

**THE IMPACT OF ADVANCE TECHNOLOGY ON THE OCCUPATIONAL INTEREST OF
SECONDARY SCHOOL STUDENT IN TECHNOLOGY EDUCATION IN BOSSO LGA,
NIGER STATE**

BY

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2014/1/50867TI

DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION

SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

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**A research project submitted to the
Department of Industrial and Technology Education
Federal University of Technology Minna,**

**In Partial Fulfillment of the Requirements for the Award of Bachelor of Technology Degree
(B.Tech) In Industrial Technology Education**

JULY, 2021

DECLARATION

I, DAVID, Solomon Kyanchat with Matriculation Number: 2014/1/50867TI an undergraduate student of the Department of Industrial and Technology Education certify that the work embodied in this project is original and has not been submitted in part or full for any other diploma or degree of this or any other university.

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2014/1/50867TI

SIGNATURE & DATE

CERTIFICATION

This project has been read and approved as meeting the requirement for the award of B.Tech Degree in Industrial and Technology Education, School of Science and Technology Education, Federal University of Technology, Minna.

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DEDICATION

This project is specially dedicated to God Almighty, My Parent and all well-wishers.

ACKNOWLEDGEMENTS

My special thanks goes to God Almighty for his divine protection, provision, mercy, wisdom and guidance throughout my course of study in FUT Minna. My special appreciation goes to my able and understanding supervisor, Dr B. M. Mohammed for his assistance and guidance, despite his numerous task he created time to supervise this work and assisted me professionally. I pray that God almighty will continue to bless him and his family. My gratitude also goes to the project coordinator Dr. AM. Hassan for is support. My sincere gratitude goes to the Head of Department Dr. I.Y. Umar and the entire lecturers of the department of Industrial and Technology Education who have contributed to my life in different ways. God bless you all. I owe a special thanks to my lovely parent Mr & Mrs TOMA David who through the years have been supportive financially, morally and above all spiritually My sincere thank goes to my friends HYONG Thomas, and SALIHU Sani, for their assistant throughout my years in school I pray God continues to bless you all and your family. Finally, my sincere appreciation goes to my family members and all well-wishers Thank you and God bless you all (Amen)

ABSTRACT

This study examined the impact of advanced technology on the occupational interest of secondary school students in industrial technology education in Bosso LGA, Niger State. It also analyzed a clear statement of the objectives and problems involved in the study. Based on the purpose of study an extensive literature was reviewed and data was sourced from both primary and secondary sources. The instrument used for data collection was questionnaire. A research questionnaire was used to elicit response from the population of the study comprising of one hundred and twenty (120) students and twenty-five (25) teachers. The respondents were randomly chosen out of the selected population. The questionnaire was based on three research questions. Finally, the study concluded that computer has taken the shift towards technology and precedents set by the industrial revolution to a new level. The growth of the personal computer and the use of the internet have forced a shift in society that will never look back. Developments throughout history have happened to ultimately make life easier on humans. Tools to help cut and shape, or lift and move to make certain work more efficient.

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CHAPTER ONE

1.1 Background to the Study

Technology has changed society throughout history. Over the last few decades, cellular devices, iPads, iPods, computers, and most importantly the internet among other various types of technology have completely overhauled the way people interact in society and the way educators work in schools. Technology implementation in schools is of crucial importance to student success in making appropriate occupational choice due to the changing times and high demands for tech shrewd personnel.

The Concise Oxford Dictionary defines technology as “the science of the industrial arts; ethnological study of the development of arts”. Technology means the study, mastery and utilization of manufacturing methods and industrial arts. It is the systematic application of knowledge to practical tasks in the industries. Technology is the result of man’s efforts to do things more efficiently. In the modern information era, the wealth of the world’s information can be accessed through a variety of devices. Technology that was once expensive and limited to only the privileged few has now advanced and become far cheaper, and available to all (Edwards, 2009).

Form the above definitions of technology; Technology can be said to be the practical application of knowledge. It is the manner of accomplishing a task especially using technical processes. Generally, we live in a world whereby technology affects our day to day activities. Everything in the world of today is controlled by technology. A world where access to a vast collection of information is only by the press of a button. (Egbert, 2009). The 21st century is often regarded as an era of advanced technology. Technology today plays a very important role in human life. It is seen as a basis of growth of the world’s economy. An economy which is poor in technology can never grow in today’s scenario.

This is because technology makes our work much easier and less time consuming. The impact of technology can be felt in every possible field one of such field is Education.

Technology is classified into different types, depending on the field it is being applied to. Some of this classes are:

- Information technology: This is a broad class of technology based on machines that process data and perform calculations at high speed known as computers. Most modern technologies have some relationship with information technology. It is known as a catch-all terms for anything that uses computers and software.
- Networks: This has to do with links that allow devices to share data. Networks are connected to networks to create a larger network such as the internet.
- Sensors: This are devices that record data from their environment such as microphones, cameras and accelerometers.
- Transport: Transport technology such as high-speed trains and aircraft.
- Energy: Energy infrastructure such as solar panels, wind turbines and grids.
- Agriculture: Agricultural technologies such as farm robots.
- Architecture: Technologies for buildings such as elevators or smart windows.
- Entertainment and Media: Tools for consuming or producing entertainment and media.
- Art and Music: Devices such as music synthesizers for creating things of artistic value.
- Appliances: A general term for technologies that are useful around the house.
- Industrial Machines: Specialized machines for industrial purposes such as manufacturing or mining.

- Clothing and Accessories: Technologies that go into clothing and fashion accessories such as watches.
- Medical Technology: Devices, machines, procedures and systems designed to prevent, cure or mitigate health problems.
- Assistive Technology: Devices that improve the capabilities of people with disabilities such as a hearing aid.
- Sciences: Research tools such as a particle collider.
- Space: Technologies for exploring or commercializing space such as spacecraft or communication satellites.
- Robotics: A class of machines with semi-autonomous capabilities meaning that robots can handle certain tasks in real world conditions without direction.
- Artificial Intelligence: A technology that learns and self-improves.
- Superintelligence: A technology that exhibits intelligence that exceeds the smartest humans.

In the modern information era, the wealth of the world's information can be accessed through a variety of devices. Technology that was once expensive and limited to only the privileged few has now advanced and become far cheaper and available to all. In Nigeria, students lack adequate occupational information before they enter into occupations. In some cases, the students concern themselves with selecting courses of study in schools without due regard to their interest and capability in the field selected.

Occupational interest is not one that is made abruptly. It is a continuous process. Career is a series of job that a person has in a particular area of work, usually involving more responsibilities as time passes

(Okonkwo, 2011). According to Alutu (2001), career development and choice should be initiated as early as the nursery school years through the primary, secondary and to the tertiary school level. One's occupational interest is mostly influenced by parents, friends, relatives, teachers, printed information, etc. Generally, one's occupational interest can be said to be influenced through one's observation and interaction with the society. Occupational interest ends with a choice.

