IMPACT OF MULTIMEDIA LEARNING ON ACADEMIC PERFORMANCE OF STUDENTS WITH SPECIAL NEEDS IN MINNA METROPOLISIS.

BY

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2016/1/63682BT

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SCHOOL OF SCIENCE AND TECHNOLOGY

EDUCATION

FEDERAL UNIVERSITY OF TECHNOLOGY,

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ABSTRACT

The study examined the Impact of multimedia learning on the academic performance of students with special needs in Minna metropolis. Three research objectives were raised and translated in to three questions and three corresponding hypotheses were raised. The study adopted a descriptive survey design. Hundred respondents were employed. The instrument used for data collection was a structured questionnaire. The instrument was validated by the supervisor. Test-retest reliability was used to establish the reliability of the instruments. The reliability coefficient of 0.79 was determined using Cronbach alpha. The data collected were subjected to mean score to analyze the research questions with a decision rule of 2.5 while inferential statistics of Chi-square statistical tool was employed and the significance of the various statistical analyses was ascertained at 0.05 alpha levels. The results showed that there is significant difference in the mean response of students with special needs on impact of multimedia in teaching and learning, there is significant difference in the mean response of students with special needs on the impacts of multimedia on academic achievement and there is significant difference in the mean response of students with special needs on the impacts of multimedia towards attitude to learning. The study concluded that the use of multimedia materials enhance effective teaching and learning, academic performance and students with special needs attitude towards learning. It was recommended that public should be aware of the uses of multimedia materials to aid teaching and learning process, emphasis must be placed on the use of multimedia learning to inculcate the positive attitude towards learning and improve students with special need academic performance.

TABLE OF CONTENT

Content	**Page**

CHAPTER ONE
INTRODUCTION

CHAPTER TWO

REVIEW OF RELATED LITERATURE

CHAPTER THREE

RESEARCH METHODOLOGY

CHAPTER FOUR

RESULTS AND DISCUSSION

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Education is a fundamental human right that is essentially meant to aid learners in realizing their potentials. Since the United Nations (1948) declaration that education is a human right, efforts have been made to ensure that children; both boys and girls across the world access education. However, it is now a common concern that the main challenge in education is not simply getting children into schools but also improving the overall quality of schooling and addressing threats to participation. As noted by United Nations Children Education Fund (UNICEF) (2018), if both quality and access are taken into consideration, then children enrolled in primary schools are likely to pursue and complete the full basic education cycle, achieve expected learning outcomes and successfully transit to secondary schools (Olney & Brockelman, 2015).

Rapid developments in information and communication technologies (ICTs) in recent years have resulted in significant changes in the way the world operates and communicates. This in turn has had an impact on educational and training needs, both in terms of the content and the delivery of educational and training services, but also there has been increasing pressure on decision makers to acquire new technologies and need to develop a supportive policy environment and framework at the national level for the integration of ICT into their education systems through the use of multimedia (Alkahtani, 2013).

The use of multimedia in education has proven its importance due to its positive impact on the teaching and learning process. Multimedia devices as part of information and communication technology facilities which are electronic media devices used to store and experience multimedia content. Multimedia is concerned with the computer controlled-integration of text, graphics, drawings, still and moving images (video), animation, audio and any other media

1

where every type of information can be represented, stored, transmitted and processed digitally. Multimedia is all about communicating in several ways. Multimedia is used in several fields such as advertising and marketing, education and training sector and mass communication (journalism). Multimedia items generally fall into one of five main categories and use varied techniques for digital formatting such as text, images, audio, video and animation.

One way to bring about a change of emphasis in teaching, from the teacher directed approach to a facilitated approach, is to change the medium of instruction (Alkahtani, 2013). Interactive multimedia offers an alternative medium of instruction to the current learning process. The nature of interactivity and discovery in multimedia learning bears a beneficial boost to the monotony of passive learning. Rather than be bounded by the pace of the teacher, learners are individually paced according to his or her own ability. One way, multimedia can give low ability students with special needs extensive learning time before moving forward. Alternatively, high ability students can branch out to random sequencing through the module and not be confined by linearity or a much slower pace. This aspect of multimedia learning supports student-centred strategy whereby learners take responsibility in their own learning process. The liberty to proceed or recede allows self-pacing, an important facet to enable learners to learn according to their individual pace.

However, as an operational definition of the term "learning disability" for the purpose of this study, the researcher sees the term as a consistent low achievement of scores by an individual either in examinations, tests or classroom academic activities without obvious physical reasons for the low achievement. Learning disability is classified to include several areas of functioning in which a person has difficulty learning in a typical manner, usually caused by known and unknown factor or factors (Gordon, Paul, Margaret & Malcolim 2010). The unknown factor is the disorder that affects the brain's ability to receive and process information. This disorder can make it problematic for a person to learn as quickly as someone who is not affected by a

learning disability. People with a learning disability have trouble performing specific types of skills or completing tasks if left to figure things out by themselves or if taught in conventional ways.

Some forms of learning disability are incurable while other is curable depending on appropriate cognitive/academic interventions (Malacrida, 2006). Individuals with learning disabilities can face unique challenges that are often pervasive throughout the lifespan. Depending on the type and severity of the disability, interventions can be used to help the individual learn strategies that will foster future success. Some interventions can be quite simplistic, while others are intricate and complex. The teachers and parents should be a part of the intervention in terms of how they aid the individual in successfully completing different tasks. Presumably, learning disabilities could be caused by a factor or cluster of factors. These could be, environmental, neurological, biological and school related factors (Lindstrom, 2014).

Quality education is a critical component of child development and a means of self-empowerment, independence and social integration. Learning disability is a disorder that can cause significant problems to the one who suffers from it both at school and in life generally. The United Nations Educational Department, (2006) defined the term learning disability to mean "a disorder in one or more of the basic psychological processes involved in understanding or in using language-spoken or written, that may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations, including such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia and developmental aphasia.

Thus, it is revealed that use of multimedia and learners' performance are relational that can be direct or inverse depending upon the ability of teachers' knowledge (Mujtaba, 2014). However, this study tends to investigate the impacts of the use of multimedia instruments and academic

achievement of students with special needs. There is a need to understand the learners themselves, their attitudes and perceptions towards the subject with the aim of suggesting strategies for improvement in the teaching and learning of the subject.

Attitude as a major factor affecting learning processes, may be implicit hence has not attracted enough attention from all stakeholders in education and therefore, it is important to consider the fact that learners can mainly contribute to their learning outcomes as a result of their belief and perceptions about the subject matter e.g. whether they like it or not and whether they see any value in it. Attitudes are seen as more or less positive and encompass emotions, beliefs, values and behavior and hence affect individual way of thinking, acting and behaving which has a lot of implications to teaching and learning (Mohamed & Waheed, 2011).

Negative dispositions induce tendencies of fear, anxiety and stress where one resorts to other nonproductive practices which finally prevents them from experiencing the richness of Mathematics and many approaches that could be used to develop competencies in the subject. On the other hand, when students with special needs build positive attitudes towards the subject, they become engaged in the material fact and are motivated to excel in the subject because they value it, enjoy it and are interested in the subject (Olatunde, 2009). However, students with special needs' attitude toward a subject has direct impacts on the academic achievement (Sachs & Schreur, 2011).

The problem of low academic achievement of students with special needs in the examinations is one of the most challenging problems that face students with special needs as well as teachers. This problem has many causes and it has educational, social, cultural and psychological dimensions. However, the students with special needs' low academic achievement in examination can be defined as low or weakness of the student's mark under the normal average in a study subject level as a result of a variety of reasons, including those related

to the student himself, or those related to family, social and academic environment. Consequently, this may lead to frequent repetition of failure, despite their abilities that qualify them to get the best marks (Samer & Mohammed, 2015).

Individual differences play an important role in academic achievement of students with special needs. There have been many attempts to address the problem of low academic achievement and some factors have been identified in explaining academic achievement. Among the numerous variables researched, demographic status, intelligence, behavioral characteristics and psychological factors, namely, attitudes, self-esteem, self-efficacy and self-concept, have been used to explain academic achievement. Besides differences in ability, which are not easy to control, students with special needs have specific learning styles that may influence their academic achievement. Samer and Mohammed (2015) noted that learning styles are at least in part socialized, suggesting that they can, to some extent, be modified.

Thus, being aware of learning styles and their roles in academic achievement is of a great importance for educational psychologists, teachers and researchers. However, there are various strategy have been adopted and suggested to improve students with special needs' achievement by educators such as Adedoyin (2010); Dunn (2008); Olatoye (2011); Olayiwola, Njoku and Muhammad (2009). However, in the quest to achieve inclusive education and UN declaration of every child is entitled to quality education. In view of the above, this study therefore, determines to investigate the impacts of multimedia learning on students with special needs with special needs' academic achievement in Minna metropolis.

1.2   Statement of the Research Problem

The rate of low academic performance of children with special needs has assumed a worrisome dimension (Alkahtani, 2013). With low academic achievement, the children with special need will not be able to obtain any meaningful jobs or economic development. Can't the situation

be improved? It is against this background that the study seeks to examine some of the ways Moreover, the children with learning needs should not be allowed to be liabilities to their families, community and the nation. They should be made to contribute their quota to bring about the required most needed economic change in the nation (Sharma & Madhumita, 2012)

Although the benefits of multimedia presentations are well known, they are not too widely used in Nigeria secondary schools. In most schools, the traditional method of teaching in which the teacher is the repertoire of knowledge is still the order of the day, and this method is used to teach special students, is full of abstract concepts and phenomenon. As a result, many students fail the subject at both internal and external examinations level, leading many to lose interest in the subject, believing it is too complex to understand.

Several studies (Yusuf, Fakomogbon, & Issa, 2012; Alkahtani, 2013; Kolawole, 2016) have identified the traditional teaching strategy as contributory to this problem. Also, it has been noted that lack of specialized teachers, inadequate infrastructure and a curriculum that emphasis on academic performance and examinations creates an unfavorable learning environment for children with special needs and disabilities and even moderate learning difficulties (Sharma & Madhumita, 2012). Hence, in order to facilitate enhance the learning outcomes of students with special needs in Minna, Niger State, it is important that teachers maintain a positive attitude so as to competently integrate assistive technologies into the teaching-learning process. This viewpoint is supported by a plethora of empirical studies that have been carried out hitherto to investigate the attitude and competence of teachers in the use of assistive technology (Sharma & Madhumita, 2012; Yusuf, Fakomogbon, & Issa, 2012; Alkahtani, 2013; Kolawole, 2016). Nevertheless, none of these studies was carried out among students with special needs or in Niger State, Nigeria. Thus, the gap this study intends to fill is to examine the impact of multimedia learning on students with special needs' academic achievement in Minna metropolis.

1.3   Aim and Objectives of the Study

The aim of the study is to determine the impact of multimedia learning on the academic performance of students with special needs in Minna metropolis. The specific objectives are to:

I.   Determine the impact of multimedia in teaching and learning.

II.   Find out the impacts of multimedia on students with special needs academic achievement.

III.   Investigate the impacts of multimedia on students with special needs attitude towards learning.

1.4   Research Questions

The following research questions are raised in line with the stated objectives.

I.   What is the impact of multimedia in teaching and learning?

II.   What are the impacts of multimedia on students with special needs academic achievement?

III.   What are the impacts of multimedia on students with special needs attitude towards learning?

1.5   Research Hypotheses

The following research hypotheses are postulated in line with the stated objectives, questions and tested at 0.05 significant level.

H_{01}: There is no significant difference in the mean response of students with special needs on impact of multimedia in teaching and learning.

H_{02}: There is no significant difference in the mean response of students with special needs on the impacts of multimedia on academic achievement.

H_{03}: There is no significant difference in the mean response of students with special needs on the impacts of multimedia towards attitude to learning.

1.6   Significance of the Study

The finding of this study would be of both practical and theoretical significance to the following groups; Teachers, Students with special needs, Educational administrators, Curriculum planners, Researchers and Educators.

The finding of this study would be significant to students with special needs because as it proffers impactive study teaching and learning techniques to improve and facilitate student cognitive capacity. The study would be of immense benefit as it could produce learners with solid secondary education to meet the demands of ever-changing society.

The findings of this study would be beneficial to teachers as it would be used as an impactive teaching strategy developed to be more impactive in teaching and learning. The strategy could instill confidence in the teacher, reduce inefficiency in time and effort and promote mutual understanding between teacher and students. It would also give direction and focus to the teacher whose job is to put the curriculum into use and to ensure the attainment of specific learning objectives.

The study would help curriculum planners to provide guidelines on suitable strategy that could be employed for teaching abstract concepts to students with special needs. The finding of the research might assist them to provide seminars, workshops and in-service training to make them more impactive and efficient in the teaching of different difficult topics in secondary school and also enhance their achievement level.

The result of the study would help Niger State Government, Niger State Ministry of Education and National Teachers' Institute and to the nation at large by improving the teaching methodologies employed by the teachers and also increase the students with special need academic achievement in Niger State. This study might serve as a spring board for future researchers who may wish to embark on a similar study.

1.7   Scope of the Study

This study is delimited to the impact of multimedia on students with special needs. The variable scopes are academic achievement of student with special need. The study is also delimited to Minna as a geographical area with specific interest to Niger State school of Handicapped, Minna.

1.8   Operational Definition of Terms

Achievement: This is the cumulative performance of students with special need after a given term or session.

Multimedia: This is concerned with the computer-controlled integration of text, graphics, drawings, still and moving images (Video), animation, audio, and any other media where every type of information can be represented, stored, transmitted and processed digitally.

Special Needs: Learning disability refer to as disorders manifested by learning difficulties, physical disability, or emotional and behavioural difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning and mathematical skills

Students with Special Needs: A student has special educational needs if they have a learning problem or disability that make it more difficult for them to learn independently.

CHAPTER TWO
LITERATURE REVIEW

2.1 Conceptual Framework

2.2.1 Concept of Teaching and Learning

One could argue that contextual teaching has been present in vocational classrooms long before the title became a buzz word in educational research. The very essence of contextual teaching and learning relates to the notion of learning by doing, which has long been a pillar of secondary agricultural education. However, at the post-secondary level agricultural students are often taught the core sciences separately from their applied agricultural courses (Kevin, Wilson, Jim & Charlotte, 2012). Teaching is a set of events outside the learner which are designed to support internal process of learning (Sequeira, 2015).

Teaching means the various activities teachers undertake in their efforts to guide and impart knowledge to learners. Wood and Gentile (2003) define teaching as the method of conveying knowledge to learners by the teacher. It is simply an art and act of imparting knowledge to learners by the teacher who can be an individual, or learning resources and experiences that bring about behavioural changes in the learners, and making them more useful to self and their immediate communities. Teaching has been a common concept in the educational environment and involves many activities whether viewed from the non-formal application in informal education or from the classroom teaching learning process (Agatha, 2002). Abimbola (2004) asserted that the definition of teaching is numerous and varied depending on the subject matter in which the concept is used. Teaching has been variously seen as the art of instilling a sense of curiosity about one's world and in enhancing the skills necessary to perpetuate this curiosity.

Duruji, Azuh, Segun, Olanrewaju, and Okorie (2014) noted that teaching is an arrangement of contingencies of reinforcement; or the presence of mind and person and body in relation to another mind and person and body, a complex array of mental, spiritual and physical acts

affecting others. Modebelu and Nwakpadolu (2013) support this characterization of the interactive nature of teaching by describing it as essentially a transactional encounter in which learners and teachers are engaged in a continual process of negotiation of priorities, methods, and evaluative criteria.

2.2   Concept of Multimedia Learning

Multimedia is defined as the combination of various digital media types such as text, images, sound and video, into an integrated multi-sensory interactive application or presentation to convey a message or information to an audience. In other words, multimedia means "an individual or a small group using a computer to interact with information that is represented in several media, by repeatedly selecting what to see and hear next" (Agnew, Kellerman and Meyer, 1996). Reisman (1994) described multimedia as a ray of "computer-driven interactive communication system, which create, store, transmit and retrieve, textual, graphic and auditory networks of information.

Multimedia could be interpreted as a combination of data carriers, for example video, CD-ROM, floppy disks, Internet and software in which the possibility for an interactive approach is offered (Smeets, 1996; Jager and Lokman, 1996). Fetterman (1997) also viewed multimedia as those resources used for instruction that include one or more media such as graphics, video, animation, image and sound in addition to textual information. He identified four important characteristics of multimedia as:

- ➢ Multimedia systems are computer controlled
- ➢ Multimedia systems are integrated
- ➢ The information content must be represented digitally
- ➢ The interface to the final presentation of media.

11

The power of multimedia lies in the fact that it is multi-sensory, stimulating the many senses of the audience. It is also interactive, enabling the end users of the application to control the content and flow of information. This has introduced important changes in the educational system and impact the way we communicate information to the learners (Neo and Neo, 2000). Ogunbote and Adesoye (2006) expressed that multimedia technology adds new dimension to learning experiences because concepts were easier to present and comprehend when the words are complemented with images and animations. Stating further that it has been established that learners retain more when a variety of senses are engaged in impacting knowledge; and the intensity of the experience aids retention and recall by engaging social, emotional and intellectual senses.

The evolution of multimedia has made it very possible for learners to become more involved in their work. With multimedia technologies, they can create multimedia applications as part of their project requirements. This would make them active participant in their own learning process, instead of just being passive learners of the educational content. Reinsman (1994) expressed that multimedia involves processing, storage,generation, manipulation and retention of multimedia system, and the resources could include text files, pictures, video, audio, databases, archives, library catalogs, course notes, relevant links to various websites and easy access to search engines available on the Internet (Shuell and Ferber, 2001). Ubogu (2006) supported the view that multimedia resources facilitate access to all human knowledge, anytime, and anywhere in a friendly, multi-modal, efficient and impactive way, by overcoming barriers of distance, language and culture, and by using multiple Internet-connect devices. It is important to say that the use of multimedia technology has great significance in schools, colleges, universities and research institutions in the Western countries. In these countries, the technology is being seen as a key player to development in all ramifications and essential component of education.

Multimedia in Education has been extremely impactive in teaching individuals a wide range of subjects. Multimedia is changing the way we communicate with each other. The way we send and receive messages is more impactively done and better comprehended. While a lecture can be extremely informative, a lecture that integrates pictures or video images can help an individual learn and retain information much more impactively. Using interactive CD-ROMs can be extremely impactive in teaching students a wide variety of disciplines, most notably languages and music. A multi-sensory experience can be created for the audience, which in turn, elicits positive attitudes towards its application (Neo and Neo, 2001). Multimedia has also been shown to elicit the highest rate of information retention and result in shorter learning time (Ng and Komiya, 2000).

On the part of the creator, designing a multimedia application that is interactive and multi-sensory can be both a challenge and thrill. Multimedia application design offers new insights into the learning process of the designer and forces him or her to represent information and knowledge in a new and innovative way (Adeolu, 2015). However, information technology application serves different purposes, such as knowledge sharing-portal, search engines, public administration, social service and business solution.

2.2.3   Concept of Students with Special Educational Needs

Students with special educational needs are those that deviate from the societal norms, to an extent that adapted programme or special methods are required to meet their needs (Adio, 2015. Ali (2014) saw students with special educational needs as people with significant sensory deficits, or unusual high intellectual ability, that is not properly addressed in the regular school programme. Heward (2003) defined student with special educational needs as those who need modification in curriculum and instruction in order to help them maximize their potential. According to him, modification of curriculum and instruction are necessary as a result of their disabilities. Alli (2003) defines student with special educational needs as people with unique

educational and/social needs or desiring extra attention in virtually all aspects of life. Venden and Peter (2004) view student with special educational needs as those exceptional students differently challenged, who may be physically, socially or intellectually different, either below or above average that require individually planned and systematically monitored arrangements of physical setting. According to them, modification of curriculum and instruction are necessary as a result of their disabilities. The National Policy on Education (2008) categorized special needs student into three main categories. These are:

The Disabled: Under this category are people with impairment (physical, sensory) and because of impairment/disability cannot cope with regular school/class organization and methods without formal special education training. They include those who are visually impaired, hearing impaired, physically impaired, mentally retarded, emotionally disturbed, learning disabled and those with one form of handicapped or the other.

The Disadvantaged: Those who fall under this group are the student of nomadic pastorals, migrant fishermen, farmers and hunters. They are those who due to their lifestyles and means of livelihood are unable to have access to the conventional educational provision and therefore require special education to cater for their particular/peculiar needs and circumstances.

The Gifted and Talented: These are student who possess very high intelligent quotient and are naturally endowed with special traits and therefore find themselves insufficiently challenged by the regular school programmes. Heward and Orlansky, (1992) also classified student with special educational needs under the following categories:

Mental Retardation: This is said to be a term used to identify "performance deficit" that is failure to demonstrate age appropriate intellectual and social behavior. It is a developmental disability characterized by significantly sub average general intellectual functioning, with concurrent deficit in adaptive behavior. Mental retardation is used when a person has certain

limitation in mental functioning and skills such as communicating and social skills. These limitations will cause a child to learn and develop more slowly than a typical child.

Student with mental retardation may take longer to learn to speak, walk and take care of his personal needs such as dressing or eating (Ozozi, 2005; Mamman, 2007; Ali 2012).

Learning Disability: This means a disorder in one or more "basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell or do mathematical calculations" (Ali 2012). It refers to variety of disorders that affect the acquisition, retention, understanding, organization or use of verbal and non-verbal information. Student who exhibits one or more deficits in the essential learning process of perception, conceptualization, language, memory, attention, and impulse control are said to having learning disability (Okeke, 2001; Ali, 2003; Mamman 2007; Ali, 2012).

Behaviour Disorders: Student with emotional disturbance are referred to as student with behavior disorders. Behaviour disorders have been defined as "deviation from age-appropriate behavior which significantly interferes with the child own growth and development" (Okeke, 2001). A child behavior to be classified disorder must differ markedly and chronically from current social or cultural norms.

Communication (speech and language) Disorders: Interaction is the major means by which human beings learn and successful interaction requires communication. Communication is said to be "transmitting and receiving of information through a common system or symbol" (Okeke, 2001). Student who are not able to make themselves understood or who cannot comprehend ideas that are spoken to them are said to suffer from communication disorders. Thus, communication disorder is impairment in the ability to understand or use words in context.

Hearing Impairments: Hearing is vital to every aspect of our daily existence. Hearing impairment refers to the ability of a person to hear sound. It is impairment in hearing whether

permanent or fluctuating that adversely affects the child educational performance. It can be total, "deaf" or partial "hard of hearing".

Visual Impairment: Vision is fundamental to human development. It is a visual factor in the development process and the wellbeing of the child. Visual impairment is the functional loss of vision. It is an impairment or difficulty with vision. The visually impaired include student that are partially sighted, student with low vision, and student that are totally blind. A child with little or no vision is unable to rely on visual signals such as eye gaze and smiling by parents, siblings and peers in social exchange, therefore; social interaction is limited and sometimes misinterpreted.

Physical and Other Health Impairment: This refers to a broad range of disabilities. It indicates a

medically diagnosed chronic physical or health impairment, either congenital or acquired. Their intellectual functioning may be normal or below normal. Many physical or health impaired student adjust to their conditions. Some use special devices or equipment such as wheelchair, because of their disabilities or illness they may require modification in physical environment.

2.2.4   Impact of Multimedia Learning

Multimedia is nothing but the processing and presentation of information in a more structured and understandable manner using more than one media such as text, graphics, animation, audio and video. Thus multimedia products can be an academic presentation, game or corporate presentation, information kiosk, fashion-designing etc. Multimedia systems are those computer platforms and software tools that support the interactive uses of text, graphics, animation, audio, or motion video. In other words, a computer capable of handling text, graphics, audio, animation and video is called multimedia computer. Technological innovation has accelerated in the first decade of the new century, with digital projectors as CD-ROMs or DVDs

accompanying many textbooks. Today, in good schools there are high-speed internet connections in most classrooms that allow reasonable-quality video streaming, and many students now bring wireless laptops, computers, or hand-held devices into the classroom setting.

The use of multimedia materials has substantial grounding in cognitive theory and research. Several studies indicate that computer-based multimedia can improve learning and retention of material presented during teaching and learning as compared to conventional teaching where study materials do not use multimedia. Multimedia presentations are most impactive when the different types of media support one another as teaching strategies which enhance students" learning.

A well -developed multimedia can do more than good. The potential pedagogical value and rationale for using multimedia in classroom is given below:

- To raise interest level: Multimedia raises the interest of the student in learning and they appreciate a variety of media.

- To enhance understanding: Multimedia materials boost students" comprehension of complex topics of science.

- To increase memorability: multimedia leads to better encoding and easier retrieval which confirms for long-term memory.

Multimedia is an impactive way for sending and receiving messages which can be comprehended easily and smoothly. The inclusion of media elements reinforces the message and the delivery, which leads to a better learning rate. The power of multimedia lies in the fact that it is multi-sensory, stimulating the many senses of the audience. It is also interactive, enabling the end-users of the application to control the content and flow of information

(Vaughan, 1998). This has introduced important changes in our educational system and impact the way we communicate information to the learners (Neo & Neo, 2000). Multimedia in Education has been extremely impactive in teaching and learning of a wide range of subjects.

A lecture can be extremely informative if it integrates pictures or video images which can help a learner to retain information much more impactively. Using interactive CDROMs can be extremely impactive in teaching students a wide variety of disciplines, most notably science. Multimedia programs provide different stimuli in their presentations which include a number of elements as Texts, spoken words, sound & music, graphics, animations and still pictures. Inclusion of these elements in teaching in a comprehensive presentation provides impactive education, which in turn will support the participation of the different senses of the learners in diverse syllabi. Media in teaching are classified with regard to the senses they stimulate. The most common classification of media: audio, visual and audio-visual. With the arrival of the multimedia computer, the term multimedia is more frequently referred to computer multimedia. The necessities of using multimedia computers are appropriate computer equipment that works and computer literacy of the learner and the teacher. Multimedia in teaching shows the numerous possibilities of combining different media in class work, successively and simultaneously, based on the existing needs for developmental achievements of students. The Classic teaching resources include verbal, textual, visual, auditory, audio-visual, manual, experimental and auxiliary technical educational resources, while modern teaching resources includes educational program back-ups, multimedia electronic communication, expert systems, teaching bases of knowledge, intelligent tutorial systems etc. Therefore, with regard to the type of sense, the information can be obtained as given below:

1. Auditory – sources of knowledge which provides information by listening.

2. Visual – sources of knowledge which provides information by watching.

3. Kinaesthetic – sources of knowledge which provides information by movement.

4. Olfactory – sources of knowledge which provides information by smelling.

5. Taste – sources of knowledge which provides information by tasting.

The students acquire knowledge, develop skills and adopt pedagogical values. The teaching content is determined by the curricula for each individual age of the student. Students along with the teacher are in a direct relationship, but in an indirect relationship with teaching contents, which means that through the mediation of the teacher's lecture, they acquire contents. Multimedia is a teaching device and instructional aid which can be bought, rented, formed for the needs of the class. Multimedia is not supplant the teacher, but serves as an excellent complement to the spoken word, blackboard, textbook, teaching transparencies, geographical maps etc. Moreover, multimedia is used in class interaction.

2.2.5 Challenges of Adopting Multimedia Learning

The challenges associated with the usage of multimedia learning on students with special need are discussed in sub-sections

2.2.5.1 Inadequate of equity in educational opportunities in Nigeria

It is clearly obvious that the use of ICT is an everyday part of the lives of most people, especially those with physical or learning disabilities, and has significant impacts on many aspects of society, including healthcare. Significant efforts and investments have been made across developed and some developing countries to maximize the benefits of ICT in education and training, with a focus on how to move from providing sufficient infrastructure (number of computer devices available and wide-spread, reliable high-speed Internet connectivity) to the impactive use of ICT by all concerned (EADSNE, 2013). Nevertheless, there is already a technical divide in Nigeria that is considered more about getting personal access to internet technologies, and not more about the skills, computer knowledge to optimize digital media

use. Nigeria's digital divide is widening and education is a key factor in exclusion. It calls for the need to encourage e-learning in Nigeria, in order to stop placing both the elderly, the working poor and the foreign-born citizens at risk of being disqualified.

When addressing e-learning and inclusive education with respect to the Nigerian classroom environment , it is important to note that inclusive education has to do with turning the education system globally into a structure capable of adapting adequately to the varied needs of all learners (UNESCO, 2018), by changing schooling to promote education for everyone and eliminating barriers Rather of importing models from abroad, Nigeria needs to develop national inclusive education models because of the broad variety of social , political , cultural and other problems that affect inclusive education models across developed and some developing countries. There are no national comprehensive educational models of areas that illuminate the meaning of achieving quality inclusion for all that demonstrate the transformative value of ICT for schools in terms of instruction, evaluation, pedagogy and organization; and this must be addressed in Nigeria as a human rights issue.

The use of ICT for learning (e-learning) refers to a learner-focused approach to the usage of emerging digital technology and the internet to enhance the learning experience by promoting access to information and facilities, as well as online exchanges and cooperation (European Commission, 2008). This has the capacity for data literacy, which in impact contributes to digital maturity, and this can be reflected in, among others, the positive and critical use of learning technologies in the information society. UNESCO (2015) coroborates that it is focused on basic ICT skills and the use of computers to gather, analyze, store, create, display and share information, and to interact and participate in interactive Internet networks. In addition, ICT has broad positive benefits for learning, such as cognitive processing, independent learning, critical thinking and teamwork, and enhancing a studentcentered approach to learning (Kennisnet, 2011). While these advantages may lend themselves to new

pedagogical strategies, virtually all Nigerian teachers have not used ICT in such a way; thereby making it difficult for the positive impact of ICT on learning to revolutionize processes at Nigerian schools.

2.2.5.2 Inadequate of ICT innovations

Inadequate of ICT technologies hinders Nigeria's promotion of equity in opportunities for education. Nigeria needs to tackle the ICT innovation challenge in three areas, namely pedagogical, technological and organizational innovation, in order to ensure a transformation impact on education and training delivery. This would lead to advances in the use of information sharing and knowledge building technologies. Innovation capabilities that can be improved and strengthened by the use of ICT include learner centered instruction, group work and study initiatives that contribute to stronger knowledge and abilities; collaborative ways that can contribute to more insightful, deeper and participatory learning; learning through doing; learning through inquiry; problem solving; innovation, and so on (Dipace, 2013). For Nigeria, it is important to nurture new and innovative learning approaches that will ensure that teachers and parents are aware of their potential and support them in curricula, teaching guidelines, and teacher training, as currently practiced in developed and some developing countries.

Ensuring quality inclusive education in Nigeria ICT will prioritize fostering equality and addressing diversity of needs through the development of transparent and equitable policies that facilitate the complete inclusion of ICT in education and training, as well as the mainstreaming of ICT goals, both at policy and implementation level, into the mainstream education and training agenda in line with international standards Nigeria should therefore ensure that the use of ICT for inclusion integrates appropriate policies and practices with respect to the use of assistive and mainstream technologies, based on research and evidence, and closely aligned with learning in a digital networked society rather than e-learning

(EADSNE 2013). It is also important to address a problem that exists for people with disabilities in the language of assistive technology by emphasizing learner-centered approaches with digital competencies that everyone has acquired, while teacher education embraces more open and flexible learning environments.

2.2.5.3 Poor knowledge of assistive technology (at) and its benefits for inclusive education

Innovative use of assistive technology for higher inclusive education in Nigeria is key to ICT. Innovation occurs at all stages of technology development and there is software and hardware that supports young people 's learning, especially those with special educational needs or disabilities in three areas of ICT use, i.e., training and rehearsal technology, learning-aid technology and learning-aid technology (UNESCO IITE, 2018). Software that helps train and practice (commonly referred to as drill and practice software) is important for supporting the learning and repetition of basic concepts in a more imaginative way than pen and paper, while software designed to support learning is primarily but not solely 'access technology,' especially for those with sensory 'or cognitive impairments. The most empowering solutions are those that endorse connectivity through 'not being able to do so without the use of technology' and facilitating learning (Abbott, et al, 2011). Enabling or assisting ICTs can provide equal educational opportunities by helping young people learn at the speed that suits their needs, helping to minimize the boundaries between subjects, enhancing creativity, as well as teaching, studying, communicating, and supporting therapy and diagnosis of need (Inclusive Children with Disabilities Education).

The lack of AT knowledge by teachers makes it difficult for them to identify the features of ICT that support learners with SEN in accessing the curriculum, and generally support the practice of special needs education. Examples of ICT features, according to Rose, Shelvin, Winter and O' Raw (2015) include (a) Individual attention in areas such as enhancing understanding - it can provide structure and variety, as well as information-rich multimedia

content to support school subjects; (b) spell-checker - as support for young people with dyslexia but also as an inclusive tool to encourage the production of written material; This type of program can also also give the instructor input on the time students spent on assignments, and so on; (e) preparation tools- graphic visualization and modeling resources to facilitate knowledge structuring, such as when preparing an essay.

The advancement of Web 2.0 technology and the implementation of Virtual Learning Environments (VLE) are critical for giving young people, particularly those with special educational needs and/or disabilities, greater access to meaningful learning anytime and wherever. These webbased systems offer opportunities for young people to access multimedia-rich resources that can support learners with specific needs, and also provide a richer learning experience for everyone (Drigas, 2016).

2.2.5.4 Lack of political will to adopt global measures that indicate progress in the use of technology for inclusive education

The adoption of global measures that indicate developments and/or progress in the use of technology for inclusive education such as digital accessibility and assistive technologies is crucial for basic school level classroom practices. Such initiatives will help encourage and support the application of the Convention on the Rights of People with Disabilities' expectations and promote internet inclusion and assistive technology (Jellinek and Abraham, 2012). Therefore, it is important for Nigeria to have some form of ICT accessibility policies or AT education programs in place. In the absence of established new technology, i.e., methods, ideas, inventions, and advancements used in different educational environments to meet diverse educational purposes, this cannot be achieved impactively (Veletsianos, 2010).

The introduction of technology such as digital whiteboards, immersive learning environments and portable computers traditionally used by elementary and secondary schools in higher

education, enterprise or home produces a rapid rate of technical change that presents a major challenge for teachers to adapt their work and capitalize on the learner 's potential It is important to determine which technologies education should adopt, identify trends and suggest how this will affect teaching and learning as well as education systems. As predicted by The New Media Consortium (2012), emerging technologies that are likely to have a significant impact on teaching, learning, research, or creative expression in education around the world include mobile and tablet computing in the short term, game-based learning and personal learning environment.

Most Nigerian teachers lack awareness of the many barriers to inclusive education existing in the classroom or wider environment being replicated in virtual learning environments (VLE) and this Beacham (2011) notes restricts readiness for learning, resources and learning opportunities. According to Chowcat (2009) VLE has considerable benefit for teaching and learning implementation and management where imaginatively applied, which can build obstacles for some learners and others. This is especially valid for research, capturing and publishing evaluations, parent portals, shared learning spaces and other immersive elements incorporated in the VLE (EADSNE, 2013).

Training and practice software is widely used with young people identified as having special educational needs, and with broader thematic product evaluations, ICT can affect the motivation of students and involve low achievement, differentiation and behavior (Balankstat, Blamire and Kefala, 2006). Robots and programmable objects are an area of youth support development with SEN (KarnaLin, Pihlainen-Bednarik, Sutinen, and Virnes, 2007). While teachers are likely to be overwhelmed by these innovations, the way it motivates and engages young people with special educational needs and how it offers a opportunity to build flexibility and new opportunities will inspire them. Therefore, teachers need to be mindful of potential

advantages and consequences, such as the opportunity to understand which leads to those cognitive skills.

Research suggests that modern advances in technology will pose obstacles for certain individuals, specifically those with special needs and disabilities. This can be resolved by adhering to the basic values that make such technologies available to people with or without special needs / disabilities (Henriskgard, 2019). It is because their engagement and use are often related to the initiative's curriculum and equitable education targets, which are influenced by the size, style of learning resources used, sophistication which perceived popularity as well as the consistency and quantity of human help and appropriateness of the pedagogical method being applied (Redecker, 2009). An accessible learning platform allows access to learning materials and learning activities, as well as providing access to peer support - which has the potential to bridge the isolation often felt by students with special needs and disabilities, and enhance subjective learning experiences (UNESCO, 2013).

It is sad to note that accessible technologies, such as Augmentative and Alternative High-Tech Communication devices, are completely absent from the Nigerian school system, although UNESCO IITE (2019) emphasizes the need for them to be consistently made available to learners with special needs, without interruption, so that they can access education and even society. Using ICT for inclusive education is a requirement for life that extends beyond the classroom, and so on. This may mean different things for different people, such as providing information in a form that can be easily understood (e.g. in an easy-to - read or symbol format) or an accessible website that can be read aloud using screen read technology, or a device that speaks and thus supports communication and social interaction, or a device that translates sign language into text or automatically subtitles.

2.2.5.5 Failure to/non-recognition of access as entitlement

Nigeria is yet to come to terms with the fact that an important ICT practice in inclusion that influences classroom delivery is to view access as an entitlement. This means making sure that innovation is accessible when required and fit to meet individual needs, both in terms of technology and the methods and processes used to implement it (UN General Assembly, 2013). And it is inevitable to ensure direct control over technology choice, positive attitudes of all involved, and technology availability in a variety of contexts.

To achieve impactive learning technologies in Nigeria, regulation with public standards, such as law that respects the interests of learners with special educational conditions and disabilities, is mandatory. This is consistent with the Convention on the Rights of Persons with Disabilities, which emphasizes equal access to information and communication, as well as ICTs and systems that promote independence and participation (UN 2006). It means a legislative duty to provide inclusive educational opportunities for special needs where implementation is integrated into statutory law with related recommendations with guidelines on how to do it.

Nigeria also needs to make use of its special needs and disabilities AT in its everyday practices to have, as stated by Linstron (2011), a form of learning, to be incorporated into educational life and to receive immediate rewards that do not impair their social involvement in regular school activities. Apprentices with special needs and disabilities should be interested in selecting AT to reflect their desires, parents' preferences and clinical advice for the application to be approved or used. It is important to tackle institutional barriers such as power relations and staff dynamics that exist in the school as an educational establishment such as between ICT and non-ICT literate professionals (European Agency for Special Needs and Inclusive Education, 2020). This means that for ICT implementation to be impactive in inclusive education, it has to come from school administrators and be promoted through the system by processes and activities. This corroborates The Achievement for All project's point that

leadership in inclusive education in the school system needs to come from either the head teacher or a senior management team member (Humphrey and Squires, 2011).

Learners with special educational needs / disabilities in Nigeria often come from economically deprived backgrounds and from a technical standpoint are at heightened risk of being part of a digital divide, because they have less extensive or no personal access to the Internet or the expertise available to optimize the use of electronic learning technology, among other reasons (UNESC, 2015). The digital divide in Nigeria needs to be reduced by considering inclusive approach- identification of different models for assessing ATs, ensuring that all children receive the appropriate AT required due to varying skills in identifying and matching needs with solutions. In doing so, Fernandez-Batanero and Colmenero-Ruiz (2016) warn that it is important to avoid supply disparities by reducing expertise differences within local ICT authorities and AT and changing their uses at a rapid pace, so that the workforce of the school will not struggle to keep up with the advances. There should be a consistent (initial and ongoing) approach to inclusion training with a focus on specialist technology for learners with special educational needs and disabilities, and sharing of knowledge for schools, resulting in different learner experiences. A survey conducted by Ikwen, Olayi and Akpan (2020) revealed that all major public schools in Nigeria 's six South-South Geo-Political Zone states lacked access to technology to support young learners with special educational needs and handicaps.

2.2.5.6 Absence of provision for training of teachers in general and specialist ICT

The successful exploitation of ICT in inclusive education is hinged on teachers. This requires education and training of teachers to equip them to succeed. As advocated by EADSNE & UNESCO IITE (2011), Nigerian teachers should be educated or trained in education and pedagogy, working in inclusive educational settings to support learners with diverse needs, and using ICT for learners with special needs and disabilities.

Currently, Nigerian teachers lack knowledge and/or information on how to choose and use ICT to improve access and support inclusion of learners with special educational needs and handicaps. To achieve this, Nigeria needs to develop hardware and software product databases that describe product capabilities, including their suitability, or issues they may have with learners with special educational needs, as researchers reveal (Polivstok, 2015; Henriskgard, 2019). It is also important to expose teachers to practice case studies or lesson delivery, which focus primarily on access to learning (Turner-Cmuchal & Aitken, 2016). Szuflita (2015) claims that it is not enough for teachers to undergo basic inclusive education instruction and to be well versed in inclusive education pedagogy with a clear knowledge of the values of e-learning / ICT, they must be able to translate this into impact and be aware of how this will impact the success and association of pupils. Beecham (2011) suggests that teachers need a clear awareness of the possible impacts of digital exclusion to improve incentives within the classroom for integration mechanisms such as trust and collaborating with or with others. Teachers' awareness of the barriers created by some ICTs is essential for delivering a quality inclusive classroom education.

As is currently being done in some of Europe's developing countries, Nigeria will expand the use of a virtual learning system built to support students with special educational needs by offering a bold, simple well-designed interface and customized learning and interaction resources. Using this framework can be incorporated into the curriculum of pre-service teacher education students as a means to develop enquiry-based learning and incorporate innovative use of ICT into their classes, and to develop their professional development skills.

Nigeria needs to consider teacher preparation as a crucial factor among the factors that decide the progress or lack of educational advancement linked to ICT. Nigeria should imbibethe statement by EADSNE (2013) that the usage of technology in classrooms is socially contextualised, engaging with schools' structural and corporate environments and representing

aspects of the dominant social structures within and outside the framework of use. Simple ICT skills training is required in initial instructor preparation, with a emphasis on operating system features and usability tools.

Within schools, Nigerian teachers are not well prepared to cope with diversity. While perceptions, values, expertise, and awareness will be an important part of Nigeria 's schooling. Teacher education should take a developmental, competency approach for all teachers (Masih and Vidyapati, 2018), which is lacking in Nigerian teacher training. This makes it difficult for student teachers to form clear opinions about inclusion in initial teacher education just as initial teacher education will not provide an opportunity to influence attitudes and no delivery of a carefully designed learning program. Positive attitudes of teachers towards inclusion are strongly dependent upon their education, experience with learners with special educational needs, and availability of support (UNESCO IITE, 2019). It is important for teachers to be given training in accessible ICTs, specialized AT and mainstream accessibility features during pre- and in-service education that can support learners with special educational needs, and how to produce adapted digital materials. UNESCO (2012) noted that as the technology advances, teacher teaching often needs to examine and expand the application of technology for both the learners they instruct and as part of their own lifelong learning.

Given the expectations and increasing complexity of teaching and learning, the use of ICTs and the diversity of learner needs, high-quality professional development for teachers has become imperative (EADSNE, 2013). Schleicher (2012) corroborates this by ensuring that all teachers are able to address the demands of diverse student communities, use data efficiently to direct reforms, involve students and become successful promoters of their own professional development.

Teachers have an important role to play in promoting and implementing inclusive education (European Special and Inclusive Education Agency, 2020), but Nigerian teachers lack information and guidance on how to select and use ICT to achieve this objective. Modern pedagogy and ICT should incorporate understandings of knowledge building through distributed cognition, design, interaction, context, complexity, dialogue, conversation, concepts and relationships in relation to the characteristics of teacher knowledge (Loveless, 2009). Kennisnet (2011) added that ICT, apart from being a powerful educational resource, is also suitable for promoting constructivist knowledge-building, teaching, and learning methods that can better achieve these modern pedagogical understandings. The aligned ICT competencies and national professional requirements for teachers, according to Becta (2010), improve successful teacher education with ICT in terms of expertise and experience, information and comprehension, and principles and qualities. Successfully caring for learners with special educational needs in the classroom requires adequate access to or use of mainstream technologies, adaptations where necessary, or the provision of personal help technologies (UNESCO, 2011). Teachers need the support to identify and evaluate the appropriate software and hardware to meet this need (EADSNE, 2013).

2.2.5.7 . Absence of Multi-stakeholder Research and Development into ICT

Presently, there is complete absence of creative thoughts, new ideas or imaginations in form of device or method in technology for inclusive education regarding the development of new tools and new ways of using ICT in Nigeria. There are no known researchers, developers or professional educators in Nigeria with knowledge of both high tech and low tech applications. To attain quality inclusive education through ICT, Consumers need to be involved in developing and integrating special education services technologies by promoting networking and communication between the multiple partners, manufacturers, individuals with

disabilities/special needs and the school personnel working with them (Abbott, Brown, Evett, Standen & Wright, 2011; Wright, Sheehy, Parsons & Abbott, 2011).

Nigeria needs to adapt Design for All and Learning Approach promotion to help or fit individual differences in order to achieve success here. Built for Everyone means that access technologies are incorporated into programs and people with and without specific needs / disabilities benefit from the access technologies to improve their learning (Szuflita, 2015). Thus, in addition to professional input, it is essential to identify what users want from products, particularly in the area of Augmentative and Additional Communication (AAC). The following core concepts proposed by (Abott, et al , 2011) if recognized by the Nigerian Government have the capacity to address human variations in the classroom in line with the UN Declaration on the Right of Persons with Disabilities: I expanded consumer participation, using participant approaches; (ii) mobile technology mainstreaming with the advancement of assistive technologies that wound up

In order for ICT to facilitate quality inclusion in the Nigerian classroom, it is necessary to ensure that assistive technology builds in access from the outset in accordance with the rapid pace of technology development which makes it difficult for accessible standards to remain current in line with Soderstrom & Ytterhus(2010) findings. The need for open and inclusive technologies that draws on accessibility abinitio requires special needs / disabled individuals in all facets of the chain from product design to product development in order to produce affordable and sensitive goods by providing multiple access points for consumers (Foley & Ferri, 2012). By doing so, (Schleicher, 2012) confirms that the needs of those with cognitive, sensory, and physical disabilities and special needs would generally be seen as important sources of diversity and complexity necessary to inform technology design to increase accessibility and usability for all users. This approach could also be extended to designing

specialized technology that would also be more user-friendly and socially inclusive design (UNESCO IITE, 2019).

The promise of emerging technological technologies needs to be tracked and explored as a way of addressing the existing obstacles to learning that learners with special educational needs and disabilities face. Mobile learning, cloud-based solutions and the use of game technologies for learning are currently trends worth monitoring according to UNESCO (2012).

2.2.5.8 Less focus on tracking the use of ICT in comprehensive education

It is sad to notice that Nigeria has yet to come to grips with the fact that the use of ICT for inclusive education is a complex field involving multiple players, disciplines and policy areas; and that it is considered a trans-sectoral field requiring the implementation of cross-sectoral policies based on the numerous knowledge sources produced. Additionally, there is an benefit in the usage of an understood universal shared language, in particular for the use of ICT in educating people with special needs and disabilities as well as in tracking regional use (Balmeo, Nno, Pagal, Puga, ArisDafQuino & Sanwen, 2017).

In regular or annual surveys, it is important for Nigeria to create or generate data sources which can provide an indicator of special needs education interventions that can be used to disclose the use of ICT to assist learners with unique educational needs. This will require assessment of national inclusive learning projects where it is possible to investigate elements that are deemed important for learners with special educational needs to realize their potential. For example, the 2009-2011 Achievement for All (AFA) pilot in England investigated these three elements in the evaluation of national inclusive learning projects: (a) evaluation, tracking and intervention- to track the progress of young people, set learning targets and implement interventions to support learning progress; (b) structured conversations with parents to build parental commitments.

By evaluating national inclusive learning projects, it will be possible to determine whether pupils make significantly greater progress in any school subject compared to the national average; significant increase in positive relationships and behaviors and associated improvement in attendance. It also has the ability to allow teachers to provide a greater knowledge of special educational conditions and topics of integration, with greater focus on identifying and meeting pupils' wider needs. The structured conversations with parents also have the potential to positively influence the teacher's expectations of young children with special educational needs that can lead to personalized approaches to teaching and learning. Using data generated within school through evaluation, tracking and monitoring has the potential to enable teachers to assess interventions and make funding decisions. The data produced during surveillance help schools to recognise children who are not making progress by ensuring adequate resources for the classroom.

It is difficult to track the progress of pupils and point out gaps using Nigeria 's technology nor can it be used to identify support and resource needs. It is also important to point out the role of parents in fostering good results for learners with special educational needs which are illustrated by study studies as completely crucial with impact on academic and non-academic results. Consequently, the importance of home and school education and their relationships is difficult to point out (Humphrey, and Squires, 2011).

2.2.6   Concept of Academic Achievement

Academic achievement is defined as the measure of what a person has accomplished after exposure to educational programme. Muhammad (2011) noted that when students are exposed to student centred instructional strategies such as demonstration and questioning strategies, the students' achievement scores are higher than those students whom were taught the same concept using subject matter approach. Aniaku (2012) referred to academic achievement as the outcome of a teaching and learning process. The extent to which a student, teacher or institution

33

has achievement their educational goals. Academic achievement as the scholastic standing of a student at a given moment which states individual's intellectual abilities which can be measured by grades obtained from examinations or continuous assessments (tests or quiz). In Nigeria, the level of students' academic achievement in the school is determined by grades obtained from exams (Adedoyin, 2010).

Academic achievement is the outcome of education, the extent to which a student, teacher or institution has achieved their educational goals and it is commonly measured by examinations or continuous assessment (Adedoyin, 2010). Academic achievement is an important parameter in measuring students learning outcome in various school discipline. Academic achievement is a key mechanism through which in-school adolescents learn about their talents, abilities and competencies which are important parts of developing career aspirations.

Aniaku (2012) pointed that academic achievement as activities that ensure that goals are consistently being met in an impactive and efficient manner. He concluded that academic achievement is the impactiveness and improvement of students towards specific goals set up to be achieved. Achievement is accomplishing whatever goals one set for oneself which is doing what one wants to do within the limits of the law, overcome obstacles and attain a high standard. An individual with a high need for achievement is characterized as having a desire to take personal responsibility.

Achievement requires drive and single mindedness and it is about completing goals one has set for oneself. Achievement is influenced by opportunities, motivations, education and training. Adedoyin (2010) argue that the urge to achieve varies from one individual to the other. For some, the need for achievement is very high while for others it is very low. Achievement is synonymously used with success; it is something that somebody has succeeded in doing usually with effort. It implies the act or process of finishing something successfully; success then in the area of academic is what is referred to as academic achievement usually assessed with

achievement test. Iwundu (2001) sees academic achievement as the degree or level of success attained at the end of an academic endeavour. The yardstick for measuring one's level of academic achievement is by assessing the academic performance of the individual through test and observation. The issue of academic achievement of students at all levels of Education in Nigeria especially at secondary school level is very crucial and has been addressed from different dimension by researchers over the years.

2.2   Theoretical Framework

The theoretical framework for this study is based on the constructivist learning theories as propounded by Piaget's Development Theory, The Cognitive Theory of Multimedia Learning and Vygotsky's Learning Theory. Learning theories are theoretical frameworks describing how information is absorbed, processed and retained during learning. Cognitive, emotional, and environmental influences, as well as prior experience, all play a part in how understanding, or a world view, is acquired or changed and knowledge and skills retained (Ormrod, 2012).

There are three sets of learning theory generally used in educational circles, under the headings of: behaviourism, cognitive and social learning theories (Atherton, 2013). He added that Behaviourism is primarily associated with Pavlov (classical conditioning) in Russia and with Thorndike, Watson and particularly, Skinner in the United States (operant conditioning), while Humanistic "theories" of learning tend to be highly value-driven and hence more like prescriptions (about what ought to happen) rather than descriptions (of what does happen) and then social learning theories. It is also the basis of the educational approach known as constructivism, which emphasises the role of the learner in constructing his own view or model of the material and what helps with that.

Bello and Abimbola (2012) stated that the newer idea of the cognitive psychologists about learning is that learning is an active internal process of construction where learners' prior

knowledge plays a significant role in further conceptual learning. The authors explained that the newer ideas of the cognitive psychologists and the constructivists epistemological views formed the cornerstones of inquiry teaching and are linked to the works and philosophies of Dewey, Vygotsky, Bruner and Piaget among others.

2.2.1 The Cognitive Theory of Multimedia Learning

The cognitive theory of multimedia learning was popularized by the work of Richard E. Mayer and other cognitive researchers who argue that multimedia supports the way that the human brain learns. They assert that people learn more deeply from words and pictures than from words alone, which is referred to as the multimedia principle (Mayer 2005a). Multimedia researchers generally define multimedia as the combination of text and pictures; and suggest that multimedia learning occurs when we build mental representations from these words and pictures (Mayer, 2005b). The words can be spoken or written, and the pictures can be any form of graphical imagery including illustrations, photos, animation, or video. Multimedia instructional design attempts to use cognitive research to combine words and pictures in ways that maximize learning impactiveness.

The theoretical foundation for the cognitive theory of multimedia learning (CTML) draws from several cognitive theories including Baddeley's model of working memory, Paivio's dual coding theory, and Sweller's Theory of Cognitive Load. As a cognitive theory of learning, it falls under the larger framework of cognitive science and the information-processing model of cognition. The information processing model suggests several information stores (memory) that are governed by processes that convert stimuli to information (Moore, Burton & Myers, 2004).

The cognitive theory of multimedia learning (CTML) centers on the idea that learners attempt to build meaningful connections between words and pictures and that they learn more deeply than they could have with words or pictures alone (Mayer, 2009). According to CTML, one of

the principle aims of multimedia instruction is to encourage the learner to build a coherent mental representation from the presented material. The learner's job is to make sense of the presented material as an active participant, ultimately constructing new knowledge.

The Three Store Structure of Memory in CTML

CTML accepts a model that includes three memory stores known as sensory memory, working memory, and long-term memory. Sweller (2005) defines sensory memory as the cognitive structure that permits us to perceive new information, working memory as the cognitive structure in which we consciously process information, and long-term memory as the cognitive structure that stores our knowledge base. We are only conscious of information in long-term memory when it has been transferred to working memory. Mayer (2005a) states that sensory memory has a visual sensory memory that briefly holds pictures and printed text as visual images; and auditory memory that briefly holds spoken words and sounds as auditory images. Schnotz (2005) refers to sensory memory as sensory registers or sensory channels and points out that though we tend to view the dual channel sensors as eye-to-visual working memory and ear-to-auditory working memory, that it is possible for other sensory channels to introduce information to working memory such as "reading" with the fingers through Braille or a deaf person being able to "hear" by reading lips.

Working memory attends to, or selects information from sensory memory for processing and integration. Sensory memory holds an exact sensory copy of what was presented for less than .25 of a second, while working memory holds a processed version of what was presented for generally less than thirty seconds and can process only a few pieces of material at any one time (Mayer 2010a). Long-term memory holds the entire store of a person's knowledge for an indefinite amount of time. Figure 1 is a representation of how memory works according to Mayer's cognitive theory of multimedia learning.
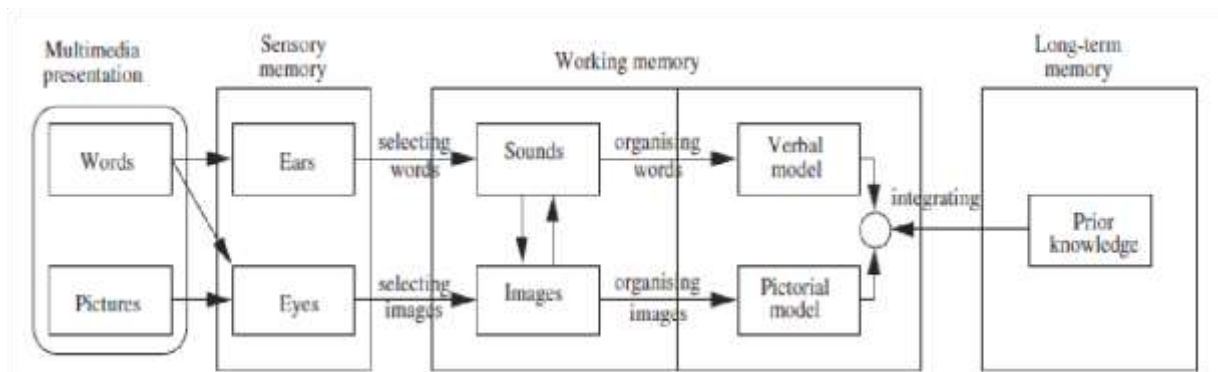
Figure 1 Mayer's Cognitive Theory of Multimedia Learning (Mayer 2010a)

Mayer (2005a) states that there are also five forms of representation of words and pictures that occur as information is processed by memory. Each form represents a particular stage of processing in the three memory stores model of multimedia learning. The first form of representation is the words and pictures in the multimedia presentation itself. The second form is the acoustic representation (sounds) and iconic representation (images) in sensory memory. The third form is the sounds and images in working memory. The fourth form of representation is the verbal and pictorial models which are also found in working memory. The fifth form is prior knowledge, or *schemas*, which are stored in long-term memory.

According to CTML, content knowledge is contained in schemas which are cognitive constructs that organize information for storage in long term memory. Schemas organize simpler elements that can then act as elements in higher order schemas. As learning occurs, increasingly sophisticated schemas are developed and learned procedures are transferred from controlled to automatic processing. Automation frees capacity in working memory for other functions. This process of developing increasingly complicated schemas that build on each other is also similar to the explanation given by Chi, Glaser, and Rees (1982) for the transition from novice to expert in a domain.

2.2.2 Constructivists' Views on Learning

Constructivism is a learning theory found in psychology which explains how people might acquire knowledge and learn. It therefore has direct application to education. The theory suggests that humans construct knowledge and meaning from their experiences and that Constructivism is not a specific pedagogy (The University of Sydney, 2017). Jean Piaget is considered as a founder of individual constructivism (Singh & Yaduvanshi, 2015). Constructivism according to Educational Broadcasting Corporation (2004), is not a teaching theory but rather a theory of learning which argued that human beings generate knowledge and meaning from interaction between their experience and ideas. Thus to the constructivists, learning is simply the experience gained by learner's interaction with the environment.

Hence, the Constructivists like the cognitive theorists see learners as active creator of knowledge. To construct knowledge, Aniaku (2012) noted that learners must ask questions, explore and assess what are known, which are the elements of inquiry teaching methods. In view of the application of inquiry process into knowledge construction (constructivism), inquiry and constructivism are interrelated and share some common characteristics which are summarized by Aniaku (2012), as follows:

i. The focus is on the student

ii. The pace of instruction is flexible not fixed

iii. Students are encouraged to search for implications

iv. Students are encouraged to generate multiple concessions

v. Students must justify their methods for problem solving

vi. Neither constructivism nor inquiry sees itself as the sole learning model for content

vii. Nature provides the object and humans classified them.

Constructivism as a paradigm or worldview posits that learning is an active, constructive process. The learner is an information constructor. People actively construct or create their own subjective representations of objective reality. New information is linked to prior knowledge, thus mental representations are subjective (learning-theories.com, 2015). The constructivism learning theory argues that people produce knowledge and form meaning based upon their experiences (Teachnology.com, 2017) which agrees with the statements of Aniaku (2012). Two of the key concepts within the constructivism learning theory which create the construction of an individual's new knowledge are accommodation and assimilation. Assimilating causes an individual to incorporate new experiences into the old experiences. This causes the individual to develop new outlooks, rethink what were once misunderstandings, and evaluate what is important, ultimately altering their perceptions.

Accommodation, on the other hand, is reframing the world and new experiences into the mental capacity already present. Individuals conceive a particular fashion in which the world operates. When things do not operate within that context, they must accommodate and reframing the expectations with the outcomes (Teachnology.com, 2017). Considering the interrelationship of inquiry and constructivism, this study poses as a question; how constructive can a learner be when using inquiry or demonstration methods of teaching? To provide an answer to the above question, the researcher reviewed the ideas, philosophies and relevance of Piaget and social constructivist learning theories of Vygotsky to this study.

2.2.3   Piaget's Development Theory

Piaget (1896-1980) was one of the most influential researchers in the area of developmental psychology during the 20th century (Huitt & Hummel, 2003). According to Neboh (2009), the Piaget's theory of intellectual development holds that cognitive development takes place from active interaction of the child with his environment. This means that the basis of learning is the child's own ability as he interacts with his physical and social environment. Piaget is of the

opinion that a child must act on the objects in his environment for him to learn. This means that he should be actively involved and should not be passive. The active involvement of the child may be in form of direct manipulations, visual observations or through mental or internal transportation or change.

According to Piaget, mental activity of the child is organized into structures. Various mental activities are related to each other and grouped together in clusters, which are known as‖ schemas‖ or patterns of behaviour. Martins-Omole (2015) wrote that Piaget theory is based on the idea that the developing child actively and adaptively builds cognitive structures for understanding and responding to physical experience within his or her environment. Piaget considered intellectual activity to be a biological function. Martins-Omole (2015), wrote that Piaget theory of intellectual development involves four stages:

Sensorimotor stage (Infancy): In this period (which has 6 stages), intelligence is demonstrated through motor activity without the use of symbols. Knowledge of the world is limited (but developing) because it's based on physical interactions/experiences. Children acquire object permanence at about 7 months of age (memory). Physical development (mobility) allows the child to begin developing new intellectual abilities. Some symbolic (language) abilities are developed at the end of this stage.

Pre-operational stage (Toddler and Early Childhood): In this period (which has two substages), intelligence is demonstrated through the use of symbols, language use matures, and memory and imagination are developed, but thinking is done in a non-logical, non-reversable manner. Egocentric thinking predominates.

Concrete operational stage (Elementary and early adolescence): In this stage characterized by seven types of conservation: number, length, liquid, mass, weight, area, and volume. Intelligence is demonstrated through logical and systematic manipulation of symbols related to

concrete objects. Operational thinking develops (mental actions that are reversible). Egocentric thought diminishes.

Formal operational stage (Adolescence and adulthood): In this stage, intelligence is demonstrated through the logical use of symbols related to abstract concepts. Early in the period there is a return to egocentric thought. Huitt and Hummel (2003) wrote that only 35% of high school graduates in industrialized countries obtain formal operations; many people do not think formally during adulthood. Piaget used the term assimilation, accommodation and reorganization to explain his views about the learning processes in children. The child assimilates new objects by making accommodation that build new cognitive structures. Nnachi (2007) in Aniaku (2012), observed that although Piaget recognized the importance of environment in child development but he laid much emphasizes on the role of cognitive structure which helps the child to build experience from important event to be superior to the environmental influences.

Okebukola (2002) stated that a classroom filled with materials to explore encourage students to become active constructor of their own knowledge. Piaget view like demonstration methods of teaching sees learning as active process in which students should be given freedom to understand and construct meaningful knowledge at their own pace through the school environment or personal experience.

The implication of Piaget's theory to this study is that the teacher should desist from answering questions for the students. The teacher acts like a facilitator and encourages the students to answer the question thereby coming up with their conclusions instead of being told. Another relevance of Piaget's theory of constructivism to demonstration methods is that it addresses how learning actually occurs, not focusing on what influences learning. The role of teachers is very important, instead of giving a lecture, the teacher function as facilitator whose role is to

aid the student when it comes to their own understanding. This takes away focus from the teacher and lecture and puts it upon the student and their learning (Teachnology.com, 2017).

2.2.4 Vygotsky's Learning Theory

The major theme of Vygotsky's theoretical framework is that social interaction plays a fundamental role in the development of cognition. Vygotsky's learning theories seem to be paramount to the existing models of learning and development due to its pursued multidimensional approach which pays special heed to the cognitive, affective, social, and contextual aspects of change (Shabani, 2016). Galloway (2015) wrote that in order to gain an understanding of Vygotsky's theories on cognitive development, one must understand two of the main principles of Vygotsky's work: the More Knowledgeable Other (MKO) and the Zone of Proximal Development (ZPD). The author added that the MKO is somewhat self-explanatory; it refers to someone who has a better understanding or a higher ability level than the learner, with respect to a particular task, process, or concept.

Vygotsky (1978) in Galloway (2015) defined the ZPD as the distance between the "actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers". Vygotsky in Galloway (2015) believed that when a student is at the ZPD for a particular task, providing the appropriate assistance (scaffolding) will give the student enough of a "boost" to achieve the task. Once the student, with the benefit of scaffolding, masters the task, the scaffolding can then be removed and the student will then be able to complete the task again on his own. Vygotsky (1978) in Culatta (2015), states: Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (inter-psychological) and then inside the child (intra-psychological). This applies equally to voluntary attention, to logical memory, and to the

formation of concepts. All the higher functions originate as actual relationships between individuals (Culatta, 2015).

Vygotsky (1982) in Shabani, Khatib and Ebadi (2010) reiterated the fact that social interaction with cultural artifacts forms the most important part of learner's psychological development. Cultural tools or artifacts include all the things we use, from simple things such as a pen, spoon, or table, to the more complex things such as language, traditions, beliefs, arts, or science. Shabani, Khatib and Ebadi (2010) added that Vygotsky stated in his genetic law of development that any higher mental function necessarily goes through an external social stage in its development before becoming an internal, truly mental function. Thus, the function is initially social and the process through which it becomes an internal function is known as internalization. Vygotsky argued that learning is a necessary and universal aspect of the process of developing culturally organized, specifically human psychological function. In other words, social learning tends to precede development. Vygotsky holds that a learner is not able to imitate anything; imitation is possible only to the extent and in those forms in which it is accompanied by understanding.

The most important application of Vygotsky's theory to this study is in his concept of a Zone of Proximal Development (ZPD). This concept is important as the teacher should take cognisance of the child's development when teaching Biology. It allows a teacher to know what a student is able to achieve and then helps the child attain that level by themselves. Vygotsky claims in Turuk (2008), this is what also happens in schools. Students do not merely copy teachers' capabilities; rather they transform what teachers offer them during the processes of appropriation. Another implication of Vygotsky's theory to this study is that it's the teacher's job is to make sure that students are active in constructing their own knowledge through social interactions.

Emphasis is laid on the social interactions in the knowledge construction process. Also, the active role of the student is stressed in building understanding, asking questions and appropriate use of information with the use of inquiry and demonstration methods. Another relevance of this theory to this study, teachers should understand that cooperative learning occurs when children at different levels help each other in or outside the classroom.

2.3   Empirical Studies

Khan (2010) investiagted if two groups of children with different learning difficulties could benefit from using the same multimedia learning system. The project focused on children under the age of 11 with either Autism or Down's Syndrome. These children are often taught in mainstream classrooms together without special elearning systems. The results indicate that benefits can be drawn from the use of multimedia systems in learning for those who have learning difficulties. The specially developed system proved beneficial for the autistic children, which highlights the potential benefits that a multimedia system can have as a learning tool. However, the project as a whole show that a system aimed specifically at a disability set may be more impactive than a general system trying to incorporate the needs of different disability groups

Shi and Liang (2012) investigate the impactive combination between college physics and multimedia to optimize the teaching procedure of physics as a serious basic course in college. Through combining multimedia technology with the teachers' subjective initiative, perfecting multimedia course system based on the network, multimedia simulation laboratory organic coupling with real experimenting, discusses how the actual teaching use of multimedia technologyˈ explore the application of the rules and characteristics of multimedia technology. we are able to develop the advantages of multimedia and explore its potential so that we make it better service in physics teaching and enhance teaching impact.

Onivehu, Ohawuiro and Oyeniran (2017) examined teachers' attitude and competence in the use of assistive technologies in special needs schools. The descriptive survey method was employed for the study among 100 teachers who were drawn using purposive sampling technique from special needs schools in Osun State, Nigeria. Six research questions were generated while four hypotheses were tested at 0.05 level of significance. A researcher-constructed questionnaire tagged "Teachers' Attitude and Competence in the Use of Assistive Technology Questionnaire (TACUATQ)" was used for data collection. The instrument was administered on 20 selected teachers outside the sample location through test-retest method; it yielded a reliability coefficient of 0.85 through Pearson Product Moment Correlation statistics. Data were analysed with percentage, mean and rank order, t-test and ANOVA statistical tools. The findings revealed that teachers have a positive attitude towards the use of assistive technologies. However, teachers were not competent in the use of assistive technologies. Gender and teaching experience did not influence teachers' attitude and competence in the use of assistive technologies. It was recommended among other things that teachers should be trained and re-trained on the use of assistive technology for students with speech disorders, visual impairments, hearing impairments, physical impairments and emotional and behavioural disorders.

Munir, Eddy, Jajang and Aji Prasetya Wibawa (2018) examined the impactiveness of multimedia in education for special education to improve reading ability and memorizing for children with intellectual disability The method used was SSR (Single Subject Research). The results showed that learning by using MESE application enhanced reading skill and memorizing. The analysis of the student's worksheet of reading ability and memorizing showed positive result though several sessions showed a decline and or a stable. This research aimed to find out MESE impactiveness in learning related to reading skills and memorizing.

MESE was very attractive and had interactive ability that provided opportunity to learners for independent study. The study identified the difference between learning using one sensory ability (e.g. reading text or hearing or looking at the pictures only) and two or more (e.g. reading text equipped by sound and visualized by animation; and even allows children to get involved directly in the process of learning) was that the low ability in memorizing. MESE (Multimedia in Education for Special Education) was a multimedia application developed for reading for children with intellectual disability.

Akinbadewa (2020) examined the impacts of computer-based multimedia instructional packages on the academic achievement of students offering Biology in Senior Secondary Schools in Ibadan, Oyo State, Nigeria. Two multimedia instructional packages were designed for the study. The study adopted the pretest-posttest, control group, experimental research design. The population of the study consists of 80 randomly selected students from three secondary schools in Ibadan, Oyo State, Nigeria. The samples were randomly assigned to three groups (one control and two experimental groups). The moderating impacts of gender and learning styles were also tested. The results showed that there was a significant main impact of treatment on students' achievement in Biology ($F_{(2, 58)}$ = 27.18; $P < 0.05$; partial eta square = 0.48). Also, gender had no significant main impact on students' performance ($F_{(1, 58)}$ = 3.97; $P > 0.05$; Partial eta square = 0.06). It was therefore concluded that multimedia instructional packages significantly enhanced students learning of Biology concepts than the conventional strategy, regardless of gender and the preferred learning style of students. Therefore, it was recommended that more multimedia instructional packages be designed and used in secondary schools for impactive and efficient teaching and learning of Biology.

Orim (2020) explored research literature that focuses on the use of technology to support inclusive teaching and learning and observes that there are contentious issues associated with

technology and inclusion that hamper inclusive education practices in Nigeria. The paper, thus points out research-based factors that enhance the use of ICT in inclusive settings that are not available in Nigerian education system, particularly the school system or classroom environment, including promoting equity in educational opportunities; ICT for innovation; knowledge of assistive technology and its benefits for inclusive education; adoption of global measures that indicate developments and progress in the use of technology for special needs education; ICT accessibility as an entitlement; training of teachers in general and specialist ICT; national level initiatives to provide high quality initial teacher training, focusing on meeting the needs of learners with special needs in an inclusive manner; investing in multi-stakeholder research and development in ICT and monitoring the use of ICT in inclusive education.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1   Research Design

Descriptive research method was used for the study. According to Isaac and Michael (2010), the method is used to describe systematically, a situation or area of interest factually and accurately. They further stated that the design could be public opinion survey, fact-finding surveys and status studies among others. Survey design is the one in which a group of items were studied by collection, analyzing and interpreting data from a sampled population considered to be representative of the study population.

3.2   Population of the Study

A research population is generally a large collection of individuals or objects that are the main focus of a scientific study. The population of the study involved senior secondary schools students with special needs in School of Handicapped Minna, Niger State.

3.3   Sample Size and Sampling Technique

The sampling techniques adopted to sample 100 students with special need was multi stage sampling techniques. First, a purposive sampling was done to sample school for the handicapped with the justification that the school is meant for students with special needs. Secondly, simple random sampling method was employed using ballot system. This method provides every student with special need to be selected, with 100 ballots labelled selected and others labelled not selected. After the balloting exercise, 100 students with special needs were selected as the sample size for this study.

3.4   Research Instrument

The instrument for data collection was structured questionnaire developed by the researcher from the review of related literature for the study. It was intended to elicit responses on impacts of group counseling on special students. The questionnaire was divided into two main parts, A

and B. Part A of the questionnaire elicits personal information of the respondents. Part B was further divided into two sections in line with the specific purposes of the study to impact of multimedia teaching on students with special needs.

3.5 Validity of the Instrument

Validity refers to the extent to which the instrument measures, what it is supposed to measure. The questionnaire will be validated by the supervisor. The supervisor will apply his wealth of knowledge to review of the questionnaire items, made necessary corrections and suggestions, their views formed the validation of the instrument.

3.6 Reliability of the Instrument

To test the reliability of the questionnaire, it was trial tested on 20 randomly selected primary school teacher of, but the samples were not part of the research population, thus they will not be used for the real study and split half method was used to collect the data. The test was administered once on 20 students with special need. Cronbach alpha revealed a reliability coefficient of 0.79 which was considered very adequate for the research study

3.7 Method Data Collection

The researcher visited the selected schools that were sampled before to seek for permission from the principal of each school to examine the impact of group counselling on students with special needs so as to determine their suitability of the study. The cooperation of the students and staff in all selected schools was sought; they were informed about the objectives of the study. This instrument was a researcher-developed and a total of hundred (100) questionnaires were personally distributed to the sampled population where the research is being conducted, patiently guided where needed and the questionnaires were also collected by hands from the respective respondents with the help of some of the teachers in the sampled schools, the questionnaire were retrieved back immediately after filling by the respondents.

3.8   Method of Data Analysis

The collected data will be analyzed using the frequency counts and percentage to answer the research questions Chi-Square statistical tool will be employed to test the null hypotheses at 0.05 significant level.

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CHAPTER FOUR

RESULT AND DISCUSSION

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4.1 Introduction

This chapter presents the data analysis and interpretation of the data collected from School of Handicapped, Minna Niger State. This chapter contains the personal data analysis and answering the research questions.

4.2 Bio Data Analysis

Table 4.2.1: Frequency Count and Percentage Score of Respondent Based on Age

Age	Frequency	Percentage (%)
11 – 13	64	64
14 – 17	26	26
18 and above	10	10
Total	**100**	**100**

Table 4.2.1 shows that 64 respondents are under the age of 11–13, 26 respondents are categorized under the age of 14-17, while 10 respondents are within the age of 18 and above.

Table 4.2.2: Frequency count and Percentage Score of Respondent Based on Gender

Gender	Frequency	Percentage (%)
Male	64	64
Female	36	36
Total	**100**	**100**

Table 4.2.2 indicates that 64 respondents which represent 64% are male while 36% of the respondents constitute the female gender.

4.3 Research Questions Analysis

Research Question One: What is the impact of multimedia in teaching and learning? This research question is answered in Table 4.3.1.

Table 4.3.1: Mean and Standard Deviation of Responses based on the Impact of Multimedia in Teaching and Learning

S/No	Statement	Mean	SD	Decision
1	Multimedia teaching enhances special need students participation in the classroom	3.65	0.52	Agree
2	Multimedia materials improve students with special need thinking capacity	3.68	0.61	Agree
3	Multimedia materials helps students with special need in acquiring basic skills required for learning.	3.81	0.51	Agree
4	Multimedia materials aid in the teaching and learning process	3.66	0.61	Agree
5	Multimedia materials provide audio-visual content to enhance students with special need assimilation.	3.60	0.57	Agree
	Grand Mean		3.71	

Source: Field Survey, 2023

Table 4.3.1 shows that the mean ranges between 3.60 and 3.81 with a grand mean of 3.71 for respondents' opinions on the impact of multimedia in teaching and learning. This implies that respondents agreed that multimedia materials enhance special need students' academic performance. This is because the cumulative mean 3.71 is greater than the decision mean of 2.50.

Research Question Two: What are the impacts of multimedia on students with special needs academic achievement? This research question is answered in Table 4.3.2.

Table 4.3.2: Mean and Standard Deviation of Responses based on the Impacts of Multimedia Learning on Students' with Special Needs Academic Performance

S/No	Statement	Mean	SD	Decision
1	Multimedia materials makes teaching and learning effective	3.55	0.52	Agree
2	Multimedia materials enhances active classroom participation	3.72	0.61	Agree
3	Multimedia materials enhances my academic achievement	3.61	0.51	Agree
4	Multimedia materials enhance special need students' retention level	3.77	0.61	Agree
5	Multimedia materials enhances psychological development of the students	3.67	0.57	Agree
	Grand Mean	**3.68**		

Source: Field Survey, 2023

Table 4.3.2 shows that the mean ranges between 3.55 and 3.77 with a grand mean is 3.68 for respondents' opinions on the impacts of multimedia on students with special needs academic achievement. This implies that respondents agreed that the teacher's multimedia enhance special need students' interest. This is because the cumulative mean 3.68 is greater than the decision mean of 2.50.

Research Question Three: What are the impacts of multimedia on special needs students' attitude towards learning? This research question is answered in Table 4.3.3.

Table 4.3.3: Mean and Standard Deviation of Responses based on the Impacts of Multimedia on Special Needs Students' Attitude towards Learning

S/No	Statement	Mean	SD	Decision
1	Studies improved due to the use of multimedia materials.	3.70	0.52	Agree
2	I become more optimistic academically through the use of multimedia materials than I do through the use of conventional method.	3.64	0.50	Agree
3	The use of multimedia learning for class room instruction boost my reading habits	3.70	0.57	Agree
4	Multimedia materials makes class activities more interactive and interesting	3.55	0.51	Agree
5	Multimedia materials enhance individualized learning.	3.58	0.51	Agree
	Grand Mean	**3.62**		

Source: Field Survey, 2022

Table 4.3.3 shows that the mean ranges between 3.55 and 3.70 while the grand mean is 3.62 for respondents' opinions on impacts of multimedia on special needs students' attitude towards learning. This implies that the respondents agreed that multimedia learnings enhance special need students' attitude in learning. This is because the cumulative mean 3.62 is greater than the decision mean of 2.50.

4.4 Test of Null Hypothesis

The following null hypotheses were tested at 0.05 significance level

H_{01}: There is no significant difference in the mean response of students with special needs on impact of impact of multimedia in teaching and learning. This research hypothesis was answered in Table 4.4.1

Table 4.4.1: Chi-square Analysis on the Response of Students with Special Needs on Impact of Multimedia in Teaching and Learning

Hypothesis	DF	X2 Calculated	X2 Critical	A	Decision
$H0_1$	3	236.74	7.817	0.05	Rejected

Table 4.41 revealed that the calculated Chi-square at 0.05 significant level at the degree of freedom of 3 equals 236.74 which is greater than the critical X^2 value of 7.82. Therefore, the null hypothesis was rejected. Therefore, there is significant difference in the mean response of students with special needs on impact of multimedia in teaching and learning.

H_{02}: There is no significant difference in the mean response of students with special needs on the impacts of multimedia on academic achievement. This research hypothesis was answered in Table 4.4.2.

Table 4.4.2: Chi-square Analysis on the Response of Students with Special Needs on the Impacts of Multimedia on Academic Achievement

Hypothesis	DF	X2 Calculated	X2 Critical	A	Decision
$H0_1$	3	247.52	7.817	0.05	Rejected

Table 4.4.2 revealed that the calculated chi-square at 0.05 significant level at the degree of freedom of 3 equals 247.52 which is greater than the critical X^2 value of 7.82. Therefore, the null hypothesis was rejected. So, there is significant difference in the mean response of students with special needs on the impacts of multimedia on academic achievement.

H_{03}: There is no significant difference in the mean response of students with special needs on the impacts of multimedia towards attitude to learning. The research hypothesis was answered in Table 4.4.3.

Table 4.4.3: Chi-Square Analysis on the Response of students with Special Needs on the Impacts of Multimedia towards Attitude to Learning

Hypothesis	DF	X2 Calculated	X2 Critical	A	Decision
$H0_1$	3	252	7.817	0.05	Rejected

Table 4.4.3 revealed that the calculated chi-square at 0.05 significant level at the degree of freedom of 3 equals 252 which is greater than the critical X^2 value of 7.82. Therefore, the null hypothesis was rejected. Therefore, there is significant difference in the mean response of students with special needs on the impacts of multimedia towards attitude to learning.

4.5   Summary of Findings

From the test of null hypothesis, the following are summary of findings.

1. There is significant difference in the mean response of students with special needs on impact of multimedia in teaching and learning.

2. There is significant difference in the mean response of students with special needs on the impacts of multimedia on academic achievement.

3. There is significant difference in the mean response of students with special needs on the impacts of multimedia towards attitude to learning.

4.6   Discussion of Findings

Hypothesis one shows that there is significant difference in the mean response of students with special needs on impact of multimedia in teaching and learning. According to Iliya (2012) multimedia help teachers to teach with ease and learners to learn without stress. They noted that multimedia learnings appeal to the senses of seeing, touching, smelling, feeling and hearing. Also, Demir (2017) opined that the availability of adequate multimedia materials in schools enhanced the effectiveness of instructional delivery and supervision. In addition, Abdu-Raheem (2011) and Aina (2010) attested that provision of high quality learning materials and

facilities such as conducive classroom, furniture, teaching aids, such as periodicals, slides, film strips, computer, office accommodation, log books chairs, tables, libraries and good working space are very essential for quality education.

Also, hypothesis two shows that there is significant difference in the mean response of students with special needs on the impacts of multimedia on academic achievement. This finding is in agreement with Adeolu (2015); Nsofor (2014); whose research works indicates that multimedia materials enhance students' academic performance. Similarly, Demir (2017) asserted that the availability or non-availability of essential educational resources have direct impact on teacher's ability to perform and not perform and also an indirect impact on teacher's motivation and satisfaction.

Hypothesis three indicates that there is significant difference in the mean response of students with special needs on the impacts of multimedia towards attitude to learning. This finding is in consistent with Al-amin (2019); Bala (2015) who examined the impacts of multimedia materials enhance special needs students' attitude towards learning. In addition, Adeolu (2015) agreed to the findings that multimedia material enhance the cognitive domain, sharpen thinking and lead to positive attitude towards learning.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1   Summary

This study was undertaken to stimulate a critical discussion on the impacts of multimedia learning on the academic performance of students with special needs in Minna metropolis. This chapter summarizes chapter one to chapter five. Chapter one comprises the background to the study that introduces the research study, the statement of the problem, the purpose of the study which is the reason for the research, the significance of the study which shows the importance and those who will benefit from this research study, the research questions used to collect relevant data for analysis and the scope and limitation of the study which show the areas the research study covers and the constraint encountered there in. Chapter two comprises the review of related literature talks about the conceptual framework of the study which gives the meanings and definitions of multimedia learnings and other related terms, its importances, types etc., the theoretical framework consists of the theories used for this research and empirical review talks about the researches or studies of other researchers related to this research study. Chapter three is the research methodology that comprises the procedures for carrying out the study that includes the research design, population for the study, sample for the study and sampling techniques used, instrument for data collection, validation of the instrument, reliability of the instrument, procedure for data collection and method of data analysis. Chapter four is the presentation and analysis of data collected for the research work to prove or disprove the results.

5.2   Conclusion

Based on the finding the study concluded that:

1. The use of multimedia materials enhance effective teaching and learning of thereby, making students perform better in schools both internally and externally and enhance effective delivery of instruction.

2. Multimedia materials have significant impacts on the academic performance of special needs students.

3. The used of multimedia learnings are vital in teaching and learning process to stimulate special need students' attitude towards learning.

5.3   Recommendations

The following recommendations are hereby suggested:

1. Emphasis must be placed on the use of multimedia learnings in order to inculcate the spirit of learning to special needs students, making learning interesting and enhance teaching process.

2. There should be rigorous campaign, policy and implementation of use of multimedia materials to enhance academic performance of special needs students.

3. Government and non-governmental agencies should assist in the provision of multimedia facilities and training of teachers to enhance special needs student's attitudes towards learning.

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Appendix II

Part A

Instruction: Kindly tick where appropriate based on your honest opinion about the items provided.

Personnel Data

Instruction: Please tick (√)

Gender: M (   )   F (   )

Age   14-16 (   )   17-19 (   )   20 and above (   )

Key: SA: Strongly Agree, A: Agree, D: Disagree and SD: Strongly Disagree

Research Question One: What is the impact of multimedia in teaching and learning?

S/No	Items	SA	A	D	SD
1	Multimedia teaching enhances special need students participation in the classroom				
2	Multimedia materials improve students with special need thinking capacity				
3	Multimedia materials helps students with special need in acquiring basic skills required for learning.				
4	Multimedia materials aid in the teaching and learning process				
5	Multimedia materials provide audio-visual content to enhance students with special need assimilation.				

Research Question Two: What are the impacts of multimedia on students with special needs

academic achievement?

S/No	Items	SA	A	D	SD
1.	Multimedia materials makes teaching and learning effective				
2.	Multimedia materials enhances active classroom participation				
3.	Multimedia materials enhances my academic achievement				
4.	Multimedia materials enhance special need students' retention level				
5.	Multimedia materials enhances psychological development of the students				

Research Question Three: What are the impacts of multimedia on special needs students'

attitude towards learning?

S/No	Items	SA	A	D	SD
1.	Studies improved due to the use of multimedia materials.				
2.	I become more optimistic academically through the use of multimedia materials than I do through the use of conventional method.				
3.	The use of multimedia learning for class room instruction boost my reading habits				
4.	Multimedia materials makes class activities more interactive and interesting				
5.	Multimedia materials enhance individualized learning.				