2022 CONFERENCE PROCEEDING

Conference Proceedings of the 2nd Biennial International Conference Organized by the Faculty of Education, Al-Hikmah University, Ilorin, Nigeria

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The Organizing Committee Welcomes Participants to Ilorin, Kwara State; the State of harmony to the 2nd Biennial International Conference on theme *Perspectives on Security and Safety Education: Research as Panacea*

It is a great pleasure to welcome all participants to the 2nd Biennial Conference organized by the Faculty of Education of Al-University, Ilorin, Nigeria. Al-Hiikmah is the first Islamic Faith-based University in Nigeria and has been living up to expectation in meeting the core mandate of its existence. The Faculty of Education is one of the six faculties in Al-Hikmah University and it has been alive to town and gown responsibilities that any academic institution should be known for. Al-Hikmah University operates three campuses; Adeta, Atere and Igbaja. We are presently at the Adeta campus which is the main campus of the university while the permanent site is the Atere within Ilorin metropolis. The Igbaja campus is outside the State and its about 80Km south of Ilorin, Specifically, the campus is located in the home town of the founder, Chief Alhaji Abdulraheem Amao Oladimeji, CFR.

Security of the nation Nigeria has never been so worse than the currency of unsafe environment we so much encountered in the present days. Academic Institutions has been the target of the miscreants, bandit and kidnappers where students and teachers (lecturers) are adopted for ransom. Government has been caught in the web in dealing with security challenges and it has been so difficult to nib the menace in the bud. Hence, stakeholders in the academic has been exposed to risk of been kidnapped and, in some instances, get killed in process of raising funds to rescue the victim from the kidnappers and faceless banditry miscreant.

To address the security menace and equipping our academic institution to be a safe environment, the Faculty of Education of Al-Hikmah University deemed it fit to initiate a national discourse in finding lasting solutions to security and safety challenges in our schools and by extension, Nigeria as a nation. Therefore, the Organizing Committee believes that security challenges should be addressed through research endeavor and came with the theme:

Perspectives on Security and Safety Education: Research as Panacea

This theme graciously explore the stony challenges experienced in Nigeria and its fast becoming an excruciating issue on the flesh of Nigerian. Hence, as academic, research endeavor is to identify and establish problems and proffering solutions in which security and safety of school is not an exception.

Seasoned academic and erudite Professors will be trashing and analyzing the theme of this conference and it is my believe that at the end of the presentations, a solution to maintain safety and secure our academic institutions will surface for onward implementation.

I wish to welcome once again to this conference and have a wonderful experience.

Dr. Hameed O. Bolaji
Chairman, Organizing Committee

Table of Content

Educational Measurement and Evaluation for Security and Safety Education

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Abstract

Educational environments must be safe and secure spaces for learners, teachers, non-teaching staff and the local community. Therefore, it is necessary to manage education safety and security properly in order to prevent accidents and incidents, creating an environment in which physical, emotional and social well-being is promoted. This study aimed at clarifying conceptual confusions and applications of terms such as; education safety and security through literature review and Educational Measurement of the author. This is because definition of these concepts enables stakeholders to have a common understanding of the subject and hence enhances meaningful conversations and better decision making. More so, how safety or security is defined among stakeholders affects its planning, application and implementation in the education environment.

Keywords: Educational measurement and evaluation for safety and security education

Introduction

Safety and Security are two words that are often confused by people. They get tossed around and together all the time, mentioning the other when one means the other one. They are often used interchangeably either correctly or wrongly. However, safety and security are of course strongly related, but two distinct concepts. To this effect, the author of this article attempts to illuminate the distinction between these concepts so that their application is also clear and most likely would be straight forward. Specifically, focus is on the application of safety and security in terms of education environments.

The questions at hand are what is education safety and education security? Are these two terms similar in meaning and application? What is the importance of a safe and secure education? What characterizes a safe and secure education environment? The foregoing questions are the ones that the author attempts to clarify. This is because definition of concepts enable people to have a common understanding of a word or subject, which enables meaningful conversations and better decision making. More so, how safety or security is defined affects its application in the education environment and provides an opportunity to influence positive outcomes for learners, teachers and other education staff. In order to exploit the concepts fully, it is important that we look at their meanings categorically.

Safety versus Security

The word "safety," comes from a Latin word salvos which means uninjured or in good health (Maddox, 2010). The first records of the word was noticed from around 1250. According to Safeopedia (2021) safety is a concept that includes all measures and practices taken to preserve the life, health, and bodily integrity of individuals. Safety is the condition of being protected from harm or other non-desirable outcomes. Safety can also refer to the control of recognized sources of danger (hazards) in order to achieve an acceptable level of risk.

Defining security is problematic, since the term has had many different meanings to different people in different places and different times over the course of human history. Actually, there has been a never-ending debate on its nature and dimension, since there is not a broad consensus on its meaning. According to the Online Etymology Dictionary (2017) the word 'secure' entered the English language in the 16th century. It was derived from a Latin word secures, meaning freedom from anxiety.

The term security is related to the presence of peace, safety and the protection of people and their resources. It also relates to the absence threats to human life and dignity. According to Stone (2009) security is about freedom from threat and ability of states to maintain independent identity and their functional integrity against forces of change, which they see as hostile. Security is generally agreed to be about feeling of being safe from harm, fear, anxiety, oppression, danger, poverty, defence, protection and preservation of core values and threat to those values. William (2008) also contributed to the definition of the word security. He stated that security is most commonly associated with the alleviation of threats to cherish values, especially those threats which threaten the survival of a particular reference object. From the foregoing definitions, security generally refers to the freedom from, or resilience against, potential harm or other unwanted coercive change caused by others.

Morgan (2021) provided a clear definitional distinction between safety and security. He contended that one of the primary difference between the two terms is their definition. Security refers to the protection of individuals, organizations, and properties against external threats that are likely to cause harm. It is clear that security is generally focused on ensuring that external factors do not cause trouble or unwelcome situation to the organization, individuals, and the properties within the premises (Morgan, 2021). On the other hand, safety is the feeling of being protected from the factors that causes harm.

Education Safety and Security

Safe Education

There are a variety of definitions of what constitutes a safe education. For example, Hernandez, Floden, and Bosworth (2010) suggested that a safe education is a place free from violence, and represented by an environment where there is no perceived fear with respect to the education or its disciplinary procedures. This in tells that in a safe education, learners, teachers, staff, and visitors are free to interact without fear or threats, and in a supportive way to support teaching and learning. Hull (2010) provided a more practical and management-oriented elucidation of education safety, stating that it includes the education's culture and the appropriate training and resources to respond to threats and hazards. Squelch (2001:138) also defined a safe education as one that is free from danger and possible harm, where non-educators, educators and learners can work, teach and learn without fear or ridicule, intimidation, harassment, humiliation or violence.

Regulation of Head of National Agency for Disaster Management (BNPB) No. 4 in 2012 (Perka BNPB No. 4/2012 on Guidelines on Implementation of Safe Education/Madrasa from Disaster in A Practical Guideline to Making Education Safer from Natural Disaster for Education Principals and Education Committees (2014: 2) defined education safety as one in which a education recognizes and protects child rights by provision of situation and environment guaranteeing process of learning-teaching, health, safety, and security of the students at any time. A Practical Guideline to Making Education Safer from Natural Disaster for Education Principals and Education Committees (2014: 2) also explained the meaning of a safer education as follows:

> *Safer education creates the secure, safer, comfortable and healthy feeling to students and teachers both in normal and also in disaster situation. By implementing the standard of structures and infrastructures with resilience to disaster, and implanting the safer culture, educations are able to protect educational community and surrounding environment from disaster risk.*

Safe and Sound Education (2014) looked at safety in terms of education communities and explains as follows: "safety" is a global term, used to describe our efforts to keep the education community and environment safe. Safety is an "umbrella term" for the many types of issues and/or crises a education community addresses in order to ensure the overall wellness of its members. Examples of such safety issues are health, mental wellness, education climate, fire safety, weather safety, building security, dangerous persons, bullying, environmental disaster, crime in the community, and bus and traffic safety (Safe and Sound Education, 2014). "Education Safety" also means creating safe environment for learners, starting from their homes to their educations and back. This includes safety from any kind of

abuse, violence, psycho-social issue, disaster: natural and manmade, fire, transportation. In a safe education, learners, teachers and other staff are free to interact and go on with their teaching and learning activities without fear of the unknown. A safe education focusses more on internal threats, that is, threats from within the education environment. McGuire (2017) explained that if learners perceive danger and sense fear from other learners, teachers, administrators, or even the education infrastructure itself, this may indicate the education is unsafe. For example, let's say a education has experienced violence among learners and the teachers or the community, that education is considered unsafe.

According to McGuire (2017) the primary indicator of a safe education is the existence of a plan in the education policy meant to address situations that may be a threat to learners and staff need a safe and supportive education environment in order to succeed.

California Education Board Association (CSBA, 2018) explained that a safe education is one where teaching and learning are not distracted; disruptions are minimized; violence, drugs, bullying and fear are not present; learners are not discriminated against; expectations for behaviour are clearly communicated; and consequences for infractions are consistently and fairly applied. The most effective approach to creating safe and supportive education environments requires a comprehensive, coordinated effort including education wide, district wide and communitywide strategies.

The foregoing definitions show that they are many ways of looking at a safe education and that the term is contextual and relative. Therefore, as we endeavour to clarify the concept of education safety, it should also be noted that what constitutes education safety may differ according to the geographical location. What constitutes education safety may differ from one education to the other depending on factors related to geography and setting. For example, a education located in a flood plain and a
education located on the plateau may have different safety concerns. This is supported by Mayer & Cornell (2010) who noted that defining education safety is often challenging as the definition can encompass a wide remit of different themes, where the separation of rhetoric versus reality becomes problematic, and where a key difficulty is distinguishing between personal beliefs and evidence-based research.

Srichai et al (2013) noted that whether there are differences in defining, the most commonly noted aspects of education safety in literature are physical, psychological, environmental and social dimension.

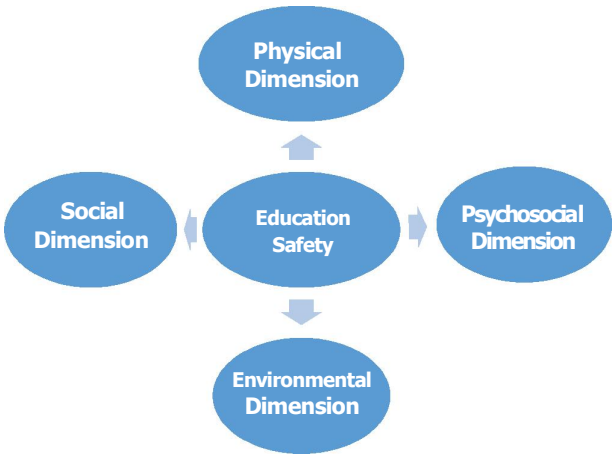

Figure 1 is an illustration of education safety dimensions.

1. **Physical Dimension:** In terms of physical issues of education safety, physical violence, corporal punishment and bullying are commonly discussed by scholars. For example, when looking at education safety, Dunlap (2013) focused particularly on education violence as the central aspect of education safety. In relation to the foregoing, literature often takes education violence as the contextual basis for education safety research and aims to develop response mechanisms to crises (Kingshott & McKenzie, 2013 and Mubita, 2016).
2. **Psychological dimension:** Psychologically, education safety is discussed in literature with reference to how safe learners and staff feel at their education (Mooij & Fettelaar, 2013). Researches related to the feeling of being safe at education have developed into debates about how safe individuals feel (Kutsyuruba, Klinger and Hussain, 2015; Mubita, 2016), talked about relationships among education climate, education safety, and student achievement and well-being (Fleming, 2012; Vega, Crawford, & Pelt, 2012), and disabilities (Boon et al., 2011 and Mubita, 2016).
3. **Social dimension:** Social Safety Theory hypothesizes that developing and maintaining friendly social bonds is a fundamental organizing principle of human behaviour and that threats to social safety are a critical feature of psychological stressors that increase risk for disease. More so, Invitational Education Theory (Purkey & Novak, 1996) suggests that the education should be an inviting place across a set of five Ps which are considered as key areas. These 5 Ps are people, place, processes, policies, and programs. In relation to the foregoing two theories (Social Safety Theory and Invitational Education Theory), attention is on creating a safe education environment, including the education's building infrastructure, playgrounds

and surroundings. This is in tandem with Mubita (2021) in his article on 'An assessment of the Provision, Quality and Adequacy of Welfare Facilities in Selected Educations of Lusaka' where it was noted that abundant and adequate welfare facilities are paramount to safety and health in learning environments.

4. **Environmental dimension:** The other way to look at education safety is in relation to hazards and disasters that may happen in the education environment. Natural hazards and disasters and other emergencies can happen at any time in education environments. When they happen, stakeholders should be prepared to handle them safely and effectively. Learners, teachers, parents and other education staff can work together to promote safety and minimize the effects of emergencies and other dangerous situations within their environments. Educations can be affected by natural hazards and disasters such as extreme temperatures, strong winds, fire outbreaks, floods, thunderstorms and lighting, landslides and debris flow among others. All these hazards and disasters can make a education unsafe for teaching and learning processes.

Secure Educations

A secure education encompasses all measures taken to combat threats to learners, teachers, support staff and property in education environments. The Independent Project Trust (IPT, 1999:3) confirmed this by stating that a secure education environment has a very low risk of physical, emotional and psychological injury to its occupants. McGuire (2017) also explained what he feels about secure educations. He noted that secure educations should have policies and procedures instituted to protect learners and staff from intruders. For example, when entering the education premises, a visitor should record details in a book and perhaps given an Identity Card to carry wherever they go within the education. Visitors could also be often required to show identification to pick up a child from education as a method of proving they are named on the child's approved pick up list (McGuire, 2017). Additionally, secure educations should be built in such a way that they have layouts or designs that minimize unauthorized entry. For example, a education may have a gate that controls in flows and out flows in education premises.

Importance of Education Safety and Security

According to Maslow's Hierarchy of Needs, safety is a foundational need that must be met before ascending to higher levels of performance (Taormina and Gao, 2013). This is applicable to educations too. Learners and staff must feel safe before they can focus their energy on teaching and learning. As educations seek to improve the academic performance, there is need to create a physically and emotionally safe environment for everyone in education.

Safety in education allows learners and staff to look forward to being in an encouraging environment, promoting social and creative learning (Applebury, 2021 and Mubita, 2021). If by any chance, their safety is not met, learners and staff could be at risk and this may increase truancy and drop out for learners in extreme cases. This is supported by Mubita (2021) in his article on 'An assessment of the Provision, Quality and Adequacy of Welfare Facilities in Selected Educations of Lusaka' as he noted that adequate facilities in education enhance education safety. A safe education creates an open space for learners to learn and explore many new things in their play grounds (Applebury, 2021).

Learners of all ages require a safe learning environment for their better education and development (Mubita, 2021). Research continues to illustrate that children who feel unsafe at education perform worse academically and are more at risk for getting indulged in drugs and delinquency (Concordia University, 2016)

Both government and private educations are faced with the major crisis of safety and security. Education boards meet with teachers and parents to listen and suggest solutions about their children's issue. State and federal governments should take steps to improve education safety and law enforcement as the nation realizes the importance of the issue and how its impacting children's future

Conclusion

Understanding the meaning of education safety and security enables meaningful conversations and better decision making among stakeholders. Additionally, how education safety and security is defined affects its application and priority setting in the education environment. As noted already, providing a safe and secure environment at education is imperative to helping learners succeed academically, socially and emotionally. Education management has the responsibility and obligation to protect all occupants of a education environment at all times and at all events. No one should ever feel unsafe and insecure when going to education regardless of where the education is located. For parents and teachers, the security and safety of learners should be their number one priority. By installing a high-quality security system around the education, parents can be assured that their children are safe at all times. Learners can easily become distracted at education. However, if they feel safe and secure in their classrooms, dormitories and playgrounds, they are more likely to focus on their academic activities.

Recommendations for Education Safety and Security

The author this paper emphasises that safety and security should be understood before implementation. This has to be done in the context of the education. Understanding the terms will ensure proper application and implementation. This discourse also lead to recommend that a safe and secure education should put certain things in place in order to help teaching

and learning processes. The following and many others depending on the education geography can be put in place to secure the education: burglar proof windows and doors, build a wall fence in education perimeters to control inflows and outflows of the people, employ security personal, practice maintenance of facilities in education, visitors identified with ID cards, install Closed Circuit Television (CCTV), and security cameras, install good lighting system, install firefighting equipment and teach all stakeholders about safety and security.

Education key stakeholders should ensure that their education is safe and secure for teaching and learning. The following is a summary of what can be done to enhance education safety and security:

- Draw a education safety and security policy
- Conduct education risk assessments regularly
- Enact a strong visitor management programme
- Teach learners and staff about education safety and security requirements
- Learn the education's emergency procedures
- Learners , staff and parents should know safe travel routes to and from the education
- Know and follow education security and safety measures
- Enforce a certain dress code, especially use of uniforms
- Learners and staff to use badges or picture IDs
- Create a good education climate
- Orient learners and staff about safety and security
- Inform education staff about health and emotional concerns.
- All stakeholders should be involved in safety and security planning and assessment for the education

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Appraisal of Social Media Addiction and Students' Learning in Nigerian

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Abstract

Technology integration into education is a means of drawing attention and increasing interest of students through using various emerging tools. Social media are interactive web-based media platforms that offer the general public chance and place to associate, share thoughts, experiences, contacts, knowledge, job searching, career tips and other allied matters. Social media consists of applications such as Facebook, Twitter, WhatsApp, Snapchat, LinkedIn, Instagram, Google and YouTube, among others. The utilization of Social media platforms has created many opportunities; however, social media addiction has posed serious threats to students in various fields. Therefore this study aim was to investigate the influence of social media addiction on biology students' academic performance in Nigerian universities. However, the study reveals that most undergraduate students' are addicted to the use of social media and they use it for chatting with families and friends, some students use it for uploading pictures, sharing videos, and also for personal socialization, few use it for gaining knowledge, share information, promoting social and political awareness. Students should be encouraged to use social media platforms for academic purposes such as discussion, assignment, research, online learning and scholarship.

Introduction

Emerging technologies in communication has improved our societies in recent time and the whole world has turn into a 'Global village'. These technologies have widened the scope of communication and help people to become more informed and progressive about the latest trend in our environment. According to National Policy on Education (Federal Republic of Nigeria, 2014) Education is regarded as an 'instrument per excellence for social and economic reform of a country'. It involves standards and practices of gaining knowledge, skills, attitudes and values that can bring about the survival of growth and development of a nation. Advancement in communication technology creates new tools and possibilities for evolving teaching and learning practices, hence, it proffers solutions to human challenges technically. This also involves hands-on arrangement that deals with knowing how to do

things. Technology integration into education will help to enhance students' attention and stimulate their interest through the use of emerging tools.

In 21st century, one of the major innovations in information and communication technology was the emergence of the social media which have facilitated the creation of different platforms for social interaction. Social media are collaborative web-based media platforms that offer individuals the chance and place to associate, share thoughts, skills, links, information, jobs, business, career tips and other allied matters. Social media are already developing formal and informal education in terms of teaching, learning and capacity building. Buetner, 2017 perceives social media as "computer mediated outfits that allow individuals or enterprises to create, interchange information, job interest, share thoughts, virtual communities and network". Ali, Iqbal and Iqbal (2016) opined that social media comprises of different application softwares such as Facebook, Google, Twitter, WhatsApp, Snapchat, LinkedIn, Instagram, Skype and YouTube, among others, that associate individuals together as they share information through social networking.

Out of the 7.87 billion people worldwide, 4.48 billion people currently subscribe to one social media or the other and this is more than double from 2.07 billion in 2015. An average social media user engages with an average of 6 various social media platforms. The leading social media platform in terms of number of users is Facebook with 2.9 billion monthly active users, this is followed by Youtube (2.3 billion), WhatsApp (2 billion), Facebook Messenger (1.3 billion), and WeChat (1.2 billion) (Social Media Usage Statistics, 2022).

Nigeria is one of the developing countries where utilization of internet and social media has grown significantly in recent years. Social media platforms are commonly utilized by students and they allocate ample hours on these sites as part of their day-to-day existence. In recent studies, finding reveals that the utilization of Social media has a major influence on students' performance. Azizi et al, (2019) find out that university students are the ones that utilize social media mostly among numerous age groups of learners. These platforms create many opportunities for learners in term of enhancing teaching and learning and also serve as threats for students in term of addiction, isolation, distraction among others. Many researchers have conducted studies on social media and academic performance of students in different countries and various institutions. The Addiction toward various social media platforms and the influence on students' academic performance triggered the researcher to plan and carry out this research. Thus, this study focused on the appraisal of social media addiction and student's learning in Nigerian.

Purpose of the study

The main purpose of this study is to appraise social media addiction and student's learning performance in Nigerian universities**.** However this study the investigated the various types of social media platforms used by students, types of addiction caused by social media platforms used by students and the influence of social media addiction on student's learning

Concept of social media

Boateng and Amankwaa (2016) defined social media as the application that permits users to interact with each other. It is an online platform that is used by citizens to connect, share, communicate, establish or maintain connection with one another for various purposes. Social media is a channel which use web based and mobile technology to form extremely high communicating platforms where by the general public can co-create, share, discuss and revises contents generated by the users (Kietzmannn, 2012). Social media is a platform that gives you information and also connects you with other individuals and researchers. It comprises of internet created application that enhance the creation of content and also sharing of content generated. Some media site includes:

Social Bookmarking: network by labeling website and searching through website book marked by others (Blink list, simple).

Social News: relate by voting for objects and commenting on them (Blogs, propello).

Social Networking: interact by gathering more friends, remarking on photo and videos, sharing groups for discussions (Facebook, WhatsApp, 2go, BB chat)

Social Photo and Video Sharing: this connects by sharing photos or videos and commenting on the user submission. (Youtube, Instagram and Fliki).

Wikis: interact by accumulation of articles and editing present articles. (Wikipedia, wikia). Nowadays, one aspect of Information and Communication Technology that is progressively advancing the drive of the student is social media platforms. It has offer new method of getting news update and dissemination of information and without doubt it has shift the paradigm from conventional method i.e print and broadcast method to a more effective technology enhanced method. Barnett-Ellis (2013) posited that the current largest online social media platform for academic atmosphere is Facebook while Muruli and Kumar (2013) concluded that Facebook is the most popular and successful among others because it is user-friendly and collaborative site for networking. Owusu-Acheaw and Larson (2015) opined that students mostly utilize social media platform to chat and connects with families and friends

rather than for educational purpose to seek knowledge and skills. This finding was corroborated by the work of Taluue, Alsaad, AlRushaidan and AlHagail (2018) who stated that the main reason why students use social media platforms is to get information for academic and entertainment purposes. From these findings it can be inferred that undergraduate students use social media platforms for fun more than they use it for education purposes. However, social media platforms assist students to create and sustain relationship with one another where problems relating to academics can be chat with the purpose of knowledge sharing.

Features of Social Media Platforms14

1. It is an open web space platform: social media platforms offer the handlers or viewers an open web space to upload their content.
2. It has an exceptional web address: the users have a sole web address which comprise of the users' unique identity, which enhance them to disseminate their message in real time.
3. It creates chances for building profiles: social media platforms assist people to gain access to likeminded individuals to communicate with each other with the likelihood of growing personal profiles.
4. It enhances online interactions with associates and families: Social media platform can be use online meetings. Families and friends who are far away from each other can get intouch with each other through online social media platforms. These platforms enable sharing of vital files, photo, video and documents with one another.
5. It allows real time information upload capacity: social media platforms offers the user opportunity to upload personal information or other documents at any time of the clock i.e 24/7 throughout 365 days in a year.
6. Instant Response/comment: the instant response or feedback of social media communication makes it resemble face to face communication, provided the individuals involved are online at the time when the dialogue is ongoing. However feedback is crucial to effective communication process.
7. Time hallmark: in social media platforms, every post has a time frame which indicates maybe the post is either new or old.

The role of social media in teaching and learning

The utilization of social media platforms in education assist learners, teachers, parents and school administrators to access valuable information, to interact with students groups and various educational technology platforms that produce effective teaching and learning process.

Social media platforms offer students and educational institutions numerous opportunities to improve instructional delivery. Through the websites, one can integrate social media platforms that will enhance information sharing and connection. Students can learn from online tutorials through the use of Youtube, online programs can be done by abroad universities via skype, zoom, google and a large number of materials can be shared through social media. Students can gain knowledge on data analysis and insights on currents issues via social media.

Another important role of social media in education is that it offers student the chance to locate experts in the same field or subject and this expert can proffer solutions on the issues that you need help. You can establish and maintain relationship with the experts and gain vital knowledge from them, this will encourage you to develop fantastic outcomes. Social media platforms have the capacity to expand your view and increase your interest on various issues. Social media platforms such as Facebook, WhatsApp, Google plus, Twitter, Youtube, Skype, Instagram among others enhance educational institutions to develop capacity to interact with students boundlessly. These media can be used in disseminating campus news, broadcast information and share updates. This develops interactions between the institution and students which can help solve many challenges facing them through group discussions. Educational institution can communicate useful posts and these will get to all students that are added to this platform. Someone can start a hastags on social media to involve the students in an online discussion that are beneficial. Some social medial platforms can share educational videos that stimulate the students and assist them in their subjects. Some social media platforms such as Facebook, Youtube or Instagram can enhance sustainable live video engagement between schools and students.

Social media platforms provide the user and subject observing tools that are useful for data extraction and analysis. Someone can investigate how people feel about a particular issue by conducting a survey using Google Forms or Survey monkey or creating Instagram/Facebook Polls, or find out experts perception and guidance on specific issues by using forums like Quora. This can help students accumulate and produce beneficial information for research. The best materials and outcomes can be extracted from social media when students are working on an assignment or a project or trying to gain more insight on a subject, and the data can be presented using Slideshare.

Types of social media addiction

The use of the internet is now almost ubiquitous in many countries, particularly among adolescents and young adults (Kuss et al. 2014). The internet and the activities that can be done on it help people in different ways, such as connecting people with each other or

providing easy access to different types of information. New forms of social interaction have recently emerged and some scholars have claimed that it is easier for individuals to be engaged in unhealthy and dysfunctional behavior (Soh et al. 2014) including potential addiction to social media (Kuss and Griffiths 2017). As stated long ago by Griffiths (2000), these online activities can become excessive, leading to deleterious behaviors in a minority of individuals. At present, the average daily use of social media is estimated to be 135 min per day, an increase of 9% from the previous year (126 min per day)(Statista 2017). Compared to other traditional forms of addiction, the internet is not a substance, and has therefore been conceptualized as a behavioral addiction (Griffiths 2005). Its consumption when excessive may result in negative outcomes and become addictive (Griffiths et al. 2016) especially among a minority of adolescents and young adults (World Health Organization 2011). Such technological addictions (Griffiths 1996a), as noted by Soper and Miller (1983), are Blike any other behavioural addiction, and consisted of a compulsive behavioural involvement, a lack of interest in other activities and physical and mental symptoms when attempting to stop the behavior.

Internet addiction is a special type of technology addiction. The term "Internet addiction" was defined for the first time by Ivan Goldberg in 1995 as a psychological illness (cited in Kim, 2009). Different conceptualizations were used for abusing Internet. Young (1998) named it as "internet addiction", Morahan-Martin and Schumacher (2000) used the term "pathological internet use", Davis, Flett and Besser (2002) labelled it as "problematic internet use" (cited in Caplan, 2002, p.554). Young (1998) suggests five types of Internet addiction: (a) cyber sexual addiction, (b) cyber relationship addiction to online friendships or affairs, (c) net compulsions to online gambling, auctions or obsessive trading, (d) information overload to compulsive web surfing or databases searches, and (e) computer addiction to game playing or programming. When properly used, Internet is an important technology that provides people with vital skills for the 21st century such as information access, problem solving, and self-directed learning. However, when Internet is used unconsciously, it can cause anxiety or fear and negatively affect personal development (Colwell & Kato, 2003; Kerberg, 2005).

In addition, excessive use of Internet may have detrimental effects on biological, physiological, psychological and social development of the user (Caplan, 2002). In this context, Internet addiction has gradually become a serious problem. Thus, although it was not mentioned in the previous editions, American Psychiatric Association (APA) has added Internet addiction, with a particular reference to online gambling, as a mental illness to the

fifth edition of the Handbook of Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2013). In many areas of behavioral addiction, it has been debated that whether some extreme behaviors can really be regarded as addiction or not. Social media addiction, as a special type of Internet addiction, has been discussed in this context. Griffiths (2013) made an important contribution to this discussion by suggesting six essential components to describe a behavior as addiction. These six components are salience, tolerance, mood modification, relapse, withdrawal, and conflict (Griffiths, 2013, p.121). He states that a behavior can be defined as addiction if it has these six components. Then, the critical question becomes what does each of these six components mean? To make the subject or issue more understandable, Griffiths (2013) explains these six components as follows:

Salience: This occurs when social networking becomes the single most important activity in a person's life and dominates his or her thinking, feelings, and behavior. For instance, even if people are not actually engaged in social networking, they will be constantly thinking about the next time that they will be.

Mood modification: This refers to the subjective experiences that people report as a consequence of social networking and can be seen as a coping strategy (i.e., they experience an arousing "buzz" or a "high" or, paradoxically, a tranquilizing feeling of "escape" or "numbing").

Tolerance: This is the process whereby increasing amounts of social networking activity are required to achieve the former mood-modifying effects. This basically means that for people engaged in social networking, they gradually build up the amount of the time they spend social networking every day.

Withdrawal symptoms: These are the unpleasant feeling states and/or physical effects (e.g., the shakes, moodiness, irritability) that occur when people are unable to engage in social networking because they are ill, on vacation, prohibited etc.

Conflict: This refers to the conflicts between a person and those around that person (interpersonal), conflicts with other activities (social life, hobbies, and interests), or from within the individual himself or herself (intrapsychic conflict and/or subjective feelings of loss of control) that are concerned with spending too much time on social networking.

Relapse: This is the tendency or desire for repeated reversions to earlier patterns of excessive social networking to recur and for even the most extreme patterns typical of the height of excessive social networking to be quickly restored after periods of personal control

Influence of social media addiction on student's learning

Empirical studies generally across the world indicate that the overall occurrence of Social Media Addiction is not low. For example several researches have been conducted based on systematic review on social media addiction among students. Social media platforms can assist learning and skill improvement outside formal learning environments by assisting peer-to-peer learning of information and skills cooperation and different cultural manifestation. Social media platforms, such as Face book, Whatsapp, Google+, LinkedIn, Instagram, Twitter, have hundreds of millions of daily active users (Fire, Goldschmidt, & Elovici, 2014).

Identification of social media adductors can be done by pointing out those students that spent extra time on their phone surfing the internet or interacting on social media. The repercussion according to Apuke (2016) is that these students availability for chatting on social media platforms turn out to become habitual and addictive. These particular set of students abandon other important academic responsibilities and are committed to Facebook, instagram, whatsapp snapchat, and tiktok. According to Kist (2012), the social media adductors usually spend time thinking about or planning how to use one social media or the other, they feel urge to use the platforms they are addicted to more and more. However, it was also perceived that some students use social media platforms so that they can forget about their personal issues, so they become agitated and disturbed whenever they are banned from using the platform. They use social media platforms to the extent that the addiction has a negative impact on their relationships. This opinion has becomes a threat to students' academic performance and therefore call for investigation.