“It is important for you to have a good understanding of your personality, to be able to make intelligent career plans”, (Splaver, 2007). There is a saying that “the blind cannot lead the blind” not just anybody can give proper occupational guidance; therefore, for the students to make the right career choices, professional advice is required. With changes in the world limiting the work opportunities in the society and market; the need for occupational guidance has also increased manifold. People have begun to realize the fact that not all can become engineers, doctors, lawyers. Rather they can explore other fields that concur with their interests and abilities. Despite having a clear idea of what they want to achieve in life, some student, do not know the career path they need to follow to have requisite academic qualification to join a particular course. The advancement of technology can help the student clear doubts by giving a clear-cut view of what to expect from various educational courses. Many students do not know the relationship between the subjects being taught in school and their dream careers. It is therefore important to stress on the need for advance technology in secondary schools

The choice of occupation is one of the most difficult decision in someone's live. However, occupational interest is one of the most important decisions every student in secondary school, irrespective of his class, must make in accordance with his or her academic pursuit, it includes an occupation, profession, job with which one engages in during his live time, (Kane, 2004). According to Webster (1878), occupation is a person's usual or principal work or business, especially as a means

of earning a living; vocation. From the above definition, it can be said that occupation is a dynamic vocation or job which an individual has interest in and find him qualified to do. Perhaps, it is important to note that the choices of a student's occupation is an area of interest that demands ones focus in order to avoid wrong choices and save time. Moreover, the advancement of technology when applied, provides options and better prepares the students for the world of works, with which the individual become reliant and can make useful contributions to the development of the society and unemployment reduction. One of the key indices of a sustainable economy is the ability of a nation to provide gainful employment for its citizens, so as to contribute to the national building and also reduce unemployment rate in the country. Anaele, Adelokun, Dem, & Barfa (2014) postulated that the rate of unemployment in Nigeria is increasing speedily due to inadequate policy implementation. The authors also stated that the percentage unemployment rate attained has reached 65%. The high unemployment rate in Nigeria is the result of academic institutions turning out graduates mostly regarded as unemployable by the employers of the labour market because they lack technical skills, and this usually occur as a result of wrong decision of the right occupational choice made from secondary school level of education.

A secondary school is described as an institution that provides O'level education and also usually includes the building where this takes place. Some secondary schools provide both lower secondary education (12 to 15 years of age) and upper secondary education (15 to 18 years of age), but these can also be provided in separate schools, as in the American middle and high school system. In the United Kingdom, elite public schools typically admit pupils between 13 and 18 years of age. United Kingdom state schools accommodate pupils between 11 and 18 years of age. Secondary schools follow on from primary schools and prepare them for vocational or tertiary education. Attendance is usually compulsory for students until the age of 16. The organisations, buildings, and terminology are

more or less unique in each country. A student primarily is a person enrolled in a school or other educational institution and who is under learning with goals of acquiring knowledge and developing skills.

As per Wikipedia the education in Nigeria is regulated by the Ministry of Education. The private singular partakes in actualizing the strategy. The education can be partitioned into 4 stages in particular;

- Crèche
- Primary education
- Secondary education
- Tertiary instruction.

Niger State under the leadership of Governor Abubakar Sani Bello has been making efforts to reposition the government owned secondary schools in the state. The secondary school is next subsequent to leaving and putting in certain years of basic education training. The student is intended to put in an additional 6 years (3 years in JSS and 3 years in SS) the initial 3 years is free i.e. junior auxiliary school. Amid the most recent 3 years senior optional school (i.e. SS1-SS3) student take the GCE O'level examination which is not mandatory which understudy use to get readied for senior auxiliary school examination.

The SSS (senior auxiliary/secondary school) depends on 6 centre subjects finished 2 or 3 elective subjects. The centre subject includes (English dialect, arithmetic, financial aspects, one noteworthy Nigeria dialect) one elective out of biology, chemistry, physics, or incorporated science, one elective out of writing in English, history, geography or social studies, agricultural science or vocational studies which incorporates; commerce, food and nutrition, technical drawing or fine arts.

It seems making appropriate career choice has become an uphill task among secondary school students in Bosso local government area of Niger State; consequently, the advancement of technology as brought about guidance as it serves as a means of counselling in secondary schools and the society in general to help tackle this problem. Advance technology serves as a pivotal tool in moulding and rebuilding secondary school students from the risk of choosing the wrong occupation but it cannot be told how much impact it has made. Occupational selection is one of many important choices' students will make in determining future plans; this decision will impact them throughout their lives. The essence of the students' personality and his/her interest will revolve around what the student wants to do with their life-long work.

Research shows that secondary school students in Bosso Local Government Area of Niger State, Nigeria generally are faced with problem of wrong occupational interest and choice towards the end of their secondary school education; this is as a result of the poor form of guidance programs being run in secondary schools. It is therefore the opinion of this study to investigate the importance of advance technology as a tool in guidance and counselling; which is organized in secondary school level; as to facilitate in the students, occupational readiness that will eventually transform to the maturity of the students in their occupation choices relative to their personalities.

Occupational interest is a process of researching, learning and discussing your career interests, or what it is that one would like to do for work. It could be a career assessment, tests or inventories that reveals where a person's skills lie and directs their interests and subsequent choices. People who jump into an occupation based on the notion of a hot career trend and not interest may find that although they may have the aptitude for the career, they may not necessarily like that career. Money and time are wasted on education and training for a career in which these people never stopped to consider if they were

really interested. Most of us identify with our career pathways. If someone is asked to talk about himself, the person would probably say "I am a..." and fill in the blank with his job title. If we are disinterested in our career, we become dissatisfied with ourselves because we so strongly identify with, but dislike our occupation.

1.2 Statement of the Problem

Very often after a successful secondary school education, many students are unable to make appropriate selection of subjects that are needed for one to specialize in an occupation or profession. Some school leavers may discover, rather late that they have gone through school, yet have not developed skills, abilities, interest, attitude and wisdom of understanding needed to make reliable and realistic career decision. The high rate of unemployment and underemployment among school leavers in Nigeria is a serious issue for concern. It is contended that one of the contributing factors of unemployment and underemployment among school leavers in the country could be inadequate or lack of occupational guidance to students while in and out of school. In other words they are not given sufficient and relevant vocational or occupational information that will enable them graduate from school into a suitable occupation

Occupational guidance and counselling programmes in secondary schools has not been given the proper attention it deserves; hence, majority of secondary school students continue to have difficulty in career decision making.

1.3 Purpose of the Study

The purpose of the study is to assess the impact of advance technology on the occupational interest of secondary school students in Industrial and Technology Education in Bosso LGA, Niger State, Nigeria. Specifically, the study intends to;

1. Identify types of advance technology that influences occupational interest of secondary school students in Industrial Technology Education in Bosso LGA, Niger State.
2. Identify the occupational interest of secondary school students in Industrial Technology Education in Bosso LGA, Niger State.
3. determine the factors that influence the interest of secondary school students in Industrial Technology Education in Bosso LGA, Niger State.

1.4 Significance of the Study

The study will no doubt be of immense value to students, parents, teachers, administrators, guardians, counsellors, governments and non-governmental agencies and to future researchers. From the outcome yield from this study, the students will be informed about the various impact advance technology has on their occupational interest, be it positively or negatively, and they can be very careful in selecting very appropriate and reliable occupation.

Secondly, this research work will give parents and guardians the necessary orientations about the several ways advance technology can guide a child and showing such child the right path to follow for effective and efficient occupational choice. Nevertheless, the finding obtained from this work will awaken school administrators to understand that lack of advance technology, instructional materials, infrastructural facilities and inadequate funding make teaching and learning to be without motivation on both side for both the instructors and the receivers, and also give students negative influence on such institution. This will make them understand that schools need solutions to these problems, and can support in making a strong technology education centre available to provide needed information and skill to student.

Guardians and counsellors from these research findings will come to understand that occupational interest can be influenced by advance technology, and when counselling students, reference should be made to the student's interest, ability, skills and understanding. The finding obtained from this work will make the government and non-governmental agencies to understand that inadequate funding, inadequate instructional materials, and the lack of advance technology resources in schools may result into half bake of its citizen, therefore provision of the necessary material for schools is needed so that teaching and learning can be very effective. Finally, researchers and the general public will be informed of the impact of advance technology on the occupational interest of secondary students in Bosso LGA, Niger State.

1.5 Scope of the Study

This study is aimed at assessing the impact of advance technology on the occupational interest of secondary schools in industrial technology education. Therefore, this research will be focusing on the factors responsible for the “occupational interest of secondary schools in industrial technology education” and also “the impact of advance technology on the occupational interest of secondary schools in industrial technology education”. The area of focus is Bosso Local Government Area, Niger State, Nigeria. Using random sampling technique, four (4) secondary schools in the study area (Bosso Local Government Area). These schools include; Maryam Babangida Girls secondary school, Ahmadu Bahago secondary school, Bosso secondary school, FUT Minna Staff Secondary School.

