthand as one of the vocational subjects offered in the senior secondary school. Also the 2008 New Senior Secondary Educational Curriculum Structure at a Glance included Shorthand as one of the trade subjects.

Shorthand is a system of representing or writing English Language by symbols. It is the art of representing spoken sounds by characters or symbols. Shorthand is the representation of spoken sounds by signs (Ibegbu, 2011 and Pitman, 1978). Igbonoba (2004) defined shorthand as a skill subject which involves the use of the head, the heart and the hand in quick response to spoken words. It is a symbolic system of writing method that increases speed of writing as compared to a normal method of writing a language. For Odea, Sykes, Watson and Williams (1999) Shorthand is a way of rapidly writing spoken sounds. Ile (1999) explained shorthand as science or art of writing spoken sounds by characters. Also Njumogu and Njumogu (2010) see shorthand as art of representing spoken sounds by signs.

Shorthand enables someone who is well trained in it to write as people speak. This art of writing as people speak is not possible in longhand. For Ezenwafor (2009) shorthand is bedrock of stenograph which enables confidential secretaries to write spoken sounds at such a high speed as 100 and 120 words per minute which is practically impossible in longhand. Shorthand has been with the society for long.

The earliest form of shorthand system is from Ancient Greece. For Westfall (1963), the earliest form of shorthand, which is from Aeropolice stone, is from Ancient Greece. Some ancient form of shorthand, were used before this time. For example, Shorthand of Tyro Cicero’s Amanuensis was used for centuries before 1599 when Timothy Bright published his 500-odd symbols for words. In 1602 Rev. John Willis published the Art of Stenography. A
French system was developed by Jacques in 1651 and a German system of shorthand was developed in 1679. Also, modern looking geometric shorthand was introduced with John Byron’s New Universal Shorthand of 1720. Samuel Taylor published his own similar system in 1786. The Pitman shorthand, which was introduced first by Sir Isaac Pitman in 1837, is in use in Nigeria although in USA and some other parts of the world, it has been largely superseded by the Gregg shorthand that was first published in 1888. The process of writing Shorthand is called stenography.

There are many systems of shorthand namely; Sloan, Pitman 2000, New Era, Gregg, Teeline and Speedwriting. Pitman 2000 is used for this study. Pitman shorthand system is based on phonetics. In Pitman shorthand there are consonants and vowels and all the sounds produced in the speech are divided into consonants and vowels.

Consonants are those sounds which are produced only when the breath is held partially or completely. In Pitman 2000, there are 24 consonants with 26 characters. Two consonants namely R and H have two characters each. Consonant R has r up and r down while consonant H has h up and h down. Consonants are in form of alphabets while characters are the signs or symbols which are used in representing the consonants. Vowels are represented by dots and dashes. There are six long vowel sounds and six short vowel sounds. There are also three vowel places and three vowel positions.

In Pitman 2000 shorthand there exists some short forms and phrases. Short forms are frequently occurring words. Examples, of short forms are: go, do, are, they, to, and, of, is, be, but, it, the, too, two, which, who, come, give, them and others. Phrases are joining of two or more words together. A typical shorthand system provides symbols for common phrases. Examples of phases are: to-the, is-the, on-the, it-is-the, give-the, come-to-the, give-them-the, they-are and others. Short forms and phrases are important because they help in writing shorthand very fast.
There are some principles or rules or guides in writing shorthand. Some of these principles are:

- Do not write shorthand on a plain paper.
- Do not use light pencil or blue pen in writing shorthand.
- Master each lesson or topic or outline taught before going to another.
- Shorthand is written according to sounds.
- The first vowel sound in a word determines the position of the consonant.

The above principles are important in teaching and learning shorthand in secondary school. The principles and guidelines stated above are also highlighted by Igbonoba (2004). He stated that teachers should teach correct outline information, teach theory and speed simultaneously and should not teach too many concepts at a time. Shorthand teachers in secondary school should endeavour to do these things listed above so as to help secondary school students in improving their achievement in the subject. In addition shorthand is an important subject. This is because shorthand allows someone that is well trained in the system to write as quickly as people speak.

The importance of Shorthand to people like the senior secondary school one students who may be future secretaries, journalists and others who need to write down or report on what people say or speak with speed makes it necessary to look at Digital Versatile Disc (DVD) content package (pre-recorded shorthand demonstrations that can be used to teach students) as a way of improving instruction, students’ achievement and interest in the subject. For instance, shorthand helps students to copy down what their teachers or lecturers give to them during lectures. Shorthand students benefit from shorthand. This is seen when shorthand students make accurate lecture notes. Secretaries use shorthand to jot down the minutes of the meeting. Shorthand has been as old as secretaries in performing their work. Okeke (2004) observed that shorthand is as old as the secretarial education curriculum in different parts of the world. Journalists and reporters use shorthand to jot down what they publish in the
newspapers. Thus there is need to drill secondary school students in shorthand so as to master it.

Shorthand requires a lot of drill and practice so as to increase students’ skill in writing it. For Enemo (2007) drilling is one of the methods of teaching shorthand. Also Ibegbu (2011) stated that shorthand requires a lot of practice so that student can learn the skill in writing the characters. Drill and practice programmes, make it possible for secondary school students to learn materials already introduced to them in shorthand. For Akudolu cited in Okwo and Ike (1996) drill and practice programmes help students to learn materials already introduced to them. This idea enables students to practice the learning content to a degree of mastery.

Drilling helps secondary school students to learn the skill in writing shorthand. For effective drilling and practice there is need to look for a device like DVD content package that will help secondary school students in acquiring the skill in writing shorthand. The device may replace the traditional or conventional method of using a tape recorder for private or home and class drilling. Tape recorder is commonly used by shorthand students and some of the students see it as a traditional way of learning how to write shorthand very fast.

Usually there are some conventional methods of teaching Shorthand subject. That is some formal ways of teaching this subject without Digital Versatile Disc (DVD) content package. For instance, one of the ways is the use of only chalk board in representing the shorthand outlines and oral dictations as well as use of tape recorders by students working without the help of a teacher. Other examples of such conventional or traditional methods are: Lecture Method, Discussion Method, Problem-Solving Method, drilling of students without the use of DVD content package and others. So, shorthand students use tape recorders as a conventional method of learning how to increase their speed in writing shorthand. This tape recorder can be replaced with DVD content package.
DVD is an audio-visual teaching and learning material, while tape recorder is only audio material. In DVD content package students see and at the same time hear what is being presented to them. In tape recorder students only hear what is being presented to them. Both DVD and tape recorder do not replace the teacher and they are not the same as teachers. The use of DVD content package and tape recorder in teaching require the presence of the teacher in the class. It may be better to use DVD content package than the traditional method.

Another conventional method of teaching shorthand is lecture method. Lecture method is where a teacher delivers his lecture by standing in front of the class while his students sit down and listen. Some students who can copy fast write down the notes and others who are slow writers copy from those who write fast at the end of the lesson. Lecture method is not commonly used in teaching secondary school students. Ibemesi (2003) stated that lecture method is not good for learning of skills. Since lecture method as a conventional method is not good for learning of skill, conventional method may be monotonous and boring to shorthand students in secondary school. This is because when secondary school students are not taught with variety of techniques, the conventional method becomes monotonous and the lesson especially shorthand lesson becomes boring to them.

The conventional method of teaching this subject is monotonous, boring and has many deficiencies. Some of these deficiencies as listed by Okwo cited in Okwo and Ike (1996) are as follows: Pyramidal structure, fixed model, limited role, individual teachers’ responsibility and isolation.

The pyramidal structure provides for the school head under whose authority is progressively subordinated the Heads of Departments, teachers and learners who are organized in classes. This makes information to flow from up to down. Thus the teacher may not be a teacher and a facilitator of learning. He may not bother himself with the use of many devices in teaching especially shorthand teacher. He only passes information to learners.
The traditional or conventional approach operates a fixed model in which classrooms; periods, class size and arrangement of learning space are fixed irrespective of the nature of task, needs and number of the learners. It lacks inbuilt flexible mechanism.

The limited role does not allow the teacher to perform different functions, which he/she is expected to perform. The traditional structure assigns a teacher to teaching task; there is a limit to other functions relevant to the learning process that a teacher can perform successfully.

In individual teacher’s responsibility, when a teacher is assigned a subject, course or task, it is expected that he should assign, implement and evaluate instruction based on the prescribed content, whether or not he is knowledgeable in all the aspects of the content. This gives rise to skipping of some content. For instance in shorthand teaching and learning, a shorthand teacher, whose way of talking is affecting his dictation, may use other experts’ recorded dictations in new technology devices and bring them into classroom for his dictation drilling of the students.

In conventional methods, teachers especially shorthand teachers are isolated from one another as each does it all alone in the department and assigned classroom. Consequently, teachers’ growth especially that of shorthand teachers is stunted as he does not use the illustrations of other experts and students are not exposed to those expert illustrations.

The traditional method of teaching this subject especially the lecture method also makes secondary school students to be passive in learning shorthand. For Ibegbu (2010) lecture method makes students to be passive and teacher to be active. It does not allow shorthand students to participate actively in the class and some of them may even fall asleep during lessons. Nworgu and Okereke (2011) stated that traditional method subjects the learner to passive role. Also traditional method makes the teacher all in all in the classroom setting (Akpan, Usoro, Akpan and Epko, 2010). For Mills (1979) cited in Ibegbu (2010) traditional method of teaching like lecture method offers no scope for class participation.
There is then the need to use some devices that may arouse secondary school students’ interest and enhance achievement in shorthand as well as make secondary school students to participate actively in shorthand class. In addition, the traditional method alone without any device usage can bring argument between secondary school students in the class. This is found in discussion method,

The discussion method, which is a traditional method, may generate a lot of argument among secondary school students in shorthand. That is discussion method may lead to a strong argument between a group of secondary school students who support one view and another group of secondary school students who opposes it. Ibegbu (2010) maintained that discussion method brings a lot of arguments among students. Also problem-solving method, which is a traditional method, takes time, as secondary school students in shorthand have to solve the problem on their own. This may confuse and discourage them, especially when they are devising a means of writing very fast in shorthand.

Apart from the deficiencies of the traditional method, government policy also constitutes another deficiency. The 2004 edition of the National Policy on Education made shorthand an elective subject which was to be selected by a senior secondary school one student among other vocational subjects. By 2008, just after a period of four years, the New Senior Secondary School Educational Curriculum included shorthand as one of the 35 trade subjects. These two policies might have affected the number of secondary school students that register shorthand in external examinations and achievement of secondary school students in shorthand as some brilliant students may prefer other subjects.

The deficiencies explained on page eight (8) and the deficiencies of passiveness and argument as well as deficiency arising from government policy might have contributed to the poor achievement of secondary school students in shorthand. Data collected from West African Examination Council (WAEC) also showed that students achieved poorly in
Shorthand. The data which is attached as appendix A shows students’ achievement in shorthand from 2005-2009 in WAEC.

From the performances, in 2005, 60 students scored credit and above. This decreases to 59 students in 2006, 42 students in 2007, 43 in 2008 and increased just to 74 in 2009. For the 5 years, more than 50% on the average of total entry failed it. Thus students’ achievement in Shorthand is going down. It is not encouraging. In addition, in 2005 total entry was 543 students. This reduced to 480 students in 2006. This shows that students are not showing interest in the subject. Although in 2007 and 2008, the total entry increased to 549 and 543 students, but only 42 and 43 students scored credit and above respectively. Though the result improved in 2009 only 247 students sat for the subject.

This may be attributed to traditional method of teaching this subject without the use of a device content package. This makes one to start looking for innovative methods and techniques as well as usage of some devices’ content package in teaching and learning of shorthand in secondary school. Teaching and learning in secondary school call for use of different media and technology in order to improve students’ achievement and interest in many subjects including Shorthand. Hence, the use of Digital Versatile Disc (DVD) content package in teaching and learning of shorthand in secondary school.

A Digital Versatile Disc or Digital Video Disc is a type of optical disc technology that processes data very fast. DVD holds a minimum of 4.7GB of data. For Robert (2007) DVD is an optical disc technology similar to the CD-Rom that can hold minimum of 4.7GB of information. DVD specification supports disk with capacities of from 4.7GB to 17GB and assess rates of 600K Bps to 1.3MBps. It uses Moving Pictures Experts Group (MPEG) -2 to compress video data. DVD is an audio-visual aid. Olanrewaju (2006) believed that audio-visual materials are basic multimedia approaches to instruction as they facilitate teaching and learning. It originated with presentation of movie. Johnson (2009) stated that DVD is commonly used as a medium for digital presentation of movies and other multimedia
presentations that combine sound with graphics. Digital Versatile Disc is an electronic
technology and an audio-visual teaching aid that stores a lot of messages or information or
data which are presented to people or students. It can be used to present lessons to secondary
school students in Shorthand. It was invented in Japan in 1996 and the following year 1997
DVD player was introduced.

DVD has a higher storage than VCD (Video Compact Disc). It stores more
information or data than VCD. For Igwebuke (2005) DVD is an electronic digital disk that
has extensive database. It can accept CD (Compact Disc) and VCD plates. In addition, a
DVD plate can play for more than three hours and can take a full-length movie. It is an
electronic technology with high storage. An electronic technology has potential increase in
electronic information (Awale-Ale, 2005). Since DVD can play, part one, part two and even
part three of a movie that is lengthy. Then, a DVD plate can store important topics for class
drilling and demonstrations that will cover up to half a terms’ scheme of work in a subject
especially Shorthand in secondary school. DVD content package in this study is DVD plate
that contains the recordings of the illustrations and demonstrations of the important topics in
a month’s scheme of work of senior secondary school one students in shorthand.

DVD content package is a technology oriented audio-visual material that can be
applied to shorthand instruction. It can as well be replayed or forwarded so as to re-
emphasize important matters or skills and reduce argument or confusion among secondary
school students in shorthand. Nwachukwu (2001) maintained that exercise recorded with
video eliminates the frequent argument that accompanies audio tape replays. Audio-visual
technology also helps to bring the lesson close to secondary school students in shorthand.

With technology, shorthand teachers can come close to ensure that the fast secondary school
student moves ahead at a place adjusted to his capacity and the slow secondary school student
knows each lesson before he is allowed to move ahead in shorthand.
DVD content package works with television and provides a way that helps to overcome learning barriers for many secondary school students in shorthand without demanding high verbal proficiency. It contributes a lot in teaching and learning of shorthand. DVD content package with television technology has the power to improve educational outcomes especially in secondary school students in shorthand. DVD content package with television and other technology devices offer a great advantage to teaching and learning of shorthand to secondary school students especially where their way or pattern of operation is in agreement with the ways in which shorthand teachers teach and shorthand students learn. Akubuilo (2011) stated that new technology based models of teaching and learning have the power to dramatically improve educational outcomes. In addition, specialized subject area instructors can be utilized throughout the educational system network and versatile recorder. DVD content package with television enables a shorthand teacher to bring prerecorded demonstrations to the class that would otherwise be impossible to do in the classroom. When a variety of enriched DVD content package with television is added to the regular instruction, it may enhance the usefulness and may improve instruction as well as achievement and interest of secondary school students in shorthand.

Television is one of the media that has attracted teachers’ attention especially shorthand teachers in teaching and learning. It helps secondary school students to have the same information at the same time in shorthand. With television some illustrations and demonstrations which can not be made available are brought into class by shorthand teachers. Umeron (2006) stated that television provides learning and teaching resources which might not have been available. Television can be used to present any kind of instruction to secondary school students and it makes secondary school students learn more especially in shorthand. Also television makes it possible for the performance of the shorthand teacher and students in secondary school to be recorded, analyzed, reported, compared, accessed and determined or measured correctly.
Learners, especially secondary school students like to watch DVD both at home and school weekend social nights. Thus if DVD content package is brought into classroom, it may enhance secondary school students’ achievement and interest in shorthand. In teaching and learning, when a child pays attention to a subject, it means that the child is interested in the subject. Ezenwafor (2007) stated that when students are interested in their course of study they will make every effort to learn. Interested shorthand students make effort to learn.

Interest occurs in shorthand when a secondary school student wants to know more and learn more of the subject. Interest also occurs when a secondary school student is eager to write more words per minute in shorthand. It is then necessary for shorthand teachers to improve secondary school students’ interest in their subject. This is because interest adds enjoyment and satisfaction to a child’s life. As long as a secondary school student finds enjoyment or satisfaction in writing shorthand; he continues to be interested in it. This is the law of effect by the Stimulus -Response learning theorists. Once secondary school students are physically and mentally ready to learn shorthand, they are ready to show interest in the subject. The only thing remaining is to create the opportunity for the secondary school students to show interest in shorthand, hence usage of DVD content package in teaching shorthand so as to give secondary school students opportunity to show interest in the subject.

Interest occurs in teaching and learning when a student masters the skills, facts and becomes competent in a subject. Interest refers to showing of a sense of concern or curiosity in acquiring knowledge in a subject (wordnetweb.princeton.edu/Perl/web). Interest occurs in shorthand when a secondary school student masters how to write shorthand and becomes competent in it. There are some principles of creating students interests. Some of these principles are; inducing thinking, creating sense of progress, sustaining the state of suspense, setting of goals and creating of humor. There are also some techniques for creating and maintaining interest. Some of these techniques are: arousing feeling of need by illustrations and personal experiences. This is shown in the DVD content package. Other techniques are:
use of a variety of teaching techniques, use of multiple sensory teaching and learning aids, use of real world examples and situations and being professional.

It is important to note that there are some values of interest to the child. Some of these values of interest to the child are given by Awoniyi (1985). They are:

- It serves as a great motivation.
- It provides the teacher with the teachable moment when the children show keen interest.
- It aids success and makes the child gainfully occupied.
- Interest adds enjoyment and satisfaction to a child’s life.

As soon as students’ interest is improved, it may lead to enhancement of their achievement in the subject.

In shorthand, secondary school students show interest by attending lessons and participating actively in the class. They also show interest by writing shorthand dictations very fast. In order to increase and maintain secondary school students’ interest in shorthand, there is need to use a variety of teaching and learning techniques, resources and devices, of which DVD content package is one. Igbonoba 2004 discovered that interest can be developed through the use of variety of techniques. If DVD content package is used it may increase interest and may also increase achievement in secondary school students in shorthand.

Achievement is the act of accomplishing or finishing a task successfully. Achievement occurs when secondary school student successfully writes down the required number of words per minute in shorthand. Ibegbu (2011) stated that when a task or work is accomplished successfully by exertion or skill or practice it becomes achievement. For Ngeng (2009) achievement in a subject is knowledge successfully attained in that subject. When a task is accomplished successfully by skill or practice or perseverance, it becomes an achievement. Achievement comes when a goal is completed successfully. In teaching and learning achievement represents how much skill or knowledge a child has attained or
acquired. In shorthand, achievement represents how many words a child can write correctly in a minute. Achievement in shorthand is therefore the number of words per minute which a secondary school student can successfully write.

Usually, standardized tests or teacher made tests are used in measuring achievement. In this study achievement test is used to measure secondary school students’ achievement in shorthand. Achievement tests are, therefore, designed to determine successes or failures in specific areas of the subjects or other experiences in the school curriculum. Achievement tests also help the teacher to know the different areas of weaknesses and strengths of secondary school students in a subject especially shorthand. This means that achievement tests help to show how secondary school students perform in different subjects they do in school including shorthand. The scores of students’ achievements are recorded in the report sheets which are kept in the school. Great achievements of students bring joy to them while failures bring grief or sadness to them. Adjun and Ajetunmod (1998) maintained that as achievements and failures are recorded, these records may either serve as the basis of joy or grief when they are compared with the activities of corresponding periods of time and money.

Achievement may also be shown according to gender, that is, gender differences in achievement, which involves male and female achievements. Gender is a central construct in human societies and there is need to be conscious of gender issues because of its pervasive influence in the society (Obi 2010). Gender refers to the socially or culturally constructed characters, roles, and qualities which different societies ascribe to males and females varying from one society to another and at different times in history (Ajaero, 2003). Also Emarievbe and Omoraka (2010) explain gender as the social, cultural and psychological attributes, characters, qualities, behaviours, roles and responsibilities that different societies ascribe to females and males. Azikiwe (2005) adds that gender includes the behavior and disposition that culture assigns to each sex. Obi believed that if gender issues are brought to the realm of education and implemented with enthusiasm, students may have equitable opportunities at
home, in the school and in the wider society. Gender therefore refers to the roles, characters, features, qualities, behaviours, responsibilities, attributes which are social, cultural and psychological that different societies ascribe to males and females. In this study gender is focused as the roles and behaviours which secondary school male and female students exhibit in the areas of interest and achievement in shorthand. There are some roles and behaviours that differentiate girls from boys. Some of these roles and behaviours that differentiate girls from boys may be as a result of how their brains work.

Reinhard (1998) stated that scientists have discovered that some of the behaviours that differentiate boys from girls are the result of differences in the way that their brains develop. He gave example by saying that in girls their language areas of brain develop early while in boys, the visual-spatial areas of the brain develop first. Thus, it is possible to show achievement of different subjects including secondary school Shorthand according to sex differences.

Macknnon and Statham (1999) illustrated sex differences in achievement in different popular subjects at General Certificate School Examination (GCSC) in England. Hence, if DVD is used in teaching students especially in teaching them shorthand in secondary school, it may have the same effect on both male and female students and so close the gap.

Offorma cited in Offorma (2009) stated that songs had influence on secondary school students’ performance in French. The findings of the study showed that female students taught with songs achieved higher than those taught without songs. She explained that the findings were in line with the psychological principle concerning the acquisition of language skills and competence which indicated that adolescent girls acquired the skills more rapidly than adolescent boys. In the same manner when DVD content package was used in teaching shorthand to secondary school students, which is phonetics, DVD content package helped the secondary school students to achieve highly. Also DVD content package closed the gap between secondary school male and female students in the roles and behaviours they
exhibited in the areas of interest and achievement in shorthand. Therefore, this study dealt also with the effect of DVD content package usage on gender.

**Statement of the Problem**

Students’ achievement in Shorthand at Senior Secondary School Certificate Examinations has been poor (West African Examination Council reports 2005, 2006, 2007, 2008 and 2009). Thus, the achievement and interest of secondary School students in shorthand are worrisome.

This poor performance may be as a result of the conventional method used in teaching them this subject. For example, drilling secondary school students with oral dictation may be boring to students. The custom of using tape recorder may not be interesting to the secondary school students. Also the number of students that offer this subject in senior secondary school certificate examination (SSCE) is very small. For instance in 2005, the number of students that registered shorthand in Nigeria was 543. This went down to 480 in 2006. In 2007 and 2008 the number increased to 549 and 543 respectfully. Then in 2009, the number of students decreased drastically to 247 in the whole country. Although this fall in the number of students that register the subject may also be attributed to government policy of 2004 which made shorthand an elective subject among many vocational subjects. Another government policy (2008 Police on Education) which included shorthand as one of the 35 trade subjects compounded the problem. Their level of pass for the 5 years is also not encouraging. The percentage pass at credit level was below 50%. This is alarming. Hence the problem of this study is what is the effect of DVD content package on the achievement and interest of the Secondary School students in Shorthand?

**Significance of the Study**

The significance of the study is derived from the theoretical and practical bases of effects of DVD content package on secondary school students’ achievement and interest in shorthand. It was hoped that the findings of this study would be beneficial to secondary
school students, shorthand teachers, curriculum planners, secondary school administrators, researchers and secondary school textbook writers when published.

Theoretically, Thorndike’s theory is beneficial and relevant to shorthand learning. When the students are exposed to DVD content package and they experienced success in shorthand, Thorndike’s theory of formation of bond increases their interest in the subject and consequently improves the number of words they write per minute in shorthand. The use of DVD content package makes the learning experience to be organized in such a way that the students will have some degree of confidence and success in their work. Also Thorndike’s law of use improves students’ achievement.

This study is beneficial to secondary school students especially those senior secondary school class one (SSS1) students used in the study. Any experience the students are exposed to in their environment in the process of learning shorthand with DVD content package would go a long way in enhancing their cognitive domain. Thus this study would help in developing the mental abilities of the secondary school students in shorthand while teaching them the topics with DVD content package. Secondary school students can also benefit from this study because DVD content package might develop secondary school students’ interest in shorthand. This might in turn help secondary school students to retain what they are taught in shorthand and so improve their achievement.

The findings of this study may sensitize teachers of secondary schools to use such devices in teaching their subjects to secondary school students, especially DVD content package as a new technology. Also if the use of DVD content package turns out to be effective, shorthand teachers might benefit by using it to increase secondary school students’ interest and achievement in shorthand. The Shorthand teacher would benefit from the study because when they use DVD content package in teaching, it would help them to achieve the objectives of their lesson in secondary school.
This study would also be beneficial to shorthand teachers to use DVD content package in drilling secondary school students in shorthand. When shorthand teachers use DVD content package in drilling secondary school students, it may make the teachers to achieve the number of words required per minute in the lesson. This in turn can lead to increase in the number of words secondary school students achieve in writing shorthand. In addition DVD content package may help shorthand teachers to improve secondary school students’ achievement in internal and external examinations.

The outcome of this study is beneficial to curriculum planners. This is because the study would make curriculum planners to be aware of the effects of DVD content package on students’ achievement and interest. In addition, the curriculum planners would benefit from the study because they might include DVD content package as one of the devices that can be used in implementing secondary school curriculum in shorthand and other subjects. This is because when planning curriculum the devices and techniques that would help in implementing the curriculum are included. DVD content package might be one of the devices that are used in implementing secondary school curriculum.

This study would also be beneficial to secondary school administrators or principals. This would help secondary school administrators to achieve the objectives of their educational programs and management. Through the findings of this study, the school administrators and principals would become aware of the benefits of DVD content package in teaching shorthand to secondary school students. Then they would encourage shorthand teachers to use DVD content package in teaching shorthand.

Moreover, it is expected that the study would be of benefit to researchers in shorthand. It may serve as available data for future researchers on efficient and effective devices and techniques of teaching shorthand to secondary school students so as to increase their interest and achievement. It would also open up more areas of research in the use of
innovative devices in teaching and learning shorthand so as to improve instruction, achievement and interest of secondary school students in shorthand as well as other subjects.

Secondary school textbook writers are not left out of the benefits of this study. The findings may make secondary school text book writers in shorthand to become aware of the advantages or merits of the use of this device and so include the use of DVD content package in their text books.

Furthermore, the study would lead to increase in enrolment of shorthand students in secondary schools and Senior Secondary School Certificate Examination (SSCE) as use of DVD content package may increase secondary school students’ achievement and interest in the subject.

**Purpose of the Study**

The purpose of this study was to find out the effects of DVD content package usage on secondary school student’s achievement and interest in shorthand.

Specifically, the study was carried out to:

1. Determine the achievement of secondary school students taught shorthand using DVD content package and those taught using conventional method.
2. Find out the achievement of secondary school male and female students in shorthand.
3. Find out the interaction effect of method and gender on secondary school students’ achievement in shorthand.
4. Determine the interest ratings of secondary school students taught shorthand using DVD content package and those using conventional method.
5. Find out the interest ratings of secondary school male and female students in shorthand.
6. Find out the interaction effect of method and gender on secondary school students’ interest ratings in shorthand.

**Scope of Study**
The study was carried out in Onitsha Education Zone of Anambra State in Nigeria. The study was focused on the effect of DVD content package usage on students’ achievement and interest in Shorthand. Specifically the study aimed at determining the achievement and interest of secondary school male and female students in shorthand. The DVD which is an audio-visual aid in teaching contained the recordings prepared by the researcher for teaching shorthand in secondary school starting from concrete learning experience of the first six pairs of shorthand outlines and vowels positions to the writing of dictation with more complex abstract shorthand characters so as to obtain the mastering of the subject by the student. The students covered the meaning and importance of shorthand, the first six down strokes, consonants F, V, K, and G, as well as vowels. The study also covered second place and position of long vowels ‘O’ and ‘A’. Short forms like circle /s/ for is, it, the, is-the, it-is, it-is-the, to-the, and other simple short forms and phrases.

**Research Questions**

To guide this study, the following research questions were posed:

I. What are the mean achievement scores of secondary school students taught shorthand using DVD content package and those taught using the traditional or conventional method?

II. What are the mean achievement scores of secondary school male and female students in shorthand?

III. What are the interaction effects of method and gender on secondary school students’ mean achievement scores in shorthand?

IV. What are the mean interest scores of secondary school students taught shorthand using DVD content package and those taught by conventional method?

V. What are the mean interest scores of secondary school male and female students in shorthand?
VI. What are the interaction effects of method and gender on secondary school students’ mean interest scores in shorthand?

Research Hypotheses

The following null hypotheses were tested at .05 levels of significance:

Ho1. There is no significant difference in the mean achievement scores of students in secondary school taught shorthand using DVD content package and those taught using conventional method.

Ho2. There is no significant difference in the mean achievement scores of secondary school male and female students in shorthand.

Ho3. There is no significant interaction effect of method and gender on secondary school students’ mean achievement scores in shorthand.

Ho4. There is no significant difference in the mean interest scores of secondary school students taught shorthand using DVD content package and those taught using conventional method.

Ho5. There is no significant difference in the mean interest scores of male and female students in shorthand.

Ho6. There is no significant interaction effect of method and gender on secondary school students’ mean interest scores in shorthand.
CHAPTER TWO

REVIEW OF RELATED LITERATURE

The review of related literature was carried out under the following sub-headings:

- **Conceptual Framework.**
  - The concept of shorthand.
  - Teaching and Learning of Shorthand in Nigeria
  - The concept of DVD.
  - Conventional methods of teaching shorthand.
  - Interest as a factor in shorthand learning.
  - Concept of achievement.
  - Relationship among the concepts.

- **Theoretical Framework**
  - Shorthand learning theories.
  - Theories underlining DVD usage.

- **Review of Empirical Studies**

- **Summary of Literature Reviewed.**

**Concept of Shorthand**

Shorthand is the use of signs or characters in representing spoken sounds. Shorthand is the art of representing spoken sounds by signs or characters (Pitman1978 and Ibegbu2011).
For Odea, Sykes, Watson and William (1999) it is a way of writing spoken sounds rapidly. It started first in Greece. Westfall (1963) stated that the earliest form of shorthand was from Ancient Greece namely: Aeropolice stone from mid-4th century B.C and that in imperial China, clerks used an abbreviated curve writing to record court proceedings and criminal confessions. The cursive abbreviation was later dropped as Taylors system of shorthand came up, although it was superseded by other forms like Pitman and Gregg shorthand systems.

There are so many Shorthand systems such as Sloans, Pitman 2000, New Era, Gregg, Tee line and Speed writing. The Shorthand system that is used in United States is Gregg Shorthand. In British Commonwealths, Pitman system is the dominant Shorthand that is used. Other Shorthand Hybrids such as Forkner, Stenoscript, Stenospeed, and Speedwriting, which use both symbols and letters of the alphabet, are also used. For this study Pitman and Gregg Shorthand Systems are reviewed. This cause they are commonly used by many countries.

Pitman Shorthand system superseded Taylor’s system. It was introduced by Sir Isaac Pitman in 1837. Pitman Shorthand is based on phonetics. It was a phonetic orthography. For this reason, it is sometimes known as phonograph, meaning sound writing, in Greek. One of the reasons that make this system to be fast is that its vowel sounds are optional when only consonants are needed to determine a word. It makes use of heavy and light lines. These lines are of different slopes and positions. This system of Shorthand is used to train Journalist especially in England. For Laurier (2009) Pitman Shorthand is required for students of Journalism Degree in England.

Gregg Shorthand system was published by John Robert Gregg in 1888. Gregg Shorthand outlines are curved and the natural, resembling those of ordinary script. The need for lifting pen was eliminated as much as possible. So a curve motion is used. There is no shading, but variation in length of line indicates variation in meaning. The outlines were scientifically worked out for simplicity and writing ease (Pitman, 1975). It helps in writing
very fast. Some Gregg Shorthand writers can write more than 80 words per minutes. Laurier (2009) stated that a good symbol Shorthand like Gregg Shorthand can be written at a very high speed.

**Teaching and Learning of Shorthand in Nigeria: Historical Development of Shorthand**

As mentioned earlier, historically the earliest form of shorthand system was from Aeropolice stone in Ancient Greece. This was followed by shorthand of Tyro Cicero’s Amanuensis, 500-odd symbols for words, Art of Stenography, French system of Jacques, German system of shorthand, geometric shorthand, Taylor’s system and then Pitman shorthand introduced by Sir Isaac Pitman. Sir Isaac Pitman was born in England in 1813. He was a British and his shorthand was widely practised in Britain and British colonized countries of which Nigeria was one. Therefore, teaching and learning of shorthand especially pitman shorthand came down to Nigeria with British masters who needed fast interpretation, clerical and secretarial personnel. Fafunwa (1974) cited in Mshelia (2012) stated that the need for clerical and secretarial work forced the colonial masters to introduce elements of business subjects into curriculum. Also for Ehiamitalor (1994) and Nwaokolo (1994) cited in MShelia (2012) training in vocational business studies or commercial education started in 1930 with establishment of clerical centre in Ogbomosho in Oyo state. St Andrews’ College Oyo founded in 1859 taught simple accounts to teacher trainees some of whom later, on their own learnt typewriting and shorthand during the holidays (Awokoya (1979) cited in Mshelia (2012)). From history of Kaduna Polytechnic, Commercial Department of the Kaduna Technical Institute was opened in 1956 with the objective of teaching commercial subjects to meet the shortage of trained clerical staff. The Junior Commercial courses ran for two years in residence and successful candidates were awarded Junior Certificate. The Senior Commercial courses ran for one year with the students selected from the junior course. The successful candidates were awarded the Senior Certificate. Subjects taught in both courses
were English Language, Book Keeping, Shorthand, Typewriting, Commerce, History, Economics and Elements of Mercantile Law.

From the history one can say that the teaching and learning of Shorthand might have started first in Yoruba land before spreading to other parts of Nigeria. It is then not a surprise that Late Chief Obafemi Awolowo was a teacher and a qualified shorthand typist (information from Obafemi Awolowo profile). Also late Mr. C. O. Onamuti who established Grace Institute of Secretarial and Management Studies (GISMS) in Lagos in July 1962 was the first Nigerian to pass shorthand 140/70 wpm Typewriting (The Royal Society of Arts and Joint Examination Board (JEB) Shorthand and Typing).

**Concept of DVD**

Digital Video Disc or Digital Versatile Disc is an electronic technology which stores a lot of information. DVD is an electronic digital disk with high data storage. For Igwebuike (2005) DVD an electronic digital disc has extensive database. Also for Awale-Ale (2005) an electronic technology has potential increase in electronic information. DVD is an electronic technology and an audio-visual teaching aid that stores a lot of information or data which are presented to people or students. DVD plate records and stores a lot of information and can therefore be used to record important topics or concepts in scheme of work of secondary school one students in shorthand. This can now be used to teach secondary school one students. DVD as an electronic gadget is not used alone. It is usually used with television or computer. Thus DVD content package can not be used in isolation. It is used in conjunction with other gadgets.

DVD content package is brought into classroom with television. Television makes DVD content package to be a complete audio-visual material. This is because DVD plays on television screen. DVD with television (TV) combines sounds with pictures and graphics and
so facilitates teaching and learning of shorthand. According to Olanrewaju (2006:88) ‘audio-visual materials are basic multimedia-approaches to instruction as they facilitate teaching and learning.

As technology oriented audio-visual material, DVD can be applied to instruction in order to improve instruction, achievement and interest of secondary school students. It can be used to record exercises and other educational information in shorthand. It can be replayed or forwarded so as to re-emphasize important matters or skills and reduce argument or confusion on secondary school students. Nwachukwu (2000) maintained that exercises recorded with video eliminate the frequent arguments that accompany audiotape replays.

DVD with television technology may help to increase secondary school students’ understanding of the subject matter in shorthand and can be applied to various levels of education especially secondary school. For Udo in Nwachukwu (2008) technology can be applied to various levels of education. In addition Nwachukwu (2008) stated that audio-visual such as radio programmes, videotapes and sound motion pictures can be applied to instruction so as to facilitate teaching and learning.

When DVD content package with television technology is brought into classroom (instruction), it might help to bring the lesson close to secondary school students. This is because DVD with television may help the secondary school students to hear and see the same information at same time. With DVD technology, shorthand teachers can come close to the secondary school students and ensure that the fast secondary school student moves according to his ability and the slow secondary school student understands each topic before he is allowed to move ahead. This cuts down frustrations in secondary school students which may be major impediment to real educational achievement. Akubuilo (2011) stated that with proper instruction through technological enhanced curriculum, students can perform better. This supports the use of DVD content package in classroom so as to enhance secondary school students’ instruction interest and achievement.
According to Abimbade (1999:105) “'new video technology has increased the flexibility of television as a medium'”. He went further to state that recent technologies like DVD and others make it appropriate to look into the role that television technology should play in education development. Thus when DVD content package is used with television in classroom, it might enhance teaching and learning of shorthand. As soon as teaching and learning is improved achievement may also improve. This will increase the shorthand teachers’ ego. Arulogun (1999) stated that the pride of joining television pioneers was the fact that it was seen as a new medium of information dissemination.

The device (DVD content package) can be used as an aid to facilitate teaching and learning especially in shorthand although it is expensive. This is because it works with television. For Anzoland (1999) in international Encyclopedia, the use of television has generally proved to be an expensive addition to educational projects, but little evidence has been gathered to show that the expenditure brought results that were worthwhile. So the fundamental problem is not whether to use aids or not, but the extent to which they enhance the number of words that secondary school students can write per minute in shorthand.

The desire of shorthand teachers to improve instruction for their students to the benefit of the society has led to the use of devices in teaching and learning process. Stenhouse cited in Burton and Bartlett (2005) believed in professional desire of teachers to improve education for their people and so benefit the society. When devices are used especially DVD content package, they will help not only in classroom, but also to rebrand a nation or country. According to Meribe (2009:11) “'the best way to successfully rebrand a country is through positive action’”. One of the positive actions is teachers teaching with effective and efficient teaching techniques of which the use of DVD content package is among.

DVD with the television contributed a lot to teaching and learning of shorthand. Although educational television runs the risk of failure by making the learner to be passive
especially in the secondary school, this can be corrected by the presence of the teacher with DVD content package. With the presence of the shorthand teacher, technological devices have a lot of advantages especially if the way of operating the devices goes in the manner the secondary school students study. One of the good things on use of new media such as DVD content package and television is that they welcome the presence of the shorthand teacher.

Educational television is a natural device in a society because every secondary school student already watches several hours of television in his own and school weekend social night. This makes educational television to succeed. DVD content package with television technology is one of the educational technology innovations, which have brought about changes in teaching and learning especially shorthand. Ereksen and Shumway (2002) stated that technology and technological innovations have brought about changes in all aspects of the society. Also, Akubuilo (2011) stated that technology is ubiquitous, teaching almost every part of our lives, our communities and our homes. He went further to state that most schools are behind integration of technology in class. It is part of this gap that the study filled.

Television programmes have long been used in teaching and learning. So, when instructions that are recorded in DVD plates are now played on television, it facilitates teaching and learning in direct class application. Umeron (2006) gave the following three general approaches to the use of radio and television in education:

- Direct class teaching where broadcast programming submitted for teachers on temporary basis.

- School broadcast where broadcast programming provides contemporary teaching and learning resources not otherwise available.

- General education programme where national and international stations provide general and informal education opportunities.

Television, for instance, is a hardware that generally attracts shorthand teachers’ attention in the bid to change and improve traditional methods of teaching and learning of
shorthand in secondary school. It makes secondary school students learn more in shorthand. Umeron (2006) stated that television provides teaching and learning resources which might not have been available. Thus, it is good to install instructional television where some devices like DVD and others can be used in teaching and learning. Instructional television is as effective as conventional instruction. It may even be better. So, instructional television can be seen as one of the reforms in education. It is necessary to have different ways or methods or devices in teaching shorthand in secondary school.

Finally, no single method of approach to teaching of shorthand to secondary school students is appropriate in all situations. Consequently, effective teaching of shorthand in secondary school requires alternative methods, strategies, and techniques as well as devices to accomplish different objectives of the lesson. It is important to note that there is no best way of teaching shorthand to secondary school students. The best technique is the one, which will be most effective for reaching a particular lesson’s objectives in shorthand.

**Conventional Methods of Teaching Shorthand**

(a) Lecture Method

Lecture is a delivery process by which a teacher stands at the chalkboard or in front of the class and delivers his instruction by talking while the students sit down and listen. During lectures, some students who can copy fast write down the notes and others who are slow writers copy from those who write fast at the end of the lesson. For Udeinya and Okobiah (1991) lecture method is a method where a lecturer stands up before the class and reads his prepared notes to the learner. It is a verbal presentation of subject matter content formally organized and supported by other leaning media extending over a period of time.

This method of teaching makes it possible for a teacher to cover a lot of useful and essential facts at minimum expense of time and it makes pupils to be passive and teacher to be active. Hence Udeinya and Okobia stated that one can cover a lot of grounds within a given time limit, but it puts students in a passive state and some fell asleep only to copy notes
from those colleagues who can make notes fast. Lecture makes the learner look only on the teacher to learn (Olugbenga and Olusegun 2010). Also Omeje (2010) stated that lecture method is teacher centered and makes students passive.

The passive state which it keeps students makes it necessary to consider certain points before delivering a lesson by lecture method. Curzon cited in Ibemesi (2003) stated that the following general points should be considered:

- The style of delivery ought to be neither casual nor in the pattern of grand orator.
- The emphasis of key points may require variations in the pattern and intensity of speech, a gesture, a pause, a visual illustration.
- Flamboyant, exaggerated gestures rapidly become meaningless, divert attention from the words which they accompany and may snap the threat of communication. This may make shorthand students not to follow the oral dictation.
- It is vital that the lecturer should convey genuine enthusiasms and interest.
- Where the lecturer involves the use of visual aids, they ought to be prepared and made available, so that continuity in presentation is maintained.

It is important to mention that lecture method is not good for primary and secondary school children. For Awoniyi cited in Ibemesi (2003) it is borne in mind that it is rarely used for primary and secondary school children who may not take in elaborate lengthy speeches, however graphic it may be. In addition, lecture method is not good in training of students in skills since it does not allow them to participate actively during instruction. Mills cited in Ibegbu (2010) maintained that lecture method is of little use in training of men (students) in skills. Thus, it is used in shorthand lesson when the teacher wants to have first class encounter. He uses it to introduce himself and topics and other materials that will be needed in the subject.

Finally, in order to improve lecture method, it is good to use it in combination with other methods as well as with some devices so as to improve instruction, achievement and
interest of students. Lecture method can be improved by supporting it with other methods such as assignments and supervision study.

(b) Discussion Method

In discussion method students are divided into groups. According to Curzon cited in Ibemesi (2003) ‘a discussion group is constituted by a class which seeks to examine a matter by means of the free flow of arguments’. Thus discussion involves a class in oral exchange of ideas facts and opinions about a topic of mutual concern and interest. Also, discussion is based upon extensive contributions of items and expressions from the members of the participating group.

Discussion makes students to understand a topic clearly. Hence Balogun, Okon, Musaazi and Thukur cited in Ibemesi (2003) maintained that if we want our pupils to see clearly how an idea applies to everyday life, we have to give them the opportunity of discussing it as much as possible. They went further to say that it helps pupils to develop the ability to express themselves openly, learn to listen to others and tolerate opinions that are different from their own.

In discussion method, it is good for teachers to establish a good pattern at the very beginning by making sure that everybody in the class has a fair chance of being involved. Discussion method is usually directed by the teacher, otherwise, the discussion will not concentrate on the topic chosen and no useful knowledge will result. Dunhil cited in Ibemesi (2003) stated that it is important to ensure that the discussion is educational and provides opportunity to practice good manners and courtesy, correct speech and clear thinking. He continued by saying that it should be certain that the pupils have an adequate depth and width of knowledge concerning the topic under discussion.

Therefore, discussion method cannot be used in isolation. It is best used in combination with a modified form of lecture. The teacher has to introduce a topic and lectures for few minutes and the topic is then thrown open for discussion. This will help
students to have in depth knowledge of the topic under discussion. For Udeinya and Okobiah (1991) the class can be divided into separate groups and each group elects a leader who presents his/her group’s point of view. This leads to a unified convergence of divergent views.

Moreover, in discussion method, it is very important to organize and control discussion class very well. If this is not done, it can cause a lot of arguments and disagreement between the groups. For Ibegbu (2011) if discussion class is not well organized, it can lead to danger of a strong argument or disagreement between a group of pupils who support one view and another group that opposes it. On the other hand, discussion method has many advantages. One of the advantages is that it provides an opportunity for students to discuss in a free and formal atmosphere, expressing their opinions and trying to think for themselves. Mills cited in Ibemesi then outlined the following as the advantages derivable from group discussion method:

- Students will be forced to face facts and give weight to the opinions and experiences of others.
- Students’ opinions will become more responsible, criticisms will become more constructive and less destructive and judgments will be more objective.
- It will develop in the students a sense of creation and civic responsibility.

Thus, it is used in shorthand when the teacher wants to discuss the job opportunities of the subject and other related topics.

(c) Problem-solving Method

In this type of method students are given some problems to offer solutions to them. Travers cited in Ibemesi (2003) described the psychological problem-solving by saying that human beings are said to be confronted with a problem when faced with a situation in which there is a goal to be achieved and individuals do not have in their repertoire of behaviour any
readily available response that will permit them to achieve the goal. He went further to say that it is only after the problem has been solved that one can say that a response to the situation has been learned. Therefore, in problem-solving method, a problem within the reach or understanding of the students is posed and the students are left to find solution to it. For Canter (2004) problem-solving is a model that first solves students’ difficulties.

According to Okorie cited in Ibemesi (2003) ‘problem-solving consists of identifying and selecting problem growing out of experiences of individual pupils, placing these problems before the pupils and guiding them in their solutions’. He continued by saying that it helps pupils to learn from their successes and failures as well as helping them to real understanding since it allows the pupils to become really involved in their learning.

Problem-solving develops reflective thinking, creative expression, critical analysis and logical reasoning in pupils and provides valuable carry-over benefits of application to future individuals and group problem. Udeinya and Okobiah (1991) stated that students are made to think out individual solutions to a problem, which has arisen through this method. They maintained that the solution lies mainly with the students, arouses their interest and makes them to work independently and learn what to do in difficult situations.

In problem-solving method, certain steps are used in providing solution to problems. Bello cited in Ibemesi (2003) gave five steps, which are necessary in problem-solving as follows:

- The problem as posed is considered and its nature carefully examined to know exactly what the problem is all about.
- All necessary information at our disposal that may lead to the solution of the problem is gathered.
- A tentative solution is put forward on the basis of the information so collected. This tentative solution will then be further tested to know whether to accept it or reject it in view of a better solution discovered.
The results, which should follow if the tentative solution were corrected, are now examined to determine its acceptability or rejection.

Finally, the solution where necessary is modified until it fits all the conditions, when it is then accepted.

Problem-solving method has many advantages. Njoku cited in Ibegbu (2010) gave the following advantages:

- It gives direction to discussion and prevents wandering.
- It stimulates reflective thinking
- It provides a motive for the study.
- It furnishes a base for the organization of ideas and provides standard for judging whether a certain statement made is true or not.
- It secures the attention of all the pupils to the task in hand.

Njoku also gave the following three disadvantages of problem-solving method.

- It takes time as pupils have to answer on their own to the problems at hand. The teacher must also be able to determine the time to give for solving the problem.
- In a bid by the pupils to find out facts to tackle the problem, they may be faced with far too much material that has to be sorted out. This may confuse and discourage the pupils.
- The use of this method calls for much skill on the part of the teacher. While he/she must not supply the answers to problems, he/she must give the pupils sufficient guidance to make solution relatively easy. This demands adequate preparation on the teacher, as he/she should have first solved the problem himself/herself.

It is used in Shorthand when students are given project work.

**Interest as a Factor in Shorthand Learning**
Whenever a child finds out something that satisfies him, he/she shows interest in it. In education, once a child gives or pays attention to a subject, it means or shows that he/she is interested in that subject.

For Nworgu and okereke (2011) interest has to do with the feeling or energy channeled towards the achievement of goals. Thus when a child continues with zeal and eager to achieve or get knowledge or write more words per minute in shorthand it means that he is interested in the subject. So, as long as a secondary school student finds shorthand enjoyable and satisfying, he/she continues to be interested in it. Ezenwafor (2002) stated that a student who is interested in his programme of study go to school regularly and punctually under rain and sun, stay in class and pay attention to the teacher, participate in class activities and take examination seriously. Ezenwafor continued by stating that the generally uninterested students will do the opposite.

For Ezenwafor (2007) students who are interested in their course of study will make every effort to learn while the uninterested ones will not care whether they learn or not. It is, therefore, necessary to note that when a child is interested in a career, he/she may become interested in the subjects that will make him/her to carry out the career. Interest controls the way students learn. Akaneme and Onyeabor (2011) stated that the way each person learns depend on interest. They went further to state that interest drives one towards action especially when such action benefits one. Also Shane cited in Ngwoke (2005) explained interest as something with which one identifies one’s personal wellbeing. Interest is the curiosity in a student to learn a subject. Akaneme and Onyeabor (2011) see interest as a feeling or emotion or curiosity which causes attention to be focused on an object or event or a process. Interest is the curiosity in a secondary school student to learn shorthand. It is then good to apply a device that can arouse the interest of students in teaching. In teaching and learning shorthand, application of new technology like DVD content package may help to arouse students’ interest.
There is degree of correlation between interest and academe achievement. Igbonoba (2004) stated that studies have however shown a very high degree of correlation between interest in a subject and success in learning. He went further to say that interest in a subject makes the learning to take place easier, faster and more lastingly. Igbonoba also added that students’ interest can be sustained through the use of a variety of teaching techniques to which DVD content package can be one. Thus it is important to obtain the active interest and concern of educators in the application of new technology in teaching and learning so as to enhance students’ interest in learning.

Interest is one of the factors that make people to engage in achievement activities For Wigfield (2010), interest is one of the motivating factors and one of the reasons for doing achievement activities. He also sees interest as one of the predictors of achievement.

There are also some facts to note in children’s interest. These facts are listed by Awoniyi (1985) as follows:

- Individual differences: The development of interest is closely related to the child’s physical and mental development
- Readiness to learn: Until the child is physically and mentally ready, he may not show interest in certain things.
- Opportunities to learn: The child cannot develop interests unless he is ready and has an opportunity to do so. The environment of the child matters on what will interest him.
- Interests change with age.
- Cultural influences: This determines Interests, More often than not, culture puts its pressure and controls on what things they must be interested in.
- Interests are emotionally weighed. A child who likes a particular teacher may go on to show interests generally in the school or a child who dislikes his teacher may dislike his subject.
Physical/mental factors: These may put a limit on interests. A child who is not aspiring will be interested in few things.

Interest has some values. Some of these values are also given by Awoniyi as follows:

- It serves as a great motivation.
- It provides the teacher with teachable moment when the children show keen interest.
- It aids success and makes the child gainfully occupied.
- Interests add enjoyment and satisfaction to a child’s life.

So in shorthand, when students start attending lessons constantly, it shows that they are interested in the subject. They also show interest by participating actively in the class activities especially in writing shorthand outlines. In addition, when students start writing shorthand dictations very fast by increasing the number of words they write per minute, it shows that their interest in shorthand has improved.

**Concept of Achievement**

Achievement is the act of accomplishing or finishing a task successfully. When a task is accomplished successfully by exertion or skill or practice or perseverance, it becomes an achievement. Achievement comes when a goal is completed successfully. For Nworgu and Okereke (2011) achievement is the successful accomplishment of goals. In teaching and learning achievement represents how much a child has acquired. In shorthand, achievement represents the number of words a child can write correctly in a minute.

Ibegbu (2011) stated that when a task is accomplishes successfully, it becomes achievement. Then achievement is the quantity of task or amount of knowledge or skill or perseverance possessed by the students. Thus, the quantity or amount of knowledge, or skill which children or students have in a subject, is the students’ achievement in that subject. Tests of achievement are used to determine what the learner has learnt in school. Standardized tests or teacher made tests are used in measuring achievement. Achievement tests are, therefore, designed to determine successes and failures in specific areas or aspects.
of work. In teaching and learning records of achievement tests brings joy or grief to the students (Adiun and Ajetunmod 1998). In shorthand, students’ achievement manifest when they start writing the required words per minute. For this study, when secondary school students are able to write 15 to 25 words per minute, we can say that the aim is achieved.

Achievement may also be shown according to gender. Gender is a central construct in human societies and there is then the need to be conscious of gender issues because of its pervasive influence in the society. It is believed that if gender issues are brought to the realm of education and implemented with enthusiasm, students may have equitable opportunities at home, in the school and in the wider society. Obi (2010) sees gender as the social dynamic that characterize the way men and women relate to each other on a given historical timeframe and through socially engineered identities. In the same manner Hannan (2002) sees gender as the attribute and opportunities associated with being a male or female and the socio-cultural relationship between groups of women and different groups of men and resulting from the social milieus evolving along with the society. Gender in this study is seen from the roles or behaviours of secondary school students towards shorthand especially in areas of achievement and interest. Some roles or behaviours that differentiate girls from boys are as a result of how their brains work.

Reinhard (1998) stated that scientists have discovered that some of the behaviours that differentiate boys from girls are the result of differences in the way that their brains develop. He gave example by saying that in girls their language areas of brain develop early while in boys, the visual-spatial areas of the brain develop first. Thus it is possible to show achievement of different subjects including Shorthand according to sex differences. Macknnon and Statham (1999) illustrated sex differences in achievement in different popular subjects at General Certificate School Examination (GCSC) in England.

**Relationship among the Concepts**
DVD content package made students to be active and not passive. This increased students’ interest in shorthand and so improved their achievement. The relationship among the concepts is shown in a chart below.

From the diagram, the left hand side shows that the use of DVD content package in teaching shorthand results to high interest and achievement but reverse is the case when DVD content package is not used in teaching shorthand as shown by the right hand side.

THEORETICAL FRAMEWORK

Learning Theories in Shorthand Learning

The following shorthand learning theories are reviewed in the study namely: Thorndike’s stimulus-response theory, cognitive theory of Bruner and Gestalt theory. Learning means to bring change in behaviour of the individuals, it has attributes of bringing about permanent change in behaviour of the individual and it results to change of enduring nature. It is also not directly observable and it depends on practice and experience. Learning also has types, theories as well as pre-requisites to learning: Gagne (1973) listed eight learning types and theories as follows:
Type 1: Signal learning: The individual learns to make a general, diffuse response to a signal. This is the classical conditioned response of Pavlov theory propounded in 1949. The general diffuse of response determines the achievement of secondary school students in shorthand. In the study shorthand begins with meaning of shorthand and its importance as well as first six consonants. Once secondary school students have learnt the first six consonants, as soon as the teacher dictates the first consonants, the secondary school students can write them in shorthand.

Type 2: Stimulus-Response learning: The learner acquires a precise response to a discriminated stimulus. What is learned is a connection (Thorndike’s theory which was propounded in 1906) or a discriminated operant (Skinner’s theory propounded in 1938) sometimes called an instrumental response. This type determines secondary students’ achievement in shorthand. After the first consonants, the vowel sounds and their position are learnt. This makes the secondary school students to write complete word as soon as it is dictated to him.

Type 3: Chaining: What is acquired is a chain of two or more stimulus-response connections. The conditions for such learning have been described by Skinner’s theory and others, notably Gilbert’s theory propounded in 1916. In shorthand secondary school student can now write complete sentence. This enhances secondary school students’ achievement in shorthand.

Type 4: Verbal association: Verbal association is the learning of chains that are verbal. Basically, the conditions resemble those for other (motor) chains. However, the presence of language in the human being makes this a special type because internal links may be selected from the individual’s previously learned repertoire of language. Here the shorthand students in secondary school can read shorthand passages and simple comprehension. This enhances secondary school students’ achievement in shorthand.

Type 5: Discrimination Learning: The individual learns to make different identifying responses to as many different stimuli, which may resemble each other in physical
appearance to greater or lesser degree. Although the learning of each stimulus-response connection is a simple type 2 occurrence, the connections tend to interfere with each other’s retention. Shorthand students in secondary school can at this point differentiate between first position, second position and third position vowels and many short forms. This increases secondary school students’ achievement in shorthand.

Type 6: Concept learning: The learner acquires a capability of making a common response to a class of stimuli that may differ from each other widely in physical appearance. He is able to make a response that identifies an entire class of objects or events. Other concepts are acquired by definition, and consequently have the formal characteristics of rules. Shorthand students in secondary school can at this point define consonants, vowels, short form and other shorthand concepts thereby improving their achievement.

Type 7: Rule learning: In simplest terms, a rule is a chain of two or more concepts. It functions to control behavior in the manner suggested by a verbalized rule of the form, “if A, then B,” where A and B are previously learned concepts. However, it must be carefully distinguished from the mere verbal sequence, “If A, then B, “Which, of course, may also be learned as type 4. In this type, shorthand students specially those in secondary school can write shorthand outlines without vowel indications which help them to write very fast and so increase their achievement.

Type 8: Problem solving: problem solving is a kind of learning that requires the internal events usually called thinking. Two or more previously acquired rules are somehow combined to produce a new capability that can be shown to depend on a “higher-order” rule. Here shorthand students in secondary school can write projects in shorthand.

Gagne went further to say that the most important class of conditions that distinguishes one form of learning from another is the initial state of the learning- in other words, its prerequisites. The conditions for chaining, for example, require that the individual have previously learned stimulus-response connections available to him, so that they can be
chained. If this condition is not met, one finds oneself dealing with conditions for establishing these prerequisite Ss-Rs and thus one is likely to draw incorrect conclusions about changing itself. This generalization, applied to varieties of learning we have discussed. This is shown below as given by Gagne:

Problem Solving (Type 8)

| Requires as prerequisites: |

Rules (Type 7)

| which require as prerequisites: |

Concepts (Type 6)

| which require as prerequisites: |

Discriminations (Type 5)

| which require as prerequisites: |

Verbal associations Type 4

or other Chains (type 3)

Which require as prerequisites:

Stimulus-Response connections (Type 2)
From the above diagram, type 1 is a prerequisite for type 2, type 2 is a prerequisite for type 3, type 3 for type 4, type 4 for type 5, type 5 for type 6, type 6 for type 7 and type 7 for type 8. In shorthand teaching and learning of consonants (type 1) is a prerequisite for teaching and learning of phrases that is joining of two or more consonants (type 2) which is a prerequisite for learning of the vowels (type 3) which is followed by writing of words (type 4) which is a prerequisite for writing of sentences (type 5) which is followed by writing and dictation of passages with simple short forms and phrases (type 6) followed with composition writing and dictation of passages with complex short forms, phrases, halving of the strokes and writing of strokes without vowel signs (type 7) and writing project which is problem solving (type 8).

Shorthand concerns a lot of practice and experience. It is phonetic and so involves experiences in development of the cognitive domain that is mental. Thus Thorndike’s Stimulus-Response theory is one of the shorthand learning theories. Thorndike’s theory was propounded in 1906 when Thorndike presented his research. In this theory all learning is a formation of bonds or connections between Stimuli-Response. This relates to shorthand learning in secondary school. The formation of bond in shorthand learning increases secondary school students’ achievement in shorthand. The process of formation of connection depends on a number of variables, which operate in the environment of the organisms. Shorthand requires a lot of practice so that secondary school students can learn the skill in writing the characters and so increase their speed in shorthand. This makes secondary school students to do a lot of exercises in shorthand learning. Thus the basic learning law of exercise in Thorndike’s theory of Stimuli-Response is applied to shorthand learning.

The law of exercise which is classified into law of use and law of disuse is used in shorthand. This law determines the achievement of secondary school students in shorthand. Law of use sets in when secondary school students engage in constant practice in shorthand. This makes secondary school students to maintain their speed in writing shorthand. As soon
as secondary school students stop constant practice, law of disuse sets in. Then students start
loosing the number of words they write per minute in shorthand. Law of exercise is divided
into two namely: law of use and law of disuse. The law of use states that other things being
equal, the more frequently a modifiable connection between stimuli response (S-R) is made
the stronger the connection and reverse is the case with law of disuse. In Shorthand learning,
the more a secondary school student writes dictation and practices it, the faster he becomes in
writing it. This makes shorthand teachers to give students opportunities to practice and repeat
the knowledge they got in the class.

Another basic law of Thorndike’s theory of learning that is used in shorthand learning
is the drill method. Drilling enhances secondary school students’ achievement in shorthand.
Thorndike cited in Chauhan stated that drill strengthens the bondage between S-R. Shorthand
also requires a lot of drilling. This drill and practice help secondary school students to attain
the speed they need in Shorthand. In shorthand learning, as soon as new characters are
introduced to secondary school students, they are drilled in a lot of exercises involving the
characters introduced. This makes them practice the writing, so as to perfect in the skill.

The cognitive theory of Bruner is also applied in shorthand learning. According to
Bruner (1966) developmental growth involves mastering each of the increasing more
complex modes. When this is applied in teaching shorthand to secondary school students it
makes them to become competent. In mastering one becomes more skilled in translating
between each mode. In shorthand learning in secondary school, students move from simple
phrases to more complex phrases and vowel signs may not be in the shorthand outline. At this
point, secondary school students need to master the more complex phrases so as to become
more skilled in the subject. This will lead to increase in speed and accuracy and the number
of words that secondary school students can write per minute.

Gestalt theory is another shorthand theory of learning. This theory was propounded in
1912. One of the characteristics of this theory is steady repetition of adoptive response
(Gestalt cited in Chauhan, 1987). This characteristic makes secondary school students to maintain their achievement or speed in shorthand. Shorthand needs a lot of repetition of the writing skills through class oral dictation by the shorthand teacher as well as tape recorders, which may be replaced by DVD plates when the student is working alone. In addition, frequently recurrent attention to the objectives or goals, which is another characteristic of Gestalt theory, is used in teaching shorthand. This makes secondary school students to become aware of the number of words they are required to write or attain in a particular examination. As soon as they know the number of words per minute, they work towards it so as to achieve the objective. Thus in secondary school shorthand students are told that in Senior Secondary Certificate Examination, they will be tested for 40 words per minute as the main objective. This makes the shorthand teachers to drill them in dictation exercises in order to make sure that they meet the target. Students on their own do a lot of practice so as to be able to write the required word per minute.

Thorndike’s S-R theory can be applied fully in secondary school shorthand. Shorthand involves experiences in development of the cognitive domain, good classroom reinforcement and so Thorndike’s S-R theory is one of the theories that are related to shorthand. In Thorndike’s theory, all learning is a formation of bonds or connections between stimuli-responses. The process of formation of connection depends on a number of variables which operate in the environment of the organism. This process of formation makes shorthand students in secondary school to improve their achievement. Shorthand is representation of spoken sounds by signs. It is a rapidly way of writing what people say in the environment. In shorthand when consonants and vowels as well as short forms are learnt, secondary school student can represent spoken sounds in shorthand. Thus law of effect of this theory stated that learning occurs if and only if the response has some effect on the environment. Secondary school students tend to practice the writing of shorthand which produces pleasant effect to them and try as much as they can to avoid any act that can
produce unpleasant effect (not practicing the writing of shorthand). Learning experiences are organized and arranged in such a way that secondary school students will have some degree of confidence and success in their work. This makes shorthand teachers to first of all teach secondary school students how to write for instance the consonants before the vowels so that it will not be difficult to them. The basic laws of exercise in Thorndike’s theory of stimulus-response and drill method application have already been discussed.

On the other hand when secondary school students do not practice the writing of this subject they run short of the speed and accuracy required of them in shorthand. Then the law of disuse will set in and the bondage between S-R will weaken, that is, the strength of the connection will be weak.

The law of readiness of Thorndike’s theory states that when a modifiable connection is ready to act to do so is satisfying but when it is not ready to do so is unsatisfying. Readiness depends upon both maturation and experience of the learner. This law makes shorthand teachers in secondary school to wait for shorthand students to be ready to learn. The shorthand teachers usually give them some preparatory experiences in Business studies when students are in Junior Secondary School (JSS). This makes senior secondary school one students to be ready by the time they enter senior secondary school (SSS).

The five principles of learning developed by Thorndike are also applied to shorthand learning. One of principles is the principle of multiple responses which states that man may try many responses before attempting the right response through the process of trial and error. This makes shorthand students in secondary school to gain wider experiences. They lean from their error. It makes secondary school students for instance to increase their speed and accuracy. When secondary school students are given an independent study, to develop the speed and accuracy especially when secondary school students are allowed to work on their own without the help of shorthand teacher, they use tape recorder. So traditionally, secondary
school students use tape recorders when they are working alone, but if this study turns out to be effective, the tape recorder may be replaced with DVD.

The second principle of this theory is the principle of mental set, which refers to the predisposition to act in a given way. For learning to occur, positive mental set in pupils is an essential condition. Thus secondary school students are prepared for various activities in advance. Secondary school students are given home works that are meaningful which help in developing positive attitudes on the students with the shorthand teachers’ assistance. Proper application of this principle increases secondary school students’ achievement in shorthand.

The third principle is the principle of partial activity. A response made only to parts or some aspects of a total matter that does not affect the whole part is principle of partial activity. It is good for students of shorthand in secondary school to be made by their teachers to be interested in the subject by creating opportunities for them to do so. This makes the researcher to think of usage of DVD content package in teaching shorthand to students in secondary school so that the students can respond to it. This may help to develop interest of secondary school students in shorthand and so enhance their achievement.

The fourth principle is the principle of analogy or assimilation, which points out that when an individual is faced with a new situation for which he has no natural or learned response, the response he makes will resemble an earlier response to a similar situation. Hence shorthand teachers provide similarities between new and old or previous experiences by teaching shorthand to secondary school students from known to unknown. This is done in order to find out whether secondary school students’ interest and achievement in shorthand can improve. Shorthand teachers also provide identity between past and present experience to secondary school students. For instance, the first six groups of consonants are first taught to the students before the second group of the consonants. Thus shorthand teachers link the first group of consonants to the second group of consonants.
The fifth principle, which is the last, is the principle of associative shifting, which states that any response of which a learner is capable to make may be attached to any stimulation to which he is sensitive. Thus shorthand teachers in secondary school should develop good attitudes and interests on their students from the way they teach them so as to prepare them on how to function as good adults in the society. Respect for objectives, systematic way of problem solving, concern for others and effective work habits should be developed in shorthand students in secondary school by the shorthand teachers so that they will interact well in the society.

**Theories Underlining DVD Technology**

In the usage of DVD content package technology in teaching, especially in shorthand, one of the theories underlining it is Operant theory of Skinner which was propounded in 1938. For Travers (1973) technology of education has been developed along two distinct lines, one of which is Operant Psychology of Skinner. The principles of generalization and chaining of the theory concern shorthand learning. Generalizing experience and knowledge in one learning situation to another manifests itself when secondary school student writes down the minutes of a meeting in shorthand and later transcribes it in long hand when he becomes a future secretary. It is also seen when a shorthand student in lecture class jots down the lecture in his note using shorthand. In addition, in chaining principle, each segment must be linked with the succeeding segment. Thus the shorthand teacher teaches each concept or group of consonants and vowels by linking them sequentially as it is from the scheme of work and in recording of demonstrations in DVD content package.

Another underling theory in DVD content package in Shorthand is Dales Cone of experience. This theory was first introduced in Dale’s 1946 book, *Audio-visual methods in teaching*. Dale propounded his theory in 1960’s. The DVD content package was designed to show the progression of learning experience in shorthand from concrete to the abstract. The theory showed that the value of educational technology is based on their degree of realism.
The theory also emphasized that in demonstration, it is good to visualize explanation of an important fact, idea, or process and also show how certain things are done (Molenda, 2003). Although DVD content package usage in teaching shorthand to secondary school students may be expensive, it brings realism of the subject into classroom setting and also shows how the characters, vowels and dictations are written. It is based on the above theories that the researcher constructed the DVD content package recordings. This helped in the determination of secondary school students’ interest in shorthand. The use of Dales Cone progression of learning experience made DVD content package to develop secondary school students interest in shorthand;

The above theories are used in the study because they are in line with the teaching and learning of Shorthand and the recordings of DVD content package. For example Thorndike’s theory of S-R is one of the Shorthand theories because its stimulus response and principles are in line with teaching and learning of shorthand. The principle of use and disuse goes with shorthand teaching because shorthand requires constant writing. As soon as secondary school student leaves writing shorthand constantly he may lose his speed. The cognitive theory of Bruner is also related to Shorthand because Shorthand touches the cognitive domain of the secondary school students. The Gestalt Characteristics of steady repetition agrees with shorthand teaching and learning. Shorthand needs a lot of repetition of the writings of the characters by the secondary school students so as to master it and increase their achievement. The Skinner’s theory especially the aspect of shaping is part of DVD content package in Shorthand because it will shape secondary school students’ behaviour in the subject. Lastly Dales Cone theory is concerned with DVD usage in Shorthand because it is prepared to show the progression of learning experiences in Shorthand taught to secondary school students from concrete to the abstract.

**Related Empirical Studies**

**Studies Related to DVD**
Lion, Kutchen and Wang (2008) conducted a study on teaching a listening and speaking course with DVD films in English at Taiwan University. The study was designed with a view to gauging and enhancing the effectiveness of using DVD films and how one can use the web to support such an approach. Data were collected through pre-test and post-test on listening skills and questionnaires designed to elicit student opinions on the method of course delivery and the materials. The following research question was answered. Is it feasible to use DVD films as the major materials for teaching listening and speaking skills? Results indicate that a number of issues related to syllabus and materials development need to be addressed before DVD films can replace traditional texts and tapes as effective teaching materials. The purpose of the study was to determine whether to use DVD films as the major course material in a university level listening and speaking course for English major. After one semester, the answer was positive from the teachers’ point of view, although the biggest drawback was the time it took to develop the materials.

The above study is related to this study from the point of DVD usage. Although the study is on listening and speaking skills, listening and speaking skills are related to phonetics. Shorthand is phonetic. In addition, in this study with DVD content package students must listen so as to get the spoken sounds which they will represent. The findings of the study showed that DVD firm usage was positive. This finding is also related to DVD content package usage.

Schafer (2008) cited 3 students of Bologna study on the use of new media in music in German schools. In this study, the term media covers devices such as computers, Moving Pictures (MP3) or CD recorders mobile phones, notebooks or information platforms like digital TV2. This study stated: that the situation in German school was following traditional pattern and there was a widespread of reluctance to implement new media in German schools even though many teachers were interested in its possibilities. The study indicates that many principals had purchased computers for their schools, fearing to be at a disadvantage if they
neglected these new technologies. However many teachers were unsure how to implement technology in their teaching if at all the usage of technology is most rudimentary. Furthermore, there is no coherent concept about computers, DVD recorders in the classroom and in the mean time the skeptics and innovators continue to discuss the merits of ‘New Media’ in schools. From the study, the following rationale in favour of the usage of New Media in Music Education, were made:

- Ability to capture time and high perceptiveness of the visual medium.
- Nurturing of creative work in music lessons and motivation of students without instrumental abilities.
- Possibility to nurture self-reliance and autonomy.
- Possibility to process and construct knowledge.
- Shift of the function of the teacher to a facilitator, coach and organizers

The study suggested the following further investigation and research areas:

- The Potential of New Media to function as a mediator between music in the student lives and music in schools.
- The potential to facilitate and amplify the development of musicianship.
- The potential to create situations, which bear the possibility to foster students’ aesthetic experiences.

The above study is related to this study because of use of DVD in teaching. Although the study does not specify whether DVD is used in teaching shorthand or not, it can be extended to the teaching of shorthand in secondary school.

Waller, Tobin and Biram (1972) conducted a research on use of Audio-visual programming in primary reading ability. It was an experimental research where audio-visual would eliminate differences in reading ability. 45 pupils from the same class or age were grouped into three. The study showed that there is significant improvement in performance of those who worked from the tapes.
The above study also relates to the study because DVD is an audio-visual teaching aid. The above study also showed that there is a significant improvement in performance of those who work from the tapes. Although the study was in primary school reading, it may be extended to secondary school where phonetic is taught. When DVD content package was used in teaching shorthand there was significant improvement in achievement of students.

Wittich and Schuller (1973) cited three people Philip, Varney and Mierhency who carried out study on use of motion pictures and films to investigate retention of information in the cognitive domain in social studies and music. The question was, “Is there any measure of long-term advantage in motion picture and film-learned cognitive information. The study provided conclusive evidence that motion picture, and film-learned cognitive information was remembered longer than knowledge assimilated through exposure to traditional verbal materials.

There is relationship between this study and the above study. This is because when motion picture is combined with film-learned, they become audio-visual aid. DVD content package is also an audio-visual aid. Although DVD content package is used in teaching shorthand, it helped students to remember what they have been taught. This is why they achieved highly.

Wittich and Schuller also went further to cite project discovery on teachers’ and students’ responses in four widely separated school districts on motion pictures, films and movies. This study showed that:

- Audio-visual aid encouraged both gifted and less gifted students.
- The sensory impart of audio-visual increased the participation of slow learners and broadened the horizon of more able students.
- It brought about constructive and positive changes and increased students’ interest as well as improvement in cognitive and skill learning.
The above study is related to this study because it involves the use of audio-visual. In addition the above study showed that the use of audio-visual increased students’ interest, improved cognitive and skill learning. When DVD content package which is an audio-visual aid was used in teaching students shorthand, it increased the students’ interest and achievement in the subject.

A comparative study on the effect of video instructional Television (VIT) and traditional method on students’ attitude and achievement in English language was conducted in Nigeria by Ojogan (1997). It was an experimental research in which three groups were used. Two groups were exposed to VIT and one group to traditional method. The findings of the study showed:

- There was no significant difference in the achievement scores of those subjects exposed to VIT and those taught by traditional method.
- There was a significant difference in attitude scores in favour of the subjects exposed to the VIT.

Ojogan study is related to this study from the point of television instruction. This is because DVD content package works with television. In Ojogan’s study the television instruction had significant difference in the attitude scores in favour of the subjects exposed to the VIT. Since the DVD works with television, the effect on students’ achievement and interest was significant.

Another work which was carried out in Nigeria was the research on Effect of Home Video on Reading Habit of Literate Nigerian Housewives. This study was conducted by Oludunjoy, (2009). A hundred (100) house wives were randomly selected in one of 752 local government areas of Nigeria for the study and the study is a descriptive survey method. Through the four-point scale, it was found that indeed, the emergence of home video in Nigeria and particularly its sporadic expansion in the recent time has a great effect on reading time habit of Nigerian wives. That is it has significant effect on the housewives.
Olodunjoye’ study is related to this study from point of DVD content package as audio-visual material. Also home Video has significant effect on housewives’ reading habits, DVD content package had significant effect on secondary school students achievement in shorthand.

Enemuo (2007) conducted a research on a Review of the Use of Information Communication Technology (computers) in Nigeria educational system. In his research, he concluded that the educational system in Nigeria is far behind use of computers in educational system. Enemuo study is related to this study because DVD content package is part of computer. This is because DVD can play in computer. Enemuo also concluded that educational system in Nigeria is behind the use of computer. It is this gap that the study wanted to fill since DVD plates can be played in Computers.

**Studies Related to Shorthand**

A study on evaluation of first-year shorthand Achievement of students was conducted by Eric (2005). This research has four main purposes of a study of students learning three shorthand systems. The purposes were to determine:

- If first year students achieved minimum shorthand goals,
- To compare dictation achievements of students learning different shorthand methods for possible selection of one system over another for certain groups of students,
- To gain further insight into factors related to different types of shorthand achievement and to determine students’ attitudes about learning shorthand and
- If those attitude changed as the year progressed.

Related research was reviewed and pretest and post-test in shorthand were given to students.

The population of the study was 1317 students. Seventy-three percent of the students who completed the work and test showed that majority of the time Forkner shorthand was easy to learn, but Forkner and Century 21 students agreed more strongly with this statement. However one year of shorthand was not considered sufficient for high school students to
develop minimal shorthand skills regardless of the system since no student could produce a Malable letter at 80 words per minute dictation. Recommendations of the study include:

- Offering Forknner shorthand to students for at least one year,
- Additional counseling for low aptitude students.
- Spending classroom time for discussion of career opportunities, as well as personal use of applications, for persons with shorthand skill.

The above study is related in this study because it is carried out in shorthand. Also one of the recommendations of the study is that time will be spent for discussion of career opportunities. In this study time was spent in classroom to discuss importance and job opportunities to Shorthand students.

Another shorthand study was conducted by Zhai (2003) on shorthand writing on Stylus Keyboar, that is, Shorthand speedwriting. In this study, a method for computer-based speed writing, Shark (Shorthand aided rapid keyboard) which augments stylus keyboard with shorthand gesturing was proposed. A user study demonstrated the feasibility of Shark method. Sharks define a shorthand symbol for each word according to its movement pattern on a stylus keyboard layout and it is tedious and usually demanding. From the study, the key rationale for designing Shark rests on five principles namely: efficiency, location and scale independency, duality of tapping and gesturing, Zips Law of effect and transition from tapping gesturing. Sharks have been developed and participants could learn shark shorthand symbols at an average rate of 15 words per (45 to 50 minutes). For this study, students were tested for 25 words per minute.

A research was carried out on shorthand study and spelling abilities by Jensen and Jensen (2009). Tests of two spelling abilities (recall and cognition) were administered to high-school students at the beginning and near the end of the first year of the study of shorthand. A control group student taking the same required course in English took the same examination at the same time. It was noted that at least two somewhat different spelling
abilities can be identified. It was further determined that the study of shorthand does not necessarily have a negative effect upon either of the spelling abilities.

The above study is related to this study because shorthand does not depend on spelling but on sounds. Shorthand is phonetic and it is the representation of spoken sounds by signs. Thus in shorthand, spelling does not have much effect on students’ performance.

Okeke (1996) carried out a study in Nigeria on Strategies for Improving Teaching and Learning of Shorthand in Junior Secondary School (JSS). He answered six research questions and tested two research hypotheses. In his study, one of the strategies that he gave for improving teaching and learning shorthand in JSS is drilling of shorthand outlines. He concluded his study by saying that drilling is one of the strategies needed in shorthand teaching and learning. Okeke recommended that shorthand teachers should use drilling method in teaching their students.

The above study is related to this study because it is carried out in shorthand. Okeke’s study also relates to this study because he recommends drilling as one of the strategies of teaching shorthand. In this study DVD content package was used in drilling students in the study so as to determine its effect on secondary school students’ achievement and interest in Shorthand. Behold DVD content package improved students’ achievement and interest in shorthand.

Ezenwafor (2009) also carried out a research on civil servants’ perception of the relevance of shorthand to the effectiveness of confidential secretaries on the era of office automation. One hundred and eight three top civil servants who utilize the services of confidential secretaries drawn from Anambra and Enugu states were used for the study. The study was a survey study. One research question was answered and one hypothesis was tested.
The analysis of the result revealed that the respondents considered shorthand relevant to confidential secretaries. The finding led to the conclusion that shorthand is a sine qua non to confidential secretaries’ effectiveness notwithstanding the type of office.

The above study is related to the study because the study shows that shorthand is still a relevant subject. As a relevant subject, there is need to make students to show interest in shorthand. The use of DVD content package in teaching shorthand enhanced achievement and interest of students.

Ibegbu (2011) carried out a study on effect of computer on male and female secondary school students’ achievement in shorthand. The study was a quasi experimental study. It was carried out in Onitsha Education Zone of Anambra state in Nigeria. 100 students selected from the zone were used for the study. Two research questions were answered and two hypotheses were tested in the study.

The findings of the study showed that there was significant difference in the mean achievement scores of secondary school students in shorthand. Ibegbu discovered that students taught shorthand using computer in transcribing achieved higher than those taught using conventional method. The findings also showed that there was no significant difference in the mean achievement scores of male and female students in secondary school in shorthand. This means that female students achieved as much as male students.

Based on findings of the study Ibegbu made the following recommendations:

- Computer should be used in teaching shorthand especially in transcribing shorthand.
- Computer should be used in transcribing shorthand by male and female students.

This study is related to the study because it is on shorthand. Also when DVD content package was used in teaching shorthand, there was significant difference in the mean achievement scores of students taught shorthand using DVD content package and those taught using conventional method. DVD content package made students to achieve very high in shorthand. There was no significant different in the mean achievement scores of male and
female secondary school students in shorthand. DVD content package made female students to achieve as much as male students.

Okeke (2004) conducted another research in Ogidi Education Zone in Anambra State of Nigeria. The study was on Strategies for Improving Shorthand Instruction in Junior Secondary School in the Zone. The study was a quasi experimental study. The population of the study was 90 Business Studies’ teachers drawn from the zone. Two research questions were posed for the study and one hypothesis was tested.

From the findings of the study Okeke discovered some strategies that can be used in teaching shorthand. Some of these strategies that Okeke discovered are:

- Class drilling of students in shorthand outlines.
- Drilling of students in printed shorthand outlines.
- Mastering of shorthand outlines.
- Making students to take dictations.
- Demonstration of confusion strokes to students.
- Clarifying through board, demonstration and illustration of each principle with drilling.

Okeke also discovered the following strategies for improving dictation:

- Students taking dictation from materials to cover five lessons back.
- Use of dictation machine.
- Students dictating for each other.
- Teacher urging students to practice new material things and things that are considered to go with the daily lessons.
- Providing for individual differences through appropriate class activities.

Okeke made the following recommendations from his findings:
National Board for Technical Measurement should give law involving a curriculum innovation package in models that will put into effective all the strategies identified in his study.

Teachers should be mandated by Ministry of Education to employ the strategies in teaching.

Okeke’s study is related to this study because his study is on strategies of teaching shorthand. DVD content package was used in drilling students in class. In addition the DVD content package contains the illustrations and the demonstrations of shorthand outlines prepared by the researcher. Illustrations and demonstrations are one of the findings in Okekes’ study as strategies for teaching shorthand.

Isineyi (2004) also carried out a research on Improving Performance of Students in Shorthand note Taking Time Saving Devices. It was a survey study. The study was carried out in South East Geopolitical Zone in Nigeria. Three federal polytechnics were used for the study. The polytechnics were Federal Polytechnic Oko, Federal Polytechnic Nekede and Akanuibian Federal Polytechnic Uwana. 60 students sampled out of 90 students from the three polytechnics were used for the study. Two research hypotheses were tested in the study.

The following findings were made in the study:

- Teaching is planned in mastering order.
- Teach one lesson a day.
- Vary class activities so that all theory is not presented in a single lesson time block.
- Have individual students to read printed shorthand and their notes.
- Observe students as they write shorthand outlines and visit the job centers to correct their errors.

Isineyi concluded his study by stating that most respondents in his study were unable to apply the time saving outlines. Also the respondents do not know the shorthand time
saving outlines. In addition efforts were not made and automaticised in the writing of the outlines of time saving devices. This is because they were not adequately identified.

The following recommendations were made:

- Serious attention to the teaching and learning of the time saving outlines as well as the mastering of the time saving outlines should be adopted.
- Students should be subjected to intensive reading of stenographic text book. This text book is compendium of phrases. Frequently writing and reading of phrases will entertain a quick mastering of the phrases.

The above study is related to this study because it is on shorthand. Also in DVD content package phrases were in the content taught to the students. This was to make students to master the phrases as the mastering of phrases would help them to write shorthand very fast. This is because phrases are the time saving outlines.

**Studies Related to Interest and Achievement**

Nworgu and Okereke (2011) carried out a study in Nigeria and the study focused on the effect of constructivist instructional model on students’ achievement and interest in biology. It specifically sought to compare the achievement and interest of biology students taught with constructivist instruction model and those taught with the traditional model (lecture method). The study was carried out in Orlu L.G.A. of Imo State using SS2 Biology students in some randomly selected public secondary schools in the area. Two research questions were answered using mean and standard deviation whereas the two null hypotheses were tested using at p<0.05 using t-test analysis. The findings revealed that the constructivist instructional model has a positive effect in the study of biology since the students exposed to this model had higher mean achievement score and expressed higher level of interest when they are compared with the biology students taught with the traditional model. Based on the findings of the study, it was recommended that biology teachers should adopt constructivist oriented instructional methods in their teaching in order to promote active participation of
students in teaching and learning process. The above study is related to this study because it is on interest and achievement which are the variables of this study. Nworgu and Okereke’s study portrays interest as a factor in achievement.

Akaneme and Onyeabor (2011) investigated on the Influence of Students’ Interest and Teachers Classroom Management on Entrepreneurial Behaviour of Students. Using descriptive survey research design, the study made use of a sample of 150 students out of 650 Educational Psychology undergraduate students who registered for entrepreneurial education course in 2008/2009 academic session in the Centre for Entrepreneurship and Development Research (CEDRCentre), University of Nigeria Nsukka. Three research questions and three null hypotheses guided the study. It was found that students’ interest and teacher’s classroom management influenced entrepreneurial behaviour of students. Recommendations made include among others, the inclusion of entrepreneurial education in the school curriculum at all levels, adequate supervision of teachers, in service training for teachers and use of strong motivational strategies in teaching–learning instruction.

Akaneme and Onyeabors’ study relate to this study because their study is on interest and achievement which are also the variables of this study. Interest was also portrayed a factor in achievement in their study.

Another study was conducted by Wigfield (2010) on students’ achievement task values, goal orientations, and interest that are motivation-related constructs which concern students’ purposes and reasons for doing achievement activities. The researcher reviewed the extant research on these constructs and described and compared many of the most frequently used measures of these constructs. He also discussed development during childhood and adolescence.

Wigfield reviewed the research on the relations of these constructs to achievement outcomes, and their relations to each other both contiguously and over time. Suggestions for future research include testing theoretically derived predictions about how students’
achievement values, goal orientations, and interest together predict various achievement outcomes; and examining how their relations with one another become established and change over time.

Wigfield’s study is related to this study because he sees interest as a factor in improving achievement. Wigfield’s study is also related to this study because his study confirms that interest is a predictor of achievement.

Köller, Baumert and Schnabel (2010) carried out a study on the relationship between Academic, Interest and Achievement in Mathematics. A total of n=602 students (59.5% female) from academically selected schools in Germany were tested at three time points--end of Grade 7, end of Grade 10, and middle of Grade 12--in order to investigate the relationships between academic interest and achievement in mathematics. In addition, sex differences in achievement, interest, and course selection were analyzed. At the end of Grade 10, students opted for either a basic or an advanced mathematics course.

Data analyses revealed sex differences in favor of boys in mathematics achievement, interest, and opting for an advanced mathematics course. Further analyses by means of structural equation modeling show that interest had no significant effect on learning from Grade 7 to Grade 10, but did affect course selection--that is, highly interested students were more likely to choose an advanced course. Furthermore, interest at the end of Grade 10 had a direct and an indirect effect (via course selection) on achievement in upper secondary school. In addition, results suggest that, at least from Grade 7 to Grade 10, achievement affected interest--that is, high achievers expressed more interest than low achievers. The findings underline the importance of interest for academic choices and for self-regulated learning when the instructional setting is less structured.

The above study is related to this study because interest and achievement are variables in the study. Koller, Baumert and Schnabel’s study also relate to this study because it shows the importance of interest in academic choices.
Emerick (1992) studied young gifted people who have pulled themselves through periods of underachievement. It details the main areas that these students felt were crucial in being able to reverse the pattern of underachievement in their lives. The results suggest that educational interventions focused on areas of student interest may be particularly effective.

This study of underachievement among the gifted has been a focus of research, for over 35 years. With few exceptions, studies of interventions for gifted underachievers have demonstrated only limited success. This study investigated factors which had influenced the reversal of the underachievement pattern in 10 gifted students, ages 14 to 20, who moved from chronic underachievement to academic success. Results indicated six factors were influential in reversing poor school performance. There was evidence that some gifted underachievers may respond well to interventions incorporating educational modifications which focus on individual strengths and interests.

Emerick’s study is related to this study because DVD content package is one of the interventions incorporating educational modifications which focus on interests.
Jianzhong (2008) conducted a study on use of Models on Secondary School Students’ Interest in Home Economics: A Multilevel Analysis. The aim of the study was to test empirical models of variables posited to predict homework interest at the secondary school level.

Student- and class-level predictors of homework interest were analyzed in a survey of 1,046 8th graders from 63 classes and of 849 11th graders from 48 classes. Most of the variance in homework interest occurred at the student level, with grade level appearing as the only significant predictor at the class level. At the student level, the variation in homework interest was positively associated with affective attitude toward homework, motivational orientation toward homework, student initiative in monitoring homework motivation, teacher feedback, and self-reported grade. Girls reported statistically significant higher scores in homework interest than did boys.

The above study is related to this study because its’ finding is on interest which is one of the variables of this study.

Studies Related to Gender as a Factor in Achievement

Nwosu (2011) examined gender differences in ICT utilization among undergraduate students. One research question and one null hypothesis guided the study. The sample for the study comprises hundred female and male students of Faculty of Education, University of Nigeria Nsukka. The instrument for data collection was questionnaire. Mean scores and t-test statistics were used for data analysis. Results showed that female and male students utilize ICT differently and males utilize ICT more than female. Also the hypothesis showed that there is a significant difference between the mean scores of male and female students in ICT utilization for academic activities which indicates that male students use ICT more than their female counterparts. Recommendations were based on the findings.
The above study is related to this study because gender is one of the variables of the study.

Umeano (2010) investigated influence of teachers’ gender dominated verbal content on pupils’ interest in class work and achievement orientation. Using the ex-post facto design, the study made use of a sample of three hundred (300) primary six pupils from twenty (20) primary six classrooms in twenty (20) schools in Awgu Local Government education Authority of Enugu State selected by random sampling technique. The study revealed that teachers’ male gender–dominated verbal content significantly influenced pupils’ interest in class work and achievement motivation. Male pupils whose teachers’ verbal content is highly male gender-dominated had significantly higher interest in class work and also have and also have a significantly higher achievement orientation than their female counterparts. Recommendation made were that teacher education curriculum should be restricted so as to prepare teachers to be gender equity conscious and Nigerian government should give an Educational body the mandate to examine all textbooks in order to ensure that they are rid of gender of gender discriminatory language and gender stereotypes.

Umeano’s study relates to this study because his study is on gender which is one of the variables of the study.

Nwana (2010) carried out an experimental study. The purpose was to determine gender effect on students –teachers’ acquisition of non-verbal communication skills using video technique of microteaching. Eighty (80) student-teachers were sampled out of a population of 120. A self-developed instrument (RASONVECS) on non-verbal skills was used for data collection. The reliability co-efficient of the instrument stood at 0.95. Mean scores were used to answer the research questions while the analysis of covariance (ANCONVA) was used to test the null hypothesis at 0.05 level of probability. It was found that gender had no significant effect on student-teachers’ acquisition of non-verbal skills though video evaluation. It was recommended among other things that, teachers, teaching
supervisors and future researchers should use the findings of the studies as a point of reference on nullity of gender in the acquisition of skills.

The above study is related to this study because it is carried out on gender which is also a variable of this study.

Messmer (1993) carried out a study on Differences in Attitude of Boys and Girls in Mathematics. Differences in attitude towards mathematics between boys and girls were evaluated in an empirical study carried out in (west)German secondary schools during 1989 on a group of 748 students aged 14–19. The main focus of the study was to ascertain whether the results from previous studies of the last decade, which reported significant differences between boys' and girls' attitudes to mathematics, were still valid.

This study shows there are still significant gender differences in many areas, such as: interest in mathematics, importance of high attainment in mathematics, willingness to consider entering a career involving mathematics and mathematical activities and themes from the real world which interest the pupils. Despite these still prevailing gender differences, the study nevertheless shows that girls' and boys' views on gender roles and corresponding areas of activities have changed considerably in recent years. Messmer study is on gender which is one of the variables of this study. Thus Messmer’s study is related to this study from the point of gender as a variable.

In another study conducted in Nigeria by Ile (2007) on the Differences in Gender Use of Computers in Nigeria, three research questions were imposed. One of the three research questions is:
To what extent do male and female students use computer?
He concluded that female students use computers more than male students.

Ile’s study is related to this study because DVD can play on computers. Ile’s study is also related to this study because gender is also one of the variables of this study although it
is to find out the achievement and interest of secondary school male and female students in Shorthand when they are taught using DVD.

**Summary of the Literature Review**

So far, this chapter presents a concise analysis of literature review on conceptual, theoretical and empirical perspectives of the study. From the conceptual perspective, the concept of shorthand, which is representation of spoken sounds by signs and its importance, were presented. This section also reveals that DVD has high storage capacity, which makes it possible to store half a term’s work in it and that it may be used in teaching shorthand. The traditional methods of teaching secondary school shorthand like lecture, discussion and problem-solving methods were also discussed. Their deficiencies were also presented. The review of concept of conventional method revealed that conventional method without DVD content package was not effective. Interest as a factor to shorthand learning was also presented and it shows that when secondary school students start attending, participating and increasing their speed in writing shorthand, it means that they are showing interest in the subject. Also Ezenwafor (2007) stated that interested students make effort to learn shorthand.

The theoretical framework reviewed some shorthand theories as well as DVD underlining theories from where the DVD content package recording was prepared. This section presented the full relationship between Thondike’s stimulus Response theory and shorthand. The review of empirical studies covered studies on DVD and shorthand. The researcher reviewed many studies on CD, VCD, DVD and others. Their relationship to the study was shown, at the end of the review of each study. Akubuilo (2011) stated that most schools are behind integration of technology in class. It is part of this gap that the study filled. Also Enenmuo (2007) in his study found out that Nigeria is behind the use of computers. The study also filled part of this gap because DVD content package can play on computer. Ezenwafor (2007) in his study concluded that shorthand is relevant to the effectiveness of confidential secretaries. Ezenwafor also stated that interested students make effort to learn
shorthand. Igbonoba (2004) discovered that interest can be developed through the use of variety of teaching techniques of which DVD content package may be one. So, there is need for this study.

In conclusion, the theoretical framework gave enough learning theories and principles that are underlining this study. In addition, the conceptual framework shows that the traditional method of teaching shorthand without DVD content package is not effective. For instance, the lecture method can only be used when the teacher wants to have his first class encounter with the students and the discussion method without device is only good in discussing the career areas of the subject. Thus there is need to teach shorthand to secondary school students with DVD content package so as to improve instruction, students’ achievement and interest in the subject.

Also, some emphases have been made in this review of literature in order to show the need for this study. Empirically, some work have been done on effect of DVD and media in other subjects like English language, music and other related subjects, but not much empirical work has been done on effect of DVD content package on shorthand. It was this gap that this study filled.
CHAPTER THREE
RESEARCH METHOD

Research Method

This chapter is concerned with the description of research design and the procedure that were used in this study. The essential components of this chapter are research design, area of study, population of the study, sample and sampling technique, instruments for data collection, validation of the instruments, reliability of the instruments, experimental procedure and method of data analysis.

Research Design

The research was a quasi-experimental design in which a pretest-posttest non-randomized control group design was used. A quasi experimental design resembles an experimental study, but is unable to control potential factors. For Ofo cited in Ibemesi (2003) quasi experiment is applied in a situation where the researcher cannot control or manipulate all relevant variables. Quasi experiment is not a true experiment. In a quasi-experimental design the absolute terms cannot be controlled but the following extraneous variables were controlled in the study namely: teachers variables, students variables, experimental bias, instructional variables, inter-group variables and pre-test post-test effect. This study was aimed at finding out the effect of DVD usage on students’ achievement and interest in Shorthand. Intact classes were used for the study. In this study the treatment group was taught using DVD and the control group was taught using conventional method.

Area of Study

The study was carried out in Onitsha Education Zone of Anambra State in Nigeria. Onitsha Education Zone comprises of Onitsha North, Onitsha South and Ogbaru Local Government Areas. The area consists of urban and sub-urban areas where the main occupation of the people is trading. The researcher chose this area because the number of students that register shorthand in the area was very small and students’ performance in
shorthand in this area was also very poor. In addition the researcher wants to find out whether
the poor achievement was as a result of the fact that most of the parents of the secondary
school students in the area are not all that literate and they are more into business.

**Population of the Study**

The population of this study comprised of all senior secondary school class one
students (SSSI) in Onitsha Education zone. Five thousand nine hundred and thirty-three
(5,933) SSSI students in Onitsha Education Zone made up the population (data from Onitsha
Education Zone office).

**Sample and Sampling Technique**

Nine (9) co-educational secondary schools in Onitsha Education Zone were used for
this study. It was from these 9 schools that two schools were selected by simple random
sampling technique for the study because gender was a variable. SSSI students were sampled
because shorthand begins in SSSI. In each of the schools one intact class of SSSI was drawn
by simple random sampling technique making a total of two classes. The intact classes were
randomly assigned to treatment and control conditions through simple balloting.

Distribution of Sample by Gender and Class, which was attached as appendix B
showed that 82 students (47 males and 35 females) were used for the study. 42 students (24
males and 18 females) were used as the experimental. 40 students (23 males and 17 females)
were used as the control. Forty-two (42) SSSI students were used as experimental while 40
SSSI students were used as control group.

**Instruments for Data Collection**

The instruments for data collection were an achievement test and Shorthand interest
inventory. The instruments were constructed by the researcher and were administered to the
students by the researcher with the help of those teachers that were used in the study. They
are attached as appendices C & D pages 107 and 111.
The achievement test consisted of sections A and B. Section A contains 20 items, which were multiple-choice objective questions on secondary school shorthand. Section B contains dictation for 25 words per minute warming test in secondary school shorthand. It contains ten sentences on long vowel O and A. The instrument was attached as appendix C. The Shorthand Interest Inventory (SII) consisted of 20 items in which students indicated the extent of their interest. It covered general areas of secondary school students’ interest in shorthand, which included dictation, writing shorthand exercise, assignments, and other practical and social attitudes towards the subject.

**Validation of the Instruments**

In order to ensure the face and content validities of the instruments, they were given to 6 experts (one expert in Business Education, one expert in Educational Technology, one expert in Curriculum Studies and two experts in Measurement and Evaluation all in University of Nigeria Nsukka and one expert in Business Education Department of Federal Government Girls’ College, Onitsha).

For the content validation of section A of the achievement test, a table of blue print or specification of Shorthand Achievement Test (SSSAT) containing columns for knowledge, comprehension, application and analysis which are levels of cognitive domain contained in the achievement test was used by the validates and the blue print was attached as appendix E (ii). 7 items in the achievement test which was 35% fell under the knowledge level. The 7 items were: 2,3,14,16,17,18 and 19. 4 items which is 20% fell under the comprehension level. The items were: 8, 12, 13 and 15. 9 items which was 45% were graded under application. The items were: 1, 4, 5, 6, 7, 9. 10 and 11. The validates agreed with the grading. For the two sections, the validates were requested to determine the framing style and the suitability as well as the coverage of the scheme of work. The validates were also requested to do the following:

- Read and revise/modify the items if necessary.
- Re-word/delete/add items as they were considered appropriate.
- Make any general comments/suggestions on the instrument.

After the validation, the options of items 13, 15 and 16 of the achievement test were restructured.

For the shorthand interest inventory (SII), 10 positive and 10 negative items were presented to the experts to validate based on the following criteria.

(a) Extent to which the statement in the Shorthand interest inventory (SII) assesses interest in secondary school Shorthand.

(b) Clarity of language to SSSI.

It is attached as appendix D.

Based on their validation, items 3, 4, 6, 10, 12 and 16 were restructured.

The lesson plans and lesson notes were face validated by three experts (one expert in Business Education Unit University of Nigeria, Nsukka, one expert in Curriculum Studies University of Nigeria, Nsukka and one expert in Business Education Department of Federal Government Girls’ College, Onitsha). The lesson plan shows how the teacher arranges to deliver his lesson in advance while lesson notes contain the explanation of the concepts or the topics of the lesson. The lesson plan and the lesson notes were prepared by the researcher for the teachers that were used for the study. They were specifically requested to examine the extent to which:

- The lesson plans covered the content.
- The objectives of the lesson were clearly stated.
- The objectives were appropriate to students’ level.

Their reports show that the lesson plans and lesson notes were of good standard.

The DVD plate illustrations/demonstrations where the researcher write down shorthand characters for teaching the experimental group was validated by three experts: one in educational technology, University of Nigeria, Nsukka, one expert in Business Education...
Unit, University of Nigeria Nsukka and one expert in Business Education Department of Federal Government Girls’ College Onitsha. They specifically examined the following:

- The standard and suitability of the DVD to the students.
- Change/add illustrations or demonstrations as they were considered necessary.
- Clarity of the content of the DVD to the students.
- Make any general comments/suggestion on the DVD.
- Extent to which the DVD illustrations covered the scheme of work.

Following their reports, the DVD plate was edited so as to show the demonstrations properly, control noise in the environment especially the ones that did not affect the demonstrations and to bring out mostly the hand that was writing the characters.

The letter of request for validation was attached as appendix E (i).

**Reliability of the Instrument**

To determine the reliability of the instruments, they were administered to twenty students of SSS1 in Comprehensive Secondary School Ogidi in Idemili North Local Government Area of Anambra State that was not used for the study. The split half technique was used to establish the reliability of the achievement test by dividing the scores into even and odd. Then deriving the correlation coefficient of the half part of the test using a statistical package for the Social Sciences (SPSS) in the excel method. Brown prophecy formula was then used to arrive at the correlation coefficient of the whole test which was .94 (see appendix K pg 136-137). This shows that the instrument is reliable to that extent.

The internal consistency of the shorthand interest inventory was estimated using Cronbach’s Alpha Coefficient Method. This method was considered appropriate because of the fact that the items are not dichotomously scored. The reliability coefficient was .95. This shows that the instrument is internally consistent. The working of the reliability is attached as appendix L pg138-139.
Experimental Procedure

Before the commencement of the training, the researcher sort the co-operation of the principals of the schools involved to enable her build in her research programme into the school’s schedule without disrupting the later. The researcher did this by explaining the purpose and the benefits that could be derived if properly conducted. This helped the researcher to obtain their co-operation throughout the study.

The principals thereafter introduced the researcher to the shorthand teachers who served as the research assistants. The researcher took time to familiarize herself with the teachers and discussed extensively with the teachers on the skills involved in the use of DVD content package for the teachers in the treatment group and conventional approach for the teachers in the control school.

To determine the extent of mastery of the required skills by the research assistants, the researcher used them to train other subjects not involved in the study during the trial testing. A lot of mock sections were carried in groups with these subjects. The researcher monitored their performance during the mock sessions to determine the extent they could help in achieving the purpose of study. The achievement test and the Shorthand Interest Inventory were administered to the subjects before the commencement of the treatment as pretest. Thereafter, the teaching with the DVD began.

The quasi-experimental group was taught by their regular teacher using the DVD while the control group was also taught by their regular teacher using conventional or traditional method. The major difference between the two was that in the experimental group, the teacher used DVD to teach. Both teachers of the experimental and control groups were trained by the researcher for the study.

The researcher prepared DVD content package using the topics that appear in the scheme of work of SSS1 in shorthand. The scheme of work was attached as appendix F. Thus the DVD content package and the teaching procedure are presented below.
Week I: Since the scheme of work shows that the topic for first week was introduction of shorthand, that is, the meaning of shorthand and its importance. Then the researcher decided to start the DVD content package by showing students a purported office of a confidential secretary. That was to arouse their interest in the subject. Picture of a flashy car was also shown to them as a car belonging to one of the journalists in the country. This was to show them the picture and dream of their future career, if they would be secretaries or journalists. That is to make them to have idea of what they will be in future with their chosen career. Hence the teacher of the experimental group switched on the DVD content package with TV in the classroom after explaining to them the meaning and importance of shorthand. This made him a teacher and a facilitator at the same time. At the point where he was doing the explanation and writing down the points for the students to copy, he was a teacher. As soon as he switched on the DVD content package, he became a facilitator. This brought in variations in teaching. Then students watched how to write the shorthand characters and wrote them.

Week one continued with the first six consonants. This made the researcher to record on the DVD how to write the first six consonants and consonants F, V, K, and G, which she demonstrated for them to see. The character of each of the consonant was written gradually so that students could see how it is written.

Also, recording of how the consonants were joined without lifting the pen was shown. That is, the writing of more than one consonant; for example joining consonant T and B or consonant D and T. Dictation of the consonants (first six) were also recorded so that the teacher could switch on the DVD content package for the students to write. This helped the teacher to supervise what the students were writing.

Week II: In the scheme of work, it contained vowels, vowel places and position. Here the researcher demonstrated how to write long vowel A and O as well as writing of some words that contain long vowels A and O. Week II continued with the vowels especially long A and
O. Here the recording of dots and dashes used to represent the vowels were switched on by the teacher. Thus the DVD content package where the researcher demonstrated the writing of the vowels was switched on.

**Week III:** It contained first down strokes PBT and D with long vowels A and O. The researcher demonstrated the writing of some words containing PBT and D strokes and long vowels A and O. Examples Day, Date, Bow, Boat and others.

**Lastly Week IV:** According to the scheme of work, it contained short forms/ phrases. Thus the demonstrations of the short forms were recorded for example /./ represents (the). Phrase like / >/ represents (to-the) and others. The researcher demonstrated and then illustrated how to write down the characters with words and sentences containing short forms in the DVD content package. The Summary of the week I –week IV work of the DVD was switched on to the students. At the end of this week, the post-test that was evaluation will be administered.

DVD content package was used in teaching the experimental group. The teaching was characterized by the following procedure:

**Step I:**

The experimental group teacher started the class by an Introduction on the television of the day’s lesson. He described shorthand and the importance of shorthand to everyday life.

**Step II:**

The experimental group teacher introduced the first six consonants on the television and showed the direction of the writing of strokes. Students watched. He also introduced consonant F, V, k and G.

**Step III:**

Students asked questions for clarifications. Teacher explained and gave class assignment / drilling from the television.
Step IV:

Students were drilled using DVD content package on the television in the class while the teacher supervised to check poor techniques.

Step V:

Informal evaluation.

The lesson plan was attached as appendix G and the lesson note for experimental group was attached as appendix H.

The design for control group went on like this:

Week I: The teacher introduced shorthand and its importance to the students. He explained the points and wrote the notes for them to copy. The teacher taught them consonants: first six consonants and consonants F, V, K, and G. The teacher wrote down the characters on the board. He also joined some consonants for them. The teacher gave them some oral dictation.

Week II: The teacher taught them vowel and the second place vowels especially long A and O. He wrote down the dots and dashes of the vowels. The teacher gave them some second place vowels by writing them down on the board. He gave them some oral dictations to write.

Week III: The content for this week was PBT and D with long vowels A and O. The teacher wrote down some words containing the PBT and D consonants with long vowels A and O. students copied down from the board.

Week IV: The teacher took them to short forms/phrases. He wrote them on the board and the students copied. He gave them summary of what had been taught. At the end, they were evaluated (post-test).

The conventional method was used to teach the control group. The teaching procedure was in this way:

Step I:

He started the lesson by writing down the topic of the day on the board.

Step II:
He explained the topic to the students and wrote down the consonants on the board while the students watched.

**Step III:**

The students asked the teacher some questions where they were not clear and then the teacher explained or clarified. The teacher re-wrote the consonants for more clarification.

**Step IV:**

The students were drilled using the board. Teacher identified the errors.

**Step V:**

Students copied the outlines on the board and the teacher checked the techniques.

**Step VI:**

Evaluation – Informal

The lesson plan was attached as appendix I and the lesson note for control group was attached as appendix J. The students regular classroom teachers taught the students and the teachers were trained for one day by the researcher on how to teach the students.

**Control of Extraneous Variables**

The following experimental variables in this study were controlled

(a) Teachers variables: The lesson plans covering the topics in the scheme of work for the study were prepared by the researcher for the shorthand teachers that were used in the study. The teachers that taught the experimental group were trained on how to use the DVD. This was to enable them to switch on to the DVD at the required points and to make them to be teachers and facilitators at the same time of teaching the experimental group or students. The control group teachers were also trained on how to teach the group with the lesson plan and notes for conventional method.

(b) Students Variables: The students in the experimental and control groups were taught the same shorthand topics within the scope of the study at the same length of time but the
experimental group was taught using DVD content package. Both were taught for four weeks. To control contamination, two different schools were used for the study (one for the experimental and the other for control).

(c) Experimental Bias: The students were taught by their regular teachers. The only difference is that the experimental group was taught using the DVD content package recordings prepared by the researcher.

(d) Instructional Variables: To make sure that the instructional situation is controlled the same lesson plans prepared by the researcher were used by the teachers of the two groups (experimental and control) and the students were not told that they were used for the study in order to control Hawthorne effect

(e) Inter-group variables: This was controlled to an extent as intact classes of non-randomized equivalent group were used in two different schools.

(f) Pre-test Post-test Effect: The experiment lasted for four weeks that is one month and it was believed that this period was long enough so as not to permit the pre-test to affect the post-test scores or interfere with the experimental treatment. The period also reduced the contamination effect of male and female students in the study.

Method of Data Analysis

Mean was used to answer research questions while the hypotheses were tested at .05 level of probability. ANCOVA was also used to partial out the initial differences of the research subjects because intact classes were used in the study.

For the scaled instrument (Shorthand Interest Inventory), which was a four point scale, the cut-off point mean was 2.5. The positive statements were scored as follows:

- Strongly agree (SA) --------------- 4 points
- Agree (A) ------------------------- 3 points
- Disagree (D) --------------------- 2 points
- Strongly Disagree (SD) ----------- 1 point

For the negative statements the scores were reversed.
CHAPTER FOUR

RESULTS

This chapter contains the presentation and analysis of data. Data relevant to each research question and hypothesis are presented and analyzed.

Research Question 1: What are the mean achievement scores of secondary school students taught Shorthand using DVD content package and those taught using the conventional Method?

Table 1: Mean Pretest and Posttest Achievement Scores and Standard Deviations of Secondary School Students Taught Shorthand Using DVD content package and Those Taught Using Conventional Method.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Pretest $\bar{x}$</th>
<th>SD</th>
<th>Posttest $\bar{x}$</th>
<th>SD</th>
<th>Mean Gain Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>42</td>
<td>31.69</td>
<td>8.12</td>
<td>59.38</td>
<td>13.44</td>
<td>27.69</td>
</tr>
<tr>
<td>Control</td>
<td>40</td>
<td>31.18</td>
<td>12.90</td>
<td>33.88</td>
<td>15.55</td>
<td>2.70</td>
</tr>
</tbody>
</table>

The data presented in Table 1 show that the experimental group had a pretest mean score of 31.69 and a posttest mean score of 59.38. This gives a mean gain score of 27.69. The control group had a mean pretest score of 31.18 and a posttest mean score of 33.88, giving a mean gain score of 2.70. The standard deviation of the experimental group in pretest is 8.12 and posttest is 13.44 and the control group standard deviation in pretest is 12.99 and posttest is 15.55. The data therefore indicate that the mean gain score of the experimental group are higher than the mean gain score of the control group. This suggests that the experimental group performed better than the control group.

A corresponding hypothesis raised to further address the research question is:
**Hypothesis 1:** There is no significance difference in the mean achievement scores of students in secondary school taught Shorthand using DVD content package and those taught by conventional method.

Table 2: 2-Way Analysis of Covariance (ANCOVA) of Students’ Post Treatment Achievement Scores on DVD Content Package by Treatment and Gender

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>13729.104</td>
<td>4</td>
<td>3432.276</td>
<td>16.082</td>
<td>.000</td>
</tr>
<tr>
<td>Intercept</td>
<td>15133.553</td>
<td>1</td>
<td>15133.553</td>
<td>70.909</td>
<td>.000</td>
</tr>
<tr>
<td>Pretest</td>
<td>100.992</td>
<td>1</td>
<td>100.992</td>
<td>.473</td>
<td>.494</td>
</tr>
<tr>
<td>Treatment</td>
<td>12500.422</td>
<td>1</td>
<td>12500.422</td>
<td>58.571</td>
<td>.000</td>
</tr>
<tr>
<td>Gender</td>
<td>208.220</td>
<td>1</td>
<td>208.220</td>
<td>.976</td>
<td>.326</td>
</tr>
<tr>
<td>Treatment * Gender</td>
<td>181.698</td>
<td>1</td>
<td>181.698</td>
<td>.851</td>
<td>.359</td>
</tr>
<tr>
<td>Error</td>
<td>16433.591</td>
<td>77</td>
<td>213.423</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>210831.000</td>
<td>82</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>30162.695</td>
<td>81</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

R Squared = .455 (Adjusted R Squared = .427)

The data in Table 2 show that the use of DVD content package as a factor in the study had a significant effect on the achievement of students in learning shorthand. The calculated F-ratio of 58.571 is significant at .000 level and therefore significant at .05 levels. Therefore, the researcher fails to accept the null hypothesis of no significant difference in the mean achievement scores of students taught shorthand using DVD content package and those taught by conventional method.

**Research Question 2:** What are the mean achievement scores of secondary school male and female students in shorthand?
The data in Table 3 show that the males in experimental group had a mean post treatment achievement score of 59.38 while the females had a mean post treatment score of 59.39. This gives a mean male/female difference of .01 (59.39 – 59.38) in favour of the females. The males in the experimental group had a standard deviation of 13.55 and the females had a standard deviation of 13.69. This gives .14 (13.69 – 13.55) in favour of females. This data reveal that there are not much difference between the mean achievement scores and the standard deviation of male and female students in the experimental group.

To further answer the above research question a corresponding hypothesis was formulated:

**Hypothesis 2:** There is no significant difference in the mean achievement scores of secondary school male and female students in shorthand.

Data in Table 2 indicated that gender as a factor in the study has no significant influence on the mean achievement scores of secondary school students in shorthand, especially, when taught using DVD content package. The calculated F-value of .976 is significant at .326 level of significance and therefore not significant at .05 levels of significance. The researcher therefore accepts the null hypothesis of no significant difference in the mean achievement scores of secondary school male and female students in shorthand.

**Research Question 3:** What are the interaction effects of method and gender on mean achievement scores of secondary school students Shorthand?

<table>
<thead>
<tr>
<th>GENDER</th>
<th>NO</th>
<th>(\bar{X})</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>24</td>
<td>59.38</td>
<td>13.55</td>
</tr>
<tr>
<td>Female</td>
<td>18</td>
<td>59.39</td>
<td>13.69</td>
</tr>
</tbody>
</table>

Table 3: Mean Posttest Scores and Standard Deviations of Male and Female Students Taught Shorthand using DVD Content Package.
Table 4: Posttest Mean Achievement Scores and Standard Deviations of Students in Shorthand by Treatment and Gender.

<table>
<thead>
<tr>
<th>Treatment Groups</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>$\bar{X}$</td>
<td>SD</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>24</td>
<td>59.38</td>
<td>13.55</td>
</tr>
<tr>
<td>Control Group</td>
<td>23</td>
<td>31.52</td>
<td>13.01</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
<td>35.52</td>
<td></td>
</tr>
</tbody>
</table>

Data presented in Table 4 indicate the effect of interaction between DVD content package and gender on achievement scores of students in shorthand. The mean achievement scores across the two gender groups for the treatment and control groups differ. Males in the experimental group had a mean score of 59.38 and a standard deviation of 13.55 while males in the control group had a mean score of 31.52 and a standard deviation of 13.01. Females in the experimental group had a mean score of 59.39 and a standard deviation of 13.69 while females in the control group had a mean score of 37.06 and a standard deviation of 18.38. The data indicate that males and females in the experimental group had a higher mean achievement score than males and females in the control group.

A corresponding hypothesis formulated to further address the research question is:

**Hypothesis 3:** There is no significant interaction effect of method and gender in the mean achievement scores of secondary school students in Shorthand.

Table 2 showed that there is no significant interaction effect of treatment using DVD content package and gender in achievement in shorthand. The calculated F-value of .851 is significant at .359 and therefore not significant at .05 levels. Thus, the researcher upholds the null hypothesis of no significant interaction effect of treatment and gender in shorthand achievement mean scores of secondary school students.

**Research Question 4:** What are the mean interest scores of secondary school students taught Shorthand using DVD content package and those taught by conventional method?
Table 5: Pretest/Posttest Mean Interest Scores and Standard Deviations for Students in Secondary School Taught Shorthand Using DVD content package and Those Taught by Conventional Method.

<table>
<thead>
<tr>
<th>GROUP</th>
<th>N</th>
<th>PRETEST</th>
<th>POSTTEST</th>
<th>MEAN GAIN SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>X</td>
<td>SD</td>
<td>X</td>
</tr>
<tr>
<td>Experiment</td>
<td>42</td>
<td>59.98</td>
<td>8.96</td>
<td>84.00</td>
</tr>
<tr>
<td>Control</td>
<td>40</td>
<td>55.98</td>
<td>8.28</td>
<td>57.90</td>
</tr>
</tbody>
</table>

The students exposed to training in DVD content package had a pretest mean interest rating of 59.98 with standard deviation of 8.96 and a posttest mean interest rating of 84.00 with standard deviation of 6.39. This gave a pretest/posttest interest mean gain score of 24.02. The students in the control group had a pretest mean interest rating of 55.98 with standard deviation of 8.28 and a posttest interest rating of 57.90 with standard deviation of 12.63, giving a pretest/posttest interest mean gain score of 1.92. The data indicate that the students in the experimental group had a higher mean interest rating than those in the control group.

A corresponding hypothesis raised to further address the research question is:

**Hypothesis 4:** There is no significant difference in the mean interest ratings of secondary school students taught Shorthand using DVD content package and those taught using conventional method.
Table 6: 2-Way Analysis of Covariance (ANCOVA) of Students’ Post Treatment Interest Rating in Shorthand.

<table>
<thead>
<tr>
<th>Source</th>
<th>Type iii</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected model</td>
<td></td>
<td>14136.263a</td>
<td>4</td>
<td>3534.066</td>
<td>35.259</td>
<td>.000</td>
</tr>
<tr>
<td>Intercept</td>
<td></td>
<td>6767.009</td>
<td>1</td>
<td>6767.009</td>
<td>67.514</td>
<td>.000</td>
</tr>
<tr>
<td>Preinterest</td>
<td></td>
<td>88.206</td>
<td>1</td>
<td>88.206</td>
<td>.880</td>
<td>.351</td>
</tr>
<tr>
<td>Treatment</td>
<td></td>
<td>12878.407</td>
<td>1</td>
<td>12878.407</td>
<td>128.486</td>
<td>.000</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td>40.000</td>
<td>1</td>
<td>40.000</td>
<td>.399</td>
<td>.529</td>
</tr>
<tr>
<td>Treatment *gender</td>
<td></td>
<td>90.051</td>
<td>1</td>
<td>90.051</td>
<td>.898</td>
<td>.346</td>
</tr>
<tr>
<td>Error</td>
<td></td>
<td>7717.834</td>
<td>77</td>
<td>100.232</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>438346.000</td>
<td>82</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected total</td>
<td></td>
<td>21854.098</td>
<td>81</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. R Squared = .647 (Adjusted R Squared = .629)

The results presented in table 6 indicated that the use of DVD content package as a factor in the study had a significant effect on the interest of students in shorthand. This is because the calculated F-value of 128.486 in respect of treatment as main effect is shown to be significant at .000 levels and therefore significant at .05 levels of significance. Therefore, the researcher fails to accept the null hypothesis of no significant difference in the mean interest ratings of the treatment and control groups.

Research Question 5: What are the mean interest ratings of secondary school male and female students in Shorthand?

Table 7: Mean Posttest Interest Ratings and Standard Deviations of Male and Female Students in Shorthand.

<table>
<thead>
<tr>
<th>GENDER</th>
<th>NO</th>
<th>X</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>24</td>
<td>82.75</td>
<td>6.93</td>
</tr>
<tr>
<td>Female</td>
<td>18</td>
<td>85.67</td>
<td>5.34</td>
</tr>
</tbody>
</table>
The data in Table 7 indicated the difference in the mean interest ratings of male and female students in the study. It can be seen from the result that the male students in the experimental group had a mean interest ratings of 82.75 while the females had a mean of 85.67; giving a male/female mean interest difference of 2.92 (85.67 – 82.75) in favour of the females. In addition the male students in the experimental group had a standard deviation of 6.93 while the females had a standard deviation of 5.34 This data suggests that there are not much difference between the mean interest ratings and the standard deviations of male and female students in the experimental group.

A corresponding hypothesis formulated to further address the research question is:

**Hypothesis 5:** There is no significant difference in the mean interest ratings of male and female students in shorthand.

The results in Table 5 indicated that gender as a factor in the study has no significant influence on the mean interest ratings of students exposed to DVD content package. The calculated F-value of .399 is significant at .529 levels and therefore not significant at .05 levels of significance. The researcher therefore accepts the null hypothesis of no significant difference in the mean interest ratings of students exposed to DVD content package.

**Research Question 6:** What are the interaction effect of treatment and gender on the mean interest ratings of secondary school students in Shorthand?
Table 8: Posttest Mean Interest Ratings and Standard Deviations of Students in Shorthand by Treatment and Gender.

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>X</td>
<td>SD</td>
</tr>
<tr>
<td>Experimental group</td>
<td>24</td>
<td>82.75</td>
<td>6.92</td>
</tr>
<tr>
<td>Control group</td>
<td>23</td>
<td>58.17</td>
<td>12.40</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data presented in Table 8 indicated the effect of interaction between DVD content package and gender on interest ratings of students in shorthand. The mean interest ratings across the two gender groups for the treatment and control groups differ. In this group, the males in the treatment group had a higher mean score of 82.75 and a standard deviation of 6.92 as against a mean score of 58.17 and standard deviation of 12.40 for those in the control group. On the other hand, females in the experimental group had a higher mean interest rating of 85.67 and a standard deviation of 5.34 as against a mean interest rating of 57.53 and a standard deviation of 13.32 for those in the control group.

A corresponding hypothesis raised to further address the research question is:

**Hypothesis 6:** There is no significant interaction effect of treatment and gender on the interest of students in shorthand.

The results in Table 5 indicated that there is no interaction effect between treatment and gender in the interest of students in shorthand. The calculated F-value of .898 which is significant at .346 levels of significance but not significant at .05 levels indicates this. Therefore, the researcher accepts the null hypothesis of no significant interaction effect of treatment and gender on the interest of students in shorthand.

**Summary of Findings**

Results presented in this chapter reveal the following:
• The students taught shorthand using DVD content package had a higher mean achievement scores than those taught using conventional method.

• There is significant effect in the mean achievement scores of students in secondary school taught shorthand using DVD content package and those taught using conventional method.

• Female students achieved as much as male students in shorthand.

• Gender had no influence in the mean achievement scores of secondary school students in shorthand.

• Male and female students in the experimental group achieved more than male and female students in the control group.

• Method and gender had no significant effect on mean achievement scores of secondary school students in Shorthand.

• The students taught shorthand using DVD content package had a higher mean interest ratings than the students taught using conventional method.

• There is significant difference in the mean interest ratings of secondary school students taught Shorthand using DVD content package and those taught by conventional method.

• Female students showed interest as much as male students.

• Gender had no significant effect in the mean interest ratings of secondary school students in shorthand.

• Male and female students in the experimental group had higher interest ratings than male and female students in the control group.

• Method and Gender had no significant effect on mean interest ratings of secondary school students in shorthand.
CHAPTER FIVE
DISCUSSION, CONCLUSION, EDUCATIONAL IMPLICATION, RECOMMENDATIONS AND SUMMARY

In this chapter, the discussion of the major findings of the study and the educational implications of the Study are presented. It also highlights the conclusion, recommends areas for further studies and summary of the study.

Discussion of the Findings

The findings of the study are discussed under the following sub-headings:

- DVD content package and achievement in shorthand.
- Gender and achievement in shorthand.
- Method, gender and achievement in shorthand.
- DVD content package and interest in shorthand.
- Gender and interest in shorthand.
- Method, gender and interest in shorthand.

**DVD Content Package and Achievement in Shorthand**

Under this sub-heading the achievement of students taught shorthand using DVD content package and those taught using conventional method is discussed. The result showed that the experimental group taught Shorthand using DVD content package obtained higher mean achievement scores than the control group taught using conventional method. The result also showed that DVD content package had significant effect on secondary school students’ achievement in shorthand. This is in line with the findings of Lion, Kutchen and Wang (2008) who conducted a study on the use of DVD in teaching and came out with enhanced achievement. It is also in line with the findings of the study carried out by Schafer (2008) on the use of DVD in German school, which facilitated the achievement of the students, although it does not specify whether DVD content package was used in teaching shorthand. It can be extended to teaching of shorthand.
This result is also in agreement with the findings of Waller, Tobin and Biram (1972) who conducted a research on the use of audio-visual aid in teaching. The study showed that there is significant improvement in performance of those who worked from the tapes. In addition Wittich and Schuller (1973) cited Philip, Varney and Mierhency who conducted a study on the use of motion pictures and films in retention of information in the cognitive domain. The use of DVD helped the students to retain and remember what they were taught. This helped to increase their achievement.

From the result, one can infer that students in the experimental group have more understanding of the subject than those in the control group. This is because they achieved more than those in the control group. The use of DVD content package also helped students to participate actively in the class which enhanced their retentive memory. This accounts for the significant effect in achievement of students in the subject. In addition, the experimental group achieved a higher mean score than the conventional group. This proves the superiority of the use of DVD content package in teaching the subject.

**Gender and Achievement in Shorthand**

The achievement of male and female students in shorthand is highlighted here. The study showed that there is not much difference between the achievement of male and female students in shorthand. Also one of the findings of the study is that gender had no significant effect on secondary school students’ achievement in shorthand. This means that secondary school male and female students achieved highly in shorthand. This finding is in line with the findings of Nwana (2010) who conducted a research on gender effect in the use of video technique on students’ achievement and came out with no significant effect on the achievement of secondary school male and female students.

This result is also in agreement with the findings of Ibegbu (2011) which showed that there was no significant effect of the use of computer on male and female students’ achievement in shorthand. Female students achieved as much as their male counterparts.
This is also in line with the findings of Ibegbu (2010) where team teaching had the same positive effect on male and female students.

**Method, Gender and Achievement in Shorthand**

The achievement of male and female students in the experimental group and control group is discussed under this sub-heading. Male and female students in the experimental group had higher mean achievement scores than male and female students in the control group. The finding of the study also showed that there is no significant interaction effect of method and gender on the mean achievement scores of secondary school students in shorthand when the two sexes were exposed equally to the DVD content package. This means that the treatment (DVD content package) administered to the subjects improved their achievement. That is DVD content package is effective in teaching and learning of shorthand. This is in line with the findings of Nwana (2010) where the treatment he gave to the subjects brought about changes in the achievement of the students that were used for the study. Literature reviewed also showed that DVD content package is effective in teaching and learning (Lion, kitchen and Wang 2008).

**DVD and Interest Ratings in Shorthand**

Under this subheading, the interest ratings of students taught shorthand using DVD content package and those taught using conventional method are discussed. The result revealed that the interest ratings of students taught shorthand using DVD content package are higher than those taught using conventional method. From the result also DVD content package had significant effect on secondary school students’ interest ratings in Shorthand. This means that those subjects taught shorthand using DVD content package showed and developed more interest than those taught using conventional method. This might be because children like watching DVD. This finding is in line with the finding of Nworgu and Okereke (2011) where students expressed high level of interest. This result is also in agreement with the findings of
Wigfield (2010) where interest predicted achievement in students. This is also in line with the findings of Köller, Baumert and Schnabel (2010) where the findings underline the importance of interest for academic choices and achievement. In addition, Ezenwafor maintained that interest makes students to learn.

This finding also agrees with the finding of Emerick (1992) where there was evidence that some gifted underachievers responded well to interventions incorporating educational modifications which focus on individual strengths and interests. DVD content package is one of the interventions. Also the findings are in support with the findings of Jianzhong (2008) where students’ interests were also increased.

One can infer that DVD content package increased secondary school students’ interest in shorthand. That is DVD content package made secondary school students to develop interest in the subject and so achieved higher than those taught with conventional method.

**Gender and Interest Ratings in Shorthand**

Male and female interest ratings are discussed under this sub-heading. There is not much difference between the interest ratings of male and female students in shorthand. The result also showed that there was no significant difference in the mean interest ratings of secondary school male and female students in shorthand. This means that female students showed as much interest as male students in shorthand. This is in line with the finding of Akaneme and Onyeabor (2011) where gender had no significant influence on students’ interest. It is also in agreement with the study of Messmer (1993) where the study nevertheless shows that girls' and boys' views on gender roles and corresponding areas of activities have changed considerably in recent year.

**Method, Gender and Interest Ratings in Shorthand**

In this sub-heading, male and female interest ratings of the experimental group and male and female interest ratings of the control group are discussed. Male and female students in the
experimental group had higher interest ratings than those in the control group. The result also showed that there was no significant interaction effect of method and gender on secondary school students’ interest in shorthand. Although the mean interest ratings of male and female students in the experimental group are higher than the mean interest ratings of the male and female students in control group, there was not much difference in the male and female students’ interest ratings in the experimental group. It means that the increase in interest ratings of secondary school students in shorthand was brought about by the treatment giving to them. This agrees with the findings of Nworgu and Okereke (2011) where the treatment they gave to their subjects increased their interest. This finding supports the findings of Jianzhong (2008) where the treatment he gave to the students increased the students’ homework interest. Also Igbonoba (2004) stated that students’ interest can be sustained through the use of a variety of teaching techniques of which DVD content package is now one. In addition, it goes with the study of Emerick (1992) where the results suggest that educational interventions focused on areas of students’ interest may be particularly effective. The findings then portray the effectiveness of DVD content package in development of interest.

Conclusion

On the basis of the discussion of the findings, the following conclusions were made:

- DVD content package enhanced students’ achievement in shorthand therefore; it is superior and better than conventional method.
- DVD content package gave equal opportunity to secondary school male and female students in achieving well in shorthand.
- DVD content package is effective in teaching shorthand to secondary school students.
- DVD content package increased students’ interest in shorthand.
DVD content package made secondary school male and female students to have interest in shorthand.

DVD content package is effective in development of interest in shorthand.

**Educational Implications of the Study**

The findings of this study have implications for mostly students, teachers, and curriculum planners. The findings show that DVD content package enhanced students’ achievement in Shorthand. This implies that the usage of any device adopted by a teacher in teaching a subject can determine to a great extent the level of students’ achievement in the subject. The result of the study also provided empirical data that DVD content package is better and superior in teaching Shorthand than conventional method since DVD content package produced better result than conventional method. It then implies that Shorthand teachers are using wrong method thereby denying students the opportunity of improving on their achievements.

Gender was found to have no significant effect in the mean achievement scores of secondary school students in shorthand. This means that male students achieved as much as female students in shorthand. This implies that male and female students are endowed to achieve well in shorthand, when an effective method is used.

Method and gender was found to have no significant effect on secondary school students’ achievement and interest in Shorthand. This implies that DVD content package created equal opportunity for improvement in achievement as well as in the development of interest in Shorthand. It also implies that curriculum planners can include DVD content package usage in teaching while planning curriculum for secondary school students.
Recommendations

Based on the findings and the implications of this study, the following recommendations are made:

- Shorthand teachers should be familiar with the use of DVD content package in teaching so that they can start using it. It is good that conferences, seminars and workshops be organized periodically by governments and other relevant professionals like Nigeria Union of Teachers to educate Shorthand teachers on the use of DVD content package in teaching and learning. Also State Ministry of Education and even Onitsha Education zone can organize shorthand teachers’ day talk or seminar to expose the teachers on the use of DVD content package in teaching.

- Research studies on DVD content package need to be undertaken for a better understanding of its nature and scope as well as its importance with the ultimate intention of including it into the teachers’ education training institutions’ programmes. This will help to use DVD content package in teaching some difficult subjects to secondary school students.

- In addition to the above recommendations, curriculum planners should include the use of DVD content package in teaching Shorthand since it has enhanced students’ achievement in the subject.

Limitation of the Study

The generalization drawn from this study is subjected to this main limitation. The contents covered were only on the introductory part of the subject which is just a small aspect of the entire syllabus. Experts were not fully used for the DVD content package development.

Suggestions for Further Research

Areas for further research based on the findings and limitations of the study are:

- Replication of the study can be carried out by teaching students elaborate topics in SSS11.
- Similar research can be done using students from other education zones in and outside the state.

Summary

Students’ poor achievement in Shorthand in Senior Secondary Certificate Examination over the years made researchers and some Shorthand teachers to look into the ways of improving students’ achievement and interest in the subject. This study, therefore, sought to identify the effect of DVD content package usage on secondary school students’ achievement and interest in Shorthand.

Literature reviewed defines Shorthand as a way of rapidly representing spoken sounds (Odea, Sykes, Watson and Williams 1999). Two systems of Shorthand namely: Pitman and Gregg were also reviewed. Digital versatile disc (DVD) is defined as an electronic technology and an electronic digital disk with extensive data base (Igwebuike 2005 and Awale-Ale 2005). The concept of DVD and television was also reviewed. Lecturing, discussion and problem-solving methods were reviewed as conventional methods of teaching Shorthand. Theoretical frame work was discussed under Shorthand learning theories and theories underlining DVD content package. Empirical studies were also carried out on DVD, shorthand, interest, achievement and gender.

The study investigated the effects of DVD content package on gender (male and female students) on the achievement and interest of secondary school students in Shorthand. Six research questions were posed and six hypotheses were formulated for the study. A quasi –experimental non-equivalent control –group design was used for the study. Two intact classes of SSSI students (82 students) selected from the two co-educational secondary schools in Onitsha Education Zone were used for the study. The experimental group was taught using DVD content package and the control group was taught using conventional method. The students were taught by their regular teachers and lesson plans and notes developed by the researcher were used to teach them. The teaching lasted for 4 weeks.
Two instruments (achievement test in Shorthand and Shorthand interest inventory) were used for the study and they were developed by the researcher. The instruments were validated by 6 experts (one in Business Education, one in Educational Technology, one in Curriculum and two in Measurement and Evaluation all in University of Nigeria Nsukka, and one expert in Business Education Department of Federal Government Girls’ College Onitsha). The instruments were administered as pretest before treatment and posttest after treatment.

The research questions were answered using mean scores while the hypotheses were tested at 0.05 level of significant.

Major findings of the study are:

- DVD content package had significant effect on secondary school students’ achievement in shorthand.
- Gender had no significant influence in the achievement of secondary school students in shorthand.
- There was no significant interaction effect of method and gender on mean achievement scores of secondary school students in shorthand.
- DVD content package had significant effect on secondary school students’ interest in shorthand.
- Gender had no significant effect on secondary school students’ interest ratings in shorthand.
- There was no significant interaction effect of method and gender on mean interest ratings of secondary school students in shorthand.

These findings provided basis for some related conclusions and implications. Since the findings showed that DVD content package enhanced students’ achievement in the subject, it implies that Shorthand teachers are using wrong method. Also method and gender had no significant effect on secondary school students’ achievement and interest in
Shorthand. Based on the findings and implications, some recommendations were made. One of the recommendations is that Shorthand teachers should use DVD content package in teaching secondary students. Also curriculum planners should include the use of DVD content package in teaching shorthand in secondary school. Limitations of the study were presented and discussed and suggestions were made for further research. In conclusion DVD content package had significant effect on secondary school students’ achievement and interest in shorthand. Method and gender had no significant effect on secondary school students’ achievement and interest in shorthand.
REFERENCES


Awka


Okobiah, O.S. (2009). Keynote address delivered at conference of curriculum organization of Nigeria held on 16th-19th September.


**APPENDIX A**

Students’ Performance in Shorthand in West African Examination Council (WAEC)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>TOTAL ENTRY</th>
<th>TOTAL SAT. &amp; %</th>
<th>ABOVE &amp; % CREDIT &amp;</th>
<th>PASS LEVEL &amp;</th>
<th>FAILURE &amp;</th>
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<tr>
<td>2005</td>
<td>543</td>
<td>243</td>
<td>60</td>
<td>8</td>
<td>166</td>
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<td>45.67%</td>
<td>24.19%</td>
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<td>480</td>
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<td>59</td>
<td>13</td>
<td>166</td>
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<td>19.21%</td>
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<td>2007</td>
<td>549</td>
<td>370</td>
<td>42</td>
<td>10</td>
<td>279</td>
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<td></td>
<td></td>
<td>67.39%</td>
<td>11.90%</td>
<td>2.70%</td>
<td>75.40%</td>
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<tr>
<td>2008</td>
<td>543</td>
<td>413</td>
<td>43</td>
<td>17</td>
<td>343</td>
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<tr>
<td></td>
<td></td>
<td>76.03%</td>
<td>10.41%</td>
<td>6.54%</td>
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<tr>
<td>2009</td>
<td>247</td>
<td>247</td>
<td>74</td>
<td>60</td>
<td>73</td>
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<td></td>
<td></td>
<td>100%</td>
<td>29.96%</td>
<td>40.49%</td>
<td>29.55%</td>
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# APPENDIX B

## Distribution of Sample by Gender and Class

<table>
<thead>
<tr>
<th>Schools</th>
<th>Group</th>
<th>Class</th>
<th>Male</th>
<th>Female</th>
<th>Treatment</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onitsha High School</td>
<td>i</td>
<td>SSS1</td>
<td>24</td>
<td>18</td>
<td>Experimental</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(DVD usage)</td>
<td></td>
</tr>
<tr>
<td>Washington Grammer School</td>
<td>ii</td>
<td>SSS1</td>
<td>23</td>
<td>17</td>
<td>Control</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(Conventional Method)</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td>47</td>
<td>35</td>
<td></td>
<td>82</td>
</tr>
</tbody>
</table>
APPENDIX C1

ACHIEVEMENT TEST IN SHORTHAND FOR PRETEST/POST-TEST

SECTION A

1. Consonant /P/ is represented with:
   Heavy down stroke (b) light down stroke (c) heavy dot (d) light dot.

2. /B/ consonant character is
   Heavy (b) light (c) not too heavy (d) heavy dot.

3. Long /o/ vowel sound outline is written:
   On the line (b) above the line (c) through the line.

4. /The/ is represented with:
   (a) Heavy dot on the line (b) heavy dot above the line (c) light dot on the line (d) heavy dot through the line.

5. Consonant /T/ is represented with (a) heavy down stroke (b) heavy dot (c) light down stroke (d) light dot.

6. Consonant /D/ is represented with:
   Heavy dot (b) light dot (c) light down stroke (d) heavy down stroke.

7. /Is/ in longhand is represented with:
   (a) Small circle on the line (b) small above the line (c) small circle through the line (d) small circle between and above the line.

8. Sounds produced in speech are divided into
   (a) Character and names (b) consonants and phrases (c) Vowels and phrases (d) consonants and vowels.

9. Consonant /K/ is represented by a:
   Light straight stroke (b) heavy straight stroke (c) light horizontal stroke (d) Heavy curved stroke
10. Consonant /G/ is represented by a:

   Heavy straight stroke (b) light straight stroke (c) light curved stroke (d) heavy horizontal stroke.

11. Consonant /f/ is represented by a:

   (a) Light horizontal stroke (b) light curved stroke facing the right side. (c) Light curve stroke facing the left hand side. (d) Heavy curve stroke facing the right hand side.

12. Those sounds which are produced only when the breath is held partially or completely are called. (a) Consonants (b) vowels (c) phrase (d) phonetics.

13. All sounds produced in speech are divided into:

   Phrases and consonants (b) vowels and phrases (c) consonants and vowels (d) Only consonants

14. Pitman shorthand system is based on – structure of the English language or any other language:

   (a) Vowels (b) Phrases (c) Consonants (d) phonetic.

15. Phrases are when:

   Two or more words are joined (b) one word is written (c) only two words. (d) Only one word

16. A consonant has – vowel places:

   (a) One (b) four (c) two (d) three

17. There are – consonants (a) 10 (b) 24 (c) 20 (d) 30.

18. There are – long vowel sounds in pitman shorthand

   (a) 6 (b) 4 (d) 10 (d) 16.

19. There are – short vowel sounds in pitman shorthand:

   (a) 16 (b) 6 (c) 4 (d) 10.

20. Vowels are represented by:
Consonants and phrases (b) dots and strokes (c) dots and dashes (d) dashes and strokes.

SECTION B

Warming Test

DICTATION 25 WPM

1. The date is today.
2. It-is-the soap boat
3. Tow-the-soap boat to-the bay
4. It-is his pay day today.
5. It-is his pay day too?
6. Aid Abe to tow-the boat to-the bay.
7. It-is Abe’s day today
8. Pay Abe to aid-the boat to-the bay.
9. Is–the day of his pay today?
10. It is today.
APPENDIX C2

MARKING SCHEME FOR THE ACHIEVEMENT TEST

1. B
2. A
3. A
4. A
5. C
6. D
7. A
8. D
9. C
10. D
11. B
12. A
13. C
14. D
15. A
16. D
17. B
18. A
19. B
20. C
### APPENDIX D1

Shorthand Interest Inventory (SII) This inventory is designed to help find out the extent of your interest in shorthand. Read each statement carefully and simply indicate for each activity, the extent of your agreement by ticking (√) against each number on the right hand side of each page. SA – Strongly Agree, A – Agree, D – Disagree, SD – Strongly Disagree.

<table>
<thead>
<tr>
<th>/N</th>
<th>I enjoy shorthand lesson</th>
<th>A</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I do not like shorthand assignments and projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Learning how to write shorthand outline is exciting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I do not devote free time to studying shorthand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Shorthand brings about progress</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Writing down shorthand phrases is not exciting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Watching shorthand outlines is enjoyable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Writing shorthand exercises is not enjoyable.</td>
<td></td>
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<tr>
<td>8</td>
<td>I look forward to working as a secretary or journalist on</td>
<td></td>
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<tr>
<td>---</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>I do not like shorthand hobbies after school activities.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>I like telling my parents and friends how many words I write per minute in shorthand.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Shorthand topics are not troublesome</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Spending part of my packet money on shorthand textbooks keeps me happy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>I do not like to take part in discussions about the importance of shorthand.</td>
<td></td>
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</tr>
<tr>
<td>6.</td>
<td>Transcribing shorthand to longhand is exciting.</td>
<td></td>
<td></td>
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<tr>
<td>7.</td>
<td>I do not like practicing speed and accuracy with my class students is interesting</td>
<td></td>
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<tr>
<td>8.</td>
<td>I will study shorthand related course on leaving school.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>I do not like dictating longhand for other students to write in shorthand.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>I will like to work with people who make discoveries in shorthand systems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>I do not like to attend public lectures on how shorthand can help man in his environment.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX D2

SCORING GUIDE FOR THE SHORTHAND INTEREST INVENTORY FOR THE
POSITIVE ITEMS

<table>
<thead>
<tr>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
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<tbody>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
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</table>

FOR THE NEGATIVE ITEMS

<table>
<thead>
<tr>
<th>SA</th>
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<th>D</th>
<th>SD</th>
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<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
REQUEST FOR VALIDATION OF TEST INSTRUMENT

Department of Arts Education,
Faculty of education,
University of Nigeria,
Nsukka.
1\textsuperscript{st} March 2010.

Sir/Madam,

I am a Ph. D. Student of the Department of Arts Education, University of Nigeria, Nsukka. I am currently undertaking a research study on the effect of DVD usage on students’ Achievement and Interest in Secondary School Shorthand.

The purpose of the study is to find out the effects of DVD content package on student’s achievement and interest in secondary school shorthand.

Specifically the study aims at:

1. Determining the mean achievement scores of students taught secondary school shorthand using DVD content and those taught with conventional method.

2. Finding out the interaction effect of method and gender on mean achievement scores of secondary school students in shorthand.

3. Determining the interest of students taught secondary school shorthand using DVD content package and those taught with conventional method.

4. Finding out the interaction effects of method and gender on interest secondary school students in shorthand.
To guide the study, the following research questions are imposed:

1. What are the relative mean achievement scores of students taught secondary school shorthand using DVD content package and those taught using the traditional or conventional method?

2. What are the relative mean achievement scores of male and female students taught secondary school shorthand using DVD?

3. What are the relative mean achievement scores of JSII and SSI students taught secondary school shorthand using DVD?

4. What are the relative mean interest scores of student taught secondary school shorthand by DVD usage and those taught by conventional method?

5. What are the relative mean interest scores of male and female students taught secondary school shorthand using DVD?

6. What are the relative mean interest scores of JSII and SSI students taught secondary school shorthand using DVD?

The following null hypothesis will be tested at .05 level of significance.

1. There is no significant difference in the mean achievement scores of students taught secondary school shorthand by DVD usage and those taught by conventional method.

2. There is no significant difference in the mean achievement scores of male and female students taught secondary school shorthand using DVD.

3. There is no significant difference in the mean achievement scores of JSII and SS1 students taught secondary school Shorthand using DVD.

4. There is no significant difference in the mean interest scores of students taught secondary school shorthand using DVD and those taught using conventional method location.

5. There is no significant difference in the mean interest scores of male and female students taught secondary school shorthand by DVD usage.
6. There is no significant difference in the mean interest scores of JSII and SS1 students taught secondary school Shorthand using DVD.

I humbly request you Sir/Madam, to effect face and content validation of the attached 20 items test instrument titled “Secondary School Shorthand Achievement Test” (SSSAT) by doing the following:

1. Read and revise/modify the items if necessary.
2. Re-word /delete/add items as they will consider appropriate.
3. Make any general comments/suggestions on the instrument.

The attached table of specification is to assist you further, in effecting the validation of the instrument.

Your earliest action on this request shall be highly appreciated.

Yours faithfully,

IBEGBU, VICTORIA OZO (MRS)
PG/PHD/08/48640
# APPENDIX E ii

## TABLE OF SPECIFICATION OF SHORTHAND ACHIEVEMENT TEST (SSSAT) FOR SSI

<table>
<thead>
<tr>
<th>TOPICS OR TEST ITEMS</th>
<th>KNOWLEDGE 35%</th>
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<tr>
<td>20</td>
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</tbody>
</table>
APPENDIX F

THE SCHEME OF WORK

This is lifted from the current scheme of Senior Secondary School one (SSI) shorthand.

Week I: Meaning of shorthand and its importance, introduction of first six down stroke consonants and consonants F, V, K and G

Week II: Dictations of the consonants, introduction of vowels – meaning, short and long vowels, vowel places and positions.

Week III: The first down strokes – PBT and D, vowels A and O and circle /S/. Phrases: joining of the consonants, Dictations reading, copying and drill exercises.

Week IV: Phrases continue, punctuation marks Dictations, drill and Practice. Evaluation: - Posttest.

Note: The scheme is drafted in this form to enable the validates to know the extent of the coverage.
Lesson Plan for the Experimental Group Base on DVD Usage

Week 1

Subject: Shorthand

Class: SS1

Title: Meaning of shorthand and its importance, introduction of consonants: First six down strokes

Step I:

The teacher starts the class by an Introduction on the television of the day’s lesson. He describes the importance of shorthand to everyday life.

Step II:

He introduces the first six consonants on the television and shows the direction of the writing of strokes. Students watch. He also introduces consonant F, V, K and G.

Step III:

Students ask questions for clarifications. Teacher explains and gives class assignment/drilling from the television.

Step IV:

Students drilling is individually with the television while teacher supervises to check poor techniques.

Step V:

Informal evaluation.
APPENDIX G 2

LESSON PLAN FOR EXPERIMENTAL GROUP

Week 2

Subject: Shorthand

Class: SS1

Title: Vowels, vowel places and positions.

Step I:

The Teacher starts the class by introduction on the television of the day’s lesson. He describes vowels, vowel places and positions.

Step II:

He switches on the DVD where the writing of the vowels, vowel places and vowel positions were demonstrated. While students watch and copy.

Step III:

Students ask questions for clarifications. Teacher explains, gives class assignment or drilling from the television.

Step IV:

Students drilling is individually and the teacher supervises poor techniques.

Step V:

Informal – Evaluation.
APPENDIX G 3

Lesson Plan for EXPERIMENTAL GROUP

Week 3

Subject: Shorthand

Class: SS1

Title: First down strokes – PBT and D with long vowels A and O

Step I:

The teacher starts by introduction on the television. He describes long vowels A and O.

Step II:

He switches on the DVD with television where many words that contain PBT and D with long A and O are written. Students watch and copy.

Step III:

Students ask questions for clarifications. Teacher explains, gives class assignment and drilling from the DVD.

Step IV:

Student drilling is individually with the DVD and teacher supervises poor techniques.

Step V:

Informal – Evaluation
APPENDIX G 4

LESSON PLAN FOR EXPERIMENTAL GROUP

Week 4

Subject: Shorthand

Class: SS1

Title: Short forms and phrases

Step I:

The teacher starts the lesson by introduction on television the days lesson and he describes short forms and phrases.

Step II:

The teacher switch on the writing of short forms and phrases on the television. Students watch and copy.

Step II:

Students ask questions for clarifications. Teacher explains, gives class assignment and drilling from the DVD.

Step IV:

Student drilling is individually with the DVD and teacher supervises poor techniques.

Step V:

Informal Evaluation.
APPENDIX H 1

Lesson Notes for Experimental Group Based on DVD Usage

Hints for the Teacher

The goals of DVD usage is to improve students interest in secondary school shorthand and by so doing enhance their achievement in the subject. Thus each lesson will begin by giving full explanation and discussion of the topic by the teacher and thereafter, the DVD prepared for the topic will be switch on for the students to see the demonstrations and illustrations, which will help them to retain them in their memory. It (DVD) will also help them to learn how to write the characters fast and join the characters without lifting hand so as to increase their speed in writing shorthand.

Week I

Subject: Shorthand

Class: SSI

Time: 1hr.20mins (2 periods)

Topic: Meaning of Shorthand, its Importance and Introduction of the first six consonants and consonants F, V, K, and G.

Objectives: At the end of the lesson, students should be able to:

1. Define shorthand.

2. Explain the Importance of Shorthand.

3. Write down the first six consonants
<table>
<thead>
<tr>
<th>Teachers Activities</th>
<th>Students activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arouse their interest by asking them what shorthand is. Then explain to them that it is a way of representing spoken words by signs. Copy it down for them on the board.</td>
<td>They watch the DVD and answer the questions. Then they pay attention to the teacher’s explanation. They also write down the points in their books.</td>
</tr>
<tr>
<td>Explain to them that it is important because it helps us to write what people say as they speak. It helps in writing very fast</td>
<td>They listen to the teacher’s explanations and jot down the points on their notebooks.</td>
</tr>
<tr>
<td>He introduces them to first six down strokes. He switches on the DVD where the writing of the six consonants P and B, T and D, CH and J were demonstrated. He also introduces consonants F, V, k, and G. He clarifies the students and supervises poor techniques.</td>
<td>They continue to pay attention and copy their notes. They watch the DVD. They ask questions for clarifications. They drill outlines individually with the DVD.</td>
</tr>
<tr>
<td>Evaluation: He asks them questions to know whether the objectives are achieved. Example, what is consonant?</td>
<td>They answer the questions and write down the first six consonants.</td>
</tr>
<tr>
<td>Summary: He summaries the lesson and gives them assignments to copy the first six consonants.</td>
<td>They pay attention to the summary and take the assignment given to them.</td>
</tr>
</tbody>
</table>
### APPENDIX H2

#### Lesson Note for Experimental Group

**Week 2**

**Subject:** Shorthand  
**Class:** SS1  
**Date:**

**Time:** 2 periods (1hr.20mins)

**Topic:** Vowels, vowel places and positions  
**Objectives:** At the end of the lesson students should be able to:
1. Represent vowels with dots and dash.  
2. Explain the places and positions of vowels

<table>
<thead>
<tr>
<th>Teacher’s activities</th>
<th>Students Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arouse their interest by asking them questions on the previous lesson like write down the first two consonants. Then explains to them that vowels are represented with dots and dashes. Switch on the DVD where the writing of dot and dash were demonstrated.</td>
<td>They answer the questions and pay attention to the explanation and the writing on the DVD.</td>
</tr>
<tr>
<td>Explain to them that there are six long vowels and six short vowels. There are also three vowel places and positions. He switches on the DVD and let them watch and practice the writing. He goes round and supervise poor technique as well as clarification where necessary</td>
<td>They practice the writing from DVD and ask questions for clarifications. And continue the drilling on the DVD.</td>
</tr>
<tr>
<td>Evaluation: He ask them questions to know whether the objectives are achieved.</td>
<td>They answer the questions.</td>
</tr>
<tr>
<td>Summary: He summarizes the lesson and gives them assignment to copy the vowel places and positions.</td>
<td>They watch the summary from the DVD and take down the assignment.</td>
</tr>
</tbody>
</table>
APPENDIX H3

LESSON NOTE FOR EXPERIMENTAL GROUP

Week 3
Subject: Shorthand
Class: S1
Date:
Time: 2 periods (1hr. 20mins)
Topic: First down strokes – PBT and D with long vowels A and O
Objectives: At the end of the lesson students should be able to represent some words containing the first four down strokes with long vowels A and O in shorthand.

<table>
<thead>
<tr>
<th>Teacher’s Activities</th>
<th>Students Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>He asks them questions on the previous lesson.</td>
<td>They answer the questions and watch the DVD as well as write down the characters.</td>
</tr>
<tr>
<td>He switches on the DVD where long vowels A and O were represented</td>
<td></td>
</tr>
<tr>
<td>He continues with the DVD on the writing of words containing the first four down strokes and long vowels A and O were represented and Supervise poor techniques as well as clarification of confusion on students.</td>
<td>They continue to watch and represent the words. They ask questions for clarifications. Students drill the characters individually with the DVD.</td>
</tr>
<tr>
<td>Evaluation: He asks them questions in order to find out whether the objectives are achieved.</td>
<td>They answer the questions</td>
</tr>
<tr>
<td>Summary:- He summaries the lesson with the DVD and gives them assignment to copy exercises on words containing PBT and D with long vowels A and O.</td>
<td>They pay attention to the summary on the DVD and take down their assignment.</td>
</tr>
</tbody>
</table>
APPENDIX H4

LESSON NOTE FOR EXPERIMENTAL GROUP

Week 4
Subject: Shorthand
Class: SS 1
Date:
Time: 2 periods (1hr. 20mins)
Topic: Short forms and phrases

Objectives: At the end of the lesson students should be able to:

1. Explain phrase
2. Represent some words in phrases or short forms.

<table>
<thead>
<tr>
<th>Teachers Activities</th>
<th>Students Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>He asks them questions on the previous lesson to arouse their interest. He explains to them that phrases occur when two or three words are joined together.</td>
<td>Students answer the question.</td>
</tr>
<tr>
<td>He switches on where short forms and phrases are represented on the DVD. He clarifies the students.</td>
<td>They watch the DVD and copy. They ask questions for clarifications.</td>
</tr>
<tr>
<td>Evaluation: He asks them questions to know whether the objectives are achieved.</td>
<td>They answer the questions.</td>
</tr>
<tr>
<td>Summary: He summarizes the lesson and gives them assignment to copy phrases.</td>
<td>They pay attention to the summary and take down the assignment.</td>
</tr>
</tbody>
</table>
Lesson Plan for the Control Group, Base on Conventional Method

Week 1

Subject: Shorthand

Class: SSI

Title: Meaning of shorthand and its importance, introduction of the consonants: first six down strokes and consonants F, V, k, and G.

Step I:

He will start the lesson by writing down the topic of the day on the board.

Step II:

He explains the topic to the students and writes down the consonants on the board while the students watch.

Step III:

The students ask the teacher some questions where they are not clear and then the teacher explains or clarifies. The teacher re-writes the consonants for more clarification.

Step IV:

The students practice the outlines on the board. Teacher moves round to identify error techniques for correction.

Step V:

Students copy the outlines on the board and the teacher checks techniques.

Step VI:

Evaluation – Informal
APPENDIX I 2

LESSON PLAN FOR THE CONTROL GROUP.

Week 2

Subject: Shorthand

Class: SSI

Title/Topic: Vowels, vowel places and positions.

Step I:

He writes down the topic on the board

Step II:

The Teacher explains the meaning of vowel, the 3 places and positions of vowels and writes them down on the board while students watch.

Step III:

The students ask the teacher some question where they are not clear and the teacher explains or clarifies them. He may re-explain and or re-writes some of the vowel places or positions.

Step IV:

The students drill the vowels places and positions on the board. Teacher moves round to identify error techniques for correction.

Step V:

He copies vowel places and positions especially long A and O on the board to identify error techniques for correction.

Step VI:

Evaluation – Informal
APPENDIX I 3

LESSON PLAN FOR THE CONTROL GROUP

Week 3

Subject: Shorthand

Class: SSI

Title: - First down strokes – PBT and D with long vowels A and O.

Step I:

The Teacher starts the lesson by writing down the topic of the day on the board.

Step II:

He explains to them what long vowels A and O are represented with and writes them down on the board. He represents many words containing consonants PBT and D with long vowels A and O. He writes them on the board while students watch.

Step III:

Students ask the teacher some questions where they are not clear and the teacher clarifies them. He explains and re-writes some of the words containing first four down strokes with long vowel A and O places on the board.

Step IV:

The students drill the vowel dots and dashes on the consonants with their places and positions on the board.

Step V:

He copies the vowel places and positions to check poor techniques.

Step VI:

Evaluation – Informal
APPENDIX I 4

LESSON PLAN FOR THE CONTROL GROUP

Week 4

Subject: Shorthand

Class: SSI

Title: Short forms and phrases

Step I:

The Teacher starts the lesson by writing down the topic of the day on the board.

Step II:

He explains to them what short forms and phrases are and writes them down on the board. He also writes down some examples of short forms and phrases while students watch.

Step III:

Students ask the teacher some questions where they are not clear and the teacher clarifies them. He explains and re-writes some of the short forms and phrases on the board.

Step IV:

Students drill the short forms and phrases on the board.

Step V:

Copy the short forms and phrases on the board to check techniques

Step VI:

Evaluation – Informal
Lesson Note for the Control Group Base on the Conventional Method

Week I:
Subject: Shorthand
Class: SS1
Time: 1hr.20mins (2 periods)
Topic: Meaning of Shorthand, its importance and Introduction of the first six consonants.
Objectives: At the end of the lesson, students should be able to:
1. Define shorthand.
2. Explain the importance of shorthand.
3. Write down the first six strokes

<table>
<thead>
<tr>
<th>Teachers Activities</th>
<th>Students activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>He explains that shorthand is a way of representing spoken words by signs after arousing student’s interest by asking them what shorthand is. He explains to them that shorthand helps in writing what people say as they speak and it helps in writing very fast.</td>
<td>They pay attention and copy down.</td>
</tr>
<tr>
<td>He introduces the first six consonants by writing them down on the board and they are P and B, T and D, CH and J. He also introduces them to consonants F, v, k, and G. He drills students on the board. He explains and clarifies students.</td>
<td>They listen and copy down. They drill the outlines on the board and ask question where they are not clear.</td>
</tr>
<tr>
<td>He re-writes the consonants for the students on the board to check techniques and identify error techniques for correction.</td>
<td>They take down correct techniques.</td>
</tr>
<tr>
<td>Evaluation: He asks students few questions like What is shorthand? And write down the first six consonants.</td>
<td>They answer the questions.</td>
</tr>
<tr>
<td>Closure: He then summaries the lesson and give them assignment to copy the first six consonants.</td>
<td>They listen to the summary and copy down the assignment.</td>
</tr>
</tbody>
</table>
APPENDIX J2

LESSON NOTE FOR CONTROL GROUP

Week 2
Subject: Shorthand
Class: SS 1
Date: 
Time: 2 periods (1hr. 20mins)
Topics: Vowels, vowel places and positions
Objectives: At the end of the lesson students should be able to:
1. Represent vowels with dots and dashes
2. Explain the places and positions of vowels

<table>
<thead>
<tr>
<th>Teacher’s Activities</th>
<th>Students Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arouse their interest by asking them question on the previous lesson like write down the first two consonants. Then explains to them that vowels are represented with dots and dashes. He writes it down on the board.</td>
<td>They answer the questions and pay attention to the explanation and writing on the board.</td>
</tr>
<tr>
<td>Explain to them that there are six long vowels and six short vowels. There are also three vowel places and positions. He writes them down on the board. He supervises poor technique as well as clarifications where necessary.</td>
<td>They practice the writing on the board and ask questions for clarifications. They continue the drilling on the board.</td>
</tr>
<tr>
<td>Evaluation: He asks them questions to know whether the objectives are achieved.</td>
<td>They answer the questions.</td>
</tr>
<tr>
<td>Summary: He summarizes the lesson and gives them assignment to copy the vowel places and positions.</td>
<td>They pay attention to the summary on the board and take down the assignment.</td>
</tr>
</tbody>
</table>
Week 3
Subject: Shorthand
Class: SS 1
Date: 
Time: 2 periods (1hr. 20mins)
Topics: First down strokes – PBT and D with long vowels A and O
Objectives: At the end of the lesson students should be able to represent some words containing the first four down strokes with long vowels A and O.

<table>
<thead>
<tr>
<th>Teachers Activities</th>
<th>Students Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>He asks them questions on the previous lesson. He writes down long vowels A and O on the board</td>
<td>They answer the question and watch the writing on the board.</td>
</tr>
<tr>
<td>He continues with the writing down on the board some words containing the first four down strokes and long vowels A and O. He supervises poor techniques as well as clarifications on students.</td>
<td>They continue to pay attention and watch the board. They ask questions for clarifications. They drill the characters individually on the board.</td>
</tr>
<tr>
<td>Evaluation: He asks them questions in order to find out whether the objectives are achieved.</td>
<td>They answer the questions.</td>
</tr>
<tr>
<td>Summary: He summaries the lesson and give them assignment to copy exercises on words containing PBT and D with long vowels A and O.</td>
<td>They pay attention to the summary and take down their assignment.</td>
</tr>
</tbody>
</table>
APPENDIX J4

LESSON NOTE FOR CONTROL GROUP

Week 4

Subject: Shorthand

Class: SS 1

Date:

Time: 2 periods (1hr. 20mins)

Topics: Short forms and phrases

Objectives: At the end of the lesson students should be able to:

1. Explain Phrases
2. Represent some words in phrases and short forms.

<table>
<thead>
<tr>
<th>Teachers Activities</th>
<th>Students Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>He asks them questions on the previous lesson to arouse their interest. He explains to them that phrases occur when two or more words are joined to gather. He writes it down on the board.</td>
<td>Students answer the question and pay attention to the explanation. They also copy down the points in their note book.</td>
</tr>
<tr>
<td>He writes short forms and phrases, on the board. He clarifies the students and supervises poor techniques.</td>
<td>They watch the board and copy. They ask questions for clarifications. They also drill the outline on board.</td>
</tr>
<tr>
<td>Evaluation: He asks them questions to know whether the objectives are achieved.</td>
<td>They answer the questions.</td>
</tr>
<tr>
<td>Summary: He summarizes the lesson and gives them assignment to copy phrases.</td>
<td>They pay attention to the summary and take down the assignment.</td>
</tr>
</tbody>
</table>
# APPENDIX K

**ACHIEVEMENT TEST SCORES FOR WORKING THE RELIABILITY**

<table>
<thead>
<tr>
<th>STUDENT</th>
<th>ODD</th>
<th>EVEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>B</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td>C</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>D</td>
<td>70</td>
<td>20</td>
</tr>
<tr>
<td>E</td>
<td>70</td>
<td>40</td>
</tr>
<tr>
<td>F</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>G</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>H</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>I</td>
<td>70</td>
<td>40</td>
</tr>
<tr>
<td>J</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>K</td>
<td>50</td>
<td>20</td>
</tr>
<tr>
<td>L</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td>M</td>
<td>70</td>
<td>60</td>
</tr>
<tr>
<td>N</td>
<td>70</td>
<td>50</td>
</tr>
<tr>
<td>O</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>P</td>
<td>70</td>
<td>50</td>
</tr>
<tr>
<td>Q</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>R</td>
<td>50</td>
<td>30</td>
</tr>
<tr>
<td>S</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>T</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>
A special package in the excel method was used to arrive at the correlation of the half part of the test by clicking function or insert function, click at select a category, click correl ok and type in the two scores in Array 1 and Array 2 and click ok, then the answer is 0.64. Then Brown Prophecy Formula was used to get the correlation of the whole test.

\[
\text{CORRELATION COEFFICIENT} = \frac{\text{NPXX}}{1+(N-1)PXX} \\
\frac{20(0.64)}{1+(20-1)0.64} \\
= 0.94
\]
APPENDIX L

Shorthand Interest Inventory Scores for Reliability

62, 73, 93, 63, 63, 73, 68, 58, 80, 62, 68, 69, 60, 54, 63, 54, 79, 75, 100 and 69.

<table>
<thead>
<tr>
<th>F1</th>
<th>X1</th>
<th>X1F1</th>
<th>X1X1 FI</th>
</tr>
</thead>
<tbody>
<tr>
<td>51-60</td>
<td>4</td>
<td>55.5</td>
<td>222</td>
</tr>
<tr>
<td>61-70</td>
<td>9</td>
<td>65.5</td>
<td>589.5</td>
</tr>
<tr>
<td>71-80</td>
<td>4</td>
<td>75.5</td>
<td>302</td>
</tr>
<tr>
<td>81-90</td>
<td>1</td>
<td>85.5</td>
<td>85.5</td>
</tr>
<tr>
<td>91-100</td>
<td>2</td>
<td>95.5</td>
<td>191</td>
</tr>
<tr>
<td>20</td>
<td>377.5</td>
<td>1390</td>
<td>99285</td>
</tr>
</tbody>
</table>

Then

Average = $\frac{X1F1}{F1}$ = 69.5

AVERAGE VARIANCE = $\frac{X1X1 FI}{FI} - 69.5^2$

Then 99285 – 4830.25 = 134

Then 18240.5 – 4830.25 = 4290

Then 7310.25 – 4830.25 = 2480

Then 122801 – 4830.25 = 870

Then 38612.25 – 4830.25 = 540
\[
\frac{12321 - 4830.25}{4} = -1750
\]

Co-variance = 134 + 4290 + 2480 + 870 - 540 - 1750 = 5484

\[
\text{Alpha} = 20 - 1 \times 5484 = 0.950433 = 0.95
\]

\[
\frac{20 \times 5484}{20 \times 5484}
\]
ATTACHMENT OF DATA ANALYSIS
VALDATED INSTRUMENTS