According to Hashem & El-Badawy (2015) the social media types used by students include Snapchat, Facebook, Instagram, Whatsapp, Twitter and YouTube. Another result from the research shows that students devote an average of 2 to 3 hours on social media platforms daily. This can clarify the extent of Internet addiction among undergraduates. This result is corroborated by the work of Talaue, Alsaad, AlRushaidan & AlHagail (2018) who concluded that undergraduate students spend on average 1 to 3 hours daily on social media platforms. Likewise, Hashem & El-Badawy (2015) posited that 50% of undergraduate students spend 1 to 3 hours studying a day and 33% spent that same amount of time on social media per day.

Owusu-Acheaw & Larson (2015) submitted that students primarily utilize social media platforms to chat with friends and relatives rather than for educational purposes. Students tend to interact with associates for chatting purpose rather than to involve in discussion to seek

educational information. Andreassen (2015) asserted that the occurrence rates of Social Media Addiction ranged between 1.6% (in a Nigerian sample) and 34% (in a Chinese student sample). Emerging indication suggests that Social Media Addiction is linked with various adverse consequences, such as: deprived sleep (Xanidis & Brignell, 2016), decrease work and academic performance (Leung, 2015), reduced self-confidence and life contentment (Hawi & Samaha, 2016), and mental health problems (Cerniglia et all., 2019). Researchers have also found brain anatomy alterations associated with Social Media Addiction, including reduced gray matter volumes in the amygdala bilaterally (He et all., 2017), that are similar to those associated with other forms of behavioral addiction (e.g. gambling).

Nowadays, abundant proof has been published on the high frequency of Social media utilization among university students. For instance, using an adapted 6-item Bergen Facebook Addiction Scale (BFAS), Tang and Koh (2017) surveyed 1,100 Singapore college students and found that 29.5% of the respondents could be categorized as having Social Media Addiction. Another study in China based on Young's Internet addiction criteria discovered that the Social Media Addiction prevalence of 34% among Chinese college students. In a recent review, it was further revealed that greater exposure to online social networks was associated with greater alcohol use and other addictive behaviors among college students (Rinker et al., 2016). This suggests that Social Media Addiction among university students has become an important public issue which deserves more attention from both researchers and the public.

Studies on social media use and student's learning

Student's Academic performance is the evaluation of students' learning progress during the course of studying and the period of commitment. In Nigerian universities, student's academic performance is measure with the cumulative grade point average (CGPA) index. The highest CGPA is 4.00 or 5.00 while the lowest is 0.00. Students are tempted to forfeit their assignments and reading time and prefer to chat with friends' online maybe due to attractive advert on the social media. Adaja and Ayodele 2013 in Onasanya (2014) observe that the capabilities of social media are continuous and boundless in terms of interactions, interrelationships and information sharing and exchange while Kaya & Bicen (2016) disclosed that Facebook and WhatsApp were mostly used by students.

Ifeanyi-obi, Olatunji, and Akpala, (2014) investigated the perceived effects of Facebook on academic activities of Agricultural students in the University of Port Harcourt, Nigeria. Samples of 80 agriculture students were randomly selected and a structured questionnaire was

used to collect data which was analyzed using descriptive statistics tools including frequencies, percentages and mean. Findings indicates that Facebook, and whatapp were the most frequently used social media platforms by undergraduate students, majority of the students spend more than one hour daily on Facebook and most of them use it foe chatting with friends and families. On the overall effect of Facebook on their academics, the study reveals that Facebook facilitates networking and association with other students and also ease information sharing. The study recommends that undergraduate students should encourage the positive effect of Facebook while the addiction of Facebook for entertainment or fun should be discouraged.

Eke, Omekwu and Odoh (2014) investigated the utilization of social media platforms among the undergraduate students of university of Nigeria Nsukka. The purpose of the study was to determine the several types of social media platforms used by UNN Undergraduates, to survey the level of utilization of social media platforms by UNN Undergraduates, to determine their reasons for using social media platforms, to find out the importance of using social media platforms and to identify the dangers associated with social media and to offer approaches to amend such dangers. The study adopted the descriptive survey research design which was employed to derive responses from a sample size of 150 undergraduate students of university of Nigeria Nsukka who were selected via random sampling techniques. Data were collected from this population using questionnaire. The result of the study reveals that mostly all the student were using the social media platforms in interaction with friends, connecting to their class mates for online study and for discussing serious national issues and watching movies etc. There are also laudable benefits of using social networking sites and dangers associated with social networking and such dangers can be ameliorated using the strategies available in the work. It was recommended that university Authorities should organize seminars to enlighten students on the not-so good aspects of social media.

Osharive (2015) examined the influence of Social Media and Academic Performance Of students in University of Lagos. Five Research questions and five Research hypotheses guided the study. To achieve this, the descriptive survey research design was adopted. The simple random sampling technique was used to select a sample of 378 students out of a population which consists of 24,661 full-time undergraduate students. A four point Likert Type Rating Scale Questionnaire type, titled: Social Media and Academic Performance of Students Questionnaire (SMAAPOS) were used to collect data from the participants. Research findings showed that a great number of students in University of Lagos, are addicted to social media.

To this end, the researcher recommended that social media should be used for educational purposes as well; Social Networking Sites should be expanded and new pages should be created to enhance academic activities and avoid setbacks in the students' academic performance; and Students should be monitored by teachers and parents on how they use these sites.

Bolaji and Wonuola (2019) evaluated tertiary institution students perceive instructional usefulness and reaction towards whatsapp social media application for mobile learning. This study adopted a descriptive approach of survey method in which a researcher-designed questionnaire was structured to collate data on instructional usefulness and reaction towards WhatsApp social media applications. Random sampling technique was adopted for the administration of the questionnaire which was validated by five lecturers and a test-retest method was adopted and yielded 0.89 of Pearson Product Moment Correlation. The result implies that tertiary institution students' reaction to WhatsApp social media application influences its instructional usefulness and gender plays a neutral role. It then recommended that lecturers should explore the WhatsApp social media application for instructional activities.

Makinde (2020) investigated undergraduate students' awareness and utilization of social networking sites (SNSs) for learning at Al-Hikmah University in the advent of Covid-19 pandemic in Nigeria. A structured questionnaire and self-made inventory awareness of SNSs for learning, frequency of utilization, and the side effects of SNSs for learning. In total, 400 out of 536 undergraduate students responded to the questionnaire and self-madeinventory/checklist remotely. The study revealed that the majority of students were not aware of the SNSs for learning. Only 2 (WhatsApp and Zoom) out of 18 selected SNSs are frequently utilized for learning. Also, students identify Identity theft (86.0%) and exposure to online crime (27.0%) respectively as the highest and the least problem of social networking sites usage. Hence, it was recommended that the institution should organize training for students and provide relevant information and communication technologies in other to create more awareness, encourage effective usage and prevent side effects of the SNSs on learners.

Conclusion

This study concludes that majority of the undergraduate students use diverse social media platforms including; Facebook, Whatsapp, Twitter, LinkedIn Instagram, Google, Youtube, Snapchat, Tiktok among others, however the social media platform with highest number of users is Facebook, while the most frequently visit social media is Whatsapp. Nowadays, it is

obvious that social media is already a huge portion of our daily life; therefore we need to embed it into teaching and learning process. Most undergraduate students' use social media for chatting with families and friends, some students use it for uploading pictures, sharing videos, and also for personal socialization, few use it for gaining knowledge, share information, promoting social and political awareness. Undergraduate students spend on average 1 to 3 hours per day on social media and this can result in addiction. Social media addiction will make the student spend more time on the platform for education purpose or for fun and entertainment. Social media addiction has a significant influence on the academic performance of undergraduate students.

Recommendations

Nigerian universities should organize seminar or workshop to educate the students on the side effects or the not too-good aspect of social media addiction on their academic performance.

University lecturer must totally discourage the use of social media platforms during lectures unless otherwise stated

Undergraduate students should also be motivated to harness their capacities of using social media platforms for assignment, research, online learning, scholarship and other related academic work.

National assembly and state house of assembly should endeavor to establish laws regulate the usage of the social media platforms by students and what they broadcast or access through the social media.

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Information and Communication Technology as a Panacea to Academic Performance of Biology Secondary School Students

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Abstract
This study investigates ICT as a panacea to academic performance among biology secondary school students. In this 21st century of Information and Communication Technology, the use of ICT facilities should be encouraged to help students to learn. The use of ICT facilities like computers, multimedia instructional packages, Power point, Audio & Visual Instructional packages in education has proven its importance due to its positive impact on the teaching and learning process. Biology as the bedrock of science needs the use of ICT facilities for its teaching in order for improvement in the academic performance of the students. It is suggested that more funds should be provided for the purchase of ICT facilities in our schools and training of teachers in the used of ICT facilities to teach the students in the class rooms.
Keywords: Biology, ICT, Academic performance, Panacea, Secondary School

Introduction

ICT stands for "Information and Communication Technology''. It is the technology that gives access to information through telecommunication. According to UNESCO, ICT is a management technique used in handling information through technology, science and engineering. Olugbenga & Adebayo (2010) defined ICT as the use of computer and micro electronic system to collect, retrieve, use, store and communicate information.

Through ICT a lot of changes has happened in the society, especially in schools. ICT gives teachers and students more opportunities in adapting learning and teaching to individual needs. There is report by West Africa Examination Council (WAEC) and National Teacher Institute (NTI) that the teaching of biology subjects in secondary schools has been affected by some problems which lead to poor academic performance.

Learning biology is very important and should be giving more preference. Biology is an important science subjects that take a special position in the schools' curriculum. Its study cannot be brush aside in the education sectors, however students' performance in the subjects is worrisome. For this to be addressed, some researchers such as (Ahmed & Abimbola, 2011; Cimer, 2012; Agboghoroma & Oyovwi, 2015; Etoboro & Fabinu, 2017) found that students see biology subject to be too difficult to comprehend, boring and abstract. And also, the large classrooms and lack of proper teaching methods applied by teachers. (Olaleye, Ajayi, & Oyebola, 2017; Gimba, Hassan, Yaki & Chado, 2018).

The student's performance in biology for some years has been unaccepted due to various reasons given by Dinah (2013) who asserted that the academic achievement of students is influenced by the provision of information technology equipment, laboratory apparatus and text books. He also added that students that like biology subject performed better than those who does not like it.

Study carried out at various time also showed that the decline in academic performance in the subject like biology and chemistry is caused by the poor quality of science teachers, unavailability of ICT facilities and lack of inadequate science equipment among others. Snezana et al (2011) in his study found that when students are taught using experimental methods perform better than those taught using lecture methods.

The study is going to address the need for the introduction of ICT in our secondary school. This will lead to the introduction of information technology facilities such as teaching aids, multimedia instructional packages, power point, the audio and visual instructional packages for teaching and learning of biology in secondary schools.

The purpose of this study was to investigate ICT on the academic performance among biology students in secondary schools. How ICT facilities like computer, multimedia instructional packages and power point usages impact on the academic performance of biology students.

Biology as a Subject

Biology is an important aspect of science that is needed for our nation's technological breakthrough. Nsofor (2010) asserted that biology scope is wide and is the foundations for many disciplines in science & technology and is applicable in all aspect of life

Biology is the study of living things and their immediate environment. And this is supported by Umar (2011) who defined biology as a science that do with living things, their functions and how it interacts with their immediate environment. for any nation to develop a basis for modern technology, the study of biology which is now the brain behind the social growth is important and forms veritable amour against misconceptions and superstition which muddles technological advancement anywhere. As a field of science, it helps us understand the living things and ways its numerous species function and interact. Biology is a science subject that

explains the existence of life. It is a natural science that deal with the study of living things, their structures, shapes, functions and hereditary.

Taiwo & Emeka (2014) defined biology as the subject that allows students to know themselves, their immediate and distance environment. This is the reasons it was introduced into the school curriculum. The subject is taught in the senior secondary and made compulsory for all the students. Biology is divided into zoology and Botany. Zoology deals with animals while botany deals with plants.

Availability and Utilization of ICT for Biology

The teaching of biology requires the use ICT facilities for effective learning, for this to take place, this ICT facilities must be available and be utilized. Examples of this resources are desktops, projectors and computers. The unavailability of this resources in our institution of learning can prevent it effective use in the classroom. There are efforts by Nigerian government to launch ICT into Nigeria educational system in the year 2001 and years after the launched, its very sad that many secondary schools did not have computer set talk less of internet network (Amuchie, 2015).

In Chile, a study was conducted on the presence and use of ICT, even though a good condition was set but the used of ICT resources like computer and projector were few. (Brum & Hinostroza, 2014). This was supported by Matheevula & Uwizeyimana (2014) that the problems teacher face was the scarcity of using ICT resources in a classroom. The nonavailability of this resource has great negative impact on the study of biology in our schools.

Most of the topic taught in sciences are abstract in nature and this need an ICT facility, like in biology class, there is need for an electronic microscope to view and study cell which will help them to be able to visualize and concretized it in their minds permanently to improved their academic performance.

Most time when this ICT resources are available, it uses can be prevented by lack of man power, lack of expertise in the area or lack of power generation (electricity). The absence of ICT in our schools are prevented by lack of ICT skills, poor electricity supply, high cost of ICT facility and infrastructure decayed (Mavellas, et al, 2015).

Application of ICT in Teaching and Learning of Biology

The use of newer technology in education has become an important area of pedagogical exploration during this 21st century for educational setting. ICT facilities makes biology subject to be visualized and concretized in the learner minds.

Bolaji (2018) opines that the use of ICT in teaching encourages the integration of emerging technologies to supplement teaching by propagating the mind of learner with a concretize acquisition of knowledge. The used of newer technologies has digitalized the content of instructions giving to learner based on the educational objectives derived from the syllabus of respective discipline (Bolaji, 2019).

The new emerging technologies include powerpoint, multimedia instructional packages and computers. Petrie (2020), listed some online platforms as Zooms, Instagram and Facebook. This online platform can also make biology to be easy and interesting. The teachers will develop a course outline and send it to the students WhatsApp, Instagram and Zoom which are all ICT product.

Benefits of using ICT in Teaching and Learning of Biology

The benefit of using newer technology in the teaching and learning of biology is very numerous. ICT has performed a lot for educational reforms. Teaching and learning process has been improved by the use of ICT. Cited from Lowther er al, in Fu (2013), there are three important characteristics require to bring out good quality in ICT for teaching and learning. These three attributes are autonomous, capability and creativity. The first attribute which is

autonomous mean that the students will be independent of there own learning with the use of ICT and able to work on their own with little interference from the teachers.

The second attributes which is capability, the students will be able to employ new technology to be apply and transmit knowledge at the same time whenever they have the confidence in learning process. Optimizing creativity through ICT also assist students and thus, the use of ICT can help to develop teaching and learning quality through assimilation of students' autonomy, capability and creativity.

Using ICT tools also help in developing higher thinking skills. Kelman cited in Ali (2012) stated that through technology higher order thinking skills can be develop. The coming of digital and information has made the acquisition of critical and creative thinking and higher-order thinking skills important to future success. (Ali, 2012). When students are exposed to ICT environment for longer times, it will help in developing the students' thinking skills and attainment of higher level of cognition.

. The teaching and learning of biology will not be fulfilled without the use of ICT like the multimedia instructional learning package which enhance students' academic achievement in biology.

Instructional materials assist teachers to make their lessons explicit to learners through devices of information which are largely self-supporting. (UNESCO, 2015). The use of ICT multimedia instructional materials helps students to visualized and concretized that in their mind for a long period of time, which will in turn improved their academic performance. Agina-Obu (2005) submitted that during teaching and learning, instructional materials make the mind to appeal to what is been taught. Instructional materials are objects or devices that help the learner to acquired their lesson logically from their teacher. (Ishola, 2010). This is also supported by Oluwagbohunmi & Abdu-Raheem (2014) which acknowledged that

through instructional materials, teacher make explanation and learning of subject understandable to students during teaching and learning process.

Technology has greatly imparted on the lives of people globally. The used of information and communication technology has a lot of benefit for both the educator and the learner. This is supported by UNESCO (2004) that confirmed ICT also give learners opportunity to expand them self. it also makes it easy for student to have access to information outside the four walls of the school with the aids of the multimedia tools (Anderson, 2005).

Factors Affecting Adoption and Integration of ICT in Secondary Schools

The use of ICT is very important in our educational institutions, but there are some problems that are making it difficult to be implemented. This are some of the problems that are affecting the use of ICT.

1. Inadequate Funding.

   Lacks of money is one of the problems that make the use of computer in our schools to be difficult. The money budgeted for the purchase of this facilities are insufficient to go round all the school or most of it has been diverted for personal use. That is why most government schools lack these facilities.

2. Teachers Factors

   Most of the teachers in our institution of learning are not computer literate and are not willing to learn and this has great impact on students learning. The integration of the teachers and students into computer learning is very important. The teachers have to go for training and retraining in order for them to be in tune with what is going on in the global worlds.

3. Infrastructural related challenges.

ICT facilities requires an appropriate and suitable place to be kept for security purpose. A well-ventilated room with air condition for proper functioning. These infrastructural facilities are not provided for by government or school authority.

4. Policy Makers and Planners

   Those that are saddle with responsibility of making policy for our schools are not been sincere with their work. They formulate policy that are not in tunes with what is attained in today reality which is affecting our education.

Conclusion

The use of ICT in the teaching and learning of biology have a positive impact on students' academic performance in biology. The lesson taught by ICT facilities likes Multimedia instructional packages, powerpoint, computer and slides make students to be able to visualized and concretized it in their minds which in turn make them performed excellently. ICT used in teaching and learning is more attractive and help students develop positive attitude towards learning of biology, thus improving the performance of students. More ICT facility should be provided in our school and the training of our teachers in the use of ICT facilities in the class rooms.

Recommendation

It is recommended that ICT should be used to teach biology in secondary schools. To this end, biology teachers and students need to be trained on how to acquire necessary skills needed in the use of ICT in teaching and learning of biology. Schools also should be provided with funds for the purchase of this facilities to be use in their schools. Training and retraining of teachers in the aspect of ICT is very important to be able to acquire the necessary skills needed for the teaching of their subjects.

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Examining the Difference Between Marker-Based and Markerless Augmented Reality on Learning Outcomes of Biology Students' Colleges of Education in Nigeria

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Abstract

This study was carried out to examine the difference between marker-based and markerless augmented reality on learning outcomes of Biology students in Colleges of Education in Nigeria The study adopted a quasi-experimental design. (Pre-test, post-test non-equivalent control group design). Four null hypotheses guided the study with NCE I Biology students in 2020/2021 academic session comprising 326 as the sample of the study. The instruments used for data collection were the Biology Achievement Test (BAT) and Biology Retention Test (RAT) Pearson Product Moment Correlation (PPMC) formula was used to determine the reliability coefficient of BAT which yielded 0.79 and Cronbach Alpha formula was used for QMSAR which also yielded 0.85 indicating that the instruments were reliable for the study. The data was analyzed using ANCOVA to test the null hypotheses at 0.05 level of significance. Findings revealed a statistically significant difference with moderate effect size in the mean achievement, and retention scores of students taught Biology course using Marker-based and Markerless Augmented Reality in Colleges of Education in North – Central, Nigeria. Similarly, there is a significant difference with small effect size between the mean achievement scores of male and female students taught Biology course using Marker-based Augmented Reality in Colleges of Education in North – Central, Nigeria. Based on these findings, it was recommended among others that the teaching of Biology course in Colleges of Education in North – Central, Nigeria should be given attention by College administrators through the use of relevant instructional materials like marker-based and markerless augmented reality. This is to ensure that Biology students are adequately trained to face the world of work with knowledge and experience to practice and deliver services effectively.

Keywords; Achievement, Application, Augmented Reality Application, Marker-based Augmented Reality, **Markerless Augmented Reality**,

1.1 Background to the Study

As globalization continued to turn the world to a global village through information technologies, educational systems become dynamic and are constantly being reviewed, developed and adapted to the requirements of the time. Supporting the dynamic changes, educators had to increase the quality of educational output by integrating technologies in their teaching (Aivelo and Uitto, 2016). This is necessary because, students are not only prepared for the dynamic changes that may occur in education but are the prime movers of the change process. It is worthy to note that students being digital natives are already conversant with the landscape of technological developments; hardware, software, internet and social media sites.

Information and Communication Technology (ICT) is increasingly becoming an attractive tool for educational practitioners in the 21st century. Educators now use computers, computer networking (the Internet and intranet), peripheral devices and multimedia, and the range of assistive technologies available for students with special educational needs to facilitate programs development, management and implementation of curricular contents in a more effective way. These technology tools have the potential to augment and transform classroom learning and teaching by offering teachers and students with educational resources which extend their teaching and learning environment beyond the classroom (Sharma, 2016).

Balasubramanian and Saminathan (2016) highlighted that ICT support the aims, principles and objectives of education by way of simplifying the means to which curriculum is implemented. Notwithstanding, curriculum implementation require the creative use of ICT in education which has the capacity to increase the quality of students' learning outcome. To achieve this, teachers have to exploit the potential of ICT to complement their own pedagogical practices by making students an active agent in their own learning. Piaget (2013) clarified that "learning is an active process of constructing knowledge, rather than simply acquiring knowledge". Thus, in a technology driven environment, ICT tools promote active learning by enabling students to find, manage, evaluate and use information retrieved from CD-ROMs and websites. The process support students on their journey through construction of new knowledge in a scientifically controlled laboratory experiment, discuss findings and share their experiences with others using presentation software and social media handles. ICT are connected to the possibilities for supporting students learning differentiation through the creation of a specialized digital learning environment and the use of reinforcement software like augmented reality to prompt for image and object recognition. Thus, the sophistication of ICT has gone beyond using them for teaching, assessment and engagement with content, but for innovations related to digitization of educational practice (Aivelo and Uitto 2016).

Augmented Reality AR was first developed in 1992 by the military and was called Virtual Fixtures developed by the U.S. Air Force's (Henriksson, 2019). Akma, *et al.,* (2018) envisioned that, there is need to digitize teaching and learning by integrating augmented reality as one of the innovations that might drive impactful teaching and functional learning. It is described as a structure of tools that allows an individual to view one or more virtual objects in real world environment. AR technology makes it possible for viewing things in real environment as an imagery attached to real location and objects (Bistaman, *et al.,* 2018). AR is a term that describes the environment which combines reality and virtual with the aid of computer so that the boundary between reality and virtual became very thin. The manipulation of the virtual environment in the real environment creates a new learning environment between teachers and students. AR emerges as a technology that may help students develop their perception, learning and visualization skills and become interactive

teaching materials with a high rate of information transfer for teachers (Ali *et al.*, 2017). Augmented Reality (AR) is an interactive experience where the real world is enhanced or completed by computer-generated additions. The process works well with image recognition and scene description with narrations; that is voice, image and text jointly describe the scene of interest.

Building and using AR scenes combines active complex problem solving and teamwork to create engaging educational experiences to teach science, math or language skills, and studies have found that this activity enhances student motivation, involvement, and engagement (Sural, 2018). Furthermore, Akcayir & Akcayir, (2017) stated that AR technology has the ability to render anything that may be hardly visualized in a classroom to 3D model systematized for real-time recognition. Along with the rapid development of AR, it can now be accessed from a user's smartphone, in which the smartphone camera captures the real images and the system add necessary information about the images to the screen. AR consists of merging live images with virtual layers of information of three-dimensional (3-D) models that include content, images, sounds, and videos as instructional formats in education systems (Vogt & Shingles, 2013; Chang, *et al.,* 2016).

The AR technology supports student's seamless interaction between real and virtual environments and allows the use of a tangible interface metaphor for object manipulation (Yuliono, *et al*., 2018). This occurs by augmenting physical devices with virtual annotations and illustrations. The digital content displayed in AR is registered in the physical world and designed to provide the user with the mixed view of reality. Categorically, the applications are generally designed to perform the functions of Marker – Based and Markerless AR in which the former uses a physical object as a trigger, as the device detects the trigger, it displays corresponding and preprogrammed digital information. While the later displays digital information based on user's specific location and is enabled by internet connectivity. In these applications, a user will view the marker and an overlay of digital information appears for the user. This digital information can include pictures, three dimensional animations, text, audio, and video (Mcmahon, 2014).

Vogt and Shingles (2013) described the differences between the two forms of AR and refer to Marker-based as an object that when viewed by the AR application will trigger preselected digital content. Examples include pictures, audio, and video that display for the user when the user views the printed trigger.

Markerless AR is location-based and displays digital information based on a user's specific location. Thus, for the trigger to be activated, internet access and GPS is required to provide accurate display of information. As such, it is called location-based AR because, it depends on GPS, compass, internet, and other tools to recognize the user's location and to display the digital content corresponding to the user's location. As the user moves the device, changes orientation, or moves themselves, the device continues to update the AR view based on the new situation (Yiu and Chen, 2021). Additionally, when these tools (AR) and resources are effectively integrated for the purpose of teaching and learning, it may simplify the identification of specimens in a science class, guide the selection of samples in the field and also motivate students.

The utilization of marker-based and markerless AR are useful in teaching Biology; in which the AR is used to build on how students interpret the real physical world. This approach has helps in the development of a special type of interactive AR application especially in the field of Biology in higher education. Therefore, educators have begun to seek classroom

technologies that have the potential to help students learn actively and may improve their understanding especially in subjects that are abstract in contents such as Biology (Morimoto and Ponton, 2021). The adoption of AR in the educational setting could be in different disciplines such as science, engineering, magnetic fields, electrical engineering laboratory for distance education and astrophysics (Vogt and Shingles, 2013; Chen, *et al*., 2017).

In the recent times, the applications of AR system in educational setting is gaining acceptance among educators, instructional designers and researchers. This technology has been successfully integrated into many broad fields of education, achieving promising results. For instance, Almoosa (2018) identified its application in the field of Natural Sciences, Mathematics and Statistics (52.50%), Social Sciences, journalism and information (15%), Arts and Humanities (15%), and Engineering manufacturing and construction (15%). In contrast, AR is yet to gain prominence in the fields of education in Africa and Nigeria though, Kamarainen, *et al*., (2013) reported that AR was effective in supporting situated learning in environmental science education, while Bistaman *et al.*, (2018) believes that there are many benefits of AR when integrated toward teaching and learning process.

The existence of AR in higher education is still daunting demanding for empirical investigation. Again, research in the area of AR is at the nascent stage especially in Africa specifically Nigeria. The available studies in developed countries had uncovered the significance of AR in expanding the possibilities for teaching and learning both academically and behaviorally (Akcayir and Akcayir, (2017). These authors believed that AR is such a technology that offers a new educational approach that help learners to develop capacity for critical thinking and deeper understanding of the concepts underlying scientific investigation. Also, AR makes it possible to study abstract concepts such as three-dimensional shapes and geometric objects, which are difficult to understand through a text book and conventional / lecture method or a teaching method used which involves primarily, an oral presentation given by a teacher in front of learners alone. Augmented reality merges any digital information within real-world settings to electronic information in a variety of media formats; not only visual and graphic media but also text, audio, video and tactile, it is research potential in educational settings is enormous (Chen, *et al.,* 2017; Almoosa, 2018). Lindgren and Johnson-Glenberg, (2013) suggest that these innovative technologies can bridge the "abstraction gap" between everyday experience and abstract understanding by creating a controlled context for physical interaction with content from which abstract concepts can be built.

The use of marker – based AR and markerless AR are useful in Biology contexts, where the virtual representations can be used to shape how students interpret the physical world. This approach has assisted in the development of a special type of interactive technology – based medium especially in the field of Biology in colleges of education. Biology is one of the aspects of science education. It is one of the important science subjects instructed in both secondary schools and higher institutions in Nigeria (Salami, O., Oloyede, M. A., & Adefioye, A. E., 2019). Biology is a subject that engages students in various process skills such as observation, clarifying, interpreting and predicting events, designing experiments, organizing information, and reporting adequately. One primary function of biology teaching is to help the students understand and apply biology concepts, principles, theories, and laws. Adenike, et, el (2019) observed that mastery of concepts in biology is difficult to achieve among students, and worse still, is assessing abstract concepts such as biological associations, which are prerequisites to understanding other life processes. Due to the abstract nature of the concepts of biological associations in biology, many students find these concepts difficult to

comprehend, connections to previous knowledge and to apply the concepts to real life situations. Therefore, to make Biology more relevant, enjoyable, easy and meaningful to learners, adequate relevant technologies (instructional materials) need to be provided and properly utilized as the teaching and learning situation may require.

Achievement can therefore be inferred as the behavior which a student exhibits within a given time range or at the end of a given period of time. Academic achievement in Biology is the quality and level of skills acquired and retained by students. Akor, (2017) and AL-Dulaimi (2021) noted that students' cognitive or psychomotor achievement is quantified by a measure of the student's academic standing in relation to those of other students. The purpose of testing an achievement is to help the teacher and the students evaluate and estimate the degree of success attained in learning a given concept. Achievement in Biology therefore, represents how fast the learner comprehend and retain a subject matter at a certain period of time. The degree of a student's cognitive achievement may be influenced by the ability to retain learning.

Retention is the learner's ability to recall, hold, often utilize and supply the attained knowledge or skills in the future. In other word, Adeniji, *et al*., (2018) refer to retention as the ability to memorize and reproduce the learnt materials when the need arises. Retention of learning is the repeated performance, skill or behavior earlier acquired by a learner, elicited after an interval of time (Erbas and Demirer,_2019). Retention is influenced by proper assimilation and storage of gained knowledge or skills. The nature of student's achievement, retention in biology course especially in colleges of education is discouraging as few students graduate every academic year (Amedu, 2015; Schneider & Preckel, 2017; Köse, *et al.,* 2018). This prompted the need to investigate whether biology education students are not motivation with the current teaching methods? Reacting to this, Owino (2018) remarked that students need motivation to learn biology.

Gender is a physiological phenomenon that divides individual into various categories such as males and females with each having associated stereotypes, roles, dress etc. It is also said to be the mental analogue of sex (Dirin, 2019). However, the effect of different technological software learning approaches on gender and learning related outcomes such as academic achievement, retention and students' motivation cannot be overlooked in educational research, hence this study intends to examine the difference between marker-based and markerless augmented reality on learning outcomes of Biology students in Colleges of Education in Nigeria.

Despite the importance attached to Biology as stated in the National Policy on Education (FRN, 2009), students' academic achievement is still unsatisfactory. Following this assertion, the study projected that the teaching of Biology education course in colleges of education does not involve much use of technology but predominantly characterized by conventional teaching method. This often produce students who are less engaged, less attentive and dependent upon memorization without having a total understanding of the course. Similarly, as students failed to understand the concepts due to abstract nature of the course contents and poor motivation to continue learning, retention of the learnt material also becomes difficult. It is however, not known empirically whether gender variations influence Students learning of biology related concepts in colleges of education.

In order to avert this ugly menace and produce a productive biology education graduates, lecturers and students in colleges of education requires technological teaching and learning

devices that are based on the ability to access a variety of information sources, hands-on practical and a friendly learning environment. This implies that when tertiary institutions remain entwined with conventional teaching method and failed to explore educational technology tools and devices, it may become less relevant in producing efficient human capital which will in turn undermine national growth and economic development of the country (Franklin *et al.,* 2014; World Council for Curriculum & Instruction, 2019).

The purpose for the study is to investigate the impacts of marker-based and markerless augmented reality application on Biology student's achievement and retention in Colleges of Education in North – Central, Nigeria. More so, the result of the study is expected to provides results on Markerless AR application proving to be effective in enhancing Biology student's achievement and retention, its responsiveness to students' learning demand, adding up to their curiosity and attention to learning Biology concepts in an interactive learning medium which was not achievable with conventional learning environment and also proving to be gender responsive for favoring both male and female students.