1.6 Research Question

The following questions were raised to guide the study;

1. To what extends do you agree that secondary school student shows interest in these occupations in the field of Industrial Technology Education?

2. what is the occupational interest of secondary school students in Industrial and Technology Education?
3. What are the factors that influences the interest of secondary school students in Industrial Technology Education in Bosso LGA, Niger State?

1.7 RESEARCH HYPOTHESES

H₀₁: There is no relationship between advance technology and occupational interest of secondary school students in industrial technology education, in Bosso Local Government Area Niger state, Nigeria.

H₀₂: Female students do not significantly differ from their male counterparts in their occupational interest.

CHAPTER TWO

2.0

LITERATURE REVIEW

2.1 Theoretical Framework

Okolie (2012) asserts that many secondary school students lack ideas on which course to study in the higher education institution after leaving secondary school. Also, the list of occupations appears inexhaustible, likewise the variety of persons with varied attributes, and certainly not all persons are suitable for all occupations because every occupation needs certain background preparation and aptitude, therefore only those that have the requirements succeed. More so, the advent of civilization, industrialization and technological development opened a wide variety of new occupations, and the problem of selecting occupation by students becomes complex and difficult.

The rudimentary objective of science training is making student procure the associate of science and comprehension of nature and in addition proper science as a field of order. Ige Akindele Matthew (2013) expressed that optional school instruction is go for setting up a person for:

- Useful living inside the general public and
- Advanced training.

He likewise expressed secondary school training goals are:

- Providing all grade school leavers with the prospect for school of upper level paying little respect to sex, economic wellbeing, religious or ethnic related.
- Offering changed curriculum to suit for contrasts in aptitudes, chances and pending parts.
- Providing capable labor in applied innovation science and trade at sub-proficient evaluations.

- Emerging and advancing Nigerian dialects, expressions and society in the milieu of the world's social legacy.
- Stirring understudies with a thirst for self-change and achievement of incredibleness.
- Nurturing national solidarity with an accentuation on the normal ties that hitch us in our assorted qualities.
- Educating an associate of individuals who can purpose behind themselves, regard the conclusions and sentiments of others.
- Admiring the respect of work, heighten those qualities separated under our wide national objectives, and live as great occupants.
- Providing specialize learning and professional abilities, vital for agrarian, modern, business, and financial advancement (FRN 2004).

The secondary school was built up as a result of the disappointment of the primary school instruction to convey numeracy and education open expertise as anticipated (Chinelo 2011 and Ige 2010). The point of optional school inside the general national target is to make course of action for a person to be valuable in the general public. According to Abdullahi (1982) Teaching a student require the coupling with some teaching material which make learning possible as long as he lives. The important of learning environment is to improve and influence learning. The learning resource provides student a chance to explore idea and knowledge, pier learning, problem solving skill and add to knowledge. For the functionality and reality of new curriculum it must be incorporated with teaching resources through rich and varied selection of instructional material. This material include book, independent and guided reading, writing program, e-learning and other technical material

Technology has changed society throughout history. Over the last few decades, cellular devices, iPads, iPods, computers, and most importantly the internet have completely overhauled the way people interact in society and the way educators work in schools. Technology implementation in schools is pivotal to student success post high school due to the changing times and high demands for tech savvy personnel. It is imperative that teachers of the 21st century adjust to the technological revolution and not only prepare themselves but prepare their students for the technological real world. Technology has changed the way society looks, and the way the classroom looks and there will be no return to chalk boards and writing letters. The 21st century society demands a technologically advanced person and the 21st century classroom requires the same.

The students of today are surrounded by technology, where access to a vast collection of information is only a fingertip away (Egbert, 2009). Many in the field of pedagogy state that technology integration is helpful, meaningful, and necessary for a school to function successfully. However, many teachers are reluctant to make the change, and many students are not motivated to try. In 2013, a survey was given to the Chicago Public Schools by Ehrlich, Spote, Sebring, & the Consortium on Chicago Schools (2013). It was found that 92% of students had some form of technology and internet access in their home, but fewer than half of the students used that technology for work related to school.

2.2 Technology

Inferring the Core Aspects of Technology and a General Definition of Technology: Skill is employed to create things in the same fashion that artists create their work. However, one need only to observe the results of skill and art to understand that something was “created.” The fact that something was created may be concluded from the overall organization; things were done the way they were so that

every aspect of the work or object functions together with a purpose that can provide some benefit (aesthetic or otherwise). That is, if something discovered is organized, then it may be inferred from the function, purpose, and benefit, that it was created without the need to establish who or what was responsible for creating it. Therefore, these three are considered to be the necessary core aspects of any example of technology.

With regard to semiotics, the original meaning of the root *Techne* (i.e., create) and *logos* (i.e., ordering words that are ordered consisting of letters that are ordered to make them; logic as in series of steps in order, and reasoning also in steps) when combined should be understood to refer to a “creation of order” (i.e., as in skill or art used to create order-yielding work), or that in which “order is created. In other words, from the perspective of making meaning, I interpret and define technology generally at its core to be either “something created through ordering exhibiting organization, whose aspects function with a purpose that can provide some benefit,” or “something that is organized (implying creation of order) whose aspects function with a purpose that can provide some benefit.”

2.2.1 Contemporary of Technology

One way to understand technology is through the schematic definition presented in the text entitled “Society and Technological Change” (Volti 2009). In it, technology is defined as “a system created by humans that uses knowledge and organization to produce objects and techniques for the attainment of specific goals” (Volti 2009, p. 6). Examples that currently exist, such as the laser, the television, or the computer, all qualify as technology according to the criteria of this definition. Although it may prove exceedingly difficult to deny any of these examples as mentioned earlier, a place among the pantheon of technology according to how Volti has defined it there still are many other examples that would not

be given full consideration for inclusion, regardless of the definition to which one compares potential examples of technology. Furthermore, there are also examples that would satisfy these criteria to be determined technology, but this example may be successfully proven through valid argumentation not to be technology according to the very same standards as the premises used to qualify it initially, which renders such definitions unacceptable. Irrespective of whether the definition gives rise to inconsistencies, such as was just alluded in the case of the criteria proposed by Volti, or whether a new definition is developed that preserves validity through consistency in determining that something is technology, it will be challenging to bar entry of valid arguments substantiating ideologies centred on the concept of technological determinism. Technology is unlikely to have occurred by chance, without being created by intelligent beings—many presume to be mankind—given the inherent knowledge and requisite organization of technology as a system that allows it to produce objects and perform techniques to achieve goals. The schematic definition of technology presented by Volti, as well as other opinions, theories, or philosophies that exist in the literature regarding its essence, do not account for aspects of technology that address this from differing perspectives. Therefore, there should be a restructuring of the definition to more thoroughly reflect a variety of aspects and forms, both created by humankind and those that predate our existence. This task may be rather daunting, but it is possible, and should primarily rely on discovering the metaphysical aspects to achieve its end that are related to the subjective nature of experiencing and interacting with technology, that are shared by all individuals. When I performed a cursory analysis of the text from sources used in the research concerning the definition of technology, the ten most frequently used words concerning technology—once we control for lemmatization and related words—in descending order were: science, Heidegger, knowledge, culture, social, human, material, system, process, and power. Based on selected documentation from

authors, it is apparent that despite the disagreement concerning how to frame the definition of technology, science, philosophy (i.e., Heidegger), and knowledge are at the core of the concept we refer to as technology.

Technology has a certain material or physical component, as manifested by the plethora of commonly agreed upon examples that surround us in the physical world. Nevertheless, for as many examples about which there may be a consensus, there is at least an equivalent number about which there is disagreement. How we come to know about the physical (world) is a matter that is the primary concern of the field of science. It is ultimately our success in arriving at such knowledge that may be attributed to the power of logic or reasoning, which itself falls under the field of philosophical inquiry. In addition to seeking knowledge, a philosophical inquiry may consist of abstract thinking and is commonly practiced in many areas of philosophy. Such thinking, especially when in the form of very highly organized abstraction that is from, or that extends beyond, another concept, is often conveyed by the prefix “meta” (Merriam-Webster 2016).

2.2.2 The Rationale for Defining Technology

Something that is definitive precisely specifies to provide a final solution (Merriam-Webster 2016). Accordingly, a definition of technology with which we are concerned is supposed to demarcate the territory that it covers, by distinguishing itself with sufficient detail to avoid ambiguity. Nevertheless, the definitions of technology considered have not proven to be sufficient, such that while explaining enough to allow only a portion of the available examples to qualify categorically as technology, others fail to meet the criteria and do not qualify, and yet more remain in limbo somewhere in between. Furthermore, proponents of the examples of technology, who feel a sense of injustice in them not

having qualified when they should have been, begin to grow understandably unnerved, which ultimately leads to divisiveness. It appears as though the lack of comprehensiveness may render the overall process of definition counterproductive if not thoroughly done, which is a reason that the issue is being revisited with my research. The rationale behind the effort given to defining technology, or anything as important for that matter, may be understood through the remarks of Dionisopoulos and Crable (1988), who have stated that the process of definition has been recognized for its persuasive and ideological potential. I would be remiss not to qualify the claim above with the word “successful” because the truth of the statement is contingent upon achieving what the process set out to accomplish. There can be no effective persuasion or ideology without success in definition first. In fact, when not done comprehensively, instead of bringing closure, the process of definition can sabotage, by creating a rift itself or exposing the presence and location of irreconcilable gaps in theory, that lead to the opposite of what the process had the potential to be, by leaving too much open to persuasive ideological misinterpretations by people in various fields of study.

2.2.3 Aspects According to the Historical Conception of Technology of Bigelow

Jacob Bigelow, who is often credited with coining technology in its present-day usage (Li-Hua 2009), was both a physician and Harvard professor in the early nineteenth century. In his book, entitled *Elements of Technology* (1829), Bigelow states that technology (at that point in time) was “understood to consist of principles, processes, and nomenclature of the more conspicuous arts, particularly those which involve applications of science, and which may be considered useful, by promoting the benefit of society, together with the emolument of those who pursue them” (Bigelow 1829). It may not

immediately be apparent the abundance of information that was provided, so I encourage readers to take a second look to fully appreciate its complexity as a reflection of that of the technology itself.

Analysing Bigelow's statement, if taken as true, reveals that technology, conceptually, was comprised of the following aspects: the physical (process), the metaphysical (principles), the sociocultural (nomenclature), the functional (application of science), the beneficial (considered useful), the purposeful (promoting societal gains), and the economic (emolument). Although the aspect of product was not expressly mentioned, it is implicit to the aspect of process, which is taken to mean action, change, or transition in some form, in that a process must either culminate with itself, or with something else that is not itself. At a subsequent point in time, the continuation of the process would be the process, whereas something other than itself at a later point in time would be a distinct product. Both alternatives, however, may be considered products and could explain why no explicit mention was made in Bigelow's definition. While I do appreciate the care taken in constructing this definition, I do not completely agree with it, in that there exists at least one example of something that satisfies all of the required aspects of both Bigelow's and Volti's definitions to be considered technology, but does not necessarily meet any of the criteria and still exists: the hormone insulin. Based on the use of implicative reasoning for conditional statements assuming his definition as the premise for the argument, and given insulin may be viewed as a system of delivery for energy sources into muscles that is created by humans and uses knowledge (i.e., science) and organization (i.e., skill, art implying it was created) in order to produce objects and techniques for the attainment of specific goals (i.e., modulation and usage of glucose as energy source), then insulin is technology. Moreover, accepting as true Bigelow's definition as premises for the argument, and given that this substance has been created by mankind, involving a process consisting of the application of science, according to

principles, has been given a name, and is considered exceedingly useful based on how it benefits society and those who create it, the substance, insulin, is technology.

2.2.4 Insulin and the Argument in Support of Technological Determinism

According to both Bigelow's and Volti's definitions, insulin is certainly technology. However, there is a rather inconvenient issue with this technology because, unlike all other forms of technology about which there is consensus, insulin does not need to be created by humans to exist. So, either insulin is technology, or it is not; if insulin is technology and insulin does not need to be manufactured, then technology does not need to be created, and anything in existence that was not created could therefore be technology. On the other hand, if insulin is not technology, despite satisfying all of the aspects of the criteria of the definition, then it is not the case that there exists something that is technology, because insulin meets the criteria and is not technology. Therein lies the problem with the definition: either everything will be technology, or nothing will be. Such an absurdity renders the definition as it stands of no use and further substantiates the need for the present study. Moreover, the case of insulin, regardless of the existing or any newly-developed definition, welcomes the corollary of technological determinism as an argument. I would not go as far as to claim that insulin is autonomous just yet, but conceding that insulin is technology that can be created, but exists without humans making it, implies that not only can humans not take responsibility for it as technology, but since it exists without mankind making it, either it simultaneously came to be with the creation of people, or this technology preceded them. It is unlikely to have entered into existence after humans, for this would imply—according to principles of causality—that humankind created it, which is obviously false. It is also unlikely to have spontaneously developed by chance factors after the existence of humans. Such a development would

mean that there was a point in time at which insulin did not exist anywhere, yet it later not only came to be, it came to be made by a particular organ which is present in all animals, in addition to humans, simultaneously, with the same function. There is very little likelihood that this could be the case and this is difficult to accept. If insulin is technology, and it came to be, simultaneous with the creation of humans, then at best technology would be considered to have a contingent reliance on humans, or at worst, it would be autonomous and coincidental to them, as well as being partially deterministic, in a sense that there exists a dynamism between insulin and humans, where each influences and is influenced by the other. Nevertheless, if insulin as technology preceded humans, then at best technology would be both autonomous and completely deterministic. The only way to avoid technologically deterministic implications is to deny that insulin is technology, but that would be problematic, considering it satisfies the criteria of some definitions of technology, which also implies that there could be other examples that qualify that should be denied.

2.2.5 Technology and the Aspect of Reflexivity

As we observed with the aspect of process, the term “product”, involves aspects that are so inextricable as to have the presence of one imply the existence of the other, which obviates the need for both to be included in a satisfactory definition. This discovery is promising because there is potential to reduce the overall number of aspects expressly mentioned in a new definition to only those from which the other aspects may be logically derived. A total of eight aspects were discovered, that included the three core aspects we have previously determined. Nevertheless, there is yet another aspect that was neither directly expressed, nor easily determined from the content of Bigelow’s definition, that deserves to be mentioned: that of reflexivity. The aspect of reflexivity refers to technology having the ability to

perform some function, purpose, or benefit, as well as be used to fulfill the same three core aspects. Perhaps it may be better understood in the following manner: If we assume Bigelow's definition is true, and having been able to derive the aspects both mentioned and implied, each aspect and the technology itself, not only require something prior to their existence, but also need that very thing after the technology and its respective aspects come to be, in order to be capable of understanding or appreciating its existence. That which is required is intelligence. Intelligence is necessary when one creates technology, or technology is created, that is, when it is created by humans to do something in particular—for instance, technology requires intelligence to underlie the skill and art responsible for imparting purpose, function, and benefit (PFB). However, in the case of technology that has either knowingly been created for another PFB by humans, or has been discovered, but not created by humans to fulfill a different PFB, intelligence is necessary to determine what the technology is to be used to do. Thus, regardless of how, or by what, something that is technology comes to be, intelligence appears to be a requisite for both appreciating and understanding it. Furthermore, while it is this appreciation and understanding that allows for the creation of technology with specific PFB, this is also what leads to things encountered that are referred to as technology being applied to a set of different PFBs. Despite the importance of the aspect of reflexivity for understanding technology, it may only operate through the PFB of technology, which precludes it from securing a status among the core aspects

2.2.6 Technology and Information in Learning/Education

Techne as a word-root is traditionally understood to refer to “art” or “skill” (Skrbina 2015). The contemporary usage of words incorporating this root imply that a certain amount of skillfulness or artistry must be involved in that to which they refer. Nevertheless, what is often overlooked is the fact

that, while skill or art undoubtedly are involved, implicit in them is a common conceptual precursor, integral to that which the word may refer to, as well as the skill and artistry that are requisite themselves—the notion of creation. Technology is ubiquitous in the real world and educational settings lag behind the needs and expectations of the students. It is through this lens that the initial diagnosis of the status of NECS and its technology implementation occurred in 2012.

Information has been disseminated throughout America in a variety of different ways. Dating back to the colonial days the first information system was led by Paul Revere and consisted of horseback riders named Midnight Riders that went from town to town passing along information. This system was the first structure for distributing information throughout different territories. Due to the invention of the printing press by Johannes Gutenberg in the 15th century and the spread of such technology to America, the original postal system was established. Benjamin Franklin created a new way for information to be passed along in a more efficient way than horseback. By using the printing press to make mass copies, the postal system developed to spread news countrywide in the shortest amount of time possible. The original high way of information was the Erie Canal. With the building of “Clinton’s Ditch” as it was known the state of New York now had a fast way to spread not only goods and people, but information as well from the Atlantic Coast to the Midwest. The Erie Canal was the 19th century’s version of the night riders, and more specifically, it was a prelude to what could be accomplished when information can be passed along a network in an accelerated way. These systems of transferring news and information were highly developed for their respective times in history. North Americans were getting on the information highway as early as the 1700s, and have been using it as a critical building block of their social, economic, and political world ever since. The information highway, however, did not truly come to fruition until the late 1900s with the introduction of the

personal computer. American sociologist and Harvard professor, Daniel Bell, used the term telematics to describe the growing connection between telecommunications and the computer. The term telematics and the computer in general, "express a new reality, an innovation that has the possibility of transforming society in the way that railroads and electricity did in the nineteenth century."

The computer has taken the shift towards technology and precedents set by the industrial revolution of the 1800s to a new level. The growth of the personal computer and the use of the internet have forced a shift in society that will never look back.

Developments throughout history have happened to ultimately make life easier on humans. Tools to help cut and shape, or lift and move to make certain work more efficient. However, the focus has shifted to tools that do not just make physical labour easier, but tools that "classify and modify information rather merely transmitting it or preserving it." Computers help perform tasks effectively and efficiently so that human error can be avoided. Although computers were first used for government and big businesses, it is now common for personal computers to be used on a daily basis. The transition caused by the use of personal computers has impacted the world in many different ways. There have been social and economic impacts that have marvellously shifted the way the present-day American lives his or her life. There have been many immense and influential impacts on society due to the development of the computer.

Computers have had an unbelievably positive impact on society. Due to the advancement of computers, space exploration took place, vehicles were designed differently, the entertainment world became more entertaining, and medical science made more cures for diseases. The computers impacted society in many ways. Life became instantaneously easier. Some people say that computers

are taking away manpower, and that may be true, but computers did make the impossible possible. One area the computer impacted on is the business area. Business uses computers for keeping track of accounts, money, and inventory. Another area the computer impacted is the entertainment world. Computers made it possible to enhance graphics and special effects. Education has transformed due to current day usage of the computer in the classroom. Computers help students in any way they need, including researching, typing, and searching. Teachers use computers as well. They use computers to keep track of grades, type out instruction for their students, engage students in the classroom, and stay in contact with parents and co-workers. The advancement of the computer has affected the medical profession as well. According to educator and author, Edwin Dolan, “calculations necessary to medical research are being done by computers at astonishing rates of speed, a procedure that is increasing the likelihood of finding cures for serious illness.” Computers are used to help perform surgeries, come up with new medications, keep track of patients, and also organize the data for medical distribution. There have been many positive results because of the introduction of computers into everyday life. However, not all the results from the introduction of computers into society have been positive, as there are negative components that go along with this advancement of technology as well. One of the large scale impacts the computer has had on society is the way it has changed social interactions amongst people. Relationships amongst people have altered due to computers and the internet. Author Robert Kling proposes that “the ways that people work and communicate via computer networks destabilize many conventional social categories. The usage of these interactions takes place as if they are at distinct places but really, they are at their homes or work. These types of interactions would have been only possible from face to face meetings prior to this invention but due to the computer these boundaries have been blurred. Historian and author Walter Mathews, takes

Kling's argument a step further and breaks down the different kinds of groups of people that either agree or disagree with the use of computers. Mathews places one group of people as followers of fifth century B.C. leader Democritus of Greece, and the other group as followers of the belief of Socrates, a contemporary of Democritus. The followers of Democritus have no difficulty in coming to terms with the computer. These people believe the computer is a new species that must be interacted with, they understand it is an intelligent machine, and they understand a "brain is a computer and a computer is a brain" and that both work together to advance society. On the other hand, the followers of Socrates find it difficult to understand the computer and feel threatened by it. These people are unable and unwilling to accept the computer as a brain and the brain as a computer and "insist upon the significance of qualities of human experience that have not at this point been reduced meaningfully simply to quantities, they read the literature on the computer written by followers of Democritus and they fear for the future of human society. Mathews argues that people need to accept the computer and its capabilities if there are going to be any advancement of human society while coexisting with the new technology.

2.3 Occupational Interest and Career Choice

Interest has been considered to be an important aspect of learning and achievement for about a century. Research has been conducted based in both philosophical and psychological perspectives. In the early twentieth century, utilizing a philosophical and pedagogical approach, Dewey discussed interest as a motive that engaged children toward an occupation and the gaining of experience (Jackson 1990). Subsequently, framed in a psychological perspective, Atkinson (1957) first defined interest in value (called incentive value), as having an important relationship to motive. He believed that the

relationship of incentive value to motive could be helpful to predict achievement. For Atkinson, motive was identified as the intention used by individuals to approach success and avoid failure. Later researchers expanded on this work to provide two major approaches to conceptualize interest based on empirical studies (Krapp et al. 1992; Parsons and Goff 1980).

2.3.1 Contextual factors

The Social Cognitive Career Theory (SCCT) by Lent et al. (1994) proposes that career choice behaviour is shaped by outcome expectancies, career interests, and career self-efficacy, and that career self-efficacy plays a mediating role between one's background and interests and one's outcome expectancies. Career self-efficacy is influenced both by individual variants such as predispositions, gender, race, ethnicity, health status and by contextual factors such as family background and learning experiences. Turner et al. (2004) did mention that contextual factors are those environment barriers and supports such as family structure, mother's and father's supports that pursuing student's career. This is supported by Nolan et al. (2008) who stated that contextual factors that surround individuals served to shape individual's career. Contextual factors and individual characteristics would influence one's career choice (Tang et al. 2008). The contextual can be classified as the barriers and supports in their environment. Contextual factors such as perceived barriers and supports are influencing career decision making. According to Lent et al. (2003), contextual supports and barrier as indirectly linked to choice goal of individuals' career decision making. Lent et al. also mentioned that contextual received by environmental supports and barriers relate to the choice goals and actions in engineering. The supports contextual would contribute and act positively towards the career decision. The barriers contextual would cause one to avoid from choosing a career which looks hard

and unsuitable. External contextual such as parents, teachers and friends do not only open up the opportunity but constraint the students' selection of career in technical area. (Guay et al., 2003; Ojeda & Flores, 2008; Tien et al., 2009; Stringer & Duncan, 1985; Nolan et al., 2008). The most important environment that students perceived supports and barriers are from school and their home. Ginzberg (1966) agree that contextual factors offer opportunities, but it also imposes limitation. The task of choosing a career is not static but part of the developmental process. Amla et al. (2006) mentioned that the school learning process as an experience and early preparation that will affect students' whole life. However, female students reported having had more difficulty than male students in making the choice (Khairul Anwar, 2003). According to Ramlee and Norhazizi (2009), the factors that hinder female students from choosing certain technical fields is a lack of encouragement from family, peers, teachers and environment.

Contextual factors such as role model, gender stereotyping, gender bias and career information are the main factors in technical career decision making. All these factors become supports and barriers among students. Teacher and parents should increase their awareness to make sure that these factors not become as a wall in career decision making process. Encouragement and information transferred will increase female student in technical fields.

2.3.2 Role model

Role model plays an important part in choosing a technical career. Role model within the family and teachers are the closest examples which can be followed. School-teachers can identify aptitudes and abilities, and encourage students to take certain subject options, or take part in work experience, or employment visits. Either one is directly or indirectly involved, a teacher plays his or her roles as a

role model in a student's career choice. The student will look at the role model as someone who is inspiring and resourceful for them. If a daughter looks at her mother choosing a career in technical field, she would grow up and accept that females can get involve in technical area. The formation of external role model would require the parents, teachers and school to take part by working together organizing talks, attachment and guidance. Both the school and the family can provide information and guidance, directly or indirectly, to influence a young person's choice of career. Family members career chosen influence students career decision making. This indirect information will form a strong believe that thus career is the best to choose. The study conducted by Creamer and Laughlin (2005) has shown that 39.9% identified one or both parents had been influential in their career choices. Siblings were identified next most frequently and followed by advisor or counsellor. The choice of role model involves factors such as similarity (e.g., same gender) and positive attributes of the model (Ochs & Roessler, 2004). Anderson and Gilbride (2005) found that reason for female students not choosing engineering because the lack of role model and female role model provided greater influence for the female students. Individuals are most likely to benefit from a supportive, high quality role model relationship. Benefits include greater readiness to make career decisions. Role models can influence career indecision in a variety of ways. First, the individual must identify with a role model. Second, individuals must seek to build a high-quality relationship with the role model. Role models may influence modellers' career indecision, not only by direct modelling and imitation, but also by offering support and fostering a healthy relationship with the modeller. According to Rodermund and Silbereisen (1998), familial factors contribute to the content of adolescents' choice such as parents' own jobs, their socio-economic status and family configuration. This is supported by Anderson and Gilbride (2007) who stated that knowledge about engineering was correlated to having an engineer in

the family. The findings of the researchers are supported by Ramlee and Norhazizi (2009) who stated that the people who closed to female students such as family and teachers play their role wisely to encourage female students to join skills courses in this country. The lack of role model or leadership of female teachers is placing them at a disadvantage in career decision making in technical field. Because of barriers like these, our teachers and role models may have to learn what inspires young women to pursue careers in technical fields. Students need to be clear about what is expected of their future career and kind of support scheme offered to them at school. Role models are aware of the ages and abilities of the students they will be working with. Career counsellors can help students identify potential role models with whom they might develop supportive, high-quality relationships. Career counsellors may also serve as role models themselves, through the use of self-disclosure or by demonstrating appropriate career exploration and decision-making behaviours. Since the same-gender parent is often an important role model, counsellors may focus on parent-child relationships as well. Such secure relationships may decrease career indecision for college students or other career counselling clients.

2.3.3 Career information

Some students take initiative and seek out the experts or information about to find out their career interests. The information on the career which is incomplete, outdated, difficult to get, scattered becomes problems for students to look for guidance in choosing a technical career. A complete package of career information should be provided for students in order for them to explore on the career. Information on the advantages of selecting or choosing a technical career would be useful for the students. Rich exposures from teachers and parents are meaningful to guide students on the right track

of career chosen. According to Ramlee and Norhazizi (2009), in making a career decision, not all teenagers are systematic and rational. Many teenagers are still indecisive about their own stand after finishing secondary school and change their jobs for a number of times without having a lucid plan based on sufficient information. Creamer and Laughlin (2005) mentioned that career choices that are made primarily based on personal experience or exposure. Important facts about career would also help students to know the academic, mental and physical needs which are required in a technical career. The role played by teachers teaching the technical subjects is very important to be explored. Anderson and Gilbride (2005) found that the lack of experience and hence knowledge could inhibit young students from regarding engineering as a viable career choice. Anderson and Gilbride also mentioned that students who still undecided about their future career choice and could be influence by receiving career information. The way the information should be delivered depends on the students' age, background knowledge and readiness. Continuous and interesting way of delivery would produce fruitful outcome. Right and exact information on the career would assist the students to make decision on the career. The most suitable way of giving the information would be through the mass media, straight to the students as well as with the help of technical assistance will push the students to select a career in technical field.

2.4 Summary of Literature Review

The foregoing review of empirical studies about technology and occupational interests indicates that there exists an ever-evolving relationship between students' choice in career paths and technology made available to them and there are different measures to assessing this relationship. Having reviewed

different related and relevant literatures, this research aims to bridge a gap in this field of knowledge by probing the impact of advance technology on the occupational interest of secondary school students in industrial technology education, in Bosso LGA, Niger State, Nigeria.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Research Design

Many researchers have argued that, the quality of anything has a subjective aspect that is perceptual as well as having an objective reality (Marans, 2012). Consequently, in this research, the impact of advance technology on the occupational interest of secondary school students in industrial technology education will be conducted through the subjective view of students as it is closely related to the way's students perceive or evaluate the determinants of their varying interests. This study employed mixed method approach which involves the use of qualitative and quantitative data to measure the research objectives. To achieve the objectives of this study, oral interviews, focus group discussions and field survey will be conducted. The figure below represents the conceptual framework of the study.

3.2 AREA OF STUDY

Bosso is a Local Government Area in Niger State Nigeria. Its headquarters are in the town of Maikunkele. It has an area of 1,592 km² and a population of 203,134 as projected in 2019 using the national population census figures of 2006 with 2.5% annual growth rate. The postal code of the area is 920. Bosso is the home of one of the campuses of the Federal University of Technology Minna. The campus which was originally the main/only campus before the school moved to the new campus at Gidan Kwano.

3.3 Population of the Study

Population in this context refers to the total number of people in the study area or to be studied. The population is 1391 senior secondary school students. The population distribution is as follows: Bosso Secondary School Minna, with a total of 308 senior secondary student, Mariam Babangida Girls Science College Minna, with a total number of 579 senior secondary student, and, Ahmadu Bahago Secondary School Minna, with a total number of 504 senior secondary student. Total population of the senior secondary student will be 1,391.

3.4 Sampling and Sampling Technique

For this study, 302 samples were selected from three secondary schools within Bosso local government area were sampled. The three secondary schools selected are Bosso Secondary School Minna, Mariam Babangida Girls Science College Minna, and, Ahmadu Bahago Secondary School Minna. These secondary schools were selected using excel RAND number function of the Microsoft excel spreadsheet software. Using the Yemane (1967) formula of $n = \frac{N}{1 + N(e)^2}$, where n is the sample size, N is the population size and e is the level of precision, with a significance level (e) of 0.05, a sample size of 302 was derived for the study. Simple random sampling will be used in the selection of students to be sampled within each institution.

Table 3.1: Questionnaires Distribution by Sample Size

Name of School	SS Student Population	Average No. of Students per Classroom (Sample)	Percentage of Sample Frame	Questionnaires To be Administered
Bosso Secondary School, Minna	308	34	22%	66
Mariam Babangida Girls Science College, Minna	579	32	42%	127
Ahmadu Bahago Secondary School, Minna	504	42	36%	109
TOTAL	1,391	108	100%	302

3.5 Data Collection

A questionnaire will be developed consisting of four sections. Section-1 will be about the socio-economic and demographic characteristics of the respondents. Section-2 will be about advance technology and its influence on occupational interest of secondary school students in industrial technology education. Section-3 will be about the factors that influence the interest of secondary school students to industrial technology education. Section-4 will be about the level of impact/influence of each factor

3.6 Reliability of the Instrument

To ensure the reliability of the instrument, the instrument will be trial tested. This test will be in the form of a pilot study which will be used to generate data used in determining the reliability of results from the instrument and whether respondents will understand and will be able to comprehend the

content of the detail as required. The Cronbach alpha reliability test will be conducted to measure reliability of questionnaire used in the study.

3.7 Method of Data Collection

The statistical method used in this research is Descriptive statistics. This involved the application of charts, frequency tables and graphs. Descriptive statistics involves graphical illustration to help recapitulate information and manage the number of tables to be included in the report.

3.8 Method of Data Analysis

Both descriptive and inferential statistics will be used for data analysis. Socioeconomic and demographic characteristics of the respondents were analysed through descriptive statistics. The percentages determining levels of the students' interests and factors guiding or determining these interests will be analysed through descriptive statistic

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Research Question One what are the types advance technology that influences occupational interest of secondary school students in Industrial and Technology Education?

Table 4.1: Shows the mean responses of the respondent on the types advance technology that influences occupational interest of secondary school students in Industrial and Technology Education

$N_1 = 120, N_2 = 25$

S/N	ITEMS	\bar{x}_A	SD	Remarks
1.	Metalwork Technology	2.54	1.27	Agreed
2.	Building Technology	2.50	1.23	Agreed
3.	Automobile Technology	2.74	1.18	Agreed
4.	Woodwork Technology	2.51	1.19	Agreed
5.	Electrical Technology	2.51	1.23	Agreed
6.	Electronic & Mechatronic Technology	2.57	1.01	Agreed
7.	Leather and Shoe making Technology	2.52	1.17	Agreed
8.	Tailoring	2.70	1.37	Agreed
9.	Computer Technology	2.80	1.10	Agreed
10.	Ceramic technology	2.59	1.43	Agreed

Keys:

N_1 = Number of Students

N_2 = Number of Teachers

\bar{x}_A = Mean average of student and Teachers

SD= Standard deviation of student and Teachers

Table 4.1 revealed the results on the types of advance technology been able to influence occupational interest of secondary school students. It shows that all the items agreed on the types of advance technology been able to influence occupational interest of secondary school students with the mean range (2.50-2.74). The Table also revealed that the standard deviations (SD) of all items are within the ranges from 1.01 to 1.43, each of these values was less than 1.96 indicated that respondents were not too far from the mean and from one another in their responses on the types of advance technology been able to influence occupational interest of secondary school students

4.2 Research Question Two

what is the occupational interest of secondary school students in Industrial and Technology Education?

Table 4.2: Shows the mean responses of the respondent on the occupational interest of secondary school students in Industrial and Technology Education.

N₁= 120, N₂ = 25

S/N	ITEMS	x_A	SD	Remarks
1.	industrial technology education provides trained manpower in applied science	2.56	1.21	Agreed
2.	industrial technology education provides technical knowledge and vocational skill necessary for commercial and economic development.	2.70	1.25	Agreed
3.	industrial technology education give training and impact the necessary skills leading to the production for craft-man	2.54	1.23	Agreed
4.	the teacher carryout the practical of industrial technology education subject with much interest and mastery	2.57	1.02	Agreed
5.	industrial technology education subjects is very interesting	2.53	1.05	Agreed
6.	students' interest is sustained thought the lesson period	2.77	1.08	Agreed
7.	The number of students that study industrial technology education is very few	2.51	1.10	Agreed
8.	Practical in industrial technology education subject's area quite interesting and Fascinating	2.58	1.20	Agreed
9.	industrial technology education provides technical knowledge and vocational skill necessary for agriculture,	2.56	1.09	Agreed
10.	industrial technology education provides technical knowledge and vocational skill necessary for industries	2.56	1.21	Agreed

Keys:

N₁= Number of Students

N₂= Number of Teachers

x_A = Mean average of student and Teachers

SD= Standard deviation of student and Teachers

Table 4.2 revealed the results on the occupational interest of secondary school students in Bosso LGA, Niger State. It shows that all the item agreed on the occupational interest of secondary school students in Bosso LGA, Niger State with the mean range (2.51-2.77). The Table also revealed that the standard deviations (SD) of all items are within the ranges from 1.01 to 1.25, each of these values was less than 1.96 indicated that respondents were not too far from the mean and from one another in their responses on the occupational interest of secondary school students in Bosso LGA, Niger State

4.3 Research Question Three

What are the factors that influences the interest of secondary school students in Industrial Technology Education in Bosso LGA, Niger State?

Table 4.3: Shows the mean responses of the respondent on the factors that influences the interest of secondary school students in Industrial Technology Education in Bosso LGA, Niger State

$N_1 = 120, N_2 = 25$

S/N	ITEMS	\bar{x}_A	SD	Remarks
1.	There are adequately trained vocational subject teacher & instructor	2.64	1.02	Agreed
2.	industrial technology education teachers are well committed teachers	2.60	1.21	Agreed
3.	the teachers teach well with the right method of teaching	2.64	1.20	Agreed
4.	the teacher carryout the practical of industrial technology education subject with much interest and mastery	2.61	1.19	Agreed
5.	parents react negatively to my study of industrial technology education subjects	2.51	1.27	Agreed
6.	parents see vocational/ technical subjects as the subjects for children from poor parents	2.67	1.01	Agreed
7.	the number of boys that enroll in the study of vocational /technical subjects are greater than girls	2.62	1.17	Agreed
8.	Boys want to study core vocational subjects because it is technology for self-reliance	2.72	1.37	Agreed
9.	students are counselled on the study of industrial technology education subjects and others	2.81	1.10	Agreed
10.	Students are well exposed to practical's and adequate skills required	2.53	1.43	Agreed

Keys:

N_1 = Number of Students

N_2 = Number of Teachers

\bar{x}_A = Mean average of student and Teachers

SD= Standard deviation of student and Teachers

Table 4.3 revealed the results on the factors that influence the interest of secondary school students to industrial technology education. It shows that all items agreed on the factors that influence the interest of secondary school students to industrial technology education with mean range (2.51-2.74). The Table also revealed that the standard deviations (SD) of all items are within the ranges from 1.01 to 1.43, each of these values was less than 1.96 indicated that respondents were not too far from the mean and from one another in their responses on the factors that influence the interest of secondary school students to industrial technology education.

4.4 Discussion of Results

Research Question One

The result revealed on what extends do you agree that secondary school student shows interest in these occupations in the field of Industrial Technology Education It shows that all the items agreed on the types of advance technology been able to influence occupational interest of secondary school students with the mean range (2.50-2.74). The Table also revealed that the standard deviations (SD) of all items are within the ranges from 1.01 to 1.43, each of these values was less than 1.96 indicated that respondents were not too far from the mean and from one another in their responses on the types of advance technology been able to influence occupational interest of secondary school students. The study is in line with Creamer and Laughlin (2005) has shown that 39.9% identified one or both parents had been influential in their career choices. Siblings were identified next most frequently and followed by advisor or counsellor. The choice of role model involves factors such as similarity (e.g., same gender) and positive attributes of the model (Ochs & Roessler, 2004). Anderson and Gilbride (2005) found that reason for female students not choosing engineering because the lack of role model and female role model provided greater influence for the female students. Individuals are

most likely to benefit from a supportive, high quality role model relationship. Benefits include greater readiness to make career decisions. Role models can influence career indecision in a variety of ways. First, the individual must identify with a role model. Second, individuals must seek to build a high-quality relationship with the role model. Role models may influence modellers' career indecision, not only by direct modelling and imitation, but also by offering support and fostering a healthy relationship with the modeller. According to Rodermund and Silbereisen (1998), familial factors contribute to the content of adolescents' choice such as parents' own jobs, their socio-economic status and family configuration. This is supported by Anderson and Gilbride (2007) who stated that knowledge about engineering was correlated to having an engineer in the family. The findings of the researchers are supported by Ramlee and Norhazizi (2009) who stated that the people who closed to female students such as family and teachers play their role wisely to encourage female students to join skills courses in this country. The lack of role model or leadership of female teachers is placing them at a disadvantage in career decision making in technical field. Because of barriers like these, our teachers and role models may have to learn what inspires young women to pursue careers in technical fields.

Research Question Two

The result revealed on the occupational interest of secondary school students in Bosso LGA, Niger State. It shows that all the item agreed on the occupational interest of secondary school students in Bosso LGA, Niger State with the mean range (2.51-2.77). The Table also revealed that the standard deviations (SD) of all items are within the ranges from 1.01 to 1.25, each of these values was less than 1.96 indicated that respondents were not too far from the mean and from one another in their responses on the occupational interest of secondary school students in Bosso LGA, Niger State. The

study is in line with According to Rodermund and Silbereisen (1998), familial factors contribute to the content of adolescents' choice such as parents' own jobs, their socio-economic status and family configuration. This is supported by Anderson and Gilbride (2007) who stated that knowledge about engineering was correlated to having an engineer in the family. The findings of the researchers are supported by Ramlee and Norhazizi (2009) who stated that the people who closed to female students such as family and teachers play their role wisely to encourage female students to join skills courses in this country. The lack of role model or leadership of female teachers is placing them at a disadvantage in career decision making in technical field. Because of barriers like these, our teachers and role models may have to learn what inspires young women to pursue careers in technical fields. Students need to be clear about what is expected of their future career and kind of support scheme offered to them at school. Role models are aware of the ages and abilities of the students they will be working with.

Research Question three

The result revealed on the factors that influence the interest of secondary school students to industrial technology education. It shows that all items agreed on the factors that influence the interest of secondary school students to industrial technology education with mean range (2.51-2.74). The Table also revealed that the standard deviations (SD) of all items are within the ranges from 1.01 to 1.43, each of these values was less than 1.96 indicated that respondents were not too far from the mean and from one another in their responses on the factors that influence the interest of secondary school students to industrial technology education. It is in line with Amla et al. (2006) mentioned that the school learning process as an experience and early preparation that will affect students' whole life. However, female students reported having had more difficulty than male students in making the

choice (Khairul Anwar, 2003). According to Ramlee and Norhazizi (2009), the factors that hinder female students from choosing certain technical fields is a lack of encouragement from family, peers, teachers and environment. Contextual factors such as role model, gender stereotyping, gender bias and career information are the main factors in technical career decision making. All this factor become supports and barriers among students. Teacher and parents should increase their awareness to make sure that these factors not become as a wall in career decision making process. Encouragement and information transferred will increase female student in technical fields.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The study is to examine the impact of advance technology on the occupational interest of secondary school students in Bosso LGA, Niger State, Nigeria. The study possesses three specific objectives to guide the study which are to identify types of advance technology available to the secondary school students in industrial technology education in Bosso LGA, Niger State, identify the occupational interest of secondary school students in Bosso LGA, Niger State and determine the factors that influence the interest of secondary school students to industrial technology education.. Three (3) corresponding research questions were raised. The research design is a descriptive survey, the population of the study comprises of one hundred and twenty (120) students and twenty-five (25) teachers. The study concluded that computer has taken the shift towards technology and precedents set by the industrial revolution to a new level. The growth of the personal computer and the use of the internet have forced a shift in society that will never look back. Developments throughout history have happened to ultimately make life easier on humans. Tools to help cut and shape, or lift and move to make certain work more efficient.

5.2 Recommendations

Based on the findings of the study the following recommendations were made;

1. The industrial technology education teacher should be able to carry out practical of the subject with much interest and mastery
2. Parents should allow their children to study any Industrial technology education career

3. The government should provide facilities and equipment for the schools to teach industrial and technology education conveniently.
4. The male and female should be given equal opportunities to enroll for the course
5. Students should be well exposed to practical and digitalized knowledge for self-reliance.

5.3 Suggestion for Further Studies

1. Assessment on the teaching of Industrial and Technology Education is North-central Nigeria.

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**QUESTIONNAIRE ON IMPACT OF ADVANCE TECHNOLOGY ON THE
OCCUPATIONAL INTEREST OF SECONDARY SCHOOL STUDENTS IN INDUSTRIAL
TECHNOLOGY EDUCATION IN BOSSO LGA, NIGER STATE**

Dear respondent,

This Questionnaire is designed to obtain information on impact of advance technology on the occupational interest of secondary school students in Bosso LGA, Niger State Please, kindly assist by filling the necessary information where appropriate. Any information obtained will be held in strict confidence and will be used solely for the purpose of this academic study. Please tick or write in the appropriate location.

SECTION A

Student []

Teachers []

SA= Strongly Agree (4 points)

A= Agree (3 points)

DA= Disagree (2 points)

SD= Strongly Disagree (1 point).

SECTION B

Research Question One

To what extends do you agree that secondary school student shows interest in these occupations in the field of Industrial Technology Education?

SA= Strongly Agree, (4 points), A= Agree (3 points), DA= Disagree (2 points), SD= Strongly Disagree (1 point).

S/N	ITEMS	SA	A	D	SD
11.	Metalwork Technology				
12.	Building Technology				
13.	Automobile Technology				
14.	Woodwork Technology				
15.	Electrical Technology				
16.	Electronic & Mechatronic Technology				
17.	Leather and Shoe making Technology				
18.	Tailoring				
19.	Computer Technology				
20.	Ceramic technology				
21.	Textile Technology				

Research Question Two

What is the occupational interest of secondary school students in Bosso LGA, Niger State?

SA= Strongly Agree, (4 points), A= Agree (3 points), DA= Disagree (2 points), SD= Strongly Disagree (1 point).

S/N	ITEMS	SA	A	D	SD
1.	industrial technology education provides trained manpower in applied science				
2.	industrial technology education provides technical knowledge and vocational skill necessary for commercial and economic development.				
3.	industrial technology education give training and impact the necessary skills leading to the production for craft-man				
4.	the teacher carryout the practical of industrial technology education subject with much interest and mastery				
5.	industrial technology education subjects are very interesting				
6.	students' interest is sustained thought the lesson period				
7.	The number of students that study industrial technology education is very few				
8.	Practical in industrial technology education subject's area quite interesting and Fascinating				
9.	industrial technology education provides technical knowledge and vocational skill necessary for agriculture,				
10.	industrial technology education provides technical knowledge and vocational skill necessary for industries				

Research Question Three

what are the factors that influence the interest of secondary school students to industrial technology education?

SA= Strongly Agree, (4 points), A= Agree (3 points), DA= Disagree (2 points), SD= Strongly Disagree (1 point).

S/N	ITEMS	SA	A	D	SD
1.	Teachers method of teaching instructions				
2.	industrial technology education teachers are well committed teachers				
3.	Future growth and changes in the courses.				
4.	Adequacy of trained teachers. s				
5.	Boys want to study core vocational subject because it is technology for self-reliance				
6.	Parent influence.				
7.	the number of boys that enrol in the study of vocational /technical subjects are greater than girls				
8.	Job opportunities in the field.				
9.	students are counselled on the study of industrial technology education subjects and others				
10.	Students are well exposed to practical's and adequate skills required				

