

**DESIGN AND IMPLEMENTATION OF COMPUTERIZED  
CAREER SELECTION SYSTEM**

**(A CASE STUDY OF UNIVERSITY OF BENIN  
DEMONSTRATION STAFF SCHOOL)**

**BY**

**IMADE PETER OSAKPOLOR**

**PSC1707499**

**DEPARTMENT OF COMPUTER SCIENCE**

**FACULTY OF PHYSICAL SCIENCES**

**UNIVERSITY OF BENIN**

**DECEMBER 2022.**

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**SUBMITTED TO THE DEPARTMENT OF COMPUTER  
SCIENCE, FACULTY OF PHYSICAL SCIENCES,  
UNIVERSITY OF BENIN IN PARTIAL FULFILLMENT OF  
THE REQUIREMENTS FOR THE AWARD OF BACHELOR  
OF SCIENCE (BS.C) HONS DEGREE COMPUTER  
SCIENCE**

**DECEMBER 2022**

**CERTIFICATION**

This is to certify that this research work was carried out by **IMADE PETER OSAKPOLOR** with matriculation number **MAT NO: PSC1707499**, Faculty of Physical Sciences, Department of Computer Science, University of Benin, Benin city under my supervision.

.....  
**MISS L. O. USIOSEFE**  
(Project Supervisor)

.....  
**Date**

# APPROVAL

This project report written by **IMADE PETER OSAKPOLOR**, with matriculation number **PSC1707499**, in partial fulfillment of the requirement for the award of the University of Benin Bachelor of Science (B. Sc.) degree in Computer Science, is adequate both in scope and content and it is hereby approved for presentation.

.....  
**PROF. (MRS.) A.O. EGWALI**  
(Head of Department)

.....  
**Date**

## **DEDICATION**

This project work is dedicated to God Almighty, for providence, guidance, and grace in seeing me through this study; I give Him all the glory. I also dedicate this project to my father Mr. Imade Peter Osahon for without them, I would not have come this far.

## ACKNOWLEDGEMENT

The greatest and the most breathtaking concept ever is that God Himself knows me personally. I really cannot fathom the implication of His love for me. He is the greatest guidance counselor because He guided me through this study. I express my sincere gratitude to Him, the originator of all things.

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## **ABSTRACT**

Career selection is one of the many important choice all secondary students will have to make at one point of their life to determining their future plans. From research it has been duly noted that student making career choice has been a big problem among students in Nigeria and also the factors that affect the students' career choice such as family background, finance or peer pressure. Also from research it was deduced that most secondary school have that false mentality that a school can function properly without the activities of the career selection counsellors, because of extra cost of employing career selection counsellors. The main objective of this project is to create a computerized career selection system that will aid secondary students in selecting the proper career according to their academic abilities, best subject, career knowledge and extracurricular activities. This computerized career selection system will not only aid the students but also automate the job career counsellors in doing their job efficiently and passing the latest information on careers to the students.

## CHAPTER ONE

### 1.0 BACKGROUND OF STUDY

The birth of career guidance and counselling can be traced as far back as the origin of man. As man evolved, the need to find meaning and purpose in life became stronger. At first, there was no direct man-to-man organized medium for seeking counsel. The methods of guidance were via weird images and items man knew as gods. However, as society evolved and diverse cultures and traditions became popular, there was a shift from man to gods to a man-to-man form of guidance counselling in societies, the elders were sought out to provide advice on different topics including the profession one should follow. As time went on, this burden shifted to the educated few in society and slowly lead to the development of a structured and organized guidance counselling system.

Just like independence, Nigeria didn't catch up to the organized guidance and counselling system early like other countries. The first setup that embodied the tenet of organized career selections was at St Theresa's College Oke Ado in Ibadan. In 1959, the Reverend sisters set up a panel to help students through deciding on what career path to follow. This group served as the first recognized mention of career guidance counselling in the formal setting. Afterwards, the vocational career guidance services spread to other secondary schools outside Ibadan and across entire Nigeria. In 1981, the guidance and counselling profession had a major boost with its inclusion in the Federal government's National policy on education. The policy emphasized the government's desire to establish guidance services in schools to boost career guidance and check personality maladjustment. This drive was also stated in the 3<sup>rd</sup> national development plan (1975-1980), emphasizing the need for guidance and counselling in Nigerian schools to achieve the manpower needed for economic growth. (Adoga, 2020)

Career Selection is one of many important choices a student will have to make in determining, their plans. Generally, there have been diverse conclusions about what makes up the key factors in choosing a career. Student personal qualities, such as interests and aptitudes or what the student value are key factors in choosing a career. However, humans are unique and choosing a career need to identify personal characteristics and match them with the compatible course in tertiary institutions to make our career. For example, a student who is excellent at mathematics and enjoys challenges and tasks associated with the mathematical field might explore math-related courses or occupations such as engineering or accounting counselling programs in schools.

The choice of career has been a serious problem among secondary students in Nigeria. Many secondary students have the idea that they would be able to work in a public or private establishment as soon they complete their tertiary education. Some have plans to become lawyers, engineers, medical doctors, scientists, accountants and so on, how the young students of today meet the problem of tomorrow will depend on the amount of success they make in planning for that tomorrow. And Planning for tomorrow itself is primarily the responsibility of the parents, teachers, and the school's guidance counsellors.

According to (Hooley, 2012), career choice is influenced by multiple factors including - Personality, Interest, Self-Concept, and Cultural identity. Globalization. Socialization. Role model, and Finance.

In general, the first factor in choosing a career is the environmental factors that influence a student's career choice. Students tend to choose a career that is directory linked to the surrounding environment and try as much as possible to solve existing challenges in the surrounding. A student who has lived their entire life on an island will most likely choose a

career dealing with the environment around them which is mostly to do with water or choose to have nothing to do with the island. Possibly someone in the student's environment has made a significant impact or impression and can motivate the student to choose a certain career. Also, media influence plays a role in the process of career choices among students, a student may see some prominent media personalities on television who may have influenced the student to either make or alter a similar career choice to those personalities or sometimes parents demands that the student assumes the family business.

The second factor in a career choice is personality. Some career demand that you have the personality to match the qualities of the occupation James explained (as cited in Kazi, Akhlaq 2017). Opportunity is the third factor that has shaped career choices for students. The issue of poverty has played an important determining role in the opportunities available to all. For example, research shows Men based their career choices on financial gains as they have to meet the household's needs while a motivating factor for women was social values and utility. (Sax 1994 as cited in Kazi, Akhlaq 2017)

The Guidance program was introduced to support the student in career selection that will guide their course of study in the tertiary institution. Over time, due to its many successes, it's become a vital part of the education system globally and in Nigeria. Since its adoption, it's the instructional responsibility of the guidance and counsellor, administrator, and staff of the school to provide the students with the specific knowledge and skills to facilitate a full expression of their career choices.

A critical level in the guidance counselling phase is at the secondary school level. In Nigeria, students are meant to make a choice on which path they want to follow in the SS1 or SS2 classes in line with their academic performance. For most students, this decision is easy.

However, there's a large percentage of students who do not have the slightest idea of what they want. That's gap is where guidance counselling comes into play. Although there are many careers to choose from, individuals without guidance and counselling on future career choice decisions can be limited in their career options, especially if they are not prepared for the requirement of the workplace underestimate their capabilities or are unaware of the range of work opportunities that can broaden their career options.

The guidance centre helps the students understand their strengths and limitations and to enable them to adjust to their social and emotional life to the fullest. It offers the following service which is given by the guidance personnel: individual counselling and administration of intelligence tests (IQ). An important aspect of a guidance program is the fact that some students need special assistance in dealing with developmental problems and immediate crises. With this, teachers and other staffs who are in direct contact with the students require assistance that can best be provided by a guidance program. Guidance program moreover is based on the belief that all students, including those with challenging needs, have the right to benefit from effective instruction to ensure optimal development.

The manual system of career guidance is being phased out, it's quite tedious, time-consuming, less efficient, more prone to error and inaccurate in comparison to a computerized system. A manual-based system will see information recorded and kept in different ways such as in files in paper form. While a computer-based information system will see data stored on various computer programs including databases, word documents, excel and so on. With the above problem, my research proposed a system called Career Selection System (CSS). This research work is geared towards developing a computerized system to assist the students and counsellors in selecting the proper career for secondary students.

## **1.2 MOTIVATION**

Career selection among students has been a very challenging decision to make and only a few students get this decision right. This project work is to develop a career selection software for students to aid them to choose the better and right career for them with a view of creating awareness of the use of computers in career counselling with due consideration of technology advancement.

## **1.3 STATEMENT OF PROBLEM.**

Research (Omoniyi, 2016) revealed that some principals in secondary schools have the false impression that a school can function effectively and profitably without a career counsellor. This false impression leads to the poor allocation of funds by the school authority for career counsellors to facilitate their work effectively. As a result, there is a shortage of trained personnel in secondary schools to manage many students in the school. This shortage limits the level of concentration the guidance counsellor can dedicate to each student and leads to poor advisory,

## **1.4 AIMS/OBJECTIVES**

The main aim of the project is to design and implement of career system.

To achieve this, the following objectives are stated:

- Study-related literature and the existing system to understand its scope of its.
- Documents the finding and identify the shortcoming that needs upgrading.
- Design and develop a computerized career selection system.
- Implementing the system and testing to confirm its functionality.

## **1.5 SCOPE OF STUDY**

The study covers the design and implementation of a career selection system for secondary schools.

## **1.6 SIGNIFICANCE OF STUDY**

This study is of numerous importance to the guidance and counsellor department and society in general in different ways.

- It will facilitate the effective delivery of career guidance and counselling service by the counsellor.
- It will also help to eliminate the word frustration among people which is very common in society. It will ease the stress of the manual data storage and retrieval process and streamline the process.
- It will facilitate career guidance for students in their large number.
- Using an automated system in this situation would be very efficient for information storage and retrieval.

## **1.7 METHODOLOGY**

A deep background study of the topic will be engaged to increase knowledge on the subject, the researcher will then gather materials and articles for this purpose. An interview with the guidance counsellor of the University of Benin staff secondary will be hereafter conducted to understand the scoping study clearly and not just from articles being read.

The Waterfall methodology of Software development will be adopted, it involves the following processes:

- Gather the requirements for the system (this includes the functional and non-functional requirements of the system), and evaluate the existing systems, exploring the shortcomings and benefits of the systems already in place.
- Summarize the requirements into a Specification document. Requirements include the database schema, required languages, required modules etc.
- With the specification given, design the web-based student career selection system.
- Implement and test the system using the JAVA programming language and using MySQL for the database.

## **1.8 LIMITATIONS OF STUDY**

The major limitations identified in this research work are as follows:

- There are many secondary schools in primitive/rural areas that have little or no technological facilities in the school. Implementing this system in such a situation would be a problem.
- There may also be a staff in the school who do not know proper usage of computer. If such staff works in the guidance and counselling unit, it would be cumbersome to operate the computerized system.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 CONCEPT OF CAREER CHOICE**

The choice of career an individual makes influences the trajectory of their life. Hence, the topic of career selection is one that holds diverse and serious consideration in a man's life. But it's impossible to understand the concept of career selection without first understanding the concept of career.

Career is defined as a job or profession for which one undergoes regulated education and training over a period, and which one intends to follow for the whole of one's life. A career choice is the process of determining a field of learning that requires certain knowledge and skills, acquired through a specific educational program which results in a certificate or degree attesting to your accomplishment (Power, 2013). Since the average person works 45-50 years in their lifetime, finding a satisfying career and not a job is very important.

Career choice has therefore become a complex task today that requires career planning and exhaustive career research to make the right choice so as to adjust with the evolving social-economic conditions. However most students in secondary schools do not have accurate information about occupational opportunities to help them make the appropriate career choices. This challenge is prevalent because most schools are located in rural areas with students having limited exposure to a broad collection of career examples.

For example, in a village where the only educated rich individuals are lawyers, doctors and engineers, the preferred career choice will always fall back to these roles. The number of career options available to certain individuals depend upon individual and external factors. Individual factors consist of education, family background, attitudes, while external factors include labour market, state of the economy etc. (Kazi & Akhlaq 2017)

In Nigeria, senior secondary school students make their career choices before sitting for their final Senior Secondary Certificate Examination (SSCE). The result of the final examination determines if they will proceed to study in tertiary institutions. When these students are then admitted to these tertiary institutions, based on the career choice that they had made, some of these students drop out of school without graduating, others perform very poorly. In other unique cases they transition into occupations that are different from what they had chosen or envisaged.

Reports reveal that 51% of students are not confident in their career path when they enrol in college (businesswire 2019). This number is the indication that the students may have been pressured by their parents, peers, society or other factors. In view of these wrong career choices made by students over the years, career education was need to be an integral part of the career development process.

## **2.2 CAREER EDUCATION: AN OVERVIEW**

The definition of career education by OECD and the World Bank: “Career education refers to services and activities intended to assist individuals throughout their life, to make

educational, training and occupational choices and manage their career”. Such services may be found in schools as training, career counselling or guidance services. The purpose of career education is to help students understand themselves, investigate and weigh up career options and develop the necessary skills to succeed in their chosen career path. However, career exploration - researching possible career paths - begins at secondary school level. This level is when the students have mastered basic foundational courses and can think for themselves. They also have built soft skills that play largely into choosing a career. The career education at secondary school is grouped into two parts; the career orientation ( Junior Secondary School) and Career preparation (Senior Secondary School).

The career orientation stage starts at JSS level. The programme is structured to prepare students to make a career choice. This program takes the students through a complete curriculum that gives them a holistic view of their strengths, weaknesses and world. At the end of this program, the student would have explored all topic areas and developed knowledge that aligns with their inbuilt skills.

At the career preparation stage, the program takes a different approach. Unlike the career preparation that lays foundation for identifying likes, dislikes and skillset, this stage builds on exploring specific fields with more focus. The career preparation stage starts at the SSS level and is structured to develop their core abilities and skills. The CP program provides advanced occupational training for specific occupations to meet the specific needs of the individual. The students are split into different departments (Science, Social Science and Art) that align to the student educational competence.

For example, a student that exhibits exceptional results in Mathematics, Basic sciences and social science will take the Science path compared to one with exceptional results in the art courses.

### **2.3 THE ROLE OF GUIDANCE AND COUNSELLING IN CAREER SELECTION**

Career counselling is very fundamental to students' successful and meaningful living. Every student desires to be identified with a good profession, but this could only be achieved through effective counselling on the choices of career to maximise their potential. (Uwaifo & Uddin, 2009). Career, though crucial to mankind, occupies almost all entire human life. This is since careers contribute enormously to all human activities.

High self-esteem satisfaction and adjusting to a healthy life. The word "career" refers to the activities and position involved in vocation, occupation, and jobs as well as to related activities associated with an individual's lifetime of work.

Afia (2009) states that the information should be centred on careful planning for a career, getting and retaining the career and adjusting effectively to it, centre on careful planning for a career, getting and retaining the career and adjusting effectively to it. The information should be centred on careful planning for a career, getting and retaining the career and adjusting effectively to it, centre on careful planning for a career, getting and retaining the career and adjusting effectively to it. The reason for all these is to let the students consider the various areas in harmony with their potentials and consequently choose the best career.

In any school setting the roles of the guidance counsellor include the following: -

1. Taking charge of establishing a school guidance programme.
2. Coordinating the guidance programme in schools
3. Define objectives of the school guidance programme for the benefit of the principals, teacher's parents, and the students.
4. Helping to disseminate career information of the students.
5. Playing a major role in the identification of the guidance needs of the students.
6. Supervising the building and maintenance of students' cumulative records in schools.
7. Assisting students and parents to understand procedures for applying to higher institutions and for financing student' education.
8. Functioning as a resource person to teach in an exposed classroom

#### **2.4 IMPORTANCE OF CAREER GUIDANCE IN NIGERIA SCHOOLING SYSTEM.**

So many years of experimentation and concrete practices career guidance counselling have not only come to stay, but it can also be said to have taken a definite pattern as there are now trained guidance counsellors who provide specialised services in our schools (Adomeh, 2015)

The career guidance counselling in Nigeria adopts a parental style of steering the child towards behaviours or decision towards a sustainable career path.(Omoegun & Buraimoh, (2013) state that the choice of a career has become more complex in this modern time for the following reasons;

1. Nigeria is a developing country with serious economic problem resulting to unemployment in various categories of occupation

2. The development in science and technology has led to new careers of which most students are not aware.
3. Students lack competence to assess and identify the right career choice.
4. There's an Information deadlock that limits the level of professional materials that will guide them to choose a career.
5. Parents and guardians are sometimes ignorant of emerging careers and force careers on their children which creates a personality disconnect in the future.
6. Peer pressure also plays a major role in students' career choice. Many students choose a career so they can remain on the same path with their friends.

In a developing country like Nigeria, career guidance is needed as a vital tool for developing students. Career guidance at secondary schools in Nigeria is of great importance to reduce

1. The problem of unemployment,
2. Students choosing wrong careers,
3. Ignorance of a particular career
4. Social Vices like cultism, fraud
5. Improve social and economic development etc.

## **2.5 BASIC ISSUE THAT AFFECT STUDENTS CAREER CHOICES**

The path to choosing a career isn't one devoid of its challenges. There are different factors ranging from lack of professional personnel in most schools which limits the efficiency of the process. However, the students still face major issues in choosing their career that might render the career and guidance process unfruitful. According to Kazi & Akhlaq (2017), below are some factors that affect students' career choice

### **A. Self-knowledge**

Beside education qualification some personality factors should necessarily be considered in career choice. A student should relate his/her personal attitude to his/her choice of career. Career education or counselling can modify a student attitude towards a career to a large extent, but the student's self-knowledge is an important determinant. A student may have all it takes to be a medical doctor but may not be able to stand the site of blood or corpse, such student may opt for engineering or environmental discipline. Also, a student with good educational qualification may have personal health problem like asthma, which may make the student not go for pharmacy for fear of drugs with irritating odour. The knowledge of one's personal abilities, attitudes or dispositions should guide one's choice of career.

### **B. Knowledge of the career**

One thing that facilitates right choice of career is the knowledge of the career. This may be rudimentary, but it is necessary. It is indeed believed that secondary school students lack adequate information about occupations, careers, and work activities (Anigbogu, 2003). It is therefore important that the student is given the knowledge about any career or work activity they want to venture in. For instance, for a student to be a lawyer, besides having the educational qualification and natural quantities of wisdom, intelligence and brilliance, the student must be a diligent indefatigable worker and the student must refrain from fraudulent or dubious act and must be a genuine forerunner of Justice and equity. Also, to be a teacher or lecturer the student must be a diligent, patient, sociable and humane.

### **C. Parental constraints**

Parents serve as a major influence in their children's career development and career decision-making. Parents want their children to find happiness and success in life and one factor which influences happiness and success is career choice. Research also indicates that when students feel supported and loved by their parents, they have more confidence in their own ability to research careers and to choose a career that would be interesting and exciting. This is important because studies show that students who feel competent regarding career decision-making, tend to make more satisfying career choice later in life (Keller. 2004): Parents influence the level of education their children achieve, the knowledge they have about work and different occupations, the beliefs, and attitudes they have to working, and the motivation they have to succeed. Most of this is learned by the students unconsciously from the parents. Middleton and Loughead (1993) studied of how parents can be an important and positive influence in decisions affecting a student's career development. Though they also warned that over- involvement in the decision-making process can undermine parental effect as a positive source of influence. Excessive parental control regarding students' career decision- making results in negative outcomes (Nucci. 1996). Parents should be cautioned against imposing their own goals in their children or seeing their child's accomplishments as a reflection on themselves. So, while parents should show genuine interest and support for their children career plans, they must allow the child to discover who they are on their own. Some students fear the disapproval of their parents if they pursue a career in art/drama or music as opposed to a practical high-earning occupation such as law or medicine. If parents make it clear that they have no specific expectations for their child's career, he/she will feel free to explore greater variety of professions, choosing one based on their own preferences rather than those of their parents. Parents should also guard against

shooting down ideas their children may have about their future careers. If they react negatively, it may shut down the whole exploration process. Parents need to keep the lines of communication open and encourage their child to gather as much information as possible on their career interest areas. Parents must recognize that their role is simply to act as a facilitator in their child's career journey and allowing independent career choices for the child.

#### **D. Financial Factors**

Parent's, guardian's financial status influences student's choice of career. In choosing a career, the student must consider the duration and cost of education necessary for preparing for the career. Some programmes are more expensive than others. Programmes like Medicine and Surgery, Law and Engineering take more years and demand very expensive books and material. Without Government intervention in the form of loans, bursaries, and scholarships the consideration of parental or guardians financial position affects choice of career made by students.

However, the purpose of education is to make the individual develop his various faculties that will make him useful to himself and the society, but wrong choice of career by any form of problems generate frustration in a workplace. It could also lead to loss of employment sense of uselessness or worthlessness and feeling of rejection and grief (Anigbogu, 2003). Uba (1997) emphasized that when the right career choice is not made, the results are job dissatisfaction failure to make a success in a career and desire to change job. When the right job is taken or right career is chosen, the student matches on without future regrets, enjoys a sense of personal fulfilment, sense of achievement and a sense of self-actualization.

### **E. Career Benefits**

Further studies showed that most secondary school leavers in Nigeria make poor career decisions because of their unrealistic vocational aspirations. It is reported that students select occupation mainly because of the salaries, positions, glamour and prestige attached to them.

For instance, students prefer medicine, engineering, law, banking, architecture and pharmacy as professions they intend to enter into after graduating from secondary school without adequate knowledge of what it takes to succeed and achieve in those occupational (Salami, 2000). It is therefore important that secondary school career counsellor help students make satisfying educational and occupational career decisions.

### **F. Subject Combination**

Since subject combination have direct influence or bearing on student's future career, it should not be left alone for students. It is necessary to assist the students in choosing the right subject for a career. Student who are left unguarded are prone to choose subjects which are not directly related to their future career.

### **G. Economic and Political Condition of the Country:**

Due to economic depression experienced in Nigeria today most individuals engaged in multiple jobs. Some individuals own part time private business as well as government job. Again, due to our economy that changed from agriculture to oil, most students seek careers in the oil field for them to secure jobs in oil companies to earn better pay.

## **H. Peer Groups' Pressure or Influence:**

Peer groups are usually made up of playmates, friends, or people within the same age bracket. They serve as confidants to their members. In most cases they belong to same social clubs where they share the same values and ideals. Educators considered peer groups to be an effective and powerful instructional strategy to develop academic as well as social skills in peer groups. Most students are confused or are not guided in their career path and tend pursue careers that fellow peer group member have chosen. Thus, undermining their skills, background, reasoning, vacation, and educational capabilities.

## **I. Teachers' Influence:**

A teacher is the central point of learning in a classroom. This is because their expertise lays a foundation for the student's comprehension of a course. A student may like a particular subject very well but because of the poor teaching method of may limit them from developing in-depth knowledge to achieve mastery. Subsequently, the student loses interest in that course and even though they have core competencies, they will take a different path that aligns with courses they find engaging. Also a student may have a close relationship with a teacher, which will influence the student's career choice following the teacher's advice or suggestions. In most cases, these teachers aren't certified professionals and do not fully assess the students' vocational, educational, and reasoning competencies.

## **2.6 COMPUTER ASSISTED CAREER SELECTION SYSTEM**

The use of computer and ICT in career guidance counselling to aid career selection is not at all recent and it dates to the first use of computer program in counselling services in 1960s. The emergence of ICT has changed the trajectory of life and the world that is more fast-paced and unpredictable. The internet, ICT and social networks is changing the lifestyle, learning modes and career future of the young generation who are evidently different from the older generations such as the baby boomers. Nevertheless, these days, the internet has gradually become an integral and important part of everyone's lives. Therefore, the rapid growth of the internet and technology has created opportunities for career counsellors and practitioners to enhance and improve their services to all (Zainudin et al., 2019).

Technology-assisted career counselling is provided in many forms and for different purposes. As a career resource such as career sites and online career assessments, it is provided as a tool for information gathering and job search. On the other hand, as a different career counselling method from the face-to-face counselling, it is provided as a way for individuals to seek for help and guidance from counsellors in a virtual world (e.g. telephone counselling, email counselling, and online chat).

Although both forms of career services are important, it seems that full integration of the ICT into the career guidance practice is still far from ready (Bright, 2015).

Furthermore, some students seek the guidance of trained career counsellors and psychologist as they grapple with making their career decisions. More and more, students are turning to their computers and internet for both information and guidance.

Today, computer assisted career counselling takes a variety of forms: Computerized career assessment, New technologies in AI, and Mobile Applications (Zainudin, et al., 2020)

### **2.6.1 COMPUTERIZED CAREER ASSESSMENT**

to help students understand their educational and career interests, skills, and values, career counsellors will often administer career assessment inventories. Result from the inventories can be used to help students identify their career path, confirm existing choices, or narrow the number of career alternatives considered. Several benefits can be realized when administering career assessment via computer. Students can be provided with a reliable interpretations and recommendation of any career path based on the student responses and computer adaptive testing (CAT)

### **2.6.2 NEW TECHNOLOGIES AND ARTIFICIAL INTELLIGENCE**

At Aristotle University of Thessalokini (AUTH) in Greece, Europe, the Career Service Office (CSO), through its counselling service, demonstrated the application of new technologies in 2008 with an easy-to-use guide, the CD-ROM guide. This application is referred to as the Career Counselling @ Career Office of Aristotle University of Thessaloniki. The system features “introduction, self-awareness, information, decision-making, goal setting, lifelong learning, self-presentation, job searching in Greece and abroad, and job finding” (Papakota, 2016).

In terms of developing new technologies for career counselling purposes, Bright (2015), in his article, also considers the possibilities of using the Holographic technology in developing holographic counselling sessions. Hence, the technology of artificial intelligence cannot be ruled out from this topic discussion. Lent (2018) discusses “Chatbots” that utilizes artificial intelligence in stimulating human dialogue. While it is considered as tools that offer life coaching, companionship and mental health support. Chatbots can also be used its benefits and designed as aids in career aspects such as in helping users to interpret assessment results. Further according to such technological supports may be able to assist with some of the more routine aspects of career planning or change, while human service providers might then have more time to help with particular decisional difficulties or with more complex career problem scenarios” (e.g. depression, relational tensions, job search struggles following job loss) (Lent (2018))

### **2.6.3 MOBILE APPLICATIONS**

Another form of technology that can be used for career development purposes are online and mobile application such as the app “iThoughts”. Osborn et al. (2014) describes the apps iThoughts.

and “Unstuck” as tools to facilitate and enhance career decision making process for any individuals. Following this, meditation and mindfulness apps such as the “Headspace” can also help individuals in combatting negative metacognitions (e.g. stress, anxiety and depression) that can possibly limit their career decisions (Osborn et al., 2014). Also, apps such as “FlipHead Thought-Stopping” to stop negative career thoughts and “DayOne Journaling” to help prepare clients to share their career problems through journaling between sessions.

#### **2.6.4 COMPUTER-ASSISTED CAREER GUIDANCE SYSTEMS.**

Computer-assisted career guidance system is a term used to describe a computer application that combines career assessment, career information, and career guidance into one integrated system. Computer-assisted career guidance have been available since the 1970s and have evolved to take advantage of new computer technologies (e.g., personal computer, internet) (Harris, 2015). Computer-assisted career guidance systems are effective at promoting career development and decision making for students.

#### **2.7 EVOLUTION OF COMPUTER ASSISTED CAREER SELECTION SYSTEM.**

Computer assisted career selection system allows a student to go through basic steps in the vocational decision-making process using a computer (Muroyamma, 2014). Some early computer assisted career selection established in the 1960s were: Tiedemann (Harvard)-Information System for Vocational Decisions (ISVD), Katz (ETS)-System for Interactive Guidance Information (SIGI), Harris (Willowbrook High School)- Computerized Vocational Information System (CVIS), Impelleteri (Penn State)-Computer Occupational Information System (COIS). etc.

These early computer assisted career selection systems can offer a prescribed sequence of activities, store an ongoing user record, they are taught decision-making process and they are also based on career development theory. But now there are more advanced computer assisted career selection systems, which are: DISCOVER, SIGI-PLUS, CHOICES AND PROSPECT. These modern computer assisted career selection systems are equipped with basic features

essential for making career or vocational choices for students, such as a self-understanding test, occupational information database, and career-planning tools.

Muroyamma, (2012) stated in his research work that computer assisted career selection system are best reliable when combined with counsellors. Tie further went on to give some reasons, which are: some student do not profit from the use of technology because of learning or personality style, students mask other problems under the rubric of career concerns and he also said that research indicates that the most effective intervention is a combination of technology and counsellor support. With the computer assisted career selection system, counsellor can determine readiness of the students for a career path, expand the interpretation of assessments, assist students to identify values that guide decision making, provide motivation and emotional support to the students and suggest creative alternatives (Harris, 2000).

## **2.8 REVIEW OF SOME COMPUTERIZED SYSTEMS FOR CAREER SELECTION.**

Below are some present computers assisted system used in educational sector, useful for students and career counsellors for taking career related decisions.

### **2.8.1 WEB BASED CAREER GUIDANCE INFORMATION SYSTEM FOR PRE-TERTIARY INSTITUTION STUDENTS IN NIGERIA (E-CAREER SYSTEM)**

Abisoye et al (2016) proposed the development of the web based career guidance and counselling system for pre tertiary institution in Nigeria. The researchers' studies prevailing challenges that clouded the effective delivery of career guidance and made the following conclusions.

- Unavailable human counsellors in some schools. This has resulting in many students making wrong career choices and then regretting for the rest of their lives.
- Where the counsellors are available, there are mostly not enough to cater for all the students.
- Real life counsellors are only available to students at working hours of the day, but an online career counsellor is available at any time and just a click away.

They proceeded to develop a online system that will improve upon the existing manual/human career guide and implement a web based application that will help young ones get a good understanding of themselves and advise them on the career path that best suits them. And serve as a complementary tool for career guide and counsellor. The system featured quiz, authorization windows and other vital section. However, a major limitation to his system was he absence of a chat module. A chat module will facilitate the communication and interaction between the career counsellor and the students. The system was test among 50 students and got a 70% pass rating.

### **2.8.2 MYFUTURE CAREER SELECTION SYSTEM**

myfuture website of the Australia National Career Information Service (Education Services Australia, 2020). The system is free and open for registered users in Australia and elsewhere. The key components of the myfuture website include on-line career assessment and profiling (interests, values and skills), information about occupations and career paths (e.g., employment information, skill levels and labour market information, career videos, career resources), as well as information about educational pathways in Australia (e.g., courses,

institutions, subject-career connection). The myfuture website was developed with students as the primary audiences and student users could continue to use the service after leaving schools. Meanwhile, the myfuture website has information for parents, teachers, and career practitioners to equip them as supportive agents. (S. Alvin Leung 2022)

### **2.8.3 INFINITY—CAREER PLANNING AND MANAGEMENT SYSTEM**

A digital career development and planning system called “Portfolio Infinity: A Career Development Self-learning and Management System” (Infinity system) was developed in Hong Kong for senior secondary students (CLAP for Youth @ JC, 2019).

The Infinity system was developed as part of a funded project to support the career guidance activities of secondary schools. The system was adopted by the Hong Kong Education Bureau for all secondary students in the city and the system was renamed “My Life Planning Portfolio”. Hong Kong did not have a CACGS for secondary students and schools relied on scattered career development and assessment materials from printed and internet sources. Hence there was a need to develop a CACGS to augment career guidance activities and to provide tools that students could use. The development of the Infinity system involved the collaboration of professional teams in career development practice, computing technologies, and research. It also involved close partnerships with schools, universities, and the funder. (Leung, 2020a)

#### **2.8.4 CLOUD BASED CAREER GUIDANCE SYSTEM**

A system is designed where students can see various career paths, the system shows various fields available after 10th ,12th, for graduation and postgraduation. The main focus is given to choose career path is after 10th because from their only the career path starts. Since the system needs to provide service to many students it needs a cloud infrastructure. Next the system allows users to give a test. It is actually a series of tests of various general questions. After test completion a score is calculated for each test. Based on those results the system manipulates and calculates the best career for that user. The system also includes an eBooks page. Here user may click to read career guidance eBooks in their browser. It allows for robust and enhanced experience by handling a huge number of visitors with efficiency. (Deeppriya & Monalisa 2020)

#### **2.9 STRENGTH OF COMPUTER ASSISTED CAREER SELECTION SYSTEM.**

Computer assisted career selection system offer several advantages over off-line career interventions. These advantages are.

1. The system organizes and present information and guidance activities in one convenient place, therefore reducing the amount of time school career counsellors would spend compiling and organizing these task.
2. Students feel comfortable working on computers and understand the ways in which information is delivered via technology therefore making computer an appropriate intervention medium.
3. The system assessment tools allow results to be shared immediately with students.

4. The systems' guidance activities may be stored in user accounts thereby creating a method to monitor students' progress. This information may be used to inform future career development activities. It could also be shared with others, such as teachers and parents, who play a prominent role in students career aspirations.
5. It has the capability to assist career counsellors turn data into information.
6. Help students understand their own career/academic aspirations.
7. Guide student on the right career choice.
8. Help students develop positive attitude towards work and learning.

## **2.10 LIMITATIONS OF COMPUTER ASSISTED CAREER SELECTION SYSTEM**

Some limitations of the computer assisted career selection system are:

- Systems are limited in the type, quantity, and quality of information presented to students based on what information has been programmed and uploaded into the system.
- For some students the quantity of information may be overwhelming and contribute to confusion about career and educational related decisions.
- Lack of counsellor intervention when it may be needed.
- Counsellor who does not have full knowledge on how to use a computer system.
- Lack of competent computer systems in schools.

## **CHAPTER THREE**

### **3.0 SYSTEM ANALYSIS AND DESIGN**

At this stage, analysis was carried out to study the performance and effectiveness of the current system. This work employs the top-down approach in its design. Here activities are divided into sub-divisions which can be handled separately, and which are related logically to one another.

### **3.1 OBSERVATION**

The following observations were made:

1. The process of collecting information is tedious.
2. The record keeping system is poor. Losses of vital records have been reported in the past consequently which always led to career counsellors applying guess work in trying to guide students in their career selection.

Besides, protecting the file system from unauthorized access is a problem that has defied solution.

3. The process of report generation is inefficient. Sometimes vital report has been delayed.
4. Some students who are nervous or afraid to socialize, may or will not discuss their career problem with the career counsellor.
5. The system also stiffer from a very time-consuming retrieval of student information for academic's purposes.

### **3.2 DETAILED ANALYSIS OF THE PRESENT SYSTEM.**

In face of the unprecedented pace of changes worldwide with the advent of information technology and explosive growth of knowledge, our educational system aims to develop student's knowledge, adaptability, creativity, independent thinking, and life-long learning capabilities so that they can be better prepared to make informed and responsible choices and thus be able to make the best of the opportunities ahead. Towards this end, most secondary schools in Nigeria adhere to the methodology of employing a staff(s) for the office of career counsellor, who will provide counselling in education, career, and personal domains to the students. He/she also assist the students to achieve greater self-awareness, develop a life/work direction, increase understanding of learning and work opportunities and become self-directed in learning, work and transition.

The career counsellor prepares a career guidance program for the students. This program incorporate two (2) sub-programs, which are; educational and vocational guidance program. The educational guidance program is concerned with all those activities that are related to the students' adjustment to his educational environment. There are three components of educational guidance. The first component relates to developing a favourable setting for the individual's education. This involve giving assistance to the new students to adjust to the new school, new

teachers, new subjects, and new regulations because these can be overwhelming to some students.

The second component of educational guidance service is concerned with recognition of individual difference and their relation to educational achievement. This means giving assistance to students to enable them to become aware of their abilities, special needs, interest, and limitations. They can understand themselves and how their potentialities may be developed.

The third component of educational guidance relates to curriculum choices. A student with many abilities and interests may have difficulty in deciding which subjects will not be most meaningful for him/her in the long run. Therefore, such a student need assistance in understanding the relationship of his curricula choices to his career objectives.

Career guidance is primarily focused on helping a student answer the following question: “what career he/she will engage in?” with hundreds of new careers available today because of the fast-moving development in science and technology and international relations, coupled with a high rate of unemployment, the need for career guidance is critical. A student may face a conflict between his interests and his abilities. Therefore, career guidance is concerned with helping students understand the world of work and understanding themselves in relation to the world of work. It is also concerned with assembling information about many

common occupations and less familiar jobs and recognizing the occupation in which they may find satisfaction and develop the fullest potential.

### **3.3 OBJECTIVES OF CURRENT SYSTEM**

The existing system i.e., the manual career guidance counsellor system for secondary schools has some objectives which it aims to achieve, that irrespective of their abilities, orientations and level of study, students will be able to:

- A. Understand their own career/academic aspirations.
- B. Develop positive attitudes toward work and learning.
- C. Make career decisions in accordance with their interest, abilities. and orientations.
- D. Make responsible choices on their learning, career goals, and other aspects leading to a meaningful life.
- E. Adapt and manage the transition from school to work and
- F. Better prepared for actualizing individuals' potential through pursuit of their personal/career goals.

### **3.4 STRUCTURE OF EXISTING SYSTEM**

The structure of the present system, which is the manual career guidance counselling system is represented in Figure below. This structure makes it possible

for the career counsellor to interrelate with each entity in the structure and information are also retrieved and delivered to the appropriate entity(s) involved.

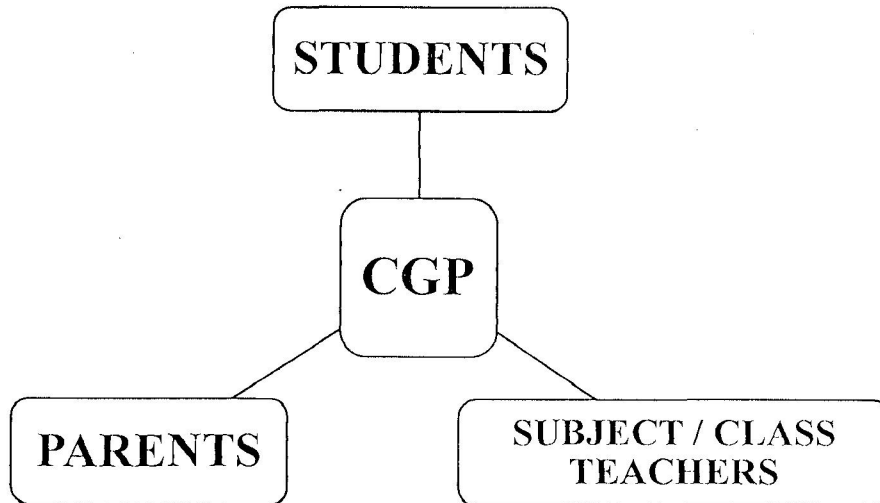
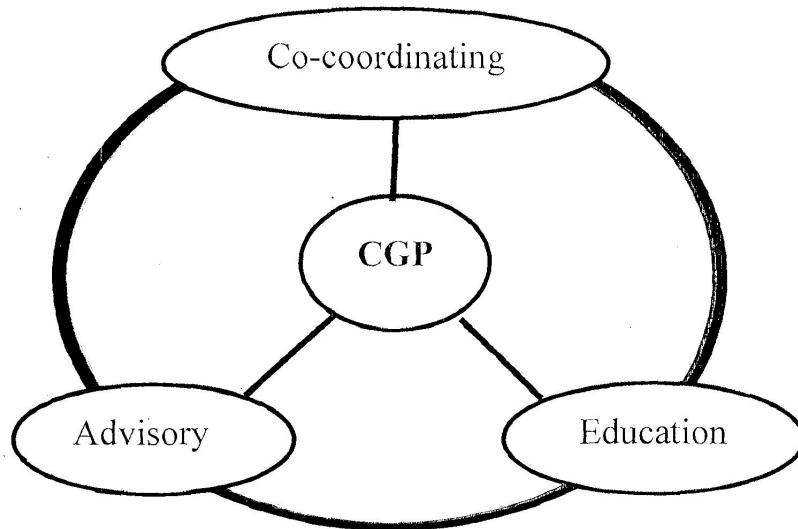


Figure 1: Structure of the Manual Career Guidance System.

### **3.4.1 AREAS OF RESPONSIBILITY OF THE CGP**

Career guidance personnel has an important role to play in student's whole-person development. given the vital need to cater for diverse student learning abilities/aptitudes, the flexibility of subject choices, and the inclusion of career related experiences. The key areas of responsibilities of the CGP are shown in the figure below.



**Figure 2: Area of Responsibility of the CGP.**

**A. Co-ordination:**

The COP collect, update, and disseminate effectively all kinds of career information to support students, parents, and teachers in career guidance and selection services (e.g., in the formulation of senior secondary subject option plan) and also to forge strong partnership with parents, teachers, and students.

**B. Advisory:**

The COP advice students individually and in groups, identify their career development problems and needs and coach them to find, develop and review their personal plans and career goals. They also advice students in their career related experiences and develop appropriate work attitude.

### **C. Education:**

The COP draws up a relevant and timely career guidance programmes for the students, conduct career assessment and helps the students in subject selection according to each student capability.

### **3.5 ANALYSIS OF THE PROPOSED SYSTEM.**

The Career Selection System (CSS) is an automated career selection and information application for secondary students. It is an expert system that aids secondary students and career counsellors to carry out career guidance and selection. The system also keeps the students career records for easy retrieval, modification, and update. The career selection system (CSS) provides the following functions:

- a. Provides the users with a graphic user interface input.
- b. Fast access, modification, update and retrieval of career and educational records of each user.
- c. Users get instant, almost real time career results.
- d. Provide aid or guide for career counsellors in secondary schools.

The proposed career selection system (CSS) is made up of two major sections:

1. Front end: which includes the interface design and the logical design using JAVA programming language due to its high object oriented programming

advantage (OOP). The front end view of the proposed system is given pictorially in the figure below:

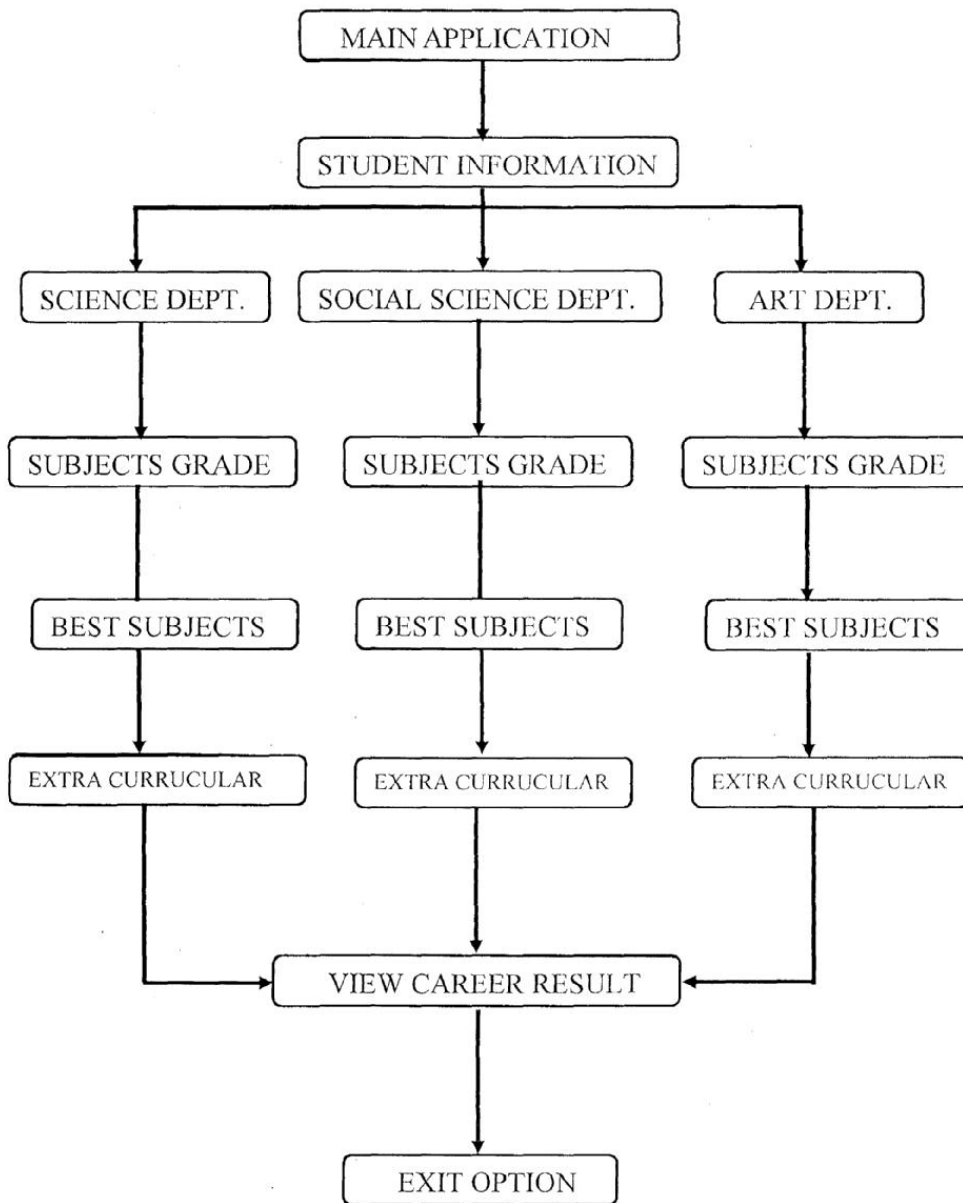


Figure 3: Front End of the Proposed System.

2. **Back end (database design):** which includes the database design of the system and schema design where each students' information (first and last names, gender, date of birth, email, department grades, best subjects, extra-curricular activities, and recommended course) will be stored for future references and easier retrieval. The implementation of the database will use XAMMP Technology which has MySQL as part of the system. MySQL offers lots of benefits that help application to customize operations running on a server.

### **3.5.1 AIM AND OBJECTIVES OF PROPOSED SYSTEM**

The new system, which is computerized, has so many benefits that will obviate the problems inherent in the current system. The need of this new system cannot be over emphasized as it aimed at achieving the following objectives:

1. **Accuracy of Computation:** Measures of accuracy will be achieved since the computer system will maintain stability in response to students or career counsellors request based on assessment and making accurate calculations.
2. **Reduced Use of Paper:** Computerization gives room for production of a very neat job. The vast volume of paper which is used in keeping/storing information will no longer be indeed.

3. Reduction of Cost: The computerized system will reduce the cost of operation of constant production of forms and register for keeping or storing student's information.
4. Quick Retrieval of Information: The computerized career selection system will create room for fast retrieval of information, which is an advantage over the manual career selection system.
5. Report Generation: The computerized career selection system (CSS) eliminates the problem of delayed report generation created by the manual career selection system. The new system generates reports almost in real time.
6. Accuracy: with this new system handles the students' data with uppermost accuracy, not providing room for mismanagement of students' information.
7. Flexibility: The computerized career selection system makes students information to be accessible at any time, unlike the manual career selection system that make access of information tedious.
8. Speed Optimization: The new proposed system will eliminate the problem of time wasting in getting the information of a particular students and selecting a particular right career for that student, which is an advantage over the manual system.

9. Error Handling: With the proposed career selection system, human error due to bias or emotional attachment in selecting a right career is greatly reduced, because of the flexibility of the proposed computerized system.
10. Aid for Career Counsellors: The use of the system aid the career counsellor in providing the right information to students, and it also ease the problem of information gathering about a particular student usually encountered by career counsellors.

### **3.6 DESIGN OF THE PROPOSED SYSTEM**

The process of software design involves the detailed specification of data objects, output to be provided, input data to be captured, storage format, system interface and finally specification of various data manipulation procedures, which should be implemented as codes. The data objects include the type of data used in the application and their descriptions. These student's data would be stored in the student database.

In the analysis of this project, the UML (unified modelling language) is being used. This is an important tool in system development, it enables system developer create blue print that capture the vision of the new system in an easy to understand way. UML is a standard modelling language with its methodology based on object oriented analysis and design. It consists of a number of graphical elements that combines to form diagrams. These diagrams present multiple views

of a system. It's important to note that UML model describes what a system is supposed to do. Some commonly user terms in UML includes:

**A. Class Diagram:** These are diagrams that shows how classes relate to each other. They provide representation that the developer can work from. The class diagram also illustrates data models for information systems, create detailed charts that focus on the programming code needed to implement the described structure, and also help in the understanding of the general overview of the application's schematics. They are very important during analysis.

**B. Use Cases:** It is a collection of system behaviour from the user's standpoint. It describes how a system looks to its user. It is a technique of gathering system requirement. It consists of an actor and the use case. It is crucial in the analysis phase of system development because it describes how a user will use the system.

**C. Actor:** Represents whoever or whatever (person, machine, or other) interact with the system. The actor is not part of the system itself and represent anyone or anything that must interact with the system to input information to the system and receive information from the system.

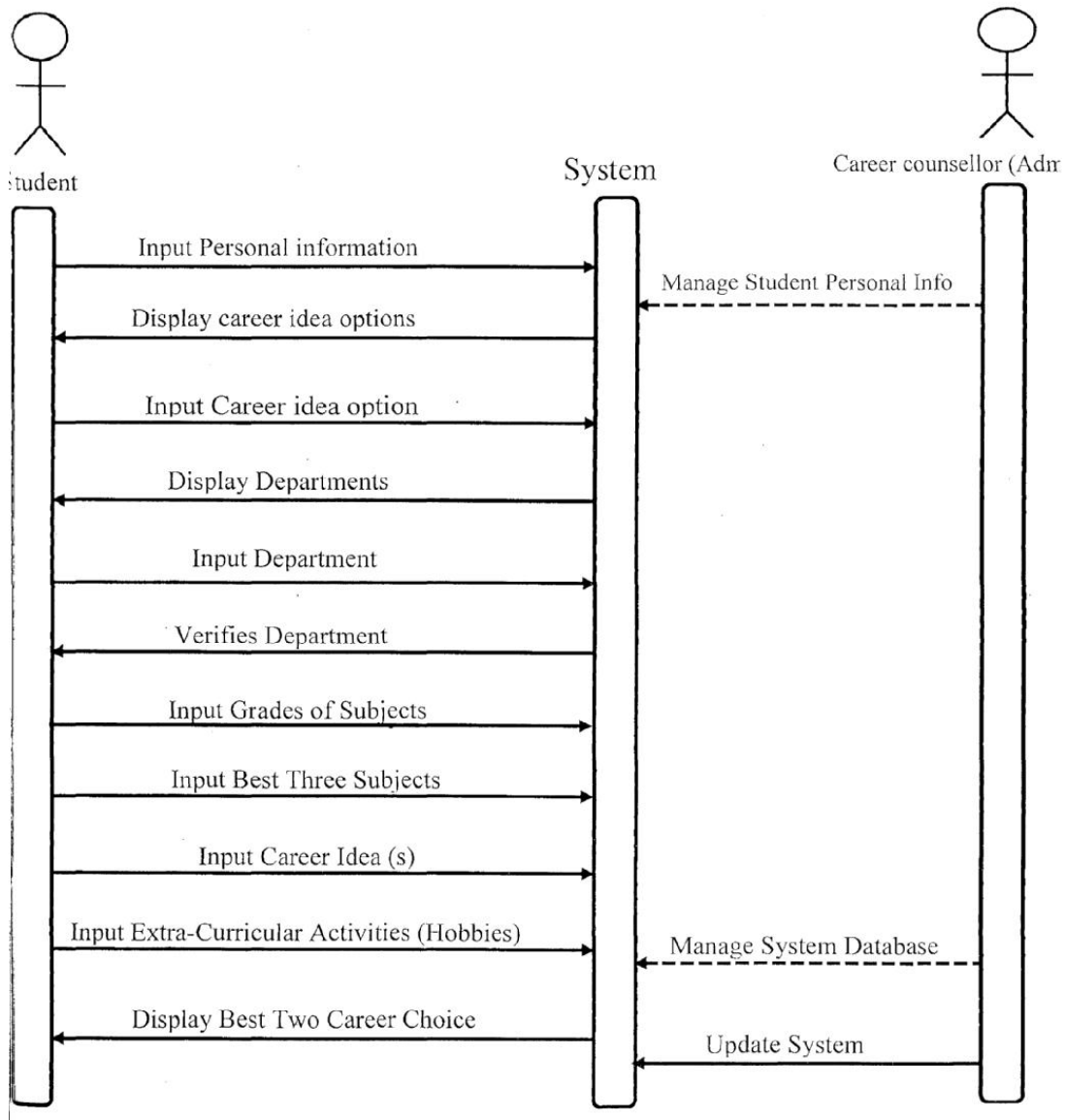
**D. Sequence Diagram:** A sequence diagram is an interaction diagram. It deals with sequence of messages flowing from one object to another. The sequence diagram has two dimensions: the vertical dimension shows the sequence of

messages in the time order that they occur; the horizontal dimension shows the object instances to which the messages are sent.

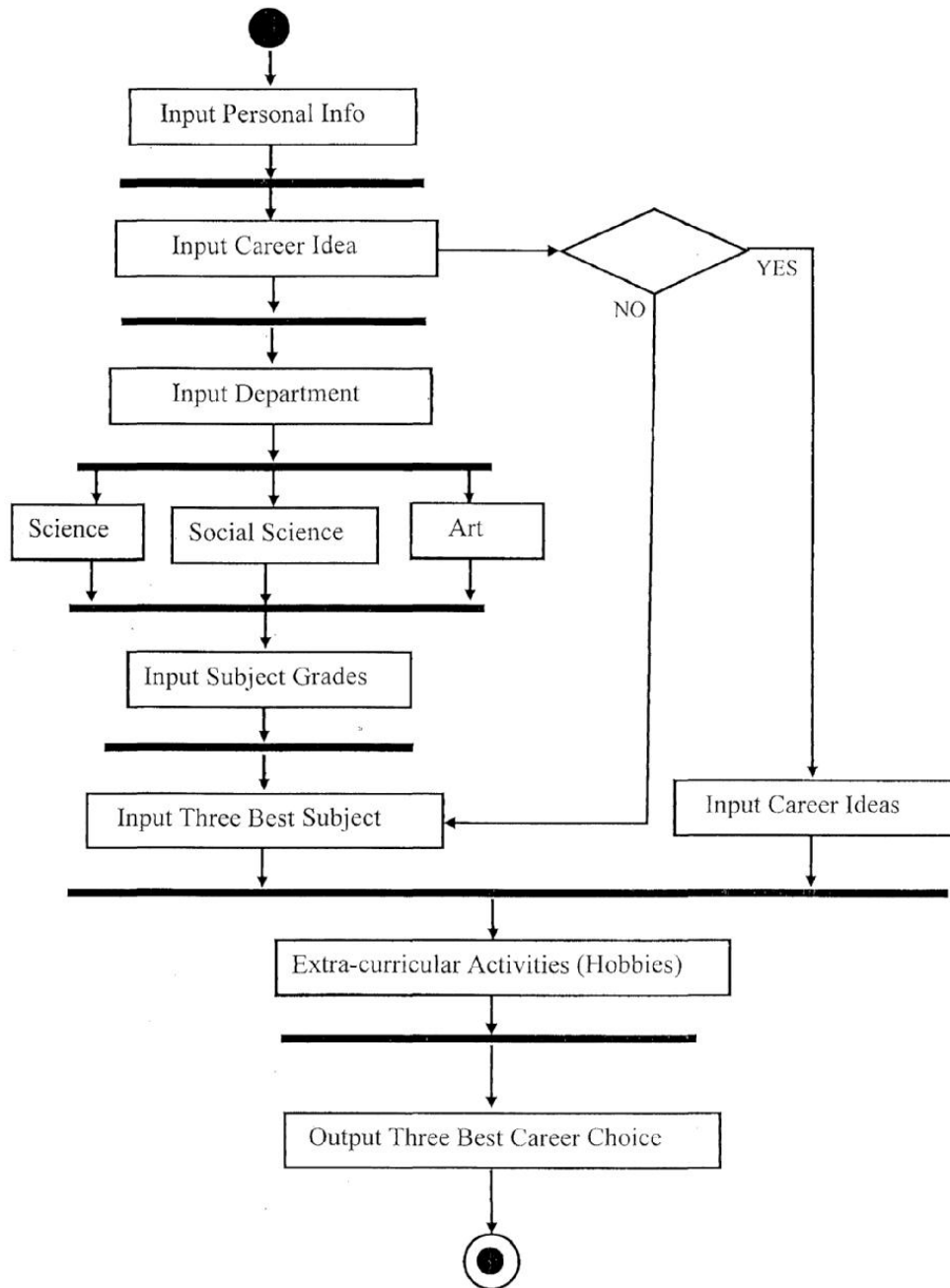
**E. Relationship:** This completes a system developer's knowledge about classes and how they are connected.

**F. Activity Diagram:** This is like a flow chart i.e., they both show steps, activities, as well as decision points and branches. It describes the flow of control in a system, the logic of an algorithm, the steps performed in a UML USC case, and it improve any process by clarifying complicated use cases. It can be sequential concurrent or branched.

**SEQUENCE DIAGRAM FOR THE PROPOSED SYSTEM**



ACTIVITY DIAGRAM FOR THE PROPOSED SYSTEM



### 3.6.1 INPUT DESIGN

In designing the program input, the forms were designed in such a way as to make it easy for the user to use. The input design approach considered the definition of the input (what data must be put in the system), the sources of the data (where the data comes from) and method of data capture (how to get the data into the system).

All data required by the new system are to be entered via the keyboard at authorized terminals. Verification of the data is carried out before input by a student this ensures that every data keyed— in agrees with what is contained in the source documents. The input was designed to ensure the following:

- i. Accuracy (Correctness)
- ii. Scheduling (having the data ready for processing on schedule)
- iii. Security (safety of the data)

The input design contains the following forms:

1. The Student Profile: This is the form in which each student must fill his/her personal information (first name, last name, gender, date of birth, city where he or she lives, email address and current class). In this form authentication and verification is placed on every field to ensure correctness of data entry.
2. Career Search Idea and Department: This is the form in which each student will input through a radio button his/her knowledge of which career to venture

into after school. The form presents three options (student with no idea, student with an idea but are not sure about it, and student who are very sure about the career he/she want to venture into) with a radio button, to ensure single selection only. Also in this form, student will also input which department (Science, Social Science or Art) he/she is.

3. Course Grade: In this form, the student inputs the grade he/she she gets in each subject.
4. Best Subjects: This is the form where the student will have to choose his/her best subject and how many percent he/she enjoys the subject.
5. Career idea: This form is only visible to students who choose that they have idea and not sure about their careers and are sure about their careers hut not to students who don't have idea about their career. In this form, the student are to input their primary and secondary career they think they want to venture into.
6. Extra-Curricular Activities (Hobbies): This is the form where the student will have to that extra-curricular activities he/she loves doing in spare time. This form helps the student to select a career that relates to his/her special abilities or hobbies.

### **3.6.2 OUTPUT DESIGN.**

The reliability and acceptance of a system is determined by its output. For this project the output design is simple. Based on the inputs of the user, the system output two recommended careers in which the student due to his/her educational abilities can excel in. the output design.

## **CHAPTER FOUR**

### **IMPLEMENTATION AND DOCUMENTATION**

#### **4.1 SYSTEM IMPLEMENTATION.**

A beautifully design system may fail to meet its objectives if it is not carefully implemented. System implementation follows the approval of the system proposals and its objectives; thus it is to arrive at a satisfactory, completed, and evaluated automated system. The implementation phase, which get the new system up and running is discussed under the following headings: The system requirement, program documentation, program design, choice of development tools etc. The system basically comprises of two important modules, maintenance, and data process modules.

##### **4.1.1 MAINTENANCE MODULE**

This module is associated with the career counsellor department, this module deals with the addition of new careers to the system, updating and deletion of outdated careers, adding new improved information and criteria for old and new careers. This module is very important because it keeps the system up to date the current evolution of the world and it help student who are not up to date with the current changes done on old and new careers.

### **4.1.2 DATA PROCESS MODULE**

This module is only accessible to career counsellors. In this module the activities performed by the career counsellor are, updating the student's personal and educational information on the database, correction of wrong input by students which can affect output correctness, insertion of new students, and deleting old students from the database.

## **4.2 DOCUMENTATION**

The program interface was designed with Eclipse IDE for java developers, using commonly java codes, with XAMMP technology which has MySQL as part of the system as the database provider. The application is called Career Fits, and it is menu and button driven, having several forms as interface. The application can work on system with current version of Windows and Macintosh operating system. In such system the XAMMP technology must be installed to enable the database services.

## **4.3 EXECUTING THE APPLICATION**

To execute the application, it should have been installed on the system program files. After installation, the program files are located, on the program file the Career Fits folder is located and clicked on. When the application is clicked on the main form is displayed. The diagram of the main form is displayed in figure

below. When the main form is displayed, all the students have to do is to click on the Start Your Career Plan button to start accessing the application.

#### **4.4 SYSTEM REQUIREMENT**

The application can be implemented on a computer system with some specific requirements. These requirements can be viewed in the following headings:

##### **4.4.1 SOFTWARE REQUIREMENT**

If the operating system installed on the computer system is Windows, the Windows version of operating system ranging from Window XP and above is preferable since it can support the XAMMP technology. While if the operating system installed on the computer system is Macintosh the Mac OS x Tiger and above is preferable.

##### **4.4.2 FUNCTIONAL REQUIREMENTS**

The following will also be required for effective functioning of the system:

- I. Uninterrupted Power Supply (U.P.S): This serves to guarantee protection against intermittent electric supply.
- II. Sufficient RAM space: The computer system which the CarcerFits is being installed should have sufficient RAM space, to enable the application to run efficiently. Less RAM space in a computer system can hinder an application from achieving its full potential.

III. An Anti-virus software: It is important that an anti-virus application is installed on the computer system to protect the CareerFits application from virus that can limit the potential of the software.

IV. Authorized personnel: these personnel oversee all the proceeding of the software and gives advice where necessary.

#### **4.5 PROGRAM DESIGN**

The program design of the new system employs the modular programming paradigm, which breaks down the programming task into several small separable compiled components called modules (presented as forms). Each module can be tested as a unit and as an integrated whole.

Testing is the last stage in the software development and in present an interesting anomaly for the software engineer where he/she attempts to build a software from an abstract concept to a perceptible/tangible product. During testing, the engineer exposes the software to real life scenarios by creating series of Test cases to discard preconceived notions of the “correctness” of software just developed and overcome a conflict of interest that occurs when error are uncovered. As a secondary benefit, testing demonstrates that the software functions appear to be working according to specification, that behavioural and performance requirements appear to have been met. Testing the software follows a certain process as shown below.

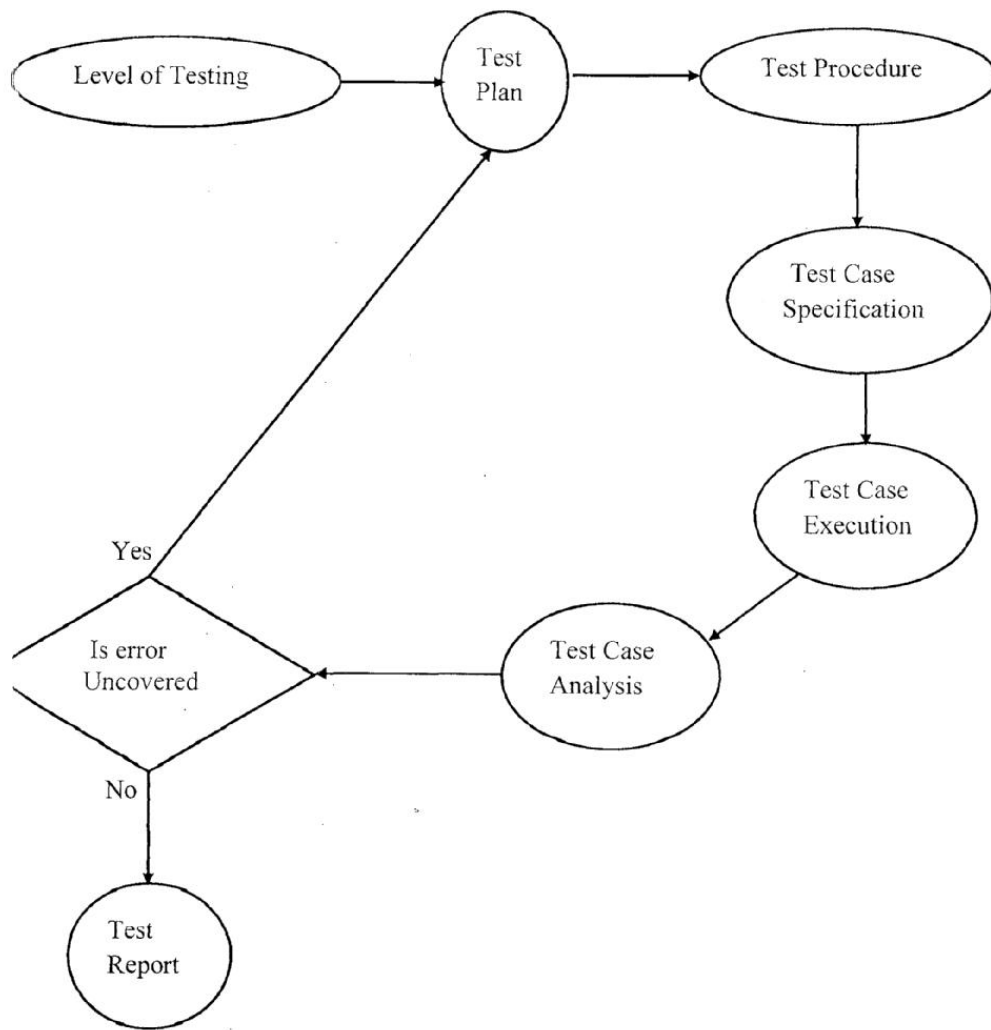


Figure 10: System Testing Process

#### 4.6.1 UNIT TEST

Each unit of the new system individually using JUnit in order to identify errors if the particular unit meets its user requirements and areas of further enhancement.

JUnit is a unit testing framework designed for Java Programming Language. JUnit

has played an important role in the development of test-driven development frameworks. Junit is linked as a JAR at compile-time and can be used to write repeatable tests.

#### **4.6.2 SYSTEM (INTEGRATION) TEST**

This type test is where we try to know how well the various units works together. The entire system was tested (test run) in general in order to identify errors in units, if the system meets its user requirements, and areas for further enhancement and development. We use the Arquillian testing tool to do the general system integration test. Arquillian is a highly innovative and extendible testing platform for JVM (Java Virtual Machine) that allows developers to easily create automated integration, functional and acceptance tests for Java. Arquillian allows you to run tests in the run-time so you don't have to manage the run-time from the test.

#### **4.7 CHOICE OF DEVELOPMENT TOOLS**

To ensure a standard object-oriented program in its implementation, Java programming language and XAMPP technology which has MySQL embedded in it was used.

## **CHAPTER FIVE**

### **SUMMARY. RECOMMENDATION AND CONCLUSION**

#### **5.1 SUMMARY**

Career assessment are tests that come in a variety of forms and rely on both quantitative qualitative methodologies. Career Assessment can help individual identify and better articulate their unique interests, values, and skills. Career counsellors often administer career assessment to aid Secondary School students focus their search on careers that closely match their unique personal profile.

Having developed a computerized Career Selection system which has the capability of selecting careers for senior secondary school students (SS1-3). This system is dependent on the student educational and vocational ability, students' self-knowledge. students' knowledge about his/her career want to go into and students' extra-curricular activities. The system is independent of parent's advice or influence, peer group pressure, environmental constraints, finance constraints, and teachers influence. With this system on board the major problem of Nigerian secondary school student in making the right and best career choice will be minimized and it will also check the problem of unemployment because the students will be well informed about their future beforehand.

The system can be deployed in any of the Nigerian secondary school with the office of the career counsellor for the best career selection and guidance for the senior secondary students.

## **5.2 RECOMMENDATION**

Career counselling should be taken seriously in Nigeria, in which every secondary school must have an office of a career counsellor. Also counselling application should be online for easy accessibility by everybody, this will help them to be counselled online. As technology improves, different kind of changes occur and this change brings about new and improved careers, putting this into consideration the researcher recommends a fast implementation of this software by secondary school career counsellors to enable them to perform their work efficiently and keep the students informed.

## **5.3 CONCLUSION**

An objective form of career selection is through guess work, parental and peer pressure, financial and environmental constraints. Now career selection can be done effectively using computer software. The software provides insightful and objective information about which career may be suitable for the user (student) on combination of interest, academic and vocational abilities, and skills.

Career selection and guidance counsellor is an essential in all secondary school. Every student needs to be properly guided and counselled to aid him/her select the

best career in his/her own interest to develop a good future. Developing a computerized system for career selection will help improve the mode of career selection by making it easier more accurate and reducing stress involved.

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