The study was limited to examine the difference between marker-based and markerless augmented reality on learning outcomes of Biology students in Colleges of Education in Nigeria. Specifically, there are fifteen (15) Colleges of Education in the North – Central, Nigeria of both Federal and State (Benue, FCT, Kogi, Kwara, Nasarawa, Niger and Plateau) out of which four (4) Colleges of Education (Federal College of Education, Kotangora, Niger State, Nasarawa State College of Education, Akwanga, Federal Capital Territory College of Education, Zuba, Abuja and Kwara State College of Education Technical, Lafiagi) randomly selected.

1.4 Research Hypotheses

The following null hypotheses are formulated and tested at 0.05 level of significance:

HO_1: There is no significant difference in the mean achievement scores of male and female students taught biological associations using Marker-based Augmented Reality in Colleges of Education in North – Central, Nigeria?

HO_2: There is no significant difference in the mean retention scores of male and female students taught biological associations using Marker-based Augmented Reality in Colleges of Education in North – Central, Nigeria?

HO_3: There is no significant difference in the mean achievement scores of male and female students taught biological associations using Markerless Augmented Reality in Colleges of Education in North – Central, Nigeria?

HO_4: There is no significant difference in the mean retention scores of male and female students taught biological associations using Markerless Augmented Reality in Colleges of Education in North – Central, Nigeria?

2.0 Review of Related Literatures

2.1 Empirical studies on student's Achievement

Safadel and White (2019) carryout a study on Spatial understanding of molecules in molecular biology in isolation and relation to their next elements. Augmented reality (AR) was developed as a computer interface that enables the users to see the real world with virtual objects superimposed on it. Users can easily convert the molecules structures obtained from protein data bank (PDB) to a 3D format and use it with an AR application to study the molecules from different perspectives. A sample of 60 college students was assigned randomly to one of two conditions namely 2D and AR. At the end of the experiment,

participants completed a comprehensive test and then a satisfaction questionnaire. The results of the study showed a significant difference in the achievement between 2D and AR in satisfaction, the media usability, perception, and apprehension.

Yiu and Chen (2021) carryout a study on Molecular Data Visualization with Augmented Reality (AR) on Mobile Devices. The AR was a computer-generated 3D model superimposed onto a real-world environment in real time. The application of AR in visualizing macromolecular structures provide step-by-step guides on a standalone app Ollomol (iOS and Android), as well as an in-browser web app, WebAR-PDB. Both of them allow users to specify entries from the Protein Data Bank (PDB) for an elementary AR experience. The result showed that the application of AR enhances students' interactivity and imaginativity in macromolecular visualization.

Önal and Önal (2021) conducted a study to determine the effect of teaching astronomy through augmented reality (AR) on the achievement and interest level of gifted students and their opinions about AR applications. The study design was an explanatory sequential mixed-methods design. The sample comprised of 51 gifted students (26 in the control group and 25 in the experimental group) attending a Science and Arts Centre. In the application process, the astronomy teaching activities supported with AR were used in the experimental group while the astronomy teaching activities suggested in the official science curriculum of the middle school 7th grade were used. The data of the study were collected by using an Astronomy Achievement Test and the Scale of Interest in Astronomy as a pretest and posttest and an AR Interview form administered only to the experimental group students at the end of the application.

The statistical analyses of the quantitative data revealed that before the experimental application, the experimental and control groups were equal in terms of astronomy achievement and interest in astronomy. After the completion of the application, however, significant differences were found for both the experimental and control groups in favor of the posttest. Moreover, significant differences were also found in the posttest in favor of the experimental group in terms of both astronomy achievement and interest in astronomy. In other words, AR-supported astronomy teaching activities positively affected the experimental group students' astronomy achievement and interest in astronomy. Furthermore, the experimental group students expressed many positive opinions about the AR applications within the categories of technical features and cognitive and affective features. The experimental group students wanted the use of AR applications in the teaching of other science subjects and other courses.

Cakir, *et al.,* (2021) carryout a study on Integration of mobile augmented reality (MAR) applications into the 5E learning model in Biology teaching. A convergent parallel mixed research method is used. The study was conducted with the 31 preservice science teachers in a General Biology Laboratory Course in the 2018-2019 academic year. As the data collection tools, "Achievement Test with Open-Ended Questions", "Attitude Scale towards Digital Technology" and "Semi-Structured Interview Form" were used. The evaluation of the research results indicates that MAR practices in the biology laboratory have increased the academic success and positively affected the attitudes of preservice teachers towards digital technology. Moreover, preservice teachers expressed that applications of MAR facilitated their learning and understanding, making the lessons more attractive.

AL-Dulaimi (2021) carryout a study on the effect of teaching according to the augmented reality on the technique of the visual thinking skills among scientific fifth-grade students in a biology course. An experimental research approach was adopted with the partial set of two equal groups with the dimensional test of visual thinking skills. The research population represented all the scientific students of the fifth grade for morning government schools affiliated to the General Directorate of Education of Baghdad / Karkh II, alshakerin preparatory for boys was chosen intentionally, in which two groups were chosen for this study. One group is chosen randomly as the control group via lottery, whereas the other group is chosen to be as the experimental group. The total number of students are 53 students. 26 students are chosen for the experimental group that were taught according to the augmented reality technique. The other group is the control group consisting of 27 students that were taught according to the traditional way. The results showed there is statistically a significant difference for the experimental group in the visual thinking skills test.

Adedokun-Shittu, Ajani and Nuhu, (2020) carried out a study on Augmented reality instructional tool in enhancing geography learners' academic performance and retention in Osun state Nigeria. Physical Geography comprise abstractions leading to students' conceptual difficulties, leading to poor academic performance and low retention. The study engaged a visualization technology; Augmented Reality Instructional Tool (ARIT) to examine Geography learners' performance and retention when they are exposed to its' use in learning Physical Geography concepts. Four research questions were answered, while, one hypothesis was tested at 0.05 level of significance. A mixed method research approach of an experimental and survey designs was adopted. A multistage sampled intact class served as the participants. Three test instruments: an open-sourced AR mobile application (ARSJA); an adopted performance and retention test on physical geography (PRTPG); and a validated 7-Item questionnaire with a reliability value of 0.82 were employed as the research instrument. A retention rubric adopted based on Brown-Peterson Task of Memory was used as the qualitative content analysis tool. The major finding of the study was that ARIT enhances learners' performance and retention, and equally embrace gender equality. The study concluded, that the teaching and learning of Geography can be enhanced with the use of ARIT.

Çetin and Türkan, (2021) investigate the Effect of Augmented Reality based applications on achievement and attitude towards science course in distance education process. A single group pretest and posttest experimental design was used. The research group consisted of 15 third grade students attending school during the 2020–2021 academic year. In the research, AR-based applications were designed for some gains aimed at the "Electric Vehicles" theme in the science course and these applications were shown to the students through the Zoom program. The applications consist of 15 hours including pre and posttest. Research data were collected through data sets obtained from success and attitude scales given before and after the application. The findings obtained from the research show that the students' achievement and attitudes towards the science course increased significantly with Augmented Reality (AR) based applications.

2.2 Empirical studies on student's retention

Huang *et al.* (2019) carried out an exploratory study comparing AR and VR technologies with regard to their impact on learning outcomes, such as retention of science information. Specifically, the authors used two-conditions (AR vs VR) between- subjects' design to test college students' science-knowledge retention in response to both auditory and visual information presented on a Samsung S4 smartphone application. The results (N= 109)

suggest that VR is more immersive and engaging through the mechanism of spatial presence. However, AR seems to be a more effective medium for conveying auditory information through the pathway of spatial presence, possibly because of increased cognitive demands associated with immersive experiences. However, they highlighted that an important implication for design is that educational content should be integrated into visual modalities when the experience will be consumed in VR, but into auditory modalities when it will be consumed in AR.

Reeves, *et al.,* (2021). Use of augmented reality (AR) to aid bioscience education and enrich student experience. The study adopted a pretest and posttest research design with a sample of Twenty participants from the 2019-2020 cohort who currently enrolled on a level-4 biochemistry module were divided evenly into two groups using a random group Generation function hosted on virtual learning environment (Moodle). Group 1 were given 15-minutes to complete formative test comprising 13 multiple choice questions designed to test their knowledge and understanding of concepts in *Structural Biology*. After which, participants attended a 20-min AR-enhanced teaching session. The data was analyzed using t-test. The result showed that there is a move towards significance with the combination of both lectures and the AR session. Participants from both groups were invited to re-sit the formative test 4-weeks later in order to assess whether they had retained the information. Ten participants completed the re-sit attempt, which showed results comparable with those of group 2 4-weeks earlier.

Najwa (2021) carryout a study on Augmented Reality Mobile Learning Applications 'Pathogenar'. The research design was Rapid Application Development model. The results show that AR is a tool that improves idea visualization through virtual and real image components, enables students to easily map physical characteristics and helps them create mental images for further discourse. Results also show that AR not only increases motivation but also causes more contact between student-student and teacher-student interaction.

Rukmani and Vasimalairaja (2021) Explores the effectiveness of augmented reality to enhance lateral thinking of high school students. The researcher adopted the experimental method with a sample of 108 was taken for the research. Tools used include augmented reality marker-based content, lateral thinking scale developed and standardized by the researcher. The result of the research concludes that there is a significant effect of augmented reality to enhance lateral thinking and academic longevity of high school students.

2.4 Influence of gender on students' academic achievement

Amedu (2015), examined the effect of gender on the achievement of students in biology using the jigsaw method. The sample was made up of 87 students in SS1 in a secondary school. The study utilized an intact class because the study took place in a normal school term. There were 39 males and 49 females. The Biology Achievement Test (BAT) was constructed from past WAEC questions. These questions are standardized test and so were not subjected to further reliability test. The students administered the BAT as pretest, and the results were collated by gender. A t- test analysis showed that there was no significant difference between the mean scores of boys and girls. Results showed that there was a significant difference between the mean scores in favor of the males.

Dirin, *et al.,* (2019) study Gender Differences in Perceptions of Conventional Video, Virtual Reality and Augmented Reality. The study assessed the personal factors, such as gender differences, of perceiving and adopting technologies such as virtual reality (VR), augmented

reality (AR), and conventional video. The study was quantitative in which students were asked to perform experiments on VR, AR, and conventional videos. After the experiments, participants were asked to fill out a predefined survey about their emotional reactions to the experiments. The data was analyze using mean, standard deviation and t-test. The results show, unlike the prior research, that female participants were more enthusiastic about the usage of new technologies than males. The user experience of VR, AR and conventional videos triggered more positive emotions among females than males. For practitioners, the results suggest that the audio-visual technologies could engage more females than males.

Ibili & Billinghurst (2019) conducted a study on Assessing the Relationship between Cognitive Load and the Usability of a Mobile Augmented Reality Tutorial System: A Study of Gender Effects. The relationship between perceived usefulness, the perceived ease of use, and the perceived natural interaction factors and intrinsic, extraneous, germane cognitive load were investigated. In addition, the effect of gender on this relationship was investigated. The research results show that there was a strong relationship between the perceived ease of use and the extraneous load in males, and there was a strong relationship between the perceived usefulness and the intrinsic load in females. Both the perceived usefulness and the perceived ease of use had a strong relationship with the germane cognitive load. Moreover, the perceived natural interaction had a strong relationship with the perceived usefulness in females and the perceived ease of use in males.

Ruth & Lachlan (2019) carry out a study with a title Pokémon Go-ing or staying: exploring the effect of age and gender on augmented reality game player experiences in public spaces. This study examines the perceptions and usage of public spaces by different demographics of 27 augmented reality gamers. Survey research design was adopted with questionnaire as instrument for data collection. The study finds that there are several statistically significant differences between the experiences of men and women, and players of different ages playing *Pokémon Go* in public spaces in Australia, particularly in their mobility, sense of marginalization and sense of place.

Schaffernak, *et al.*, (2020) carrying out a study on the Potential Augmented Reality Application Areas for Pilot Education: An Exploratory Study. The study identify potential application areas for augmented reality (AR) in pilot education by addressing gender preferences. Like the field of engineering, the aviation industry is dominated by men. Because the aviation industry forecasts a high demand for pilots, it is highly desirable to address gender diversity and improve teaching methods in pilot education. In this study, potential application areas for AR-supported pilot training were investigated by conducting a survey with 60 pilots and flight instructors (including 12 women). Typical AR use cases were presented in videos, and the pilots reported their preferences regarding similar or other AR applications used in different parts of the flight training program. AR navigation was the use case that was most frequently preferred by both female and male pilots. The majority of pilots agreed that AR could potentially be used in theoretical instruction, pre-flight aircraft inspection, and procedure training. In addition, both gender groups showed similar preferences for various gaming concepts that make learning more interesting and engaging, such as receiving positive feedback. However, a higher percentage of women than men reported that achieving a target or receiving points to successfully finish a task and answering questions during the game were satisfying. Including a story in the game to attract attention was preferred by a higher percentage of men than women. The results of this study can be used to design AR educational concepts that support gender diversity in pilot education and other technical domains.

Urbano, *et al.,* (2021) conducted a Case Study of AR Technology and Engineering Students: Is There a Gender Gap? The study seeks to determine the factors influencing students' intention to use Augmented Reality (AR) allows a deeper understanding on how students react to the use of such technologies in their training as engineers. This study aims to identify the emotional and cognitive factors that influence the students' intention of using AR in their future professional life and to access possible gender differences. A group of about 150 undergraduate students from an Engineering and Industrial Management program had the opportunity to explore AR applications related to contents addressed in Sensors and Actuators course. A survey was designed and used with those students. Principal component analysis resulted in three components named interest, ease of use and attitude. Logistic regression analysis was conducted with these three components together with gender, as predictors of intention of using AR in later professional life. Attitude turned out to be the strongest predictor. This analysis has also shown that gender has no significant effect.

Buchner (2021) carry out a study on a title Generative learning strategy do not diminish primary students' attitudes towards augmented reality. A total of 56 primary school students participated and learned with augmented reality (AR) learning materials either in an experimental group or a control group. The experimental group learned with AR and additional learning strategies based on generative learning theory, namely, self-explanation and self-testing. The control group learned only with AR. A survey instrument was developed for the study. To analyze the data, the mean values of the individual items were first assigned to their respective scales. Gender differences were found for the accessibility subscale, with male participants considering the AR technology to be easier to access outside of the classroom too.

3.0 Methodology

This study adopted a quasi-experimental design, (pre-test, post-test non-equivalent control group design). The design entails the use of non-randomized sampling where the researcher cannot randomly assign subjects to a group, hence intact classes were used for experimental group I, II and control group respectively. Experimental groups and control group were given the pretest and posttest. The Experimental group one was exposed to Marker-based (AR), Experimental group two was exposed to Markerless (AR) while the control group was taught using conventional lecture method. The population for the study consisted of 3,152 Nigeria Certificate in Education (NCE) Biology students in North Central, Nigeria. The sample for the study was made up of 326 students 162 males and 164 female's students from three Colleges of Education in North - Central. The Colleges with common features such as equivalent, composition, facilities, exposure were sampled. The Colleges were randomly assigned to each of the experimental groups marker – based augmented reality application (MB), markerless augmented reality application (ML) and control group conventional lecture method (CLM). The instrument used in this study is Biology Achievement Test (BAT) a 50 – item covering topics in Biology used to collect data for both pre-test, post-test, retention test and Marker-based. The instrument was subjected to face and content validation by two experts from Science Education Department of Federal University of Technology, Minna. To determine the reliability of the instrument, a pilot test was conducted within the targeted population but outside the sampled schools for the study. Test re-test method of administration was used for (BAT) to NCE 1 Biology education students who were randomly selected for the period of two weeks interval. The result obtained from pilot test conducted was used for reliability test of the instruments. Pearson Product Moment Correlation (PPMC) formula was used to determine the reliability coefficient which yielded 0.79 indicating that

the instrument is reliable for the study. The instrument was letter administered to the two experimental groups and the control group. They were made to expose students to a new instructional environment; Marker-based Augmented Reality (MBAR), Markerless Augmented Reality (MLAR) and Conventional Lecture Method (CLM). The study lasted for 12 weeks. The data collected from this research work were statistically analyzed using descriptive and inferential statistics. The research questions were answered using Mean (ẍ) and Standard Deviation (SD) while the hypotheses were tested at 0.05 level of significance using analysis of variance (ANOVA) and analysis of covariance (ANCOVA) with the aid of computer software Statistical Package for Social Sciences (SPSS) version 23.0 was used for the analysis.

4.0 Results and Discussion

4.1. HO_1: There is no significant difference in the mean achievement scores of male and female students taught Biological associations using Marker-based Augmented Reality in Colleges of Education in North – Central, Nigeria

Table 1: ANCOVA Analysis of mean achievement scores of male and female students on the use of Marker-based Augmented Reality

Source	Sum of Squares	df	Mean Square	F-value	P-value
Corrected Model	1425.505[a]	2	712.753	6.110	.003
Intercept	126306.771	1	126306.771	1082.727	.000
Covariate (Pretest)	389.911	1	389.911	3.342	.070
*Gender	633.103	1	633.103	5.427	.022*
Error	13065.486	112	116.656		
Total	845536.000	115			
Corrected Total	14490.991	114			

a. S = Significant

Table 1. ANCOVA was run to examine the differences in the mean achievement scores of male and female students taught Biological associations using Marker-based Augmented Reality in Colleges of Education in North – Central, Nigeria. The table revealed that $F_{(1,112)} = 5.427$, P-value = 0.022 at $P < 0.05$. The effect size revealed that there was a moderate difference between the groups, partial $\square^2_{\square} = .046$. Therefore, hypothesis one was rejected. This indicates that there was a significant difference in the mean achievement scores of male and female students taught Biological associations using Marker-based Augmented Reality in Colleges of Education in North – Central, Nigeria.

4.2 HO_2: There is no significant difference in the mean retention scores of male and female students taught Biological associations using Marker-based Augmented Reality in Colleges of Education in North – Central, Nigeria.

Table 2: ANCOVA Analysis of Mean Retention Scores of Male and Female Students on the use of Marker-based Augmented Reality

Source	Sum of Squares	df	Mean Square	F-value	P-value

Corrected Model	2616.807[a]	2	1308.404	5.976	.003
Intercept	11643.064	1	11643.064	53.177	.000
Covariate (Achievement)	153.124	1	153.124	.699	.405
*Gender	2614.998	1	2614.998	11.943	.001*
Error	24522.323	112	218.949		
Total	915940.000	115			
Corrected Total	27139.130	114			

S = Significant

Table 2: ANCOVA statistic was computed to examine the differences in the mean retention scores of male and female students taught Biological associations using Marker-based Augmented Reality in Colleges of Education in North – Central, Nigeria. The table revealed that $F_{(1,112)} = 11.943$, P-value = 0.001 at $P < 0.05$. The effect size revealed that there was a moderate difference between the groups, partial $\square^2_{\square} = .096$. Therefore, hypothesis two was rejected. This indicates that there was a significant difference in the mean retention scores of male and female students taught Biological associations using Marker-based Augmented Reality in Colleges of Education in North – Central, Nigeria.

4.4 HO_3: There is no significant difference in the mean achievement scores of male and female students taught Biological associations using Markerless Augmented Reality in Colleges of Education in North – Central, Nigeria.

Table 3: ANCOVA Analysis of mean achievement scores of male and female students on the use of Markerless Augmented Reality

Source	Sum of Squares	df	Mean Square	F-value	P-value
Corrected Model	5654.541[a]	2	2827.270	15.971	.000
Intercept	105279.044	1	105279.044	594.708	.000
Covariate (Pretest)	244.098	1	244.098	1.379	.243
*Gender	5450.139	1	5450.139	30.787	.000
Error	18941.832	107	177.026		
Total	749063.000	110			
Corrected Total	24596.373	109			

S = Significant

Table 3: ANCOVA was run to examine the differences in the mean achievement scores of male and female students taught Biological associations using Markerless Augmented Reality in Colleges of Education in North – Central, Nigeria. The table revealed that $F_{(1,107)} = 30.787$, P-value = 0.000 at $P < 0.05$. The effect size revealed that there was a moderate difference between the groups, partial $\square^2_{\square} = .223$. Therefore, hypothesis three was rejected. This indicates that there was a significant difference in the mean achievement scores of male and female students taught Biological associations using Markerless Augmented Reality in Colleges of Education in North – Central, Nigeria.

4.5. HO_4: There is no significant difference in the mean retention scores of male and female students taught Biological associations using Markerless Augmented Reality in Colleges of Education in North – Central, Nigeria.

Table 4: ANCOVA Analysis of Mean Retention Scores of Male and Female Students on the use of Markerless Augmented Reality

Source	Sum of Squares	df	Mean Square	F-value	P-value
Corrected Model	25543.982[a]	2	12771.991	59.863	.000
Intercept	26757.246	1	26757.246	125.412	.000
Covariate (Achievement)	1035.044	1	1035.044	4.851	.030
*Gender	23518.021	1	23518.021	110.230	.000
Error	22828.891	107	213.354		
Total	706428.000	110			
Corrected Total	48372.873	109			

S = Significant

Table 4: ANCOVA statistic was computed to examine the differences in the mean retention scores of male and female students taught Biological associations using Markerless Augmented Reality in Colleges of Education in North – Central, Nigeria. The table revealed that $F_{(1,107)} = 110.230$, P-value = 0.000 at $P < 0.05$. The effect size revealed that there was a large difference between the groups, partial $\square^2_{\square} = .507$. Therefore, hypothesis four was rejected. This indicates that there was a significant difference in the mean retention scores of male and female students taught Biological associations using Markerless Augmented Reality in Colleges of Education in North – Central, Nigeria.

4.7. Discussion of Findings

The finding of the null hypothesis one indicated that the difference in their mean achievement scores was significant with small effect size. The finding was supported by Schaffernak, *et al.*, (2020) whose finding revealed a higher percentage of women than men reported that achieving a target or receiving points to successfully finish a task and answering questions during the game were satisfying. Similarly, the finding of Buchner (2021) also revealed that gender differences were found for the accessibility subscale, with male participants considering the AR technology to be easier to access outside of the classroom too. Finding from null hypothesis two indicates that the difference in the mean retention scores of students was statistically significant. The finding was supported by Dirin, *et al.,* (2019) whose finding showed that female participants were more enthusiastic and retentive about the usage of new technologies than males. The user experience of VR, AR and conventional videos triggered more positive emotions among females than males. For practitioners, the results showed that the audio-visual technologies could engage more females than males. Furthermore, the finding of the null hypothesis three indicates that the difference in their mean achievement scores was statistically significant with moderate effect size favoring male students. The finding is not supported by Rukmani and Vasimalairaja (2021) who revealed that there is a significant effect of augmented reality to enhance lateral thinking and academic longevity of high school students in both genders. The finding of the null hypothesis four indicated that the difference in the mean retention scores of students was statistically significant with large effect size favoring female students. The finding was not supported by the finding of Reeves, *et al.,* (2021) who showed that there is a move towards significance with the combination of both lectures and the AR session among genders. However, the finding agreed with the finding of Yiu and Chen (2021) who showed that the application of AR enhances students' interactivity, remembrance and imaginability in macromolecular visualization.

5.0 CONCLUSION AND RECOMMENDATIONS

Based on the findings of the study, Marker-based augmented reality application proved to be effective in enhancing Biology students learning outcome in Colleges of Education in North – Central, Nigeria. The superiority of marker-based was not only responsive to students' learning demand, but has added to their curiosity and attention to learning Biology concepts in an interactive learning medium which was difficult to achieved with traditional learning environment. Markerless augmented reality application was also responsive to students sensorimotor learning demand and had increased the learning outcome of students higher than the conventional lecture method group. It is therefore effective in enhancing learning however, suffer some limitations like the need for Global Positioning System (GPS) and WiFi positioning system connectivity. Though, the interactivity and the display of animations, image capture systems and triggers are all the same with marker-based but being location inclined make it fall behind its counterpart.The marker-based and markerless augmented reality proved to be gender responsive favoring both male and female students. The differences observed the in their achievement and retention is not considerable to spur attention.

5.2 Recommendations

Based on the findings and conclusions of the study, the following recommendations were made;

1. The teaching of Biology course in Colleges of Education in North – Central, Nigeria should be given attention by College administrators through the use of relevant instructional materials like marker-based and markerless augmented reality. This is to ensure that Biology graduates are adequately trained to face the world of work with knowledge and experience to practice and deliver services effectively.
2. The Federal Ministry of Education should endeavor to stimulate the production of marker-based and markerless augmented reality in order to explore its potential in Colleges of Education in Nigeria. Their use would not only increase students' achievement but motivate students to retain concepts which were ordinarily difficult to do so without the use of AR.
3. Building on students' use of mobile devices in campuses of higher learning, augmented reality applications should be installed on students' devices loaded with Biology concepts based on the course requirements by the ICT unit of the Department. This is to prepare the mind of students regarding the concepts to be treated as advance organizer to increase their achievement or as follow up review after the completion of the course to increase chances for knowledge retention.

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Effects of Glencoe's and Rusbult's Problem-Solving Instructional Strategies on Students' Ability Level and Interest in Electrical Installation and Maintenance Work in North-Central, Nigeria

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Abstract

The study determined the Effects of Glencoe's and Rusbult's Problem-Solving Instructional Strategies on Students' Ability Level and Interest in Electrical Installation and Maintenance Work in North-Central, Nigeria. Two research questions were raised. The study adopted a factorial research design. The study was conducted in the North-central geo-political zone of Nigeria. The population for this study comprised of 1013 NTC II students of EIMW in the technical colleges in North-central, Nigeria. A simple random sampling technique and purposive sampling technique was used in the study. Instrument for data collection was design by researcher. The instruments were validated by three experts. The reliability coefficient of: EIWAT was determined as 0.80 and EIWII was determined as 0.70 using Cronbach's Alpha statistical technique. The data collected were analyzed using mean and standard deviation to answer all the research questions. Findings from the study revealed that students taught EIMW using Rusbult's problem-solving strategy have low ability students than using Glencoe's and Rusbult's problem-solving strategies had higher mean skill achievement and interest scores than high and medium ability students. Based on the findings from the study, among others recommendations were made that, Electrical Installation and Maintenance Works teachers should adopt the use of Rusbult's problem-solving strategy to enhance students' ability level and interest. The study further recommend that Science and Technical Schools Board should sensitize and train Electrical Installation and Maintenance Works teachers on the use of Glencoe's and Rusbult's problem-solving strategies in order to enhance students' ability level and skill achievements.

INTRODUCTION

Technical Education has been recognized all over the world as a tool for empowering people, especially the youths, for sustainable livelihood and social-economic development (Sanni, 2012). Technical Education have been preparing individuals to wind up skilled workers and professionals since the preparation qualifies them for occupations in both open and private segments of the economy. In view of the above definitions the term technical education in general is a form of training that has to do with the securing of practical skills in a certain profession, art or employment. It also provides individuals or learner with vital training and the proper aptitudes as well as addition specialized information, so that, so that an individual or students will be able to exercise a profession, art or activity, irrespective of their age or their training level. The goals of technical colleges, as stated by Federal Republic of Nigeria (FRN) (2013) are, to provide trained manpower in the applied sciences, technology and business, particularly at craft, advanced craft and technician levels; provide the technical knowledge and vocational skills necessary for agricultural, commercial and economic development; and give training and impart the requisite skills to individuals who shall be self-reliant economically and in tune with latest technology. The courses offered at these technical colleges includes general subjects which are offered by all students they are mathematics, English languages, social studies, civic education, physics, chemistry and religion. While trade areas among others which are optional are Carpentry and Joinery, Motor Vehicle Mechanics (MVM), Blocklaying and Concreting, Computer Craft Studies (CCS) and Electrical Installation and Maintenance Work (EIMW).

EIMW as one of the engineering trades offered in Nigerian Technical colleges, it involves the application of scientific knowledge in the design, selection of materials, construction, operation and maintenance of Electrical equipment. The Federal Republic of Nigeria (FRN,

2013), indicates that the programme for EIMW in Nigeria Technical Colleges was designed to produce competent craftsmen that are expected to test, diagnose, service and completely repair any fault relating to electrical installation main units and systems to the manufacturers' specification as indicated in the Technical College curriculum for EIMW (NBTE, 2010). The curriculum of EIMW is structured in foundation and trade modules which consist of general education such as mathematics, English languages, social studies, civic education, physics, chemistry and religion, theory and related courses, workshop practice, industrial training components and small business management and entrepreneurial training. This curriculum if adequately implemented is expected to produce competent craftsmen in EIMW for industrial and technological development in Nigeria.

Electrical and Electronics industries need the service of craftsmen who can adapt to the changes and challenges in technology in the industries. The need for preparing students for these change and challenges therefore has necessitated a shift from instructional strategies that are based on the behavioural learning theories to those rooted in cognitive psychological learning theories for which Glencoe and Rusbult's problem-solving strategies are one (Teman and Dauda, 2019). Problem-solving plays a very important role in Education, as it is used to train students/learners to apply scientific knowledge and skills learned. Besides, problems are seen as a vehicle for developing student's general problem-solving capacity and for making lessons more pleasant and motivating. Wun and Sharifah, (2016) asserted that problem solving is an important life skill in the 21st century.

With the low performance of EIMW student in this technical colleges, most of these graduates faces several challenges and most people enjoy the stimulating challenge of a good problem and the satisfaction of solving it. You feel this satisfaction more when you master the tools of problem solving (Rusbult, 1989). Rusbult believes that you get "oriented" by

using all available information (words, pictures, and free information) to form a clear, complete mental picture of the problem situation. By reading the problem statement carefully, you get accurate comprehension, the meaning of words and sentence structure in order to gather all the important facts. Most problems are written clearly, so use standard reading techniques to accurately interpret what is written. In Rusbult problem solving, the teacher gives detailed explanation to students at every stage of solving the problem and also provides the procedures for solving the problem where necessary.

Glencoe and McGraw-Hill believes that some students don't spend time identifying the problem, which makes it more challenging for them to create, execute, and analyze the effectiveness of a solution plan. Glencoe therefore proposed four phases of problem solving (Exploration, planning, solving and examination). In exploration stage, students brainstorm and study the problem properly in order to understand it. In planning stage, the students identify the basic facts and materials needed for solving the problem. At this phase too, the students identify the parameters, formula or diagrams that are required for solving the problem. In solving stage, the students carry out the plan prepared and solve the problem identified. The last stage of the problem is examination where the students examine their answers carefully to see if it fits the facts given in the problem or the problem has been adequately solved (Teman & Dauda, 2019). In Glencoe problem solving, the teacher serves as guide or facilitator at every phase of the problem solving.

However, academic performances of students in EIMW is to measure the achievement in both theory and practical. Students' academic achievement is determined by an achievement test which should cover the three domains of learning, namely: cognitive, psychomotor and affective. Student's level of academic achievement is usually influenced by many factors such as students' readiness, personality and ability level. Ability level enables students to understand and transfer understanding from one situation to another. Ability level is the

characteristic mode of functioning that a student exhibits in intellectual activities in a highly consistent and persuasive way (Charles, *et al*, 2017). The students are placed into ability groups based on their academic strengths and weaknesses (Davidson, 2019). Ability grouping, also known as homogeneous grouping, is the educational method of placing students into groups in respect to their academic achievement level. Udofia (2012) observed that students' ability level is a significant factor in their academic achievement with the high-level students benefitting more from particular teaching methods than their low ability counterparts in Electrical/Electronics. This inconsistency on the extent to which students of different academic abilities benefit from particular teaching methods underscores the need for this study to explore the effect of problem-solving strategies on students ability in electrical installation and maintenance work.

In electrical installation and maintenance works, students' assessment is based on both theory and practical abilities, interest and ability level. The teaching strategy employed by the teacher could be a strong determinant of students' level of academic achievement and interest. Therefore, achievement of students in electrical installation and maintenance work could depend on the teaching methodology and motivating factor (either intrinsic or extrinsic), ability and interest. Interest is an important factor in learning. Interest is an important variable in learning because if a student has positive interest towards a particular subject he or she will not only enjoy studying the subject but would also derive satisfaction from the knowledge of the subject. Interest is perceived in relation to internal state of mind or reactions to external environment or predisposition to experience (Abdurahaman *et al.*, 2016). Based on the foregoing, it becomes necessary to investigate the efficiency of problem solving approach on students' achievement and interest in EIMW especially in teaching topics such as battery charging and electric machines. This study will therefore ascertain whether

Glencoe and Rusbult problem solving strategies will be better in enhancing students' ability level and interest in Electrical Installation and Maintenance work trade at Technical Colleges.

Statement of the Research Problem

EIMW students upon graduation are expected to possess skills among others in domestic and industrial installation, as well as having the ability to operate, maintain and repair electrical and electronic equipment (Bakare, 2012). It is hoped that these skills will boost their chances at enterprise and self-reliance. The realization of this objective rests hugely on the quality and strategies of instruction they receive from the teacher. EIMW students have been reported to perform poorly in EIMW related courses in their final college examinations for some years now. An analysis of National Business and Technical Examination Board (NABTEB) examinations conducted in May/June for electrical installation and maintenance students in government technical colleges in North-Central Nigeria, from 2011 to 2018 revealed that student perform poorly. Sadly, EIMW graduates are deficient in employability skills, workplace skills and job generation competencies (Abubakar and Danjuma, 2012). This abysmal outing at final and college examinations could be linked to a few factors but most prominently theuse of inappropriate and uninspiring teaching methods by the teachers. Akinsuroju (2012) revealed that most teachers adopt teaching methods that are easy to implement in the classroom, but most of the time inadequate and inappropriate for teaching trades like EIMW because the methods and strategies do not provide a link between the industry and classroom situation.

The problem of poor performance at final and college examinations, as well as the lack of adequate requisite skills for survival in the world of work, is worsened by the fact that the teaching methods adopted by the teachers might mostly be 'talk-and-chalk' based-methods and so are void of student participation in the learning process. This makes it paramount to

seek strategies for teaching EIMW that aims at improving its understanding and performance by students both theoretically and practically. Some of the teaching methods that could prepare EIMW for entry-level jobs, advancement in the workplace and higher-order thinking and problem-solving work skills are; Glencoe's and Rusbult's Problem-Solving Strategies. Studies have shown that Glencoe's and Rusbult's Problem-Solving Strategies are effective in teaching and learning of technical subjects (Nfon, 2013), but, it is not certain if they will produce similar results when used to teaching trades like EIMW. Hence, the problem of this study is to examine the effects of Glencoe's and Rusbult's Problem-Solving Strategies on students' achievement and interest in EIMW in technical colleges.

Aim and Objectives of the Study

The aim of this study was to determine the effects of the Glencoe's problem-solving strategies (GPSS) and Rusbult's problem-solving strategies (RPSS) on student ability level and interest in EIMW in Technical Colleges. Specifically, the objectives of the study was to determine the effect of:

1. Glencoe's and Rusbult's problem-solving strategies on students' interest in studying electrical installation and maintenance work (EIMW).
2. Ability level on skills achievement of student taught EIMW with Glencoe's and Rusbult's problem-solving strategies.

Research Question

The following research questions were formulated based on the objectives of the research.

1. What is the effects of Glencoe's and Rusbult's problem-solving strategies on students' interest in studying EIMW?.
2. What is the effects of ability level on skills achievement of students' in EIMW when taught using Glencoe's and Rusbult's problem-solving strategies?

Hypotheses

HO_1: There is no significance difference between students interest mean scores in studying EIMW using Glencoe's and the Rusbult's problem-solving strategies

HO_2: There is no significant difference between the mean scores of ability level on skills achievement ofstudents' taught EIMW with Glencoe's and Rusbult's problem-solving strategies zs

RESEARCH METHODOLOGY

A factorial research design was used in this study. Specifically, the pretest, posttest, non-equivalent control group design was adopted for the study. This study was conducted in the North-central geo-political zone of Nigeria. The population for this study comprised of 1013 NTC II students of EIMW in the 29 accredited technical colleges in North-central geo-political zone of Nigeria. NTC II students was used for the study because of the nature of NBTE curriculum for technical colleges which provides that the topics on battery charging and electrical machines are taught in the second year of EIMW trade. A simple random sampling technique and purposive sampling technique was used in the study. In the first stage, the simple random sampling technique was used to select 12 technical colleges from the list of 29 in the geo-political zone. The sample size for this study was 430 NTC II EIMW students. In the second stage, random sampling technique was used to assign one TC each to the two treatment groups, Glencoe's problem-solving strategy and Rusbult's problem-solving strategy in each state. Six technical colleges were assigned to GPSS while six technical colleges were also assigned to RPSS. Therefore, six intact classes comprising 209 students were assigned to GPSS, while the six intact classes comprising 221 were assigned to RPSS. Furthermore, purposive sampling technique was used to assign 56 students to high ability level, 158 students to ability level and 216 students to low ability level. Two instruments were used for the study. They are: Electrical Installation Work Cognitive Achievement Test (EIWCAT) and Electrical Installation Work Interest Inventory (EIWII). The researcher

prepared two sets of lesson plans that was used for teaching the two experimental groups. 40 question item was administered to NTC III EIMW students of Government Technical College, Malali Kaduna State. After this, the coefficient of internal consistency of EIWCAT was determined and it was found to be 0.80 and the reliability of EIWII was determined as 0.81. The EIMW teachers administered the pretest to the two treatment groups (Glencoe Problem solving strategies group and Rubusult problem solving strategies group) in their respective schools. In the pretest, the EIMW cognitive Achievement Test, EIMW psychomotor Achievement Test and the EIMW interest on both the two experimental groups respectively. The EIMW teachers used the skill achievement test scoring guide to rate the students. The students checked (√) to indicate the degree to which they agreed or disagreed with statement in the EIMW interest inventory. The researcher marked the answer sheets of the EIMWCAT and scoring guide of EIMWPAT to obtain the students' scores on the test before the treatment while the interest inventory was scored by the researcher to determine each of the student's interest before the treatment.

RESULTS AND DISCUSSION

Research Question 1

What is the effect of Glencoe's and Rusbult's problem-solving strategies on students' interest in studying EIMW?

The data for answering research question three is contained in Table 4.3.

Table 1: Mean of Pre-test and Post-test Interest Scores of Students Taught EIMW Using Glencoe's and Rusbult's Problem-Solving Strategies

Groups		Pretest		Posttest		
	N	Mean	SD	Mean	SD	Mean Gain
Glencoe's Problem-Solving Strategy	221	34.42	1.67	67.39	1.12	32.97
Rusbult's Problem-Solving	209	34.22	0.99	78.35	0.90	44.13

Strategy

Table 1 showed that, students taught EIMW using Glencoe's problem-solving strategy had pre-test mean interest score of 34.42 with standard deviation of 1.67 and post-test score of 67.39 with standard deviation of 1.12. The mean gained between the pre-test and post-test mean interest scores of the students taught EIMW using Glencoe's problem-solving strategy was 32.97. The students taught EIMW using Rusbult's problem-solving strategy had pre-test mean interest score of 34.22 with standard deviation of 0.99 and post-test score of 78.35 with standard deviation of 0.90. The mean gained between the pre-test and post-test mean interest scores of the students taught EIMW using Rusbult's problem-solving strategy was 44.13. This indicated that, students taught EIMW using Rusbult's problem-solving strategy had higher mean interest scores than students taught using Glencoe's problem-solving strategy.

Research Question 2

What is the effect ability level on skill achievement of students' in EIMW when taught using Glencoe's and Rusbult's problem-solving strategies?

The data for answering research question four is contained in Table 2.

Table 2: Mean of Pre-test and Post-test Skill Achievement Scores of High, Medium and Low Ability Students Taught EIMW Using Glencoe's and Rusbult's Problem-Solving Strategies

Ability Levels	Glencoe's Problem-Solving Strategy						Rusbult's Problem-Solving Strategy					
	Pretest			Posttest			Pretest			Posttest		
	N	Mean	SD	Mean	SD	Mean Gain	N	Mean	SD	Mean	SD	Mean Gain
High Ability	25	27.08	0.85	83.85	0.86	56.77	31	26.99	0.98	82.65	0.93	55.66
Medium	78	23.61	2.5	79.12	1.2	55.51	80	24.07	1.7	78.66	0.9	54.59

Ability			3		8				0		6	
Low Ability	10 6	19.41	1.1 4	78.95	0.9 4	59.54	11 0	20.44	1.0 2	77.87	0.8 8	57.43

Table 2 showed that, the high ability students taught EIMW using Glencoe's problem-solving strategies had pre-test mean skill achievement score of 27.08 with standard deviation of 0.85 and post-test score of 83.85 with standard deviation of 0.86. The mean gained between the pre-test and post-test mean skill achievement scores of the high ability students was 56.77. The medium ability students taught EIMW using Glencoe's problem-solving strategies had pre-test mean skill achievement score of 23.61 with standard deviation of 2.53 and post-test score of 79.12 with standard deviation of 1.28. The mean gained between the pre-test and post-test mean skill achievement scores of the medium ability students was 55.51. The low ability students taught EIMW using Glencoe's problem-solving strategies had pre-test mean skill achievement score of 19.41 with standard deviation of 1.14 and post-test score of 78.95 with standard deviation of 0.94. The mean gained between the pre-test and post-test mean skill achievement scores of the low ability students was 59.54.

Furthermore, the high ability students taught EIMW using Rusbult's problem-solving strategies had pre-test mean skill achievement score of 26.99 with standard deviation of 0.98 and post-test score of 82.65 with standard deviation of 0.93. The mean gained between the pre-test and post-test mean skill achievement scores of the high ability students was 55.66. The medium ability students taught EIMW using Rusbult'sproblem-solving strategies had pre-test mean skill achievement score of 24.07 with standard deviation of 1.70 and post-test score of 78.66 with standard deviation of 0.96. The mean gained between the pre-test and post-test mean skill achievement scores of the medium ability students was 54.59. The low ability students taught EIMW using Rusbult's problem-solving strategies had pre-test mean skill achievement score of 20.44 with standard deviation of 1.20 and post-test score of 77.87

with standard deviation of 0.88. The mean gained between the pre-test and post-test mean skill achievement scores of the low ability students was 57.43. This indicated that, the combined low ability students taught EIMW using Glencoe's and Rusbult's problem-solving strategies had higher mean skill achievement score than the high and medium ability students.

Hypothesis One

There is no significance difference between students interest mean scores in studying EIMW using Glencoe's and the Rusbult's problem-solving strategies. The data for testing hypothesis three is contained in Table 3.

Table 3: Analysis of Covariance for the test of Significance Difference Between Students' Interest Mean Scores in EIMW When Taught Using Glencoe's and Rusbult's Problem-Solving Strategies

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	1290.29[a]	2	6452.64	621.50	.000
Intercept	3568.82	1	3568.82	343.22	.000
Pretest	1.33	1	1.330	1.282	.258
Group	1285.42	1	1285.42	123.97	.000*
Error	443.22	427	1.038		
Total	22873.00	430			
Corrected Total	1334.51	429			

a. R Squared = .967 (Adjusted R Squared = .967)

Table 4.8 show the F-calculated value for testing the significance difference between the interest scores of students taught EIMW using Glencoe's and those taught using Rusbult's problem-solving strategies. The F-calculated value of 123.97 was obtained with associated exact Sig. 2 tailed value of 0.00. Since the associated Sig. 2 tailed value of 0.00 is less than 0.05, the null hypothesis which stated that there is no significance difference between students' interest mean scores in EIMW when taught using Glencoe's and those taught using Rusbult's problem-solving strategies is rejected. This implied that, there is significance

difference between students' interest mean scores in EIMW when taught using Glencoe's and those taught using Rusbult's problem-solving strategies.

Hypothesis Two

There is no significant difference between the mean scores of high, medium and low ability levels on the skills achievement of students taught EIMW with Glencoe's and Rusbult's problem-solving strategies. The data for testing hypothesis four is contained in Table 4.

Table 4: Analysis of Covariance for the test of Significance Difference Between the Mean Scores of High, Medium and Low Ability Levels on the Skills Achievement of Students Taught EIMW with Glencoe's and Rusbult's Problem-Solving Strategies

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1322.86[a]	3	440.95	609.50	.000
Intercept	1251.33	1	1251.33	1729.75	.000
Pretest	184.00	1	184.00	254.33	.000
Ability Levels	506.85	2	253.42	350.29	.000*
Error	308.19	426	.72		
Total	27300.00	430			
Corrected Total	1631.06	429			

a. R Squared = .811 (Adjusted R Squared = .810)

Table 4 show the F-calculated value for testing the significance difference between the mean scores of high, medium and low ability levels on the skill achievement of students taught EIMW with Glencoe's and Rusbult's problem-solving strategies. The F-calculated value of 350.29 was obtained with associated exact Sig. 2 tailed value of 0.00. Since the associated Sig. 2 tailed value of 0.00 is less than 0.05, the null hypothesis which stated that there is no significance difference between the mean scores of high, medium and low ability levels on the skill achievement of students taught EIMW with Glencoe's and Rusbult's problem-

solving strategies is rejected. Hence, there is significance difference between the mean scores of high, medium and low ability levels on the skill achievement of students taught EIMW with Glencoe's and Rusbult's problem-solving strategies**.** In order to determine the ability level responsible for the significance difference, post hoc test was carried out as shown in Table 4.

Findings of the study

1. Rusbult's and Glencoe's problem-solving strategies are effective in improving students interest in EIMW but Rusbult's problem-solving strategy is more effective in student interest in EIMW than Glencoe's problem-solving strategy.
2. The ability levels are effective in improving students skill achievement but Low ability students taught EIMW using Glencoe's and Rusbult's problem-solving strategies had higher mean skill achievement score than high and medium ability students.
3. There was significant difference between students' interest mean scores in EIMW when taught using Glencoe's and those taught using Rusbult's problem-solving strategies.
4. There was significant difference between the mean scores of high, medium and low ability levels on the skills achievement of students taught EIMW with Glencoe's and Rusbult's problem-solving strategies.

Discussion of Findings

Findings on the effects of Glencoe's and Rusbult's problem-solving strategies on students' interest in EIMW revealed that, the students taught EIMW using Rusbult's problem-solving strategy had higher mean interest scores than students taught using Glencoe's problem-solving strategy. The finding provided a clearer understanding that, the interest of students in learning EIMW is stimulated using Rusbult's problem-solving strategy than using Glencoe's problem-solving strategy. The finding is also in-line with the findings of Ogumah *et al.*

(2019) on the **e**ffect of guided inquiry teaching method on students' academic performance and interest in EIMW in technical colleges in Gombe State that revealed guided inquiry significantly impacted the interest of students. However, the characteristics of Rusbult's problem solving strategy that allows the teacher to give detailed explanation and procedures to students at every stage of problem solving where necessary could be the stimulus responsible for arousing the students' interest in EIMW. Shadreck (2018) confirmed that, the distinctive features of Rusbult's problem solving strategy that allows students' engagement and participation in the learning processes is capable of arousing interest. The finding revealed an interesting fact that, interest among students can be stimulated using Rusbult's problem solving strategy. This implied that, stimulating the interest of students in learning EIMW can be achieved using Rusbult's problem solving strategy.

Similarly, finding on the test for significance difference between the students' interest mean scores in EIMW when taught using Glencoe's and those taught using Rusbult's problem-solving strategies revealed statistical significant. The revealed statistical significant difference show the great extent to which Rusbult's problem-solving strategy stimulates students' interest in EIMW especially, when compared with Glencoe's problem-solving strategy. Literarily, the finding is in harmony with the finding of Akinwumi *et al.,* (2018) that revealed statistical significant difference between the interest of students taught Biology using problem–solving teaching strategy and their counterparts taught using the conventional method.

Findings on the effects of ability level on the skills achievement of students' in EIMW when taught using Glencoe's and Rusbult's problem-solving strategies revealed that, the low ability students taught EIMW using Glencoe's and Rusbult's problem-solving strategies had higher mean skill achievement score than the medium ability students. The finding shows

that, Glencoe's and Rusbult's problem-solving strategies are effective in enhancing the skill achievement of low ability students in EIMW. The finding is in concordance with the finding of Olaniyan and Mosewo (2015) that revealed enhanced academic performance of low scoring level male students on the effects of a target-task problem-solving model on senior secondary school students' performance in Physics. In other words, the finding also revealed that, Glencoe's and Rusbult's problem-solving strategies have taken care of the difference that existed between the low and high ability students taught EIMW in the skill achievement test.

Finding on the test for significant difference between the mean scores of high, medium and low ability levels on the skills achievement of students taught EIMW with Glencoe's and Rusbult's problem-solving strategies revealed statistical significant. The statistical significant difference was traced to the scores of high ability level students taught EIMW using Glencoe's and Rusbult's problem-solving strategies. The finding entailed that, there was no significance difference between the skill achievement scores of low and medium ability level students taught EIMW using Glencoe's and Rusbult's problem-solving strategies. The finding is similar to the finding of Shadreck (2018) that revealed that, low ability students taught Chemistry in Zimbabwe using problem-solving instructional strategy performed significantly better than their high and medium ability counterparts.

CONCLUSION

Based on the findings of the study, insights on the effects of Glencoe's and Rusbult's Problem-Solving Strategies on students' ability level and interest in Electrical Installation and Maintenance Works (EIMW) in technical colleges was provided. The study found out that: students taught EIMW using Rusbult's problem-solving strategy had higher mean skill achievement and interest scores and students taught EIMW using Glencoe's problem-solving

strategy had higher mean cognitive achievement scores. Therefore, it is concluded that, Glencoe's and Rusbult's problem-solving strategies had positive effects on students' cognitive and skill achievement as well as interest in EIMW.

Recommendations

Based on the findings from the study, the following recommendations were made:

1. Electrical Installation and Maintenance Works teachers should adopt the use of: Rusbult's problem-solving strategy to enhance students' skill achievement and interest; and Glencoe's problem-solving strategy to enhance students' cognitive achievement.
2. Science and Technical Schools Board should sensitize and train Electrical Installation and Maintenance Works teachers on the use of Glencoe's and Rusbult's problem-solving strategies in order to enhance students' cognitive and skill achievements as well as stimulate their interest.
3. Administrators of technical colleges should encourage the teaching of Electrical Installation and Maintenance Works using Glencoe's and Rusbult's problem-solving strategies in order to enhance students' cognitive and skill achievements as well as stimulate their interest.

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Relevance of Arts and Social Sciences Education for Security and Safety Education in Nigeria

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Abstract

The existence of man and all the institutions surrounding him greatly depend on the total existence of security in any given society. Indeed, security of lives and properties is a fundamental factor that is not negotiable in all ramifications. In fact, no nation thrives in an unrest society. Hence, man must be equipped with the knowledge, skills and practices on how he can be adequately saved and secured in any environment or institutions he lives. It is against this background that this paper investigates the relevance of Arts and Social Sciences Education in the promotion of security and safety education in Nigeria. This paper critically analysed the religious, social and language roles in ensuring security and safety of lives and properties in our society. In the course of this study, both primary and secondary data were used for this work. The primary data was obtained through a direct observation and interview from key stakeholders ranging from religious scholars, political leaders, economists, educationalists and security operatives while the secondary data were sourced from journals, textbooks, articles, newspapers and other relevant materials that are germane to this study. The findings of the study revealed that Arts and Social Sciences Education are relevant in ensuring security and safety education in our society. The study concluded that to achieve the aims of Arts and Social Sciences Education for security and safety education in our institutions, the curriculum must be reviewed in other to promote security education through Arts and Social Sciences Education.
Key words: Security, Safety, Arts and Social Sciences, Education.

Introduction

The security of any nation, society, institution and state can never be compromised. The fragile nature of the society nowadays is seriously calling for a great concern in which no one can sleep with his two eyes closed. Even the security architecture of the state needs total overhauling due to the incessant attacks by the Boko Haram terrorists, Islamic States of West Africa Provinces (ISWAP), bandits, unknown gunmen, herdsmen, militants, and host of others that are unleashing terror on the citizenry. Moreover, the level of insecurity of human lives had greatly affected virtually all sectors in the country particularly the educational institutions. Schools, teachers and students are the subjects of attacks and academic activities were indefinitely shut down in most of the schools or institutions of learning in the country.

Perhaps, education is the major key to tackle the menace of insecurity of lives and properties of the citizenry. Hence, all hands must be on deck to promote security and safety education through the Arts and Social Sciences Education at all levels of our educational system in Nigeria. The Arts and Social Sciences Education houses various courses such as religious education, language education, economics education, political science education, social studies and host of other courses of which this study covered only three disciplines (Religious Education, Language Education and Social Studies) in related to security and safety education out of the courses obtainable in Arts and Social Sciences in our institutions of learning. Thus, the knowledge of all these aforementioned courses embedded in Arts and Social Sciences Education can be explored to successfully fight against the menace of insecurity of lives and properties in our society.

Purpose of the Study

The main purpose of this study was to examine the relevance of Arts and Social Sciences Education in the promotion of security and safety education in Nigeria. Specifically, the study investigated:

a. the relevance of religious education to security and safety education.

b. the relevance of language education to security and safety education.

c. the relevance of social studies education to security and safety education.

Research Questions

The following research questions were raised to guide this study:

1. What is relevance of Religious education to security and safety education?
2. Does Language education relevant to security and safety education?
3. Is the Social Studies education relevant to security and safety education?

Relevance of Religious Education to Security and Safety Education

The security and safety education is primarily the ultimate aim of every religion. Security and safety of a state and every member of a society can never be taken for granted. Ushe (2015) noted that Christianity and Islam are the two major religions in Nigeria but it is pathetic that the incessant insecurity witnessed in the country were been perpetrated by the adherent of these aforementioned religions. Moreover, religion is fundamental to the nature of behaviour exhibited by an individual and that there a strong relationship between religious education, security and safety education. Religious education deals with the education that is primarily concerned with religion. It is the education that is designed to teach religious doctrines, principles, practices, faith and every aspect of inculcating spiritual growth, moral discipline and character building of an individual.

Religious education plays significant roles in promoting security and safety of people such as instilling of moral and spiritual discipline, peaceful co-existence, character building, security of lives and properties, food security and host of others. Indeed, religious education is vital towards curbing the challenges insecurity of lives and properties. Aliyu and Abdul-Rafiu (2021) stressed that security and safety of lives, progeny, properties, sanity and spiritual security occupies a vital position in Islam. Thus, it is strongly condemned and

punishable for anyone who wrongly or unjustifiably tampers with the security and safety of his/her fellow being.

Historically, Prophet Ibrahim (Abraham) recognized the need for security and safety of a nation by praying to God to make the city of Makkah and its environs a secured and safe place (Q2:126). Similarly, the Prophet (SAW) was reported to have said that a true believer is one whose people's lives and belongings are well secured in his/her custody (Ibn Manzoor, nd.). However, Christianity religion also attaches great importance to security and safety of lives and properties. The Bible encourages peaceful coexistence and security of an individual in many places in the Bible such as in Romans, 14:19 "Let us then pursue what makes for peace"; Mark 9: 50 "… be at peace with one another and host of others.

Relevance of Language Education to Security and Safety Education

Language is the key towards transmission of any education. No learning process can be effective without a deep understanding of the language that conveys it. It is an act of communication, and it is also the art of passing message across, from one person to another. Language is the vehicle for communication in any given speech community, while national security is concerned with preserving a country's power, be it military or political (Jacek, 2019). Language is the medium by which information is communicated to people and the aim of writing or speaking a language is basically to produce a pattern for transmitting a message to the audience (Ajewole-Orimogunje, Adewusi & Babalola, 2018).

Ishaq (2019) noted that language occupies a vital position in any nation's educational system. One of the languages taught in schools is Arabic language at basic, senior secondary school and tertiary education in Nigeria. In Nigeria, Arabic is officially treated as a foreign language in the Basic Education Curriculum (BEC) and placed in the second position under non-vocational electives at all levels of the Universal Basic Education (NERDC, 2013). Anthony (2018) argued that the language policy of any given society should be focused on

security. He further argued that ensuring security requires that a society as a whole has an understanding and knowledge of those nations or other groups which pose possible security threats to the lives and properties of the citizenry and language education is seen as a way to develop such understanding and knowledge.

The decision making about language is significant to the safety and security structure of a nation (Anthony, 2018). Balzacq (2005) opined that security or insecurity is not primarily the predictors of threat or safety of a state but rather an argument established for understanding a phenomenon. Salami (2010) observed that changes taking place in the social, political, economic and security lives of human communities are not only expressed by language but also promoted through the use of language.

Relevance of Social Studies to Security and Safety Education

Security and safety education of a state can never be overlooked. In fact, the socio-economic and political growth of any nation lies on the security and safety of lives and properties of the citizenry. It is disheartening to see the level at which the nations is facing security challenges. This has caused a major problem to social existence in of Nigeria. The security situation is made worse by the activities of Boko Harram, kidnappers, armed banditry, violence of different dimensions, terrorism, cultism, hostage taking and host of others.

Moreover, social studies as a subject play a tremendous role in strengthening the security and safety education among the people in the society. Following this development, United Nations dedicated 2001 to 2010 as the decade for the promotion of peace and non-violence for children and young adults of the world. The General Assembly of the United Nations, thereafter went on to invite Member States to take necessary steps to ensure that the practice of peace, security and safety education, is taught at all levels in all the institutions of

learning (Muller, 2002). Countries are now turning to social studies education for solution to the problem of security and safety.

Benavot (2002) observed that social studies is one of the school subjects that dealt with emerging issues in the society such as family matters, political issues, educational matters, social order, security and safety issues. The decision to include security education was taken at the Presidential summit in 2011 that led to restructuring of the basic and senior secondary school education curricular in National Policy of Education 2013.

Edozie (2014) defined Security Education as that cooperative, dynamic and lifelong process through which a society generates knowledge, values and skills for its survival, sustenance, enlightenment and empowerment against all forms of danger and threats to its wellbeing and coexistence. Hence, security education as stipulated in the Nigeria's National Values Curriculum is aimed at sensitizing the learners to be awareness and conscious of behaviour that can endanger their personal and neighbourhood wellbeing and safety. It is pertinent to note that to enhance security and safety education in our society, the curriculum of the teachers' training institutions should be reviewed such that various topical issues that tackle security and safety challenges must be given a maximum consideration. Students should be exposed to security and safety tips needed to curb the menace of insecurity in our society.

Methodology

This study adopted mixed method of research (quantitative and qualitative). Interview, observation and the researchers-designed questionnaire tagged "Questionnaire on Relevance of Arts and Social Sciences to Security and Safety Education (QRASSSSE)" were used as instruments for this study. Simple random sampling technique was used to select fifty (50) out of one hundred and twenty (120) scholars of religious studies (pastors and Imams), fifty five (55) out of one hundred and thirty-five (135) teachers of languages (Arabic and

English Language) and fifty-three (53) out of three hundred and fifteen (315) teachers of Social studies in Ilorin metropolis. The instrument used for data collection was validated by three experts in Test & Measurement and found it appropriate for this study. The reliability of the instrument was determined using the test re-test reliability technique within a two week interval. The scores of the two tests were correlated using the Pearson's Product Moment Correlation (PPMC). The value of the correlation coefficient obtained was 0.87. Four research questions were raised and answered using the percentage.

Similarly, the instrument was personally administered by the researchers to all the 50 Religious studies scholars (Pastors and Imams), 55 teachers of Languages (Arabic & English Languages) and 53 Social studies teachers, in Kwara State, Nigeria. The researchers sought the permission from all the heads of the sampled schools in Ilorin metropolis. Fifteen items were designed for the respondents to react to by ticking "Yes" or "No".

Results

Table 1: Frequency Distribution of the Respondents

S/N	Items	Sex	Frequency	Percentage (%)
1.	Religious Scholars			
		Imams	25	50
		Pastors	25	50
Total			**50**	**100**
2.	Language Educators	Arabic Teachers	27	49.1
		English Teachers	28	50.9
Total			**55**	**100**
3.	Social Studies	Social Studies Teachers	53	100
Total			**53**	**100%**

Table 1 above shows that 25 (50%) of the Religious scholars are Imam while 25 (50%) of the Religious scholars are Pastors sampled for this study. Similarly, 27 (49.1%) of the Language educators are Arabic teachers while 28 (50.9%) Language educators are English teachers sampled for this study. Also, 53 (100%) of the Social studies teachers are

sampled for this study. This implies that the population of male tricycle riders is more than the female tricycle riders in Ilorin metropolis, Kwara State, Nigeria. This implies that the Religious studies, Languages and Social studies are the subjects or courses domicile in the Arts and Social Sciences Education considered relevant to security and safety education in this study.

Research Question 1: What is relevance of religious education to security and safety education?

Table 2: Relevance of Religious Studies Education to Security and Safety Education

S/N	Items	Yes (%)	No (%)
1.	Religious studies has nothing to do with security and safety of human beings.	13 (26%)	37 (74%)
2.	Security and safety education should not be taught by the Imams and Pastors.	7 (14%)	43 (86%)
3.	Religious studies education preaches insecurity of people belonging to other faiths.	11(22%)	39 (78%)
4.	Religious studies education promotes intolerance and violence among the people.	5 (10%)	45 (90%)
5.	Security and safety education should be included in the curriculum of Religious Studies education at all levels.	49 (98%)	1 (2%)

Table 2 above shows that 13 (26%) of the respondents agreed that religious studies has nothing to do with security and safety of human beings while 37 (74%) of the respondents disagree. Also, 7 (14%) of the respondents agreed that security and safety education should not be taught by the Imams and Pastors while 43 (86%) of the respondents disagree. In another vein, 11(22%) of the respondents agreed that Religious studies education preaches insecurity of people belonging to other faiths while 39 (78%) of the respondents disagree. Similarly, 5 (10%) of the respondents agree that religious studies education

promotes intolerance and violence among the people while 45 (90%) of the respondents disagree. Consequently, 49 (98%) of the respondents agree that security and safety education should be included in the curriculum of Religious Studies education at all levels while 1 (2%) of the respondents disagree. This implies that Religious Studies Education as a course of study in Arts and Social Sciences Education is relevant to security and safety education.

Research Question 2: Does language education relevant to security and safety education?

Table 3: Relevance of Language Education to Security and Safety Education

S/N	Items	Yes (%)	No (%)
1.	Language education is vital to security and safety of human beings.	43 (78.2%)	12 (21.8%)
2.	Security and safety education should be taught using the language of the community.	51 (92.7%)	4 (7.3%)
3.	Language education endanger the security and safety of people.	13(23.6%)	42 (76.4%)
4.	Security and safety of lives and properties can never be guaranteed without learning the language of the community.	39 (70.9%)	16 (29.1%)
5.	Language education should be included in the security and safety education curriculum.	45 (81.8%)	10 (18.2%)

Table 3 shows that 43 (78.2%) of the respondents agreed that language education is vital to security and safety of human beings while 12 (21.8%) of the respondents disagree. In another vein, 51 (92.7%) of the respondents agreed that security and safety education should be taught using the language of the community while 4 (7.3%) of the respondents disagree. Also, 13(23.6%) of the respondents agreed that language education endanger the security and safety of people while 42 (76.4%) of the respondents disagree. Moreover, 39 (70.9%) of the respondents agree that security and safety of lives and properties can never be guaranteed without learning the language of the people while 16 (29.1%) of the respondents disagree.

Similarly, 45 (81.8%) of the respondents agree that language education should be included in the security and safety education curriculum while 10 (18.2%) of the respondents disagree. This implies that Language Education as a course of study in Arts and Social Sciences Education is relevant to security and safety education.

Research Question 3: Is the Social Studies education relevant to security and safety education?

Table 4: Relevance of Social Studies Education to Security and Safety Education

S/N	Items	Yes (%)	No (%)
1.	Social studies education promotes security and safety education of an individual.	47 (88.7%)	6 (11.3%)
2.	Security and safety education should be a major component of Social Studies education.	50 (94.3%)	3 (5.7%)
3.	Social Studies education orientate the citizens on security and safety tips.	49 (92.5%)	4 (7.5%)
4.	Security and safety education is not relevant to any of the concepts in Social Studies education.	1 (1.9%)	52 (98.1%)
5.	Social life of the people must be considered to guarantee security and safety of lives and properties.	41 (77.4%)	12 (22.6%)

Table 4 shows that 47 (88.7%) of the respondents agreed that Social studies education promotes security and safety education of an individual while 6 (11.3%) of the respondents disagree. Also, 50 (94.3%) of the respondents agreed that security and safety education should be a major component of Social studies education while 3 (5.7%) of the respondents disagree. In a similar vein, 49 (92.5%) of the respondents agreed that Social studies education orientate security and safety tips while 4 (7.5%) of the respondents disagree. Moreover, 1 (1.9%) of the respondents agree that security and safety education is not relevant to any of the concepts in Social Studies education while 52 (98.1%) of the respondents disagree.

Consequently, 41 (77.4%) of the respondents agree that social life of the people must be considered to guarantee security and safety of lives and properties while 12 (22.6%) of the respondents disagree. This implies that Social Studies as a course of study in Arts and Social Sciences Education is relevant to security and safety education.

Conclusion

This paper examined relevance of Arts and Social Sciences Education in the promotion of security and safety education in Nigeria. It was concluded that the religious studies education, language education and social studies domiciles in the Arts and Social Sciences Education are significantly relevant to the promotion of security and safety education. In addition, to achieve the aims and objectives of security and safety education, religious studies education, language education and social studies should be included in the security and safety education curriculum at all levels of education.

Recommendations

The following recommendations were based on the findings of the study:

1. The Ministry of Education should include security and safety education in religious studies education curriculum at all levels of education.
2. The Ministry of Education should include security and safety education in language education curriculum at all levels of education.
3. The Ministry of Education should include security and safety education in social studies education curriculum at all levels of education.

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Peer Group Influence as a Correlate to Safety and Security in Secondary Schools in Ilorin, Kwara State

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ABSTRACT

Abstract

The study emphasized on how Peer Group Influence can be a Correlate to Safety and Security in our various Secondary Schools most especially within Ilorin metropolis, Kwara State. it further discussed the concept of peer group and safety and security. The paper reiterated that peer group is a child's first contact with a social group outside the household. The need for inclusion of elements that promote peace in educational settings was also discussed. The paper concluded that safety and security among peer group should be a paramount importance to all individual because safety and security have been a great challenge to all and sundry throughout the country, which as a matter of facts need urgent attention. The paper also suggested among other things that all school counselors must be well trained in order to provide preventive counseling to students when necessary.

Keywords: Peer group, Safety, Security, Teens and Influence.

Introduction

Safety and Security plays an important role in the classroom environment in Nigeria. Safety and Security has an impact in every school setting, without it most schools fall into exposing their students to danger. Every school setting must take safety and security serious in order to ensure optimal safety of their students' life and property.

Safety and Security in the classroom refers to the absence of physical damage to students and teachers. However, more focus is being placed on larger dimensions of safety and security in the literature on education, such as issues with emotional insecurity (caused, for instance, by bullying) and pedagogical insecurity (through discriminatory teaching), (Cornell, Mayer & Sulkowski, 2021).

Children and teens must feel safe at school in order to study and progress along a favorable development path. The consequence of concerns with school disruption and violence are not always taken into account by educational and political authorities, and which can lead to crucial issues being confused, minimized, misrepresented, or overblown, frequently impeding systematic improvement. In general, efforts to "harden" schools focus primarily on security measures, frequently at the expense of devoting time and resources to important investigations into school safety foci. Efforts to promote school safety vary greatly, (Cornell et al., 2021).

According to Jullie Fallmayer, (2018) ''Long-term education's objective is to imbue a person with the capacity to independently investigate the world and form his own opinions. Social orders would have citizens who adhere to public standards in an ideal world. If civilization succeeds in this, it will almost certainly disappear. Anyone who thinks they are capable should evaluate society, try to alter it, and fight against it while paying little attention to the risks. This is society's solitary beam of trust. More so, it is in this manner that a community be able to develop''

The tragic school shooting that have been the focus of media attention in recent years have resulted in short-term evidence of more public knowledge and concern, but minimal long-term effective investment in change. There is a wealth of empirically supported studies on how to enhance school atmosphere, lessen bullying, restrict other types of violence in schools, and deal with threats in a methodical manner, yet assessments of the efficacy and effectiveness of many of these strategies have differed widely, (Cornell et al., 2021).

Peer groups are made up of people who share similar interests, backgrounds, and social standing. This form of peer group is social as well as a primary group of people that have similar interests and aesthetics. students' behavioral changes take place in school, and peers play an important part in this process. (Allen in Deepika & Prema, 2017).

Concept of Peer Group

Throughout one's life, the peer group is crucial. It is especially important when students are developing. A child's peer group comprises of persons or people who are in the same age range as them. The major setting for belonging to a peer group is at school. They might attend the same school. Peer influence establishes values, attitudes, self-esteem and peer tutoring.

Before a child is sent to school for a formal education, the informal educational foundation of that child begins at home. The child is exposed to classmates, teachers, and peers at school. They all influence the child in one way or the other. As a result, the peer group is the child's first contact with a social group outside the household. Each peer group as its own set of rules for behaviors, some which may not always adhere to higher standard (Ryan, 2012).

Peer groups are commonly associated with adolescent risky behaviors such as crime, drug use and sexual activity. These behaviors are linked to peer influence. The beneficial outcome is due to the influence of peers, as seen by a significant rise in achievement in voluntary charity, public work among others. (Kellie, 2013). Adolescence is a period of an individual that is transitory when a child reaches the point in changing its childhood to adulthood (Adeniyi & Kolawole, 2015).

However, peers can also have a negative influence. They can encourage each other to skip classes, steal, cheat, use of drugs or alcohol, or become involve in other risky behaviors.

Concept of Safety and Security

The term "Safety" comes from the Latin words ''sine cura'', which means "lack of worries". Safety and Security is the protection of life and property of a person. It offers a high level of defense against risk, harm, loss and criminal activity. It also describes an environment in which people are free to live in peace and have their basic rights upheld. Student safety emphasis a secure learning environment free from internal and external threats, one that promotes peaceful cohabitation, a pleasant school climate, and friendly interaction between instructors and students, (Gilbert, Mark, and Victoria, 2021),

Numerous academic disciplines, including but not limited to education, special education, schools, counselling, clinical and community psychology, social work, juvenile justice, and sociology, are included in the research on school safety. These disciplines deal with a variety of issues, including promoting desired academic and social-emotional behavioral outcomes for students as well as efficient school organizational functioning,

victimization and related forms of harm, student-family partnerships with schools, and victimization and associated forms of harm. Many of these themes are related to study on topics like establishing supportive school environments, combating bullying, fostering authoritative role models in the classroom, facilitating culturally sensitive schools, and comprehending children' mental health and needs (Matthew, Amanda & Shane, 2021).

Because of the intricacy of the issue and the detrimental effects it has on the education of the students involved, violence in schools is a topic that attracts a lot of attention. The intricacy is illustrated by research that demonstrates how students' cognitive and social functioning in schools and their perceptions of safety can vary depending on a variety of personal, social, pedagogical, curricular, organizational, and societal aspects, (Ton and Daan, 2012).

Concept of Peer Group and Safety and Security in Nigeria

The Nigeria National Security Strategy underscores the belief and generally acknowledged the view that security is the cornerstone of development and progress (National Security Strategy (2019). Every security challenge, irrespective of where it occurs, potentially puts at risk the livelihood and well-being of every citizen as security is vital for national cohesion, peace and sustainable development more especially in the educational sector. Security is the state of being free from danger or injury, the freedom from apprehension, anxiety, or care; confidence of power of safety; hence, assurance and certainty.

Parents are suffering because of the constant reports of terrorist attacks, kidnappings, and abductions of innocent students at our schools. The stealing of hostages from the country's schools is heard across the entire nation. The aspiration of both boarding and day schools have become elusive due to conflicts and instability in the classroom, Gilbert, et, al. (2021).

According to Bankole and Ogunsakin (2016), peer group give adolescents a sense of security and encourage them to pose social identity theory-related questions like ''Who am I?'' ''what do I want from life?'' A variety of peer groups by improving their academic standing. The same is true for children who are brilliant and have good relationships; These students typically perform better in school, which is ascribed to the fact that they are on the same team and have comparable goals.

According to Gilbert, et, al (2021), the idea of security is synonymous with sensations of safety, independence from threats, and defense against physical injury. The inclusion of elements that promote peace and goodwill toward one another in educational settings is necessary for student security. Other crimes in schools that cause emotional and

psychological harm to victims and parents include drug usage, rape, and sex for grades. Students in the same class are more likely to study and revisit the materials together, resulting in significant externalities. However, this type of bond does not develop between all members of a class because, while taking the same classes, some students may not engage with one another. To address this issue and develop a peer group measure based on this type of contact, which we believe is particularly important, we consider students who are members of the same group to take tests together. Chebet (2018)

With reference to Chebet, (2018), members of a peer group interact in learning, assist one another in studying, share essential information, and impose externalities on others by behaving in a certain way. Well or badly, for example, a noisy student disrupts the learning environment, or allowing teachers to delve deeper into subjects contributes to the creation of values and goals.

Conclusion

The concept of safety and security among peer group should be a paramount importance to all individual. The task of providing security in schools is a collective responsibility involving individuals, organizations and government.

Government must make sure that safety precautions are put in place in schools to protect both the students, teachers, and educational resources in light of the special importance that education holds in each society. Some of the security measures to be put in place include the use of CCTV systems around the location of the schools, security. Building of school fences, burglary proof, and strong public address system, among others.

Parents should be more vigilant about the type of peer group their children mingle with, in order to be safe from bad gang.

Suggestion

Suggestion Made by the Researchers to Obviate Possible Security and Safety Treat in Schools

1. The location of school should be consider because of safety of the students. A school sited at an isolation area put his/her students at risk.
2. Since peer group has a big impact on secondary school academic performance and safety, teachers should provide more supervision and restrictions to learners while in school in order to improve the type of group they mingle with.

3. The federal and state government through the ministry of education should ensure that trained counsellors are stationed in all schools and institutions to give preventive counselling and to adjust the behavior of pupils who may have been negatively impacted by their colleagues.

4. Staff and students' should be giving continuous training on how to safeguard themselves from dangers.

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Effects of Ilias and Latitude Learning Management System on Learning Outcomes in Geography Among Colleges of Education Students in North- Central, Nigeria

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ABSTRACT

This study investigated the Effects of effects of ILIAS and latitude learning management systems on learning outcomes in geography among college of education students in North Central, Nigeria. The study adopted a pre-test post-test quasi experimental research design in which seven research questions and seven corresponding null hypotheses guided the study. The sample of the study consists of 212 (102 males and 110 females) NCE two geography students that was randomly selected from three colleges of education in North Central Nigeria. Each school was assigned into experimental group one; ILIAS learning management system, experimental group two; Latitude learning management system and Control group was Lecture Method (LM) groups. A 25-Multiple Choice Objective Question, named Geography Achievement Test and Geography Retention Test was used for data collection at pretest and posttest after being validated by experts and subjected to reliability check. The reliability coefficient 0.72 was obtained which shows that the instrument is reliable for the study. Similarly, a 40 questionnaire items were administered to the same students to determine the reliability coefficient of Students' Attitude Questionnaire on ILIAS and Latitude LMS (SAQILLMS). Cronbach Alpha was used in analyzing the data collected. A reliability coefficient of 0.77 was obtained and this was adjudged to be reliable for the study. The main data was analyzed using mean and standard deviations in answering research questions while Analysis of Covariance (ANCOVA) was used to test the hypothesis at 0.05 level of significance. Findings revealed that There is a statistically significance difference $F_{(2, 209)} = 25.371$, *P-value = 0.000 at* $P < 0.05$, *in the mean achievement of students taught geography using ILIAS LMS, Latitude LMS and conventional lecture method. There is a statistically significance difference in the mean achievement scores of male and female students taught geography with ILIAS LMS. Similarly, there is a statistically significance*

differences in the attitude of geography students after using ILIAS LMS, latitude LMS and conventional method. Based on these findings, it was recommended among others that the use of ILIAS and Latitude LMS should be adopted by lecturers as an option to showcase the practical teaching of Regional Geography of Nigeria in Colleges of Education in North Central, Nigeria.

Keywords: Learning Management System, ILIAS Latitude

Introduction

Revolutions all over the world has made computers (personal computers, tablets, ipads & smart phones) and the internet (through routers, modems & smart phones) available to students thus, facilitating electronic teaching and learning. Electronics learning (e-learning) approach allows learners to choose when, where and how they study and access educational materials (Wayne & Casciband, 2016). Apart from the flexibility of choosing when, where and how they study, e-learning allows both the teachers and students to access electronic teaching and learning resources.

Nevertheless, the sustenance of e-learning in any given system is enabled by a functional ICT infrastructure. This is based on the fact that, e-learning success is partly determined by the ability to establish a synergistic interaction between the available ICT infrastructure, the internet and compatible pedagogical approaches (Yusuf, & Onasanya, 2004; Sulisworo, *et al.*, 2020). ICTs have the potential to accelerate, enrich, and deepen skills, to motivate and engage students, to help relate school experience to work practices, strengthening teaching and helping schools change (Aldiab, *et al.,* 2019). This development was inadvertently facilitated by the introduction of learning management system where teachers deliver their instructions via internet while students are synchronously receiving the lecture.

Learning Management System (LMS) denote a technology and internet enabled platform for teaching, learning, assessment and general management of education. LMS is referred to as a web-based technology which assists in the planning, distribution and evaluation of a specific learning process (Rabiman, 2020). This technology support lecturers to manage their students' access to remote course materials and monitor students' learning activities while providing a medium for knowledge sharing anywhere any time by providing new opportunities for communication and interaction between students and lecturers. Therefore, LMS has created the opportunities for lecturers and students to use digital technologies in educational contexts with a potential to extend the boundaries of traditional classrooms. LMS is a wider concept used to characterize a variety of systems that provides online educational services to learners, educators, and administrators (Aldiab et al., 2019). The system manages and administers online learning content and resources on a diverse range of topics to learners. Moreover, LMS has gained widespread acceptance by several institutions across the world to support teaching and learning. Radwan, *et al.,* (2014) opined that organizations are considering upgrading their existing LMS with state-of-the-art systems to address the demands of distance learning while also managing the challenges of Covid-19 pandemic. The literature shows that LMS is an invaluable web-based technology developed to deliver, track, report, assess and manage online training (Aldiab et al., 2019; Simanullang, & Rajagukguk,

(2020). LMS serves as a free open-source platform for an environment that allows sharing course content to support conventional instruction. It is flexible since it can be accessed anywhere as long as student has a personal device with Internet connection such as smart phone, tablet or computer. Adzharuddin, (2013) remarked that the flexibility of LMS learning environment makes the content of a course easier to access by learners and are able to study at their own speed via the Web. Furthermore, LMS supports robust learning by enabling the storage and retrieval of training resources in structured formats. Typical features of LMS support content distribution and helps educators to share course content and interact with students regardless of their geographical location (Mershad & Pilar, 2018). The concept of LMS is an essential communication and interaction tool that is valuable to students and educators in an online learning environment. The additional features of LMS include creating and managing existing courses, user registration, developing self-marking quizzes and tests, automated grading and scoring, students' marks allocation system, reports generation and student data records (Dhika, *et al.,* 2020). Prior to the inception of LMS, internal email systems were typically used as the primary form of communication between educators and learners in various institutions. However, the LMS integrated messaging system is rapidly replacing the existing internal emailing systems.

In recent times, the usages of LMS have become a requirement for the management of education including accreditation, digital presence and institutional recognition. As such, factors related to the success of using LMS in schools take into account the features used in the portal like the user friendliness, the technical support available and the compatibility with the institutional systems needs and infrastructure. For example, Al-Mutairi, (2015) identified seven main categories of tools in an educational platform to include; interface, navigation, evaluation, didactic resources, communication/interaction, coordination and administrative support services. In schools where LMS such as ILIAS learning management and latitude management system are used, students have access to tools that adjust to their attention span and provide valuable and immediate feedback for the enhancement of learning school subjects.

ILIAS is a German word for "Integrated Learning, Information and Work Cooperation System". It is an open-source web-based learning management system (LMS) which supports tools for collaboration, communication, evaluation and assessment. ILIAS main objective is to provide a flexible environment for online learning. The integrated tools give opportunities that go far beyond the idea that education only consists of creation and completing of a particular course. It could easily be seen as a library, which houses various learning materials made available for non-registered users, making the platform a free knowledge repository. Parallel to ILIAS is the Latitude LMS which is privately own software that provides software application for administration, documentation, tracking, reporting of training programmes, classroom and online event, e-learning programme and training content. Latitude Learning is a cloud-based LMS for extended enterprise organizations that require more functionality in order to train all segments of their business. It was designed to support the complexity of partner training: manage and organize content and users by audience, create and track certification programs with performance metrics, define audience-specific rules, branded learning environments, internal and external learner paths and customize workflows and features to trainee and their partner's needs.

Latitude Learning was designed specifically to manage extended enterprise training programs, however, its worthiness in education especially in the area of managing teaching and learning is paramount (Kuran, *et al.*, 2017). This is because, the learning platform makes it easier to deliver quality teaching training across extended multi-campus network using its control system throughout the training process and deliver a tailored learning experience no matter who is on the receiving end. It also allows a teacher to create customized style sheets that can be used to brand elements of the LMS, like background color, button style, tabs style, and other system display options (Avsec & Kocijancic, 2016).

Geography is the study of natural features and phenomena on the earth‘s surface and in the atmosphere with a special focus on locations, space relations, and changes of physical phenomena on the earth‘s surface (Abdulkarim, 2010 & Aderogba, 2011). In our rapidly changing world, the science of geography and geography education requires a new approach to teaching the concepts because, the subject matter is changing gradually becoming more globalized with science and technology at the centre. With these changes, geography educators are now forward looking for research-based learning, problem solving based education, teaching programs and sustainability-based approaches to teaching the subject such as ILIAS LMS and latitude learning management system. Alabi, *et al.,* (2020) emphasized that teaching with technologies have tendencies to increasing students learning outcome. Studies in the field of geography education have concentrated on adaptation of technology to geography lessons, digital game-based teaching, development of geographical skills and using applications to test natural phenomenon like rainfall, wind and temperature (Hanson, 2004; İncekara, 2009). However, three fundamental reasons such as technological advancement, technology literacy and the demand for geographic information as guidance for future practices necessitated the need to shift a ground favoring a new way of curriculum development and implementation in schools. In spite of the recent developments, schools fall short of giving geography education a world teaching standard (Kaya, 2013). This marked the need to integrate ILIAS and latitude learning management system to bring the abstract concepts more apparent and to increase students’ learning outcome in geography.

Learning outcomes describe the essential learning that learners have achieved, and can reliably demonstrate at the end of a course or program (Seyal, 2015). In other words, learning outcomes identify what the learner was able to do at the end of a course program. Firat, (2016) and Rabiman, (2020) Stated that academic achievement is the exhibition of knowledge attained or skills developed by students in a subject designed by test scores assigned by teachers. As achievement is established comes the need to retain the knowledge attained and the skills developed by students for future reference and use. However, knowledge retention in geography is still challenging because, students find it difficult to decipher what they had learnt without experimenting the process. Could ILIAS and latitude learning management system increase students’ retention?

Retention is what is left after learning has taken place over a given period of time. Retention is attributed to how much a person remembers what they learnt after an interval of time without practice (Mershad, & Pilar-Wakim, 2018). In other words, it is the difference between what is initially learnt and what is later forgotten. It is important that what students learn stay with them beyond examinations and tests. Kran, *et al.,* (2017) defined retention as learning which lasts beyond the initial testing and is assessed with tests administered two or more weeks after the information has been taught and tested. That is why retention of

learning is measured within two tests; the initial test and the delayed retention test. Upon testing, it is difficult to understand who among male and female students retain geography concepts more. This also presented the need to understand gender variations among students especially when ILIAS and latitude learning management system are used.

Gender is a range of characteristics used to distinguish between male and female in order to ensure good classroom communication between students. Aicha, (2014) and Donghyun, (2017) stated that gender is the characteristics, whether biologically or socially influenced, by which people define male and female. Gender being an analytical device used to explain and recognize the family members and variations between men and women in a society, is socially constructed characteristics to identify roles such as norm, relationship of and between groups of men and women. In another way, it influences specific boundaries in accessing offerings, financial resources and political opportunities and education (Firat, 2016). Studies have established the superiority of learning outcome of boys over girls. However, could this superiority continue to manifest when ILIAS and latitude learning management system are used? Çeliköz1 and Erdoğan (2017) highlighted that a silent feature such as motivation and attitude as influencing factors among boys and girls in schools.

Statement of the Problem

Student achievement in geography has been unsatisfactory over the years. The poor performance has been linked to so many factors including inappropriate teaching methods, inadequate coverage of syllabus, ineffective use of media and negative attitude of students towards geography. The consequence of these has made geography teachers to decern the subject by presenting excuses that point to lack of practical resources for teaching while the students to be levelled the subject as the difficult one. NCCE chief examiners report of 2020 reported that students skipped questions related to map reading, relief, weather and climate.

The use of innovative instructional strategies as well as instructional media that will bring about more meaningful learning of geography may require the incorporation of learning management system. Studies of Aicha, (2014) and Alabi, *et al*., (2020) have been carried out on the effect of different learning platform in geography and other subjects in comparison with conventional lecture method. However, no study to the best knowledge of the researcher experimented ILIAS and latitude learning management systems in teaching geography among College of Education students in North Central, Nigeria. This study is different because its compares ILIAS, latitude learning management system and conventional lecture method. Therefore, this study examined the effects of ILIAS learning management system, latitude learning management system and conventional method, gender, retention and attitude of students in geography.

Research Questions

The following research questions were raised to guide the study:

1 What is the mean retention scores of students taught Geography using ILIAS LMS, latitude LMS and conventional lecture method?

2 What is the mean retention score of male and female students taught Geography with ILIAS LMS?

3 What is the mean retention scores of male and female students taught Geography with latitude LMS?

Research Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

H_{01}: There is no significance difference in the retention scores of students taught geography using ILIAS LMS, latitude LMS and conventional lecture method.

H_{02}: There is no significance difference is the retention scores of male and female students taught geography with ILIAS LMS.

H_{03}: There is no significance difference the mean retention scores of male and female students taught geography with latitude LMS.

Methodology

The research design that was used is a quasi-experimental design, it is a pre-test, post-test, non-randomized control group design. The design involves a 3 x 2 factorial design. Three levels of independent variables namely ILIAS learning management system, latitude learning management systems and conventional lecture method, two levels of gender (male and female), with students' posttest, retention test and attitude as dependent variables.

The population for this study was made up of 3,421 Nigeria Certificates in Education geography students, (NCE students) 2019/2020 academic session in the North Central, Nigeria. The zone comprises of Niger, Kwara, Nassarawa, Kogi, Plateau, Benue states, and FCT Abuja. The target population was made up of 716 NCE two students in 22019/2020 academic session.

The sample for this research consists of 212 NCE two Geography students that was randomly selected from three colleges of education in North Central Nigeria, the selected schools were

named schools A, B and C respectively. Multi stage sampling technique was employed in the following order. Firstly, the 14 Colleges of Education in north central was clustered into three A, B and C, and one state was selected from each cluster using hat draw method. Secondly, one college of education was randomly selected in each state using convenient sampling. Thirdly, the randomly selected three colleges of education for the main study was randomly assigned to each of the two experimental and one control groups using simple random sampling technique. Each school was assigned into experimental group one; ILIAS learning management system, experimental group two; Latitude learning management system and Control group was Lecture Method (LM) groups. Fourthly, NCE two geography class was randomly selected using simple random sampling technique. Finally, purposive sampling technique was used in each college of education and used the students as they are without disrupting the routine lecture activities. As such, NCE two Geography students' intact classes were assigned to experimental and control groups respective. Students' gender was taken in to consideration only during data analysis.

A total of 212 students; 76 students in experimental group (one) were exposed to ILIAS learning management system, 61 students in experimental group (two) were exposed to Latitude learning management while 75 students in control group was exposed to Lecture Method (LM). The instruments used for this study were categorized into two sections; treatment instrument and test instrument. The treatment instruments were ILIAS Learning Management System on Geography Concepts, Latitude Learning Management System on Geography Concepts and Conventional Lecture Method which were used for experimental groups I, II and the control group. The test instruments are Geography Achievement Test (GAT), Geography Retention Test (GRT) designed and administered to Geography students at pretest, posttest and retention test.

The instructional content was developed by the researcher based on the content of Nigeria Certificate in Education Geography (NCE 2) curriculum, GEO 212 Regional Geography of Nigeria. The course comprised of the following subtopics (Nigeria, location, position size and political development in West Africa, Relief of Nigeria, Climate of Nigeria**).** ILIAS learning management system and Latitude learning management was prepared by writing lesson plan on (GEO 212) Regional Geography of Nigeria which comprises of the following subtopics (Nigeria, location, position size and political development in West Africa, Relief of Nigeria, Climate of Nigeria**).** The treatment material is named ILIAS learning management system and Latitude learning management. They are open source software that was adapted and modified by the researcher with the assistance of a software developer to suit the research purpose. Learning contents was based on the Geography Syllabus in NCE (GEO 212), it was developed and uploaded on the ILIAS learning management system and Latitude learning management system platforms for students to learn. The features of ILIAS learning management system and Latitude learning management system were design to be accessible and easy to navigate on both desktop and smart phones. The students access the ILIAS learning management system and Latitude learning management system via the internet by login on to the website. The username was created by the researcher using students' username and password and was assigned as a class member on on the platforms. The contents of lessons were uploaded by the researcher through the website for students to have access and learn the geography contents in the platforms. The test instrument that was used for this study was Geography Achievement Test (GAT). The GAT consists of 30 multiple

choice objective items that was prepared from the NCE II student syllabus (from 2017 - 2019). The GAT was administered as pre-test, post-test and delayed posttest to the experimental and control groups. In scoring the multiple-choice questions, each question was awarded one mark for a correct option chosen and later converted to percentage.

The developed LMS (ILIAS learning management system and Latitude learning management system) and Geography Achievement Test (GAT) were validated by two computer programmers, two educational technology experts and three Geography experts to determine the appropriateness of the instruction in terms of legibility, navigation, interface, functionality, packaging, portability and durability. Their suggestions and recommendations were used for modifying the instruction and improve on the ILIAS learning management system and latitude learning management system.

To test the reliability of the Geography Achievement Test (GAT), a random sample of 40 geography NCE II students who were part of the research population, but not part of the sample for the study were selected from Niger State College of Education Minna to test the reliability of the instrument. The test was administered on the pilot sample in which a split-half method applied on the data collected and was subjected Pearson Product Moment Correlation statistic. The reliability coefficient 0.727 was determined which shows that the instrument is reliable for the study. The researcher visited the three sampled schools to seek permission from the authorities to use their facilities and the students for the study. The cooperation of the students and staff in the three selected schools was sought and the objectives of the study was explained to the them. All the groups (experimental and control) were pretested before the treatment. Experimental group one was exposed to the use of ILIAS learning management system; experimental group two was exposed to Latitude learning management system while the control group was exposed to conventional lecture method. The posttest was administered on the groups after five weeks of treatment while retention test and attitude questionnaire were administered two weeks after posttest. A total of nine (9) weeks was used for data collection.

The data obtained from the field work was subjected to descriptive and inferential statistics. The research questions were answered using mean and standard deviations while inferential statistic was used to test the hypothesis at 0.05 level of significance. Analysis of Covariance (ANCOVA) and Bonferroni pairwise comparisons test was used for retention test.

Results

Answering Research Questions

Research Question One: What is the mean retention of students taught geography using ILIAS LMS, latitude LMS and conventional lecture method?

Table 3: Mean and Standard Deviation of Posttest and Retention Test Scores of Experimental Group I and II and the Control Group

Group	N	Posttest		Retention		Mean Gain/Loss
		$\bar{x}$	SD	$\bar{x}$	SD	
Experimental Group 1	76	77.63	14.729	65.16	17.516	-12.47
Experimental Group 2	61	83.43	8.663	65.25	14.945	-18.18
Control Group	75	58.39	22.837	56.43	23.695	-1.96

Key: $\bar{x}$ = Mean, SD= Standard Deviations, N= Number in samples.

Table 3 displays the means and standard deviation of experimental group one treated with ILIAS LMS and experimental group two treated with Latitude LMS and the control group exposed to conventional lecture method at posttest and retention test. The mean retention scores of students for experimental group one was lower (M = 65.16, SD = 17.516) than the posttest scores (M = 77.63, SD = 14.729). The mean loss was -12.47 indicating a substantial loss in their retention. For experimental group two, the mean retention scores of the posttest were also lower (M = 65.25, SD = 14.945) than the posttest scores (M = 83.43, SD = 8.663). The mean loss was -18.18 indicating a substantial loss in their retention. Nevertheless, in the control group, the mean retention scores were the lowest (M = 56.43, SD = 23.695) than the posttest scores (M = 58.39, SD = 22.837), with a mean loss of -1.96 which signifies a minimal loss. The mean losses for the experimental groups were less than 20% implying that students taught geography using ILIAS LMS and Latitude LMS on average retained the geography concepts learnt. For the control group taught geography with conventional lecture method, their posttest scores were already on the lower bound and had therefore retained close to 98%. The achievement of the groups was graphically presented in figure 1.

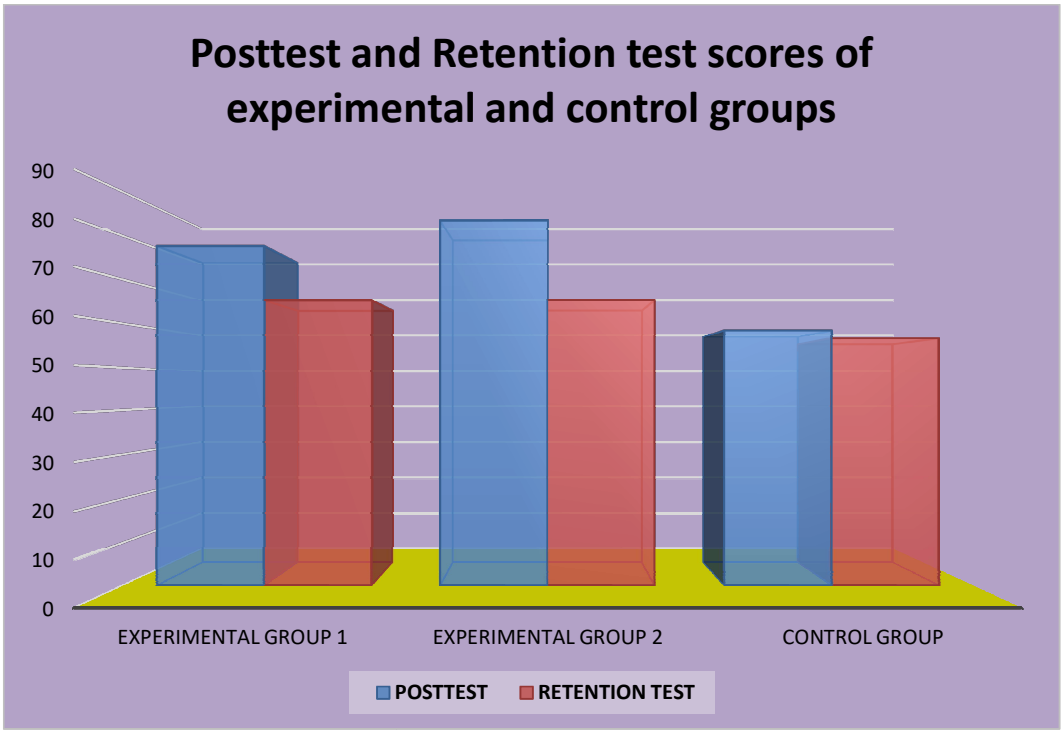

Figure 1: Mean and standard deviation of experimental group I and II and the control group.

Research Question Two: What is the mean retention score of male and female students taught geography with ILIAS LMS?

Table 4: Mean and Standard Deviation of Posttest and Retention Test Scores of Male and Female Students Taught Geography with ILIAS LMS

Group	N	Posttest		Retention		Mean Gain/Loss
		$\bar{x}$	SD	$\bar{x}$	SD	
Male	35	81.49	6.441	70.40	16.218	-11.09
Female	41	74.34	18.639	60.68	17.525	-13.66

Key: $\bar{x}$ = Mean, SD= Standard Deviations, N= Number in samples,

Table 4 displays the means and standard deviation of male and female students in experimental group one treated with ILIAS LMS at posttest and retention test. The mean retention scores for male group at retention test was lower (M = 70.40, SD = 16.218) than the posttest scores (M = 81.49, SD = 6.441). The mean loss was -11.09 indicating a minimal loss in their knowledge retention. For the female group, the mean retention scores were also lower (M = 60.68, SD = 17.525) than the posttest scores (M = 74.34, SD = 18.639). The mean loss was -13.66 indicating a minimal loss in their knowledge retention. This implies that there is a minimal difference in the retention of male students taught geography using ILIAS LMS with their female counterparts.

Research Question Three: What is the mean retention score of male and female students taught geography with Latitude LMS?

Table 5: Mean and Standard Deviation of Posttest and Retention test Scores of Male and Female Students Taught Geography with Latitude LMS

Group	N	Posttest		Retention		Mean Gain/Loss
		$\bar{x}$	SD	$\bar{x}$	SD	
Male	26	85.88	7.789	68.19	14.397	-17.69
Female	35	81.60	8.932	63.06	15.171	-18.54

Key: $\bar{x}$ = Mean, SD= Standard Deviations, N= Number in samples.

Table 5 displays the means and standard deviation of male and female students in experimental group two treated with Latitude LMS at posttest and retention test. The mean retention scores for male group were lower (M = 68.19, SD = 14.397) than the posttest scores (M = 85.88, SD = 7.789). The mean loss was -1769 indicating a substantial loss from their retention level. For the female group, the mean retention scores were lower (M = 63.06, SD = 15.171) than the posttest scores (M = 81.60, SD = 8.932). The mean loss was -18.54 indicating a substantial loss in their retention. This implies that on average, both male and female students taught geography using Latitude LMS retained up to 80% of the knowledge with minimal difference from the two groups.

Testing Null Hypotheses

Hypothesis One: There is no significance difference in the mean retention scores of students taught geography using ILIAS LMS, latitude LMS and conventional lecture method.

Table 6: Summary of ANCOVA Result of Mean Retention Scores of Students Taught Geography using ILIAS LMS, latitude LMS and conventional lecture method

Source	Sum of Squares	df	Mean Square	F-value	P-value
Corrected Model	5114.829a	3	1704.943	4.631	.004
Intercept	27516.139	1	27516.139	74.744	.000
Covariate (Posttest)	1386.480	1	1386.480	3.766	.054
*Retention	1079.064	2	539.532	1.466	.233^{NS}
Error	76573.284	208	368.141		
Total	899098.000	212			

Corrected Total	81688.113	211

NS = Not Significant at 0.05 level

Table 6 revealed that $F_{(3,208)} = 1.466$, P-value = 0.233 at $P > 0.05$, indicating a non-significant difference in the mean retention scores of students taught geography using ILIAS LMS, latitude LMS and conventional lecture method. Therefore, hypothesis four was rejected. The finding implies that students taught geography using ILIAS LMS, latitude LMS and conventional lecture method did not differ significantly in their mean retention.

Hypothesis Two: There is no significance difference is the mean retention score of male and female students taught geography with ILIAS LMS.

Table 8: Summary of ANCOVA Result of mean retention scores of male and female students taught geography with ILIAS LMS

Source	Sum Squares	ofdf	Mean Square	F-value	P-value
Corrected Model	1833.835a	2	916.917	3.161	.048
Intercept	9093.122	1	9093.122	31.346	.000
Covariate (Achievement)	51.007	1	51.007	.176	.676
*Gender	1537.892	1	1537.892	5.302	.024
Error	21176.271	73	290.086		
Total	345672.000	76			
Corrected Total	23010.105	75			

S = Significant at 0.05 level

Table 8 revealed that $F_{(2,73)} = 5.302$, P-value = 0.024 at $P < 0.05$, indicating a significant difference in the mean retention scores of male and female students taught geography using ILIAS LMS. Therefore, hypothesis five was rejected. The finding implies that male students taught geography using ILIAS LMS differ significantly in their mean retention with their female counterparts who received the same treatment condition. Thus, the ILIAS LMS favours male students in retaining a substantial amount of knowledge higher than the female students in learning geography in Colleges of Education in North Central, Nigeria.

Hypothesis Three There is no significant difference in the mean retention score of male and female students taught geography with latitude LMS.

Table 9: Summary of ANCOVA Result of mean retention scores of male and female students taught geography with Latitude LMS

Source	Sum Squares	ofdf	Mean Square	F-value	P-value
Corrected Model	453.066a	2	226.533	1.015	.369
Intercept	1850.697	1	1850.697	8.290	.006
Covariate (Achievement)	59.678	1	59.678	.267	.607
*Gender	299.852	1	299.852	1.343	.251
Error	12948.246	58	223.246		
Total	273080.000	61			
Corrected Total	13401.311	60			

NS = Not Significant at 0.05 level

Table 17 revealed that $F_{(2,58)} = 1.343$, P-value = 0.251 at $P > 0.05$, indicating a non significant difference in the mean retention of male and female students taught geography using Latitude LMS. Therefore, hypothesis six was not rejected. The finding implies that both male and female students taught geography using Latitude LMS does not differ significantly in their mean retention in Colleges of Education in North Central, Nigeria. This implies that Latitude LMS is gender friendly with regards to learning.

Discussion of Findings

The findings of this research revealed that students taught geography using ILIAS LMS and Latitude LMS on average retained the geography concepts learnt higher than those taught with conventional lecture method. The finding of the null hypothesis indicated that students taught geography using ILIAS LMS, latitude LMS and conventional lecture method did not differ significantly in their mean retention. Furthermore, the computed Bonferroni pairwise comparisons indicated no statistical significance between all the three groups with negative mean differences. This finding implies that the geography student's loss part of the information in all the three conditions; ILIAS LMS, latitude LMS and conventional lecture method. The finding is consistent with the finding of Hock, Omar and Mahmud (2015) who evaluated three OS LMS, Moodle, ATutor and ILIAS based on the usability and students remember most of the material learnt through ILIAS LMS. The finding was also consistent with the postulates of dual coding theory citation which emphasize on two different types of coding; the pictorial which is represented in form of images and short videos and the verbal which is represented in form of voice over explaining the pictorial aspects. The two basically increases the likelihood of learners to retain the information, given that their mind will store it as a representation of both a verbal and non- verbal mental image that can be accessed at a later time.

The research also revealed that the mean retention scores of male and female students taught geography using ILIAS LMS discovered that there is a minimal difference in the retention of male students taught geography using ILIAS LMS with their female counterparts. The finding of the null hypothesis indicated that male students taught geography using ILIAS LMS differ significantly in their mean retention with their female counterparts who received the same treatment condition. This finding consistently supported the earlier finding on achievement which also returned males as being higher than the females. The finding is attributed to the fact that males are more serious in learning with the platforms higher than the females who are more inclined to social media. The finding is not supported by the finding of Alabi, *et al.,* (2020) indicated no significant difference in the mean achievement scores of male and female students taught Educational Technology using ILIAS learning platform.

The findings of research question further revealed that the mean retention scores of male and female students taught geography using Latitude LMS discovered that on average, both male and female students taught geography using Latitude LMS retained up to 80% of the knowledge with minimal difference from the two groups. The finding of the null hypothesis indicated that both male and female students taught geography using Latitude LMS does not differ significantly in their mean retention in Colleges of Education in North Central, Nigeria. The finding is consistent with the finding of Lin, (2017) who found no significant gender difference was found in the post-test results for achievement in mathematics.

Conclusions

Based on the findings of this study, the following conclusions were drawn;

The findings of this study revealed that the use of ILIAS LMS, latitude LMS to teach geography concepts had not only exposed students to relevant platforms where students learn the course with interactive experience, it was concluded that the retention of geography concepts of Regional Geography of Nigeria which comprises of Nigeria location, position, size and political development in West Africa, Relief of Nigeria and Climate of Nigeria are independent of the platforms. Thus, male and female geography students do not differ in the level at which they retain the concepts when exposed to ILIAS LMS. However, those in latitude LMS showed a superiority between males and females. For students' attitude, ILIAS LMS is reported to be more preferred by the students than the Latitude LMS.

Recommendations

The following are the recommendations made based on the findings of this study;

The use of ILIAS and Latitude LMS should be adopted by lecturers as an option to showcase the practical teaching of Regional Geography of Nigeria in Colleges of Education in North Central, Nigeria. This is to enable students to observe the relevant features of the regions and identify the locations, positions and size of an area of interest.

Lecturers in Colleges of Education should complement their lecturing effort with the use of ILIAS and latitude LMS for collaboration, communication, evaluation and assessment so as to allow both male and female students understand these features for their gradual adoption as a learning culture. Lecturers in Colleges of Education should emphasize on the use of LMS as an interactive learning platform rather than for social interactions. This is to close gender parity in the use of LMS by developing confidence among geography students to use the features for learning.

The administration of Colleges of Education should organize a workshop for lecturers on how to develop a courseware for teaching and learning with ILIAS and latitude LMS. This is to increase chances for students' retention of geography concepts.
The Federal Ministry of Education in collaboration with National Commission for Colleges of Education should customize ILIAS and latitude-like platforms for Nigeria. This is in recognition with its gender friendliness and their alignment with the teaching of geography where lecturers upload images and assign branded logos to portals specified per location using Geographic Information System (GIS) and google maps.

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Scientific Literacy in Decision Making for Security and Safety Education in Secondary Schools, Kwara State Nigeria

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ABSTRACT

This paper aims to reiterate the scientific literacy in decision making for security and safety education in secondary schools, Kwara State Nigeria. For the past 15 years, the Nigeria school system has been under attack leading to kidnappings and killings of students, teachers and even the school administrators. Measures have been taken to curb these attacks but unfortunately, instead of the attacks to alleviate, they are still frequent and increasing everyday while the psychological effect on innocent students is alarming and rate of abductions are increasing. To safeguard the educational system from collapse, the issue of security in secondary schools and Nigeria must be dealt with efficiently. The individuals need to be safe physically and psychologically. Safety is essential within as well as outside the homes. In educational institutions and training centres as well as in various types of employment settings, the individuals are imparted information in terms of ways of promoting safety. When the individuals are safe, only then they will be able to concentrate wholeheartedly towards the implementation of job duties well. If these incessant attacks are not proactively dealt with, it could bring the danger to the quality of labour force and human capital needed to drive a sustainable economy. This paper, therefore, focuses on the issues of security and safety education in Nigeria education system

Keywords: Scientific Literacy, Security, Decision Makers, , Safety Education, Secondary School System

Introduction

Scientific literacy could be defined as an individual's capability to formulate, employ and interpret science in a variety of contexts which includes reasoning scientifically and using scientific concepts effectively. Science deals with theories, concepts and problems which may not necessarily encountered in everyday life while scientific literacy deals with common practical problems therefore, scientific literacy is an individual's capacity to identify and understand the role that science plays in the world, to make well-founded judgment around the globe (Asunda, 2012). Literacy is derived from latin word meaning a letter of alphabet (Lawal, 2014). Researchers have come up with different definition of literacy, UNESCO viewed literate as the ability to identify, understand, interpret, create, communicate, compute and use printed and written materials associated with varying contexts. It involves a continuous learning that enables individuals to achieve their goals, to optimize their potentials and participate fully in the school, community and the society at large (UNESCO, 2019).

Therefore, science educators need a lot to do in order to enable individual learners to achieve their goals, to optimize their potentials and to participate fully in the school, community and the society at large by making provision for learning facilities, instructional materials, adequate teachers and security in Nigerian secondary schools. It was noted that every state are no more secured due to the increase in numbers of armed robbery, kidnappers, corruptions, terrorisms, absence of safety measures in schools, insurgencies, hostility and general threats in school that could be found in continents, regions, states and the community (Ani & Onyebukwa, 2016). The issue of security has taken center stage in the contemporary international system which needs to call for the solution to this and the impact of insecurity on the implementation of secondary education has become very obvious.

Insecurity has presented itself in the form of insurgency such as Boko Haram, Niger Delta Militants, Fulani herdsmen attack etc which has caused a lot of challenges for the economic development of Nigeria. Philomina (2019) defined insecurity as a situation where lives and properties are vulnerable and are left at the mercy of terrorists, criminals or rebels. This insecurity has been link to threat, corruption, inequality and poor leadership. Insecurity in Nigeria secondary schools has ravaged infrastructures and claimed thousands of lives remains an insurmountable mystery in the wheel of educational progress(Adams et.al, 2021) The impact of insecurity on the implementation of secondary education and academic sustenance becoming noticeable.

On the other hand, security is a condition of being safe or protected (Oxford Dictionary). When there is security in schools, all learning activities would be smooth, protected and learning environment would be more conducive for learning. Philomina (2019) affirmed that students environment condition determines to a very large extent his/her academic achievement. The researcher added that a hostile environment due to insecurity hinders significantly, the implementation of tertiary education especially in the Northern part of Nigeria. According to Ani and Onyebukwa (2016) security requires physical protection from existing harm and the establishment of resilient socio-political and economic structures to deal with its complexity. In this regard, science educators need to reach consensus in decision making on how Nigerian secondary school would be safe from kidnappers, armed robbery, terrorism etc. This study was to investigate the scientific literacy in decision making for security and safety education in secondary schools in Kwara State, Nigeria.

Importance of Security of a Nation

Security is a major policy challenge to decision makers as well as communities and groups around the globe. Philomina (2019) sees security as the mechanism put in place in order to prevent, reduce or resolve violence, conflicts and threats that emanate from other states, non-state actors, or structured socio-political and economic conditions. Ewentan and Urhie (2014) observed that various attempt have been made to redefine the concept of security in a broader view placing more relevance on individuals than state, since national security development and humans rights remain basic yardstick for revealing the concept security. Nigeria suffers from so many security challenges in some areas which make the live of her citizens to be constantly live in a state of panic.

The security situation in Nigeria has brought about manifold implication on education. UNICEF (2016) reported that 10 million Nigerian children are out of school and about 670,000 children have been deprived of an education out of a population of over 160 million children as a result of insecurity in Nigeria. Many parents are no longer interested in sending their wards to school in the north and teachers have abandoned their school for others in more peaceful states because they have been threatened and killed in some cases while some parents allow their students to attend lessons under the trees and canopies which disrupts their access to education (Ekere, 2013 & Bertoni et.al 2019).

Insecurity could be summarized as a breach of peace and security whether historical, religious, ethno-regional, civil, social, economic and political, contributes to frequent

conflicts leading to nation destruction of lives and properties (Philomina, 2019). Studies reveal that there has been an abysmal low rate of enrolment in the northeastern regions, especially among girls and this is due to security issues in particular the Boko Haram insurgency which has made schools all over Northern Nigeria unsafe (Emelife, 2020). Adams, et-al (2021) observed that conducive and peaceful school environment bring about great achievement in both students and teachers while feeling of insecurity within and outside the school environment deterred the academic performance of students. According to Akintunde and Musa (2016), an insecure school environment affects the learning of children negatively.

Many lives of learners were distorted, some were killed and some were even got pregnant in their custody. In order to avoid loss of lives of learners, teachers, school workers and properties, there must be concrete preventive and resilient decisions for safety education in Nigeria educational system. According to Radhika (2020) Safety education is the education that aims to impart knowledge and understanding to the individuals in terms of measures and strategies to promote safety. That is to promote good health and well-being physically as well as psychologically, the individuals need while safety is a state of being free from criminal activity such as terrorism, kidnappers or espionage. Although there are different types of safety education which are health security, food security, environmental security etc but this study is focused on environmental security.

On 14th of February, 2014 it was reported that more than 200 girls were kidnapped from their school dormitory in Chibok, Borno state in which the Boko Haram drew a global attention. The basis of the kidnap springs from the ideological opposition to the idea of educating girls instead of marrying them off as Boko Haram's leader revealed in a video (Mantzikos, 2014). Girls as young as ten years old have been used as suicide bombers and forcefully taken away from their homes and schools. Also, in 2018 there was a case of 110 school girls' abduction from Dapchi, Yobe state and the government has no solution to all these problems (Mbah, 2019). Presently, the case of kidnappers, abduction are more rampant in all over the state which make Nigeria education to be at stake.

For instance, a student from Moshood Abiola Polytechnic was kidnapped and raped and they eventually killed her in Ogun state (The Punch, Monday, 15, 2022). Recently there was a case of a student of Ladoke Akintola University of Technology, Ogbomoso a final year student who was kidnapped and killed after the kidnappers had collected a N5m ransom

while okada rider who took the ransom to the kidnappers was gunshot (The Punch, Wednesday, 3, 2022).. Also a case of Gunmen who attack resident in Abuja estate and kidnapped some residents (The Guardian, June 7, 2022). It is observed that the challenges of security have now gone beyond the schools in the North as we can see many cases of kidnappers in almost all over the state.

All these scenarios are indication of inefficacy of Nigerian security operation and Government intervention. Amnesty International (March, 2018) reports that the Nigerian authorities failed to ensure protection for schools in northern Nigerian especially girls' schools. If these could happen in northern part therefore, the southern part should be awake and be minded of security in our secondary schools especially in Kwara state. Therefore, science educators need to make decisions in establishing objectives, planning, organizing, directing and controlling the insurgency of insecurity in educational system. Decision making is a process of identifying alternatives and choosing one of the alternatives to solve a problem or address an opportunity (Koivunen, et-al 2019). Decision making starts with the initial recognition of a problem that is worth-while making decision about, through the collection of data, identification of real situation, the development of alternatives and the evaluation to the final choice that is implemented and controlled (Alabi, n.d). There are four elements necessary for effective decision-making according to Campbell, Corbally and Nystrand (1983), sense of purpose, existence of a need for decision, reviewing alternatives and selecting a course of action. To improve and maintain safety education in Nigeria secondary schools, adequate security should be provided in schools, survailance camera at strategic places should be fixed in all area of the school and security men should be trained to face the attacker at any point in time.

Several studies have investigated the actual cause of armed robbery, kidnappers, terrorisms, insurgencies all over Nigeria and findings range from unemployment, poverty, terrorism, economic problems, inefficient' government intervention to extreme political ideology and religious feelings etc (Adelaja, et al., 2018). It is difficult for a country like Nigeria to develop in the face of attack. It is definitely affects the education system therefore inclusive education cannot be guaranteed in such country. As Nigeria is suffering from so many security challenges and peace therefore the live of citizens are in a state of panic. There are many factors responsible for the security challenges in Nigeria as observed by different researchers like (Adams, 2021; Ameh, 2015; Philomina, 2019).

Causes of Security Challenges in Nigeria

Many factors have been assumed as causes of unsafe in Nigeria. Some writers put their blames on the government while some others pass the blame on parents other writers hold the blame on youth while many writers put the combination of these on all. Putting all these factors together will provide some of the following as responsible factors responsible for security challenges in Nigeria:

Unemployment: There is a high level of unemployment in Nigeria, especially among the youth. Many graduates are flooding the streets seeking employment within the country. These employment opportunities are resulting in too many young people being jobless and without means of survival and the need for survival makes one vulnerable to manipulation into committing crimes even for very little pay. While many pick up guns and resort to kidnapping for ransom, robbery and other violent acts for their survival.

Terrorism: The violent extremism of various terrorist groups in Nigeria in recent years remains a major cause of insecurity in the country. Different militant groups like ethnic and religious superiority and the likes have emerged and are causing serious havoc in various parts of the country. There are two major groups that continue to pose a problem of security in Nigeria education system, they are Boko Haram and Movement for the Emancipation of Niger Delta (MEND), they employed tactics such as suicide bombing, kidnapping, vandalization, sabotage of oil facilities and other means that result to destruction of property and loss of lives.

Inefficient Government Intervention: Government is a major cause of the state of insecurity in Nigeria by not providing the needs of her citizen. With the nation's rich mineral resources to cater for the needs of her people, the government still shows incapability to deliver public services and provide basic needs of the masses. Laws and order are still unobtainable where the government fails to curb the crime.

Corruption: This is an act of stealing public funds or embezzled money act which is very common among the government officials in Nigeria. The security agency on our ways fail to do their jobs by allowing criminals to get into the places like church, mosques, school etc after collecting token from them. Some of the government fund terrorist groups in order to assist them during election.

Poverty: Poverty is the lack of capability to function effectively in society. The rate of poverty in Nigeria is quite alarming and the result of this is an increase in petty crimes, gang membership and other social vices that add to the problem of security in the country. Poverty leads to a lack of educational resources in poor schools and sometimes could hinder learning.

Porous Boarder: the boarders are so free to the extent that people move in from another country to Nigeria without proper check. This allows criminals to enter the country which bring about unsafe environment.

Illegal Armed Groups: Illegal importation of arms and animation has made possession of arms by individuals and groups very easy. There are different groups who made possession of arms and animation in the name of their group like Oodua Peoples' Congress, Bakassi Boys etc.

Religious fanaticism/extremism: Religious fanaticism and extremism have been among the major challenges of security in Nigeria. The recent incidences of attack on churches and Christians in Northern part of the country by Muslim extremists have rendered several states in the north unsafe for life and properties.

Labour activities: This is the act of call for strike, in 2012 the Nigerian Labour Congress call for a nationwide strike as a result of increase in price of fuel by government. The NLC accused the government of insensitivity to the suffering of the people as well as ignoring the security challenges in the country.

According to Sababa (2015) in his empirical studies of causes of insecurity in the North-East, streamlined that poverty, massive unemployment and Religious wars against other faiths are the major variables cause Islamic insurgency in northern Adamawa and Borno states of Nigeria.

Secondary Education and effect of Insecurity in Nigerian School System

The form of education receiving after primary education is either high or secondary education. This is divided into two section that is; junior secondary and senior secondary. Junior education is one which Nigerian child is enrolled and receives just after completing primary education. It is of three-year basic education duration and the objectives of junior secondary school education include providing the Nigerian child with varied basic knowledge and skills for free enterprise and for furthering his/her education. While senior secondary

education is the education received after junior secondary education (NPE, 2018). Part of their objectives are to providing the Nigerian child with varied basic knowledge and skills for free enterprise and for furthering his/her education, It is also inspiring adolescents with an aspiration for self-improvement and attainment of quality.

These are the commissioner, governor, president of tomorrow, without giving the children education, all these objectives might not come to materialize, a child who has education is the one that is more recognized in any political passion as at Nigeria of today therefore all teachers, policy makers, stake holders and government need to reach consensus and be proactive enough on how to maintain safety education in Nigeria educational system. Therefore, to safeguard the educational system from collapse, the issue of insecurity in secondary schools and Nigeria must be dealt with seriousness.

No nation can develop when there is a high level of insecurity in the society and one of the major issues affecting education in Nigeria is insecurity. The importance of education has been adequately discussed in many forums and in different literature (Ojukwu, 2017). It is in the realization of the importance of education of the child that the government of the Federal Republic of Nigeria in its 1999 constitution made a declaration of the right of every Nigeria child to education irrespective of gender, tribe, religion or race while these could be realized in the conducive school environment. If there is a feeling of insecurity within and outside of the school environment, both students and teachers are likely to be deterred and this may affect the academic performance of the students (Adams et.al, 2021).

According to Adams et.al (2021) declared that insecurity in school system trigger traumatic disorder and toxic stress which affect learning negatively through enrolment of students since parents pull their children out of schools and in some cases, insecurity has led to the closure of schools. For instance, Borno schools were shut-down in major towns as a result of insurgency (Ameh, 3015). These attacks on schools usually lead to vandalization and outright destruction of school facilities which discourage the establishment of new schools. As a result of this, government resources are depleted as funds meant for other developmental projects are channeled to tackling the aftermath of attacks (Adams et.al, 2021). In order to tackle the issues of insecurity in Nigeria secondary schools, there is need to deploy extraordinary measures to tackle the spate of attacks on school facilities in Nigeria.

Position of Insecurity in Nigeria

Insecurity in Nigeria has since 1999 become a major item in national and international discuss. Almost a decade now, the nation is still trying to find lasting solution to various forms of insecurities. These challenges constitute threats to the cooperate existence of its citizens and to the maintenance and survival of its democratic political system. These security challenges are ranges from political disagreement to criminal activities with alarming dimensions and consequences. The unexpected bombing by Boko Haram is a big challenge to government, its citizens and international community. Book Haram began their evil enterprise in the North-east and gradually spread their tentacles to Abuja the seat of power and its environs even now there are issues of kidnappers all over the state including Kwara state.

In April 2014, Boko Haram stormed the hostel of Chibok Government Secondary School in Borno state and abducted almost 300 schoolgirls who were preparing for their final examination (WASSCE) it was a traumatic kidnapping experience ever known in the world. In November 2016, head teachers from 114 institutions including 100 schools in the Northeast attended a United Nations Educational, Scientific and Cultural Organisation (UNESCO) workshop on security to help them handle the instability caused by Boko Haram insurgency. Participants from primary, junior and senior secondary schools in the three Nigerian states of Adamawa, Borno and Yobe were given 1350 safe school kits which were developed by a non-governmental organization in collaboration with Nigerian security agencies for their establishments. But all efforts to curb these attacks were in vain when Dapchi girls of 110 students were abducted in 2018 from Dapchi, Yobe state (Lawal, 2018).

The issues of school children abduction is now beyond the Northern part of the state, there was another case of abduction on February 29, 2016 in Babington Macaulay Junior Seminary, a school on the outskirts of Lagos where three schoolgirls were kidnapped although some of the kidnappers were apprehended and the girls were rescued. Also, on October 6, 2016 at 7:30a.m, school's vice principal, a teacher and four pupils were kidnapped during the school's general assembly morning devotion at Igbonla Model College in Epe. On January 13, 2017, pupils of the Nigerian Tulip International College), Isheri, Ogun State, three pupils and five employees of the institution were kidnapped (a student from Moshood Abiola Polytechnic was kidnapped and raped and they eventually killed her in Ogun state (The Punch, Monday, 15, 2022).

Recently there was a case of kidnappers in Ogbomosho and the bitter aspect of it was that both the student and the ransomed were killed instantly after collecting the money that was brought to release the student (The Guardian, 2022) This successful kidnaps reveal that school children kidnaps are fast becoming a trend and a major threat. It is pivotal that the government collaborates with schools to increase policing and protective measures, so as to be better prepared in case of any future attacks (Argomaniz et.al., 2015) Now that the problem is identified therefore, science educators need to fast track decision making on strategies to improve security around the globe for safety education in Nigerian secondary schools especially in Kwara state.

Although, Nigerian government has established several initiatives and frameworks aimed at mainstreaming the Sustainable Development Goals (SDG) into national policy and planning since there were issues of insecurity in schools in northeast Nigeria in which there plan objectives include restoring growth, investing in people and building a globally competitive economy (Buhari, 2017). But these plans are not focusing on the pressing issues of insecurity in Nigeria because there are still alarming rate of kidnappers, armed robbers, insurgency in every nook and corner of the society which brings about unsafe learning environment. Ojigho (2018) and Amnesty International (2018) shares that no framework seem to be in place to prevent further abductions and it appears that the Nigerian military is unable to protect schools from attack. This shows that nothing practical is being done to keep school safe from abduction in future attack.

Idris (2020) described abduction as a national embarrassment, and blamed the federal and state governments for leaving the girls vulnerable and the government must have learned from what happened in Chibok by providing adequate security for the girls in the school. He urged Governor Gaidam to intensify efforts by providing adequate security for all schools, especially the female institutions in the state.

Methodology

This study adopted expository research design. Expository research design is the type of design that allow the researcher to gather supporting evidence and present a point of view or argument on the topic and this can be done through multiple methods, including compare and contrast and cause or effect. It is expository design in the sense that it was built on the foundation of knowledge of the rate of abduction in Nigeria. It was further prepared with

internet search via Google Scholar using the variables of this study for searching and supported by the reviews of the most representative studies of recent years.

Conclusion

In conclusion, this study made an attempt to present the challenges facing security in education which is the major forms of security that is threatening the manifest destiny of the Nigerian State. This research is basically on the terrorism, kidnappers, insurgency etc which need to call for decision making on how to eradicate it since all these affect education system in Nigeria. The dynamics of terrorism is generally promoted by the problem of arms proliferation across the length and breadth of the country, which then empowers the activities of kidnappers, criminals and the war machineries that prosecute inter-communal conflicts in different parts of the country. The problem of environmental securities has taken the lives of many Nigerians youth who to be the commissioner, governor, president of tomorrow.

Consequently, the issue of security in Nigeria have manifests multiple forms of complexity. However, as various security issues require strategic policies to curb and manage them, the science educators need to come together through decision making for possible solution to this problem. The government must also come up with policies that will ensure the general well-being of Nigerian citizens and greater enhancement human security. Also, stakeholders, parents, educators policy makers come up with dialogue to apply and enforce diplomacy by means to curb the activities of kidnappers in Nigerian secondary school and the community at large. Government must as a matter of urgency, formulate and vigorously pursue policy strategies aimed at eliminating proliferation. Therefore, the government and management of the school should provide opportunity to their staff for its proper usage in their pedagogical practices these could assist them in curbing most of these problem of security in Nigeria secondary schools.

Recommendations

Based on the above findings, it is recommended that:

Government should create strategies and practical plans directing towards ensuring safety schools and also policy intervention to prevent future attack in Nigeria. In order to attain the sustainable development goals students should be given equal more access to education by clamouring on education for change. A Ministerial Strategic Plan and Economy Recovery and Growth Plan should be reviewed to include explicit ways of securing all school in Nigeria. Security situation of the country should not be far from the community, government should emulate the style of United State of American's Policing style by operating both state policing and community policing by attaching them to each street and community. Democratic situation of the country should be strong in such a way that would not affect any Nigerian education system.

All critical stake holders should be involved in decision making and planning so as to guide against insecurity in Nigeria. Government too should be more proactive towards strategic security awareness, strategic security consciousness and crime prevention. This will enable people to appreciate the importance of monitoring developments around and to report unwholesome activities to the security agencies.

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Employability Skill of Undergraduate Students in Kwara State: Implications for Behavioural Psychologists

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ABSTRACT

Employability skills are general skills that are necessary for success in the labour market at all employment levels and in all sectors. The on-going changes in the workplace demand that the current and future generation of workers should be well trained since their knowledge, skills and positive attitude are essential to cope with the demands of the modern world. For this reason, university students, who are the future generation of the labour force, need to gear themselves up for a tough journey in the prevailing economic conditions. Previous research has revealed that the possession of employability skills has the potential to ascertain successful careers for students, as they will be more employable during their working life. This paper focused on employability skill of undergraduate students in Kwara State: implication for behaviour psychologist. It examined the factor that affects employability skill of undergraduates, skills required by the 21st century workplace, list of employability aspects, behaviour psychology as well as employability skills implication for behavioural psychologist among others. It, therefore, suggested universities should modify their traditional methods of lecture delivery to the one that is work-based partnerships with employer organizations in which students are referred to do practical work to improve their employability skills.
Keywords: Employability skill, Undergraduate students and Behaioural psychology.

Introduction

The interest in employability continued to grow throughout the decades and towards the end of the 1950s and during the 1960s the focus shifted towards the potential of persons obtaining employment by focusing on their labour market history (Sanders, 2014). During the 1970s it became an economic imperative for employees to increase their employability, while the 1980s were marked by constant change, which compelled companies to approach employability as a human resource instrument to optimize deployment within the business (Forrier & Sels, 2013). The beginning of the 1990s was characterized by the controlling of the instability of intra-organisational job markets and organisations emphasised lifetime employment as a guiding principle (Thijssen, 2018). Much of the focus recently is on securing rather than finding employment (De Cuyper, 2018).

In Nigeria, according to National Bureau of Statistcs (NBS, 2022) reported that unemployment rate in Nigeria has reached 33 percent. The figure was projected to at 32.5 percent in the preceding year. Statistically, overall Nigeria unemployment is 33.3 percent, youth unemployment is 42.5 percent while 22.8 percent are under employment. Chronological data show that the unemployment rate in Nigeria rose constantly in the past years. In the fourth quarter of 2020 unemployment increased to 33.30 percent from 27.10 percent in the second quarter of 2020 (NBS, 2022).

Research showed that lack of employability skills of youths, graduates and undergraduates contribute largely to the increase of unemployment. Thus, this study tends to find out the factors affecting the employability skills of undergraduate students in Kwara State as well as the new skills required by the 21st century workplace.

The concept of employability has over time become a topic of interest among university students and, in particular, it is claimed that graduates do not possess the competencies required by end users (Egulu, 2014). This is also reflected in the growing trend of unemployment among graduates worldwide (ILO, 2010; Tan and French-Arnold, 2012). Among the contributing factors is the curriculum that lacks innovative aspects that would enable graduates to acquire the competencies required by employers or the skills required to be self-employed (Kolawole & Arikpo, 2018). Increased enrolment in universities as well resulted to higher number of graduates acquiring a bachelor's degree (French-Arnold, 2012).

Traditionally, graduates have been able to secure jobs, but globalization and the rapid development of technology have changed the nature of work, demanding more flexible workers. In this era therefore, training students for a career at the universities is not enough but rather students need to be prepared to work in the dynamic global environment (Saemundsson 2018). This includes developing among students the skills and important attributes as demanded by the labour market. These skills are important as they enable

graduates to meet the demands of the new knowledge economy, which is characterized by flexible workers who are the ones most desired by employers (Billing, 2013).

University students, who are the future generation of the labour force, need to gear themselves for a tough journey in the prevailing economic conditions. Therefore, it is in the best interest of students to develop new skills and knowledge as this is important regarding their employability (Van Dam, 204). Undoubtedly, the possession of employability skills has the potential to ascertain successful careers for students, as they will be more employable during their working life (Forrier and Sels, 2013). For this reason and many others, formal education together with competence development and job tenure would be important features for students' perceived employability (Berntson, 2016).

Concept of Employability and Employability Skills

Employability refers to an undergraduate possessing a set of skills and/or competencies that enable him or her to compete and secure employment, whether in formal employment, self-employment or any career (Harvey, 2013). Besides the skills, employability also includes various attributes and experiences obtained through higher level learning where prerequisite knowledge and skills at lower levels are important (Harvey, 2011). Barrick and Bush (2017) stated that employability comprises attributes besides technical skills (skills required for the accomplishment of a specific task) that makes employees an asset to employers. According to Hillage and Pollard (2018), employability is about being capable of getting and keeping fulfilling work. In a broader context, employability is the ability of an individual to attain and continuously secure employment sustainably within the labour market and thus realize one's potential. In operationalizing employability, Bino (2017) was of the view that becoming employed means having a job and being employable means possessing the qualities necessary to maintain a job, make a smooth transition from one workplace to another and progress in different workplaces.While employers view employability as the

skills looked for in new employees, universities view employability as the skills and attributes demanded of their graduates to enable them to be more employable and more able to cope with change (Hager, 2016).

Bridgstock (2019) categorized employability from two perspectives: the traditional or narrow view, which focuses on generic and discipline-specific skills and the initial employment outcomes, and the broader view of employability, which focuses on a more holistic approach that acknowledges personal characteristics, disciplinary differences and placing work in the context of an individual's life and the demands of the labour market (Rychen & Salganik, 2013). This study abides to the broader view of employability since it is the most relevant in the current knowledge based economy views also shared by Biling (2013).

Recently, the concept of employability has become more important due to the changing nature of the graduate labour market. This has been brought about by globalization and the rapid development of technology (Henry, 2015). According to Henry et al. (2015), these changes bring with them opportunities at different levels. At the global level, opportunities are created from the reduction of trade barriers and advancements in technology. With advancements in technology, organizational forms have changed from the division of labour to holistic organizations (Datta et al. 2017). Additionally, the nature of work has shifted from specialization to versatility (Datta, 2011). Employability in the context of holism entails increased demand for skilled workers who have the ability to integrate work with both endogenous (meeting customers' demands, exploring new geographical locations and initiating discovery processes) and exogenous characteristics of the firm (which involves being conscious of changes in the business environment and technology and the ability to absorb multiple cultures) (Datta et al. 2017).

At the organization level, the promise of employment security (stable employment relationship), a longstanding and central feature of the employment relationship is increasingly losing credibility (Cappelli, 2015). In this dynamic and competitive environment, employers demand workers with broader skills, who can manage labour market flexibility. According to Pfeifer (2015), there exist internal flexibility, which firms use over time or shift work to increase production in peak seasons, and functional flexibility whereby firms effectively use multi-skilled workers.

At an individual level, individuals are faced with a wide variety of employment options in a variety of contexts, including the ability to manage more than one job and take on more responsibility at work with the related stress. This demands adaptable workers who are able to productively integrate part-time and self-employment opportunities as the labour market and their personal circumstances require (Arnold, 2014).

With the remarkable changes in employment relations (Opengart 2016), careers are now developed horizontally and the commonly upward movements within one organization are no longer that certain. Work is no longer characterized by a finite and fixed set of tasks and so competencies or skills required for one job may not be sufficient over a long period (McMahon, 2013). Individuals are therefore required to adapt to the rapidly changing work environment and labour market demands, including emerging technologies. As a result, employability skills are needed to enable graduates to cope with the current turbulent changes in the labour market (Henry et al. 2015). It is important therefore for university graduates to possess higher order skills. The skills will enable them to continuously recognize opportunities aiming at enhancing their employability prospects and integrate the same in their life aspects.

Concept of Employability Skills

Employability skills are generic in nature and include the cognitive and soft skills that enable an individual to apply the acquired knowledge and skills (Jackson, 2012). They cut across industries and jobs from entry level to the highest level in the business (Cassidy, 2016). It is therefore essential, particularly for university students, to develop a range of personal attributes and employability skills above and beyond the specific abilities in an academic or vocational discipline (Shah, 2014) because education and training contribute to one's development beyond the academic years. Furthermore, employers assign an important value to the development of employability skills, particularly those of graduates (Jackson, 2013), as these skills assist a person to get, keep and do well in a job. For this reason, there is unprecedented attention towards the current state and future of graduates (Jackson, 2010). The on-going changes in the workplace demand that workers should be well trained since their knowledge, skills and positive attitude are essential to cope with the demands of the modern world (Bakar and Hanafi, 2017).

Over the decades, the employability skills have been interesting countries like Canada, united states, New Zealand, Denmark, UK, Australia, and others...(Sung et al. 2013) and Malaysia, to define employability skills as part of their supporting to microeconomic target. Employability skills are known by a number of different terminologies of concept in different countries, such as „core competencies", „transferable skills", „personal skills", key competencies", „soft skills", describe the skills demanding in workplace(Naanda, 2010).

One aspect of employability is the possession of employability skills. Employability skills are those basic skills necessary for getting, keeping and doing well in a job. According to Hillage (2018), employability skills comprise knowledge (i.e. what an individual knows, which can be subject knowledge), skills (what is done with the knowledge) and attitudes (how it is done). Subject knowledge is perceived to be an in-depth study and possessing an

understanding of a discipline, as well as the skills and personal attributes necessary to perform adequately at the graduate level (Zuzel, 2010).

In some cases, knowledge and understanding of a specific subject are desirable. In other instances this is not the case. A study by Harvey (2014) for example indicates that UK employers do not place much importance on study disciplines and in particular subject knowledge. Reflecting the related statistics, over a third (38 percent) of the employers indicated that subject knowledge was of little or no importance in relation to their satisfaction with graduates. At that time, this caused considerable concern but over time the trend became more readily accepted (Harvey, 2013).

Besides having different connotations, such as graduate attributes or skills, transferable skills, key competencies, soft skills and generic skills (Munir, 2011), the term preferred by industry (which also this study abides by) is employability skills (Allen Consulting Group report, 2006). There is also a measure of agreement amongst different stakeholders that the key dimensions of employability skills are lifelong learning, preparing students for an uncertain future, possessing the core skills and competencies needed to participate in the workforce and the need to promote an active and engaged citizenry (Barrie, 2018). Employability skills are therefore important for students as they enable them to meet the demands of different occupations as demanded by the labour market after graduation.

Categories of Employability Skills

Robinson and Lorrain (2012) categorizes employability skills into five broad categories;

1. **Core Skills** (job specific skills and in particular technical and academic ones), core skills include; reading effectiveness, numeracy, information retrieval, language skills, self-management, critical analysis, listening, written communication, oral presentations, explaining, global awareness. Other core skills attributes include business acumen, attention to detail and reading effectiveness.

2. **Personal Qualities** (fixed self – beliefs that do not change over time and are incremental), Personal qualities comprise of self-awareness or self-management, self-confidence, emotional intelligence, adaptability, willingness to learn and reflectiveness.
3. **Initiative and Enterprise** (ability to initiate new things and use relevant networks to realize them) initiative and enterprise includes; change management, identifying opportunities, being creative, generating a range of options, translating ideas into action reflecting on one's own practice for improvement, engaging colleagues and adapting to new situations.
4. **Process Skills** (ability to use technology, colleagues' and own potential to process and manage information, work and people) Process skills include technology or computer literacy, planning, applying subject understanding, (transferable skills), problem solving, decision making and teamwork.
5. **Positive Attitude** (a 'can-do' approach and a readiness to take part and contribute in an endeavour) Positive attitude include attributes such as managing traits (spontaneous reaction to situations), self motivation, openness to change, ability to cope with work pressure, taking responsibility for own action and time management.

Another key aspect of employability is the ability to demonstrate employability skills and present them to the market in an accessible way once a job is identified (Hillage and Pollard, 1998). This includes the presentation of a CV, showing an individual's record of achievements and work experience, qualifications (both academic and vocational), the provision of references and testimonies, as well as the ability to perform well in an interview.

Employability Skill of Undergraduates

In a study among graduates at the University of Ibadan, Mathew and Samson (2018) found that students regard problem solving, working independently, dealing with stress, staying positive and listening as important skills in terms of their employability. Similarly, in

Kano State, Petter and Salisu (2017) found that employers, university lecturers and students rank problem solving as an important employability skill. Graduates from Amadu Bello University Zaria identified teamwork, communication, self-motivation, personal organisation and subject knowledge as the most useful skills (Shah et al., 2014). Zaharim, Yussof, Omar, Mohamed and Muhamad (2019) investigated the required employability skills for new engineers in Delta, Imo, Kaduna and Bornu State, employers in all the four States viewed communication, problem solving and interpersonal skills as the most important skills.

The growing interest in graduate employability came about as a consequence of employers reporting a deficiency in some of the most basic skills required of graduates to render them unemployable (Tymon, 2013). In Vietnam, the shortage of employability skills among graduates is viewed as contributing to the high unemployment among young people (Tran, 2010). In Pakistan, employers complain about weak communication, practical and presentation skills among graduates (Warraich and Ameen, 2011). Due to the shortage of the necessary skills and attributes, it is estimated that at one time 60 000 graduates in Malaysia were unemployed, even though jobs were available (Singh & Singh, 2018). Similarly, in the South Pacific Island nation, although employers were concerned with the development of generic business skills and attributes for effective on-job performance (Fish, 2019). In Australia, Jackson and Chapman (2012) found that graduates lacked important elements of managerial skills set such as critical thinking and decision management.

Factors Affecting Undergraduates Employability Skills

1. Academic Performance
2. Technical Skill
3. Communication Skill
4. Personality
5. Leadership Qualities
6. Motivational Skills
7. Teamwork Skills
8. Problem Solving Skills

1. Academic Performance

There are several factors that can affect graduate employability among which academic performance is one of them. The employability with the great academic performance must have higher ratio of employability because they have the set of skills and good academic education. With the help of good skills and academic performance they would perform better on their workplace. Cuthbert and Spark (2018)The employability with the great academic performance must have higher ratio of employability because they have the set of skills and good academic education. With the help of good skills and academic performance they would perform better on their workplace. Employability skills denote characters that may make an individual attractive to potential employers, Bridgstock (2019). Since it has been proven that these employability skills encourage performance in the workplace, it is postulated that they may also enhance academic performance.

2. Technical Skills

Apart from academic performance technical skills also affect employability. It is assumed that technical skills are required to get the job on the workplace. In this regard, argued that the workplace expects that the fresh graduates on their first job would have all technical skills required for the workplace and they also think that the universities have prepared them in such a way; Ewubare (2010) So, those who lacks technical skills are more likely to not get the desiring job because of lack of ability. But those who have the technical skills would get the desire job in the organization. Technical skills can also contribute towards communication skills because the existence of skill can provide the confidence to communicate. Aliyu (2015)

3. Communication Skill

Along from technical skills communication skills also affect employability. People those who can communicate in good manner are more likely to come in the limelight then

those have insufficient communication skills According to Bharathi (2016). These communication skills help the graduates in gaining the job which they need. Graduate with good communication skills helps the organizations to gain more clients and allows to organization to become prosperous.

4. Personality

Personality also affects employability. Like, the graduate with good personality would stand out among others and that graduate would be appealing. Then those who have no good personality. Graduates with good personality would seems to have more job opportunities than those who lacks good personality.

5. Leadership Qualities

Leadership qualities can also affects employability. Employees those have leadership qualities would contribute in much greater way in the organization because they would be able to motivate its team. They would have the ability to encounter hurdles, motivate their team, and keep the morale high. Colin Dale (2015) Leadership quality would always contribute in positive ways. So, it can be assumed that leadership quality among the graduate would be highly appreciable by the workplace.

6. Motivational Skills

Motivational skills also affects employability. Organizations seek to appoint such worker who contributes towards the well-being of the organization rather than those who demotivate others and does not allow other to perform well on the organization. People with good motivational skills can have good leadership qualities. Cakmak, Öztekin, and Karadağ (2015), Also improve your performance, minimize errors and promote collaboration with your coworkers, enabling you to perform your role more efficiently.

7. Teamwork Skills

Teamwork skills also affect employability. It is more likely that people who can work in a team can be the brighter employee of the organization. Because they can contribute

towards the organization in better ways to Emmanuel (2015). So, if the graduate has an ability to work in the team would cause less or no troubles for the organization and can perform their task with full devotion despite concerning about their designation in the teamwork. Improved teamwork can help in achieving the goals of the company. Marchioro, G. (2010).

8. Problem Solving Skills

Employees with problem solving skills would allow them to sort out any challenge occurs during the project or within the organization. This factor could also contribute towards employability of the graduate. Problem solving skills also improves the personality of the employee. It can make the employee more professional, firm, and influential. Rehman and Mehmood (2014).

Employability Skills Required by the 21st-Century Workplace

The current working environment differs from the previous age. The global job market characterized by change and increased competition for jobs. Research conducted by Think Global and British Council TGBC (2012) found that for job seekers, knowledge and awareness of the wider world are more important than degree classification. Today's global competition and the process of new management required the employee to have critical thinking, able to solve problems besides excellent in communication skills. In order to respond the technology advances and the competitive world of work, it is necessary to prepare graduates to have the skills and ability to adapt working environment. Employability becomes very important as it facilitates them to move from one job to another, within and between organizations (Nugroho, 2012)

Various terminologies are currently used within the international research community to refer the category of employability skills. The term of employability skills has gained prominence of late because of the changing world of work. Employability is used interchangeably with other terms such as generic skills, transferable skills, non-technical

skills, core skills, key skills, essential skills, and 21st-century skills (Morreal, 2018). These skills were seen to have relevance to both entry-level and established employees. Employability skills framework has been developed in many countries.

The Learning and Employability Series offers a wide range of perspectives on the employability of undergraduates. In this study, employability defined as a set of skills, knowledge and personal attributes that make an individual (undergraduates) more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy" (Crawford, 2011) The employability skills framework consists of personal qualities, core skills, and process skills.

List of Employability Aspects

Personal Qualities	Core Skills	Processing Skills
Malleable self-theory	Reading effectiveness	Computer literacy
Self-awareness	Numeracy	Commercial awareness
Self-confidence	Information retrieval	Political sensitivity
Independence	Language skills	Ability to work cross-culturally
Emotional intelligence	Self-management	Ethical sensitivity
Adaptability	Critical analysis	Prioritizing
Stress tolerance	Planning	Creativity
Initiative	Listening	Applying subject understanding
Willingness to learn	Written communication	Acting morally
Reflectiveness	Oral presentations	Coping with complexity
	Explaining	Problem solving
	Global awareness	Influencing
		Arguing
		Resolving conflict
		Decision-making
		Negotiating
		Teamwork

Adapted from Yorke & Knight (2016) "Embedding employability into the curriculum".

As stated earlier in this paper, employability skills refer to a set of generic skills and personal attributes used in tandem with the application of technical knowledge-skills in the workplace. Most importantly, these skills are not jobbed specific but are skills which cut horizontally across all industries and vertically across all jobs at all levels. These skills also

required by the 21st-century workplace which is necessary for career success at all levels of employment and for all levels of education (Hussain, 2013).

Concept of Behavioural Psychology

Behavioural psychology is concerned with the conditions involved in development, maintenance, control, and elimination of the behavior of individuals and other organisms. Behavioral psychology grew out of laboratory studies of learning which began in the late 19th century. Applications of behavioral psychology to human problems are more recent, beginning around 1950 under the influence of Skinner and his colleagues. Most theories of personality, psychopathology, and psychotherapy can be divided into three to five broad schools. Lyddon (2015) proposes four models, based on Pepper's root metaphor or world hypothesis (ontology, or nature of reality) theory: formism, mechanism, contextualism, and organicism (p. 71-72). Behavioral psychology is based on the mechanistic metaphor. Of contemporary theories, behavioral psychology is most clearly rooted in empirical research.

Modern Behaviour Theory

Behaviourists divided behaviour into two classes, respondents and operants. **Respondents** are behaviours elicited or controlled primarily by preceding events. They are involuntary, involving the autonomic nervous system and the smooth muscles and glands. Respondents occur automatically following their eliciting stimulus unless the organism is exhausted or incapacitated; thus, respondents are sometimes referred to as "reflexive." Initially respondents are under control of a limited range of stimulus events determined by biological and genetic factors. Through presenting a new stimulus followed by the eliciting stimulus, new eliciting stimuli can be developed. This process is known as respondent or Pavlovian conditioning. Conditioned respondents can be eliminated by presenting the

conditioned stimulus in the absence of the natural eliciting stimulus until the organism ceases to respond; this process is called respondent extinction (Hussain, 2013)

Operant Behaviour involves the organism acting on the environment to produce an effect. Operants are controlled primarily by events which follow them, called consequences. However, once the response-consequence relationship has been established, the response can then be brought under control of preceding events, called discriminative stimuli. The process is called stimulus control. Since much of human behaviour is operant, the principles of operant behaviour are extremely important in understanding human behaviour (Lyddon, 2015).

Respondent behaviour is measured primarily in terms of the latency or delay between presentation of stimulus and occurrence of the response and the intensity or magnitude of the response. Operant behaviour, because of its greater complexity, is measured in several ways: rate or frequency, latency, duration, and intensity or amplitude. Rate or frequency is by far the most common measure, but the preferred measure of an operant depends substantially on the aspect of behavior which is of concern. Tantrums, for example, are often measured in terms of duration and intensity as well as frequency (Lyddon, 2015).

Behavioural Psychologists Implications

The following are the implications of the study:

1. There is the need for state governments to establish counselling centres in all communities in their states and beahvioural psychologist are to be employed to psychological help graduates and undergraduates about the needed skills in the world of job.
2. The community psychologists are to reach out to pastors of different churches and Imams of Mosques to sensitize their members on the need for modern employability skills.
3. Behavioural psychologist are to liaise with Non- Governmental organisations (NGO) on the need to empower graduate and undergraduate youths financially so that they can

acquire the employability skills available outside the university, and also to train these applicants to acquire the needed skills.

4. The Counselling Association of Nigeria (CASSON), Association of Professional Counsellors of Nigeria (APROCON) and other counselling psychologists' professional bodies at the National and state levels are to work hand in hand with various ministries and para-statal to organize lectures, seminars and conferences for graduates and undergraduates of tertiary institutions to get them equiped with 21st century employability skills.

5. The Counseling Association of Nigeria (CASSON), Association of Professional Counsellors of Nigeria (APROCON) and other counselling psychologist professional bodies at the national level should work with curriculum planners of tertiary institutions so as to include more courses in empolyability skills, entrepreneurial studies in the programme of students in order to make them imbibe the job requirements and culture of self – employment.

Conclusion

The rapid change in the world of work requires undergraduate students with employability skills that will benefit them as future employees and employers alike. Judging from the findings of this study, university students perceive themselves as possessing employability skills, which influence how they perceive their employability. It is therefore essential that there is a continuous investigation of employability of university students.

Suggestions

It is evident that employability skills play a significant role towards the perceptions of university students regarding their employability prospects. Therefore, universities should modify their traditional methods of delivery to the one that is work-based (Christy, Uddin and Ghosh, 2007). Universities should form partnerships with employer organisations in which students are referred to do practical work to improve their employability skills. Furthermore,

employers should be invited as guest lecturers to share their knowledge with students and consulted when curricular is designed for different programmes.

A further recommendation is that a favourable state of the labour market is required to enhance employability. Therefore, government should create a favourable environment in terms of the regulatory laws to enhance employability of students. For example, government can provide employers with incentives in the form of subsidies or tax concessions to encourage employment of graduates, thereby enhancing their skills. Organisations such as the South African Graduate Development Association (SAGDA) should intensify their programmes as they play a pivotal role in preparing graduates for the world of work.

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Teachers' Compensation: A Tool for Enhancing Secondary Schools' Effectiveness in Kwara State

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ABSTRACT

The role which compensation plays in boosting teachers' morale towards performing their duties in a way which would enhance school effectiveness cannot be over-emphasised. Hence, this paper discussed compensation as financial and non-financial rewards which government provides for teachers to enhance their satisfaction level and sschool effectiveness. The components of compensation were identified as salary, promotion, training opportunities and health services. This paper was premised on Two-factor theory which was propounded by Fredrick Herzberg in 1959. It emphasized on motivating factors and hygiene factors. School effectiveness was discussed as the extent to which the school achieves its stated goals, especially in the aspect of students' academic performance. It was concluded that adequate and timely provision of compensation to the teachers is a way of continually boosting their morale towards performing their job in a way that would facilitate effectiveness of Kwara State secondary schools. Based on the discussions, it was suggested, among other things, that government should ensure that teachers' salary is timely and adequately paid at the end of the months, to enhance the actualisation of school effectiveness. Also, government should, as a matter of urgency, genuinely implement the New Minimum Wage for teachers to increase their monthly take-home, as against the consequential adjustment, so as to be able to take care of themselves and the families better, and get more motivated to perform their duties better to actualise school effectiveness.

Keywords: Teacher Compensation: Training Opportunities, Salary, Promotion; School Effectiveness

Introduction

Compensation of employees is a significant factor which needs to be given adequate attention by the employer to enhance effectiveness of the organisation. Any organisation which holds compensation of its employees with levity might not compete in the area of actualisation of the stated goals, with its counterparts which are very serious about the compensation of their employees. In public secondary schools in Nigeria, the issue of compensation has been generating a topic of discussion, because teachers in these schools have been complaining that they are not well treated by the government. For instance, in Kwara State public secondary schools, sometimes, teachers get their salary late. Not only that, there has been a serious complaint by public secondary school teachers over the new Minimum Wage which the government has not implemented, despite the rising prices of the commodities every day, which is making it difficult for the teachers to properly take care of themselves and their families. To this end, Samson (2020) stated that, compensation of teachers in public secondary schools in many states in Nigeria, especially in the areas of salary, promotion, training opportunities, fringe benefits and other incentives, has not been encouraging. This worrisome to teachers and this scenario might be having a negative effect on the school effectiveness.

Furthermore, promotion is another component of compensation but this is not timely implemented for teachers. Since some years back, anytime Kwara State government implemented teachers' promotion after it had been delayed for months or years, arrears were not given to them. This is an injustice which could dampen their morale, cause ineffective job performance and consequently school ineffectiveness. Health services also covers compensation, but health insurance scheme, like or better than what is made available for Federal Government staff is not made available for teachers. Capacity building is very important to update teachers' knowledge. However, the situation is not encouraging as workshops, lectures, conferences, and seminars are not

adequately organised for teachers, to boost their knowledge for effective job performance (James, 2019). Fringe benefits such as car loans, agricultural loans, festive packages and further studies financial support are not made available for teachers.

School effectiveness means the extent to which the school has been able to achieve the stated goals, especially in the area of students' academic performance. Adedeji (2018) maintained that effectiveness of schools could be measured through discipline, neatness of the environment, mutual relationship among school members or between school members and members of the host community, judicious utilisation of the available resources could also be used to determine effectiveness of schools. However, students' academic performance takes precedence over others, because it is through it that concrete measures could be derived. Gabriel (2019) asserted that, in recent times, one could conclude that public secondary schools in Nigeria have not been effective. This is because the results derived from Senior School Certificate Examinations have not been encouraging enough. Dada (2017) asserted effectiveness of the public secondary schools, especially in terms of excellent students' academic performance, is the end result which every stakeholder in education has a keen interest in. For this to be well achieved, among other things which should be done, teachers' compensation needs to be given adequate attention by the government at all levels. The above scenario necessitates the writing of this paper which is titled "Teachers' Compensation: A tool for Enhancing Secondary Schools' Effectiveness in Kwara Sate."

Theoretical Framework

This paper is premised on Two-factor theory which was propounded by Fredrick Herzberg in 1959. The theory is considered necessary for this paper because it deals with human motivation, compensation and also revolves around motivation of teachers.

According to the theory, the factors which motivate employees in any organisation can be divided into two, namely: "motivating factors" which bring about satisfaction and "hygiene factors" which cause dissatisfaction. The motivators include responsibility, advancement, growth, work itself, recognition and achievement, while the hygiene factors cover salary, relationship with peers, relationship with boss, work conditions, security, organizational policy and supervision. A factor can either belong to the group of hygiene factors or motivators but cannot belong to the two groups at the same time.

However, the same way employees in other organisations need motivation, Kwara State secondary school teachers also need to be adequately motivated so that their official duties can be effectively performed, to enhance school effectiveness. Based on this, salary is a hygiene factor and when it is not paid at the right time or teachers are owed backlog of salaries, there is no doubt that they would develop high level of dissatisfaction towards the job; hence, goal achievement is hindered. This is because salary is the only monthly stable compensation which teachers expect from the government to be able to cater for their physiological needs (food, clothing and shelter) and to take proper care of their families. Also, training opportunities, promotion and health services are categorised under motivating factors. This is because training opportunities give teachers the chance to acquire more skills, knowledge and techniques needed to be more effective in job performance; promotion leads to pay increment and higher recognition, while health services promote physical and mental balance. When salary, promotion, health services and training are regularly and adequately provided to the lecturers, it would not only boost their morale to effectively perform their jobs but also facilitate realization of school effectiveness.

Concept of Teacher Compensation

Compensation of the employees is an important factor which determines the quality of the outputs or overall effectiveness of an organisation. Ivancevich (2004) defined compensation as a component of what a human resource manager does in an organisation which specifically focuses on every type of rewards given to the employees by the employers in exchange for services rendered to the organisation. This is necessary to make the employees more committed to the realisation of the stated goals. Compensation refers to some basic features which make employees satisfied on the job among which include incentives, allowances, salaries, bonuses, promotion and recognition (Martineau, Lehman, Matwa, Kathyola & Storey, 2006; Werner, 2001). In the opinion of Osibanjo, Pavithra and Adeniji (2014) explained that compensation means the benefits workers get in return for performing organisational tasks. Compensation covers wages, salaries, bonuses or commission, housing allowances, incentive bonus, meal allowances, medical benefits, utility allowances, shift allowances, hospitalisation expenses, vehicle loan benefits, annual leave allowances and car basic allowances. Compensation covers direct cash payment, indirect payments in terms of incentives to boost employees' morale so that they can effectively perform their job.

Teeseema and Soeters (2006) opined that a good compensation scheme is a good stimulator. Teachers as indispensible elements of schools play significant roles in achieving the goals of these institutions. Therefore, it is imperative for the government to ensure that teachers are adequately compensated. In the view of Osibajo, Adeniji and Falola (2014), ability of the organisation to appropriately attract and keep experienced and effective employees depends on the level of attention given to compensation. Compensation packages determine the commitment or willingness of the employees to remain in the organisation. Wasiu and Adebajo (2014) opined that in a school system, it is highly necessary for the proprietor to develop the most suitable incentives and good

reward system which could be financial and non-financial to facilitate actualisation of success. Stajkovic and Luthans (2006) observed that, productivity of the employees is influenced by a number of factors such as managerial factors, interpersonal relationship among the employees, adequacy of equipment and a host of others. However, the roles played by compensation in determining workers' productivity which leads to the effectiveness of an organisation cannot be over-emphasised. Martocchio (2011) stated that the basic fact in compensation is that, it provides income and other forms of benefits to the employees and incurs some costs on the employer, but constitutes greatly to the goals realisation of the organisation. According to Osibanjo, Pavithra and Adeniji (2014), compensation is a great determinant of any employee-employer relationship and it is a factor which binds both the employees and the employer together. It relates to the welfare of the employees, with special references to monthly pay and other rewards which employees are entitled to, in accordance with the conditions of service.

Robbins, Judge and Sanghi (2009) viewed compensation as a very significant factor which assists the organisation to achieve commitment and dedication of workers, thereby resulting in effective realisation of the stated goals. Positive behaviour of employees can be maintained in any organisation via attractive compensation. Qureshi and Sajjad 2015) opined that, compensation of the employees varies from one organisation to the other. It could be referred to as employee remuneration. It plays a crucial role in the life of workers. Compensation packages provided to workers have significant impacts on their morale and commitment to the organisation. Well-compensated workers could have higher remarkable performance or productivity and promotion of ethical practices within the organisation than those ones who are poorly compensated.

Components of Teacher Compensation

The components of teacher compensation in this paper include salary, promotion, health services and training opportunities.

Salary is an aspect of teacher compensation which needs to be given adequate attention by the employers to facilitate effective performance of the organisation. Salary is a fixed amount of money given to the workers at regular periods for the services rendered towards the realisation of organisational goals (Surbhi, 2015). According to Odoh (2011), salary is usually based on mutual agreement between the employees and the employer, which may be sometimes an individual, group of individuals or government, depending on the ownership of the job. Surbhi (2015) elucidated that salary is a fixed amount of money given to employees at regular periods for the services rendered towards the realisation of organizational goals. Wasiu and Adebajo (2014) asserted that one of the benefits of prompt payment of salaries is that it helps the organisation to properly retain the competent, committed and highly motivated employees it needs to clinch success. Salary contributes majorly in setting and boosting morale of the workers.

Ezeani (2005) asserted that there is no doubt that ability of any organised enterprise to achieve its goals depends to a large extent on how regular, employees' salaries are paid. Indeed, the manager may not succeed in actualising the stated goals of the organisation when salaries are not regularly paid to the employees. Wasiu and Adebajo (2014) asserted that one of the benefits of prompt payment of salaries is that it helps the organisation to properly retain the competent, committed and highly motivated employees it needs to clinch success. Salary contributes majorly in setting and boosting morale of the workers. Regular salary payment could create productive human resources who are competent, committed and dedicated to the job, which in turn could facilitate effective realisation of the organisational goals (Haryati, 2012). Prompt payment of salary goes a long way in improving the viability and commitment of the employees, as well

actualisation of the vision and mission of the organisation (Umar, 2012). As opined by Muhammad-Rafiq (2012), to achieve effective teachers' job performance and organisational growth, salary needs to be paid to employees at the right time. Attractive salary package is one of the significant determinants of organizational effectiveness. Rosser (2012) believed that poor attitude of the government to salaries is one of the key factors hampering not only the commitment of teachers, but also effective goals realisation. Kamoh, Ughili and Abada (2013) asserted that inadequate delay in the payment of teachers' salaries has been one of the factors responsible for poor job performance of teachers in public secondary schools in Nigeria.

Promotion**,** which denotes movement of teachers from a level to another higher one, is an aspect of teachers' compensation. According to Chris (2009), promotion is one of the variables of compensation which helps in triggering higher performance of the employees. It should be noted that promotion is not only an effective tool for employees' motivation, but also a facilitator of fruitful outcomes for the organisation. According to McCausland, Pouliakas and Theodossiou (2005), promotion is the process of transferring an employee to a rank with higher responsibilities.

Kalesh, Curley and Stefanov (2007) believed that promotion leads to higher movement in terms of status, increased salary and fringe benefits. In some organisations, the duties which employees perform may change when they are promoted. As explained by Dessler (2008), promotion refers to the situation when a worker is given chance to have upward movement in organisational hierarchy, to occupy a place of higher responsibility. Bohlander (2004) opined that promotion connotes upward movement in the responsibilities assigneds to an employee in the organisation. This usually results in increased pay and status and may demand acquisition of more skills to effectively perform the tasks. Promotion enables an organisation to effectively harness the skills and

potential of its employees; thus, good performance is realised. Bedfast (2004) stated that promotion should not only be viewed as a means of rewarding employees, but a yardstick for determining placement of employees in the positions they fit. Promotion needs to be given a thorough consideration, because it affects not only the welfare of the workers but also the effectiveness of an organisation.

Gupta (2011) elucidated that promotion means movement of an employee to a higher post accompanied with greater responsibilities, higher status and better salary. It is the advancement of an employee in the organisation's hierarchy to another higher position which earns him or her greater or higher authority, status and better working conditions. Promotions are used to compensate workers for more effective performance and motivate them for greater efforts.

Prasad (2010) believed that promotion is the most common form of internal mobility of personnel in an organization and an essential feature of an individual's career. It refers to employees' advancement in the organisation which involves a change from one job/position to another which is higher or better in terms of status and responsibility. Promotion is usually accompanied with increased monetary compensation and privileges. Danish (2010) opined that employees are the most significant of all the resources which every organisation normally has, so they should be given enough opportunity to progress within the organisation. Promotion as a key concept/factor determines the extent to which an organisation is able to retain its efficient, competent and experienced workforce.

Health is very significant because employees cannot be productive when they are not healthy. Sadiku (2007) stated that health services provision is a good initiative which every organisation should prioritise, because it goes a long way in contributing to the improvement of the employees' wellbeing. When employees are not physically and

mentally fit, their job performance would not be effective, hence effectiveness of the organisation continues to wane. Sanusi (2008) believed that the health service is a significant aspect of compensation, because it has to do with maintenance of employees' lives. According to Sadiku (2007), health care is an important aspect of employee compensation in any organization, because no organisation can achieve the stated goals when its employees are not healthy. In the same vein, Sanusi (2008) opined that provision of health services to the employees is very essential because it goes a long way in contributing to the improvement of their health status. This is very necessary because unless workers are healthily balanced, effective job performance cannot be realised, hence difficulty in the realisation of organisational goals. It is important for every organisation to be committed to providing health services to the employees because of its productive benefits to the success of the organisation. Employees' health should be well taken care of to make them fit physically and mentally to contribute their quota towards realisation of the stated goals of the organisation.

Khanka (2008) observed that employees' health is divided into physical and mental health. Physical health refers to infirmity in the employees' health. Employees' physical health and work are inseparable, while an unhealthy employee works less quantitatively and qualitatively compared to the set standard, commits accidents and remains absent from work, a healthy employee produces results opposite to these. Mental health refers to the mental soundness of the employees. The three factors, namely: mental breakdowns, mental disturbances and mental illness affect the mental health of the employees.

Ogunlana (2006) elucidated that health care services refer to the maintenance or improvement of the employees' health via the diagnosis, treatment and prevention of disease, illness, injury and other physical and mental impairments. Medical care provision

is very necessary in any organisation because it helps to realise the health needs of the workers required for effective job performance. As observed by Khanka (2008), health service is very necessary in any organisation because it helps in the reduction of absenteeism and turnover, accidents and occupational diseases. Health services also provide other benefits such as reduced spoilage, improved morale of employee, increased productivity of employees and longer period of employees in an organisation.

The importance of training to the realisation of organisational goals cannot be over-emphasised. Ezeani and Oladele (2013) elucidated that training is an important aspect of human resource management. It refers to a course of action or any exercise meant for developing effective, cognitive and psychomotor skills which employees need to help the organization achieve its goals. Workers are the most important resources of every organisation. Workers directly or indirectly perform all the tasks carried out in an organisation. So, they need adequate information and the required skills. Employees who are given adequate training are likely to perform their job better than those with inadequate training (Elnaga & Imran, 2013).

As observed by Khan, Khan and Khan (2011), from the time immemorial, training has been identified as a crucial factor which helps in increasing both employees and organisational efficiency and effectiveness. Edralin, 2004; Lynton and Pareek (2010); and Vemić (2007) in their various studies stated that, today, the level of competition is very high among the existing corporate organisations. However, the success of any of these organisations is premised on its commitment to training its human resource to be creative, innovative and inventive. Employees are inseparable asset and significant tool for any organisation to gain competitive advantage over others. However, for employees to have the knowledge and skills which enable them to help the organisation have a greater edge over its counterparts, they should be properly trained (Houger, 2006).

Kennedy, Chyung, Winiecke and Brinkerholff (2013) believed that to ensure continuous actualisation of the goals of the organisation, it is imperative for the management to periodically assess training need of the workers and map out training programmes which will help them acquire the needed skills and knowledge identified during the assessment. Ngirwa (2009) asserted that no organisation can compete with its counterparts without prioritising adequate training of its employees. Training assists to improve the knowledge, skills or attitudes required for an employee to perform his/her job. It may be tailored towards increasing an employee's level of self-awareness, competency and motivation to carry out his or her duties effectively.

Employees develop feelings that they are part of the organisation when they are adequately trained to acquire the needed skills and knowledge. Training gives workers more sense of belonging, increases their skills and knowledge, stimulates them and also improves organisational productivity (Pynes, 2008). As opined by Devi and Shaik (2012), training could be seen as the key to unlock the potential growth and development opportunities of the employees. In this context, organisations train and develop their employees to the fullest advantage in order to enhance their effectiveness. The importance of training as a central role of management has long been recognised by leading writers (Irene, 2013).

Concept of School Effectiveness

Effectiveness is a significant factor in any school system because it is used to measure the extent to which the stated goals have been achieved. Botha (2010) explained school effectiveness as the extent to which a school actualises its objectives. It is also regarded as a distinct characteristic which x-rays how a school has been able to

accomplish the stated goals. According to Cheng (2016), studies of school effectiveness have dual interpretations: firstly, identification of the factors that are features of effective schools; and secondly, identification of differences between students' academic performance in these schools. The use of students' academic performance as the measure of school effectiveness has gained universal acceptance, despite the fact that others measures which could also be used to measure school effectiveness.

Crawford and Cartwright (2013) opined that an effective school is the one whose students academically progress further than might be expected. Oyetola, Kayode and Okunuga (2015) opined that a school is made up of a group of people (teaching and non-teaching) working together to ensure that established goals are achieved. All the stakeholders in schools have to cooperate with one another, school facilities have to be adequately available and in good shape, to realise the effectiveness. Chukwu (2008) viewed effectiveness as the extent to which a school achieves its goals. It is imperative that school principals are skilled and committed so as to be able effectively utilise both human and non-human materials towards achieving effectiveness. Effectiveness is the extent to which a school achieves appreciable students' academic performance. Botha (2010) opined that effectiveness of school is dependent more on its processes and gauged by its outcomes than on its intake. Cheng (2016) elucidated that an effective school is the one in which essentially all of the students acquire the basic skills and other desired behaviour within the schools.

Teachers' Compensation and Secondary Schools' Effectiveness

Compensation plays key role in enhancing the effectiveness of schools as a formal organisation. Compensation, in this paper, covers promotion, salary, health services, training opportunities and fringe benefits. Salary as an aspect of compensation is

very important to enhancing school effectiveness. When teachers' salary is adequately paid at the right time, they would be able to take care of themselves and the family. This would consequently facilitate their effectiveness in job performance which brings about actualisation of effectiveness. Contrarily, a teacher, who is unable to meet up the basic needs, due to delay or non-payment of salary, is likely to be demoralised and be less committed; hence, poor job performance which would lead to schools' ineffectiveness. Compensation as financial and non-financial rewards which government provides for teachers to make them satisfied and effectively perform their job, to enhance school effectiveness. Agburu (2018) believed that, salary is significant to the employees in any organisation and that is why it should be timely and adequately paid to them. Inadequate and untimely payment of salaries could quickly demoralize employees in an organization thereby hampering their effective job performance. Rosser (2012) believed that, salary is a significant factor which affects job performance of teachers and the overall goal achievement of education, irrespective of the level. Hence, government needs to ensure adequate payment of salaries so that teachers can properly take good care of themselves and their families.

Promotion, which connotes movement of teachers from a level to a higher level, also significantly contributes to the actualisation of schools' effectiveness. Like other employees in other organisations, teachers also value promotion. However, if teachers are able to have their promotion implemented as and when due, it is sure that there would be increment in their salary. If the salary is increased, their morale is likely to be boosted and the end result of this could be seen as attainment of school effectiveness. In addition, when teachers' promotion is timely implemented, their responsibilities and recognition are expected to increase in due course; hence, improvement in their commitment to the job which would bring about school effectiveness. According to Chris (2009), promotion

is one of the variables of compensation and it helps in enhancing job performance of the employees. It should be noted that promotion is not only an effective tool for enhancing effective teachers' job performance but also a facilitator of fruitful outcomes for the organization. Saharuddin and Sulaiman (2016) opined that, promotion shows a kind of recognition to an employee's performance. Just like employees in other organisation, promotion offers teachers opportunity to progress on the job. A teacher who is regularly promoted is likely to show good attitudes towards his official duties than the one whose promotion is stagnant.

Another component of compensation which helps in realising school effectiveness is training opportunities. Training opportunities provide teachers with different avenues through which they acquire more professional knowledge, skills and techniques for performing their effectively. It is likely that teachers would be eager to carry out their duties when they possess the skills, knowledge and techniques. Contrarily, teachers who lack the required skills, knowledge and techniques would be bored in discharging their statutory duties. This could lead to poor job performance thereby resulting in school ineffectiveness. To support this, Asfaw, Argaw and Bayissa (2015) maintained that, to achieve school effectiveness, teachers need to be subject to periodic training opportunities that are well design and implemented, to enhance teachers' job performance and school effectiveness. Olusanya, Awotungase and Ohadebere, (2016) asserted that training opportunities help to bring out professional, intellectual and social development in teachers so that they could be fit to contribute to realisation of the school goals.

Health is wealth as people do say! A teacher cannot be either productive or committed to the job when he is not healthy. It is through health services that physical and mental status of an employee can be maintained. Therefore, provision of health

services is instrumental to the realisation of schools' effectiveness. When teachers are sure of their health being taken care of by the government, at any time the need arises, their commitment to the job is likely to be high; hence, they could be ready to put in their best to the attainment of the schools' effectiveness. According Bamidele (2015), salary payment and promotion implementation alone is not enough to motivate teachers. There is need to help maintain their health, to achieve their effective job performance and enhance school effectiveness. Olabanjo (2019) also stated that adequate provision of health services to teachers could motivate teachers to perform their duties effectively.

Conclusion

Conclusively, adequate and timely provision of compensation to the teachers is a significant way of continually boosting their morale towards performing their job in a way that would facilitate effectiveness of Kwara State secondary schools. Specifically, if teachers' salaries are not only adequately and timely paid but also increased, it would assist teachers to cope better with the current economic situation in the country, thereby motivating them towards effective job performance which would help actualise school effectiveness. In addition, with timely implementation of teachers' promotion, their monthly pays would be improved and consequently stimulate them towards delivery their official duties in a way which would enhance school effectiveness. If government provides better health services to teachers through subsidisation of their hospital bills and that of their wives and children, it would serve as a motivator which would make them to be more committed and dedicated to their job and eventually lead to actualisation of effectiveness. Lastly, providing teachers with regular and periodic training opportunities would help update their knowledge, skills and techniques, facilitate better delivery of their official duties which would assist in realizing school effectiveness.

Suggestions

Based on the above discussions, the following suggestions were made:

i. government should ensure that teachers' salary is timely and adequately paid at the end of the month, to enhance the actualisation of school effectiveness.

ii. Also, government should, as a matter of urgency, genuinely implement New Minimum Wage for teachers to increase their monthly take-home, as against the consequential adjustment, so that they could be able to take care of themselves and the families better, and get more motivated to perform their duties better to actualise school effectiveness;

iii. there is need for government to make sure that teachers' promotion is timely implemented to boost their morale, so that their job performance could be more improved to facilitate actualisation of school effectiveness;

iv. health insurance scheme should be made available for the teachers, to help them reduce the money spent on maintaining their health and that of members of their family, to boost their morale towards performing their job in a way which would enhance school effectiveness; and

v. government should intensify its efforts in providing training opportunities for teachers to make them acquire more knowledge, techniques and skills which would make them improve in their job performance and facilitate effectiveness of schools.

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Gender Difference in Enrollment, Graduation and Academic Achievement in Nigeria Certificate in Education Chemistry Programme Kwara State College of Education, Oro

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Abstract

This study investigated gender differences in enrolment, student graduation and gender differences in the academic achievement of the Nigeria Certificate in Education Chemistry program at Kwara State College of Education, Oro. This study is inspired by the findings of a research study that states the era of male superiority and the dominance in science and technology are fast becoming history, this study sought to confirm this fact. A total sample 228 students (52 males and 176 females) of the Kwara State College of Education, Oro enrolled in the N.C.E Chemistry program between 2014/15 to 2019/20 and graduated between 2016/17 to 2020/21 academic sessions were respectively used in the study. The sample was the total number of students who graduated from the program at the end of their year. Data regarding students' enrolment and graduation were obtained from examination and academics offices of the College. Data analyzed using simple percentages and t-tests, results revealed that more women enrolled and graduated from Chemistry than their male counterparts. There was no significant difference (P> 0.05) in gender gains in Chemistry for five consecutive years of students' graduation. This confirmed the findings of some researchers, that there is indeed a gender balance in the success of scientific studies. Also agree with the Social Construction of Gender Difference Theories which argues that gender segregation is socially constructed and influenced by many factors. Some of the recommendations offered in this research are: Teaching problem solving using scientific techniques such as measurement, observation, testing of hypotheses, evaluating and making practical conclusions should be the basis of our teaching and learning process, the type of research should also be conducted at other institutions of higher learning that will shed light on gender issues in academic success.

Introduction

Education can be defined as the process by which a person is helped to develop his or her skills to achieve his or her full potential and contribute meaningfully to its society. It can be seen as a universal development that includes ingenuity, character development and mental development. This includes the development of human resources and constitutes the

ultimate basis for wealth of nations. This idea is reasonable because the people themselves are the active agents in the accumulation of capital, exploration and exploitation of natural resources, building of social, economic and political organizations that influence national development. No nation can be richer than its standard of educational sector (Odukoya, Bowale & Okunlola 2018) because it is their education that will produces the best leaders such as Teachers, Engineers, Medical Doctors, Good Parents, Politicians, among others.

Over the world education is regarded as "instrument par excellence for affecting national development" and the educators are the core of the education sector as a whole. As the Nigerian community develops, the need for qualified teachers is growing. Therefore, there is a growing pressure on teacher training programs to provide needed teachers with value and quality. Although the demand for qualified teachers is growing, enrolment in teacher education programs has continued to decline (Tayyaba, Akram, Ijaz & Ikram 2017). Science education encompasses the teaching and learning of science subjects in order to make progress in the development of a nation. It is described as the study of in – depth knowledge of both science and educational concepts (Okoli, Obiajulu, & Ella 2013). In a formal setting, science teaching and learning begins at the basic level where trained science teachers pass on their scientific knowledge to their students. Qualified Science teachers are expected to receive their training at tertiary institutions such as Colleges of Education or Universities. Teaching and learning science should be a lifelong learning in a nation that aspires to development both scientifically and technologically. When it comes to national development in a country like Nigeria that is still struggling to develop these two are inseparable. (Okoli et al., 2013) also pointed out that science education is the information needed to make progress in the field of technology. It can be considered that science is one of the great concepts expected to be learned in science education in addition to general academic knowledge. One of the biggest challenges to science education in Africa is gender inequality. As we all know that there is a particular history that introduces science as a male subject so women were not encouraged to take up science studies.

Gender differences in scientific participation and academic achievement have received considerable attention in science education literatures. However, conflicting, contradicting and inconclusive views and ideas emerge, especially with regards to achievement. On gender enrolment in science education, (Lawan and Muhammed 2014) reported that female gender is higher in the College of Education. Probably, because primary and secondary education level, teaching is generally viewed as feminine job. The higher

female enrolment figures in the College of Education are clearly the result of the emphasis placed on promoting of science and technology for women. However, (Yusuf and Ayodele 2018), (Ogunleye and Babajide 2011) in their studies noted that the era of male domination and supremacy in science education is fast approaching. Their positions were based on their independent studies involving Biology and Physics students where the authors record statistically with no significant differences in the achievement and practical skills of female and male students.

Chemistry can be defined as the natural science involved in the study of the composition of matter. It is a scientific subject that deals with both quantity and quality of matter. This is because it reveals what is found in a particular case and to what extent. Thus, it is scientific knowledge that works in providing the human need to make life comfortable; such as the provision and storage of food, drugs, clothing etc. In the same way, it is referred to as the basis for the development of science and technology (Yusuf et al., 2018). In order to benefit from the application of chemistry knowledge as a branch of science, its effective teaching and learning has to be emphasized. Despite the fact that many benefits have been attributed to the knowledge of chemistry for human sustainability, the number of students studying the subject at Colleges of Education is not all that encouraging. In a country like Nigeria that still wants to improve this situation is not considered acceptable. . Enrolment popularity for Colleges of Education is of utmost importance for the development of a nation; as the duality of roles played by students who graduate from the institutions are expected to take on the teaching of Chemistry at the basic level of learning, as well as feed into university faculties of education to continue the process of higher education teaching and learning. A low enrolment rate for Chemistry students in Education College is self - evident at the Kwara State College of Education Oro, as shown in Table 1.

Number of students enrolled in Chemistry Education at the College Education Oro seems to be declining in since 2017. Although the general decline in the number of students has been seen in virtually all the department, but that of Chemistry, Mathematics, and Physics was very obvious, this is not good for a country trying to develop scientifically and technologically. The enrolment of students in science-based courses at the Colleges of Education requires a change of magnitude in order to be able to handle the teaching of basic science in the state, as well as to feed into the faculties of education at universities. This change is much needed for a sufficient number of scientists and trained science teachers.

Flexible student considerations such as gender and grade level are required when investigating their views regarding the causes of low enrolment as researchers have differing views on the impact of this diversity on research in science education. While some reported significant differences in their findings, others reported no significant differences in gender implications and grade. For example, in the gender impact studies by (Majere, Role, and Makewa 2012), and (Odum, Akomaye, and Chinyere 2013), the first found significant differences while the latter reported no significant differences. Also, (Cheung 2009) reported significant differences when considering the level of Chemistry students. In line with their vision for the causes of lower enrolment in Chemistry, Grade level differences can be considered as differences in students' reading comprehension. It is expected that the acquisition of Chemistry information will improve as students move from lower to higher levels. This research finding tends to conjecture that gender inequality has been resolved. This is indeed good signs for sustainable development in Nigeria considering over 50% of the Nigerian population is dominated by the female folks (Kawu 2021). But such a conclusion lacks enough support and calls for much research in all levels of education to buttress it.

Objective of the Study

The main purpose of this study was to investigate the causes of low enrolment, graduation and academic performance of students studying Chemistry at Kwara State College of Education, Oro. Specifically, the study determined the following.

1. Investigate whether gender difference affects student enrolment in the Nigerian Certificate in Education (N.C.E) Chemistry program at Kwara State College of Education, Oro.
2. Find out if gender differences affect the educational achievement of Chemistry students at graduation at Kwara State College of Education, Oro.
3. Determine if the grade levels influence the perceptions of students on factors causing low enrolment for the learning of Chemistry in kwara State College of Education, Oro.

Research Question

The study sought to address two research questions and to test one hypothesis as stated below;

1. What is the gender difference in student enrolment and graduation in the N.C.E chemistry program of Kwara State College of Education, Oro?
2. What is the gender difference in the academic achievement of chemistry students graduating from Kwara State College of Education, Oro?

Hypothesis

Based on the above research questions, the hypothesis was tested at 0.05

- Ho: There is no significant difference between gender and academic achievement of Chemistry students upon graduation.

The study used the design of ex-post facto research design as it sought to find out the results of what had happened. Moreover, the variables under study could not be manipulated. The study took place in Kwara State College of Education Oro in Irepodun Local Government of Kwara State of Nigeria, while the Population of the Study is all the students' admitted to study N. C. E. chemistry in college between 2014/16 to 2018/19 academic session. A total of 195 (45 male and 150 female) chemistry students drawn from a population of 228 chemistry students constituted the sample for the study. The N.C.E program is usually scheduled for three years. The sample was the total number of students graduated from the program at the end of their third year (i.e. the academic sessions for 2015/16 to 2020/2021) respectively. The data were purposely collected at the Kwara State College of Education Examination and Records Office.

The difference between the graduated figure of male students and that of the female students was calculated to determine if difference exists in the graduation and academic achievement of male and female students' in chemistry. The researcher concluded the number of the students that graduated with merit and above, graduated with pass and those that were graduated with carryover. The researcher calculated the mean achievement scores (MAS) of male and female students' in chemistry. To do this, the grade scores of all the male students', as well the female students' in all the courses registered were summed up to get the total score for the male students' and female students' respectively. Entries and graduations by gender were analyzed using simple percentages to answer the first research question. Mean and standard deviations were used at Cumulative Grade Point Average (C.G.P.A) in their graduation years to answer the second research question. The College Grading System for Standard Graduation in all Colleges of Education in Nigeria is shown in Table 1 and the t -

test carried out to test the hypotheses at 0.05 significant level. A t-test analysis of the differences in CGPAs was used to assess the null hypothesis. The analyzed results are presented in Tables 2 and 3.

Table 1: Grading system for graduation for Colleges of Education in Nigeria

Range of G.P.A	**Letter Grade**	**Remark**
0.00 – 0.99	F	Fail
1.00 – 1.49	E	Pass
1.50 – 2.39	D	Pass
2.40 – 3.49	C	Merit
3.50 – 4.49	B	Credit
4.50 – 5.00	A	Distinction

Result

Table 2: Analysis of Students' Enrolment and Graduation by Gender.

Year of Entry	Total Entries	Entry by Gender M	F	**Year of Graduation**	Graduation by Gender M	F	Attrition M	F
2014/15	62	18(29%)	44(71%)	16/17	15(24%)	39(63%)	3(5%)	5(8%)
2015/16	38	5(13%)	33(87%)	17/18	5(13%)	28(74%)	0(0%)	5(13%)
2016/17	53	11(21%)	42(79%)	18/19	10(19%)	31(59%)	1(2%)	11(22%)
2017/18	39	8(21%)	31(79%)	19/20	7(18%)	28(72%)	1(2%)	3(8%)
2018/19	36	10(28%)	26(72%)	20/21	8(22%)	24(67%)	2(6%)	2(6%)
Total	228	52	176		45	150	7	26

The results in Table 2 show that more female students enrolled in the chemistry program than their male counterparts throughout years under study. With regard to gender graduation, more female students graduated from the sessions of 2014/15, 2015/16 2016/17, 2017/18 and 2018/19 as shown in Table 2. For all entry years, the number of students who

could not graduate at the scheduled time or perhaps dropped from the program was lower for males than females, more female students were enrolled than the male students and more female students could not graduate at the expected time or dropped from the program during the years of this study.

Table 3: Results of **t–test** Analysis of Students' Achievement by Gender at the End of Graduation Years

Year of graduation	Total No grandaunts	No of Graduated with Merits and above		No of Graduated with passes		No of Graduated with carryover		X, SD of Students'		t-value
		M	F	M	F	M	F	M	F	
2016/17	54	10	31	3	5	2	3	X=2.83 SD=0.87	X=2.98 SD=0.97	0.15(ns)
2017/18	33	5	21	0	4	0	3	X= 2.87 SD=0.95	X= 2.83 SD=0.87	0.40(ns)
2018/19	41	7	20	2	8	1	3	X= 2.66 SD=0.95	X= 2.70 SD=0.87	0.58(ns)
2019/20	35	4	18	1	6	2	4	X= 2.92 SD=0.88	X= 2.77 SD=0.90	1.39(ns)
2020/21	32	4	15	2	8	2	1	X= 2.92 SD=0.88	X= 2.92 SD=0.88	1.39(ns
Total	195	30	105	8	31	7	14			

ns = not significant at 0.05 level of significance.

The result of the **t–test** analysis of students' achievement by gender shows that there is no significant gender difference in academic achievement of the chemistry students at the

end of their various graduation years from 2009/10 to 2012/13. Thus, the null hypothesis is accepted.

Discussion of Findings

The results show that female student's enrolment in the N.C.E Chemistry study at Kwara State College of Education, Oro outnumbered their male counterparts throughout the academic years of this study. This is another confirmation of previous studies of (Agaba and Ogwuche 2020) where enrolment of women at Federal College of Education (Special), Oyo, Oyo State was higher than that of their male counterparts. Possible reasons are: primary and secondary education is considered mainly feminine; the results of the revised National Education Policy (2004) which emphasized the promotion of women's science and technology education. There are more women in the program, and more graduates than men in all these years under this study. What is not clear in this study is whether the maximum number of men who failed to graduate on time has already dropped out of the program or graduated year or years later. Similar studies were conducted in the N.C.E Biology and Integrated Science program where more male students enrolled in the program than their female counterparts (Dawson 2000, Akpan 2013, and Maikano 2014). More men are also graduating than their female counterparts, which is a variation of the study in question.

In terms of achievement, this research reveals there is no significant gender difference in academic achievement for five consecutive years of students' graduation. This result, undoubtedly agrees with the findings of (Lawan et al., 2014) and (Maikano 2014) that the era of male dominance and supremacy in science learning is fast winding up and becoming an issue of the past. It was a serious problem because the post – independence Nigeria society had the male – female ratio in her educational system predominantly focused on males in public schools. Therefore gender equity in science learning is paramount for sustainable development in Nigeria.

Conclusion

More female students enrolled and graduated with additional degrees in the N.C.E Chemistry program for academic periods 2016/17, 2017/18, 2018/19, 2019/20 and 2020/21. There was no significant gender difference in the success of the five consecutive study sessions in C.O.E Oro. Gender equality in achievement reflects a strong hope for overcoming the challenges of advancing development in Nigeria, considering a large proportion of

women in the country's population. As we all know that development in the 21st century is driven by knowledge.

Recommendation

It is recommended that similar studies be conducted in other Colleges of Education, Polytechnics or Universities base on the geopolitical zones or the nation at large to make comparative analysis which will illuminate the gender issues in achievement. Beside this, the teaching of problem solving using scientific techniques namely observation, measurement, formulating or testing hypotheses, experimentation, drawing valid conclusions adopted in C.O.E Oro in teaching and learning processes to remove the gender inequality should be sustained and disseminated to sister institutions of learning.

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Lifelong Skills Needed By Business Education Students For Sustainable Development In Nigeria

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Abstract
Despite the fact that Business Education is a Program designed to equip individual students with skills and attitude that can make them self-reliant. Nigeria is still experiencing underdevelopment while most of these graduates are still looking for white collar job that are no where to be found. The study therefore, was on lifelong skills needed by Business Education students for sustainable development in Nigeria. The study adopted descriptive survey research design. The population for the study was 76. The population is minimal to be manageable, so all 76 students of Business Education undergraduate of Al-hikmah University Ilorin participated in the research. A four-point scale questionnaire was used for data collection. The instrument which was face-validated by three experts from the Department of Business Education, was used to collect data from the respondents. The study made use of Cronbach Alpha to determine the reliability of the instrument and a reliability coefficient of 0.81 was obtained. The data collected were analyzed using mean to answer the research questions raised, standard deviation were used to determine the extent to which responses were clustered to, or deviated from mean. The result from the findings based on the analysis revealed that Business Education Students needed goal setting skills, motivational skills as well as marketing skills to elevate them through the labour market and make them self-reliance that will make our economic maintain sustainability. Adequate provision of career development, adequate procurement of instructional materials and equipment, striking and maintain a balance between theory and practice that will help to stimulate students' confidence to engage themselves in entrepreneurial and Lifelong Skills activities throughout their lifespan were further recommended for the research.

Keywords: Lifelong Skills, Business Education, Students, and Sustainable Development

Introduction

Business Education is a Program designed to equipped individual students or its recipients with skills and attitude that will make them self-reliance and compete in the labour market. Nigeria as a nation is still under development despite the increase rate of graduate of business education program, this call for assessment into skills acquired by the recipient of business education are capable of relieving Nigeria from this mess. The goal of business education in this electronic world is to provide students with hands-on, technical training that prepares them for the rapidly evolving 21st century workforce. Okeke-Ezeanyanwu, & Nweke, (2021). Business education is an educational Program that prepare students for entry into and advancement in jobs within business affairs to function intelligently as consumers and citizens in business economy. Okeke-Ezeanyanwu, J. A. (2021). Mshelia, (2019) asserted that it is a type of education that helps someone to learn the facts, acquire skills, develop abilities, solve problems and be able to have business-like attitudes useful for success in Business situation. Business Education therefore prepare its recipients with appropriate skills, knowledge, abilities, attitude and competency that will make them self-reliant leading to sustainable development of the country economy.

Skill acquisition is the ability of individual to carry out a specific task through the development of inner force. Omidiji and Ogwu (2019), defined skill acquisition as a systematic and sequential development of skills that promotes efficiency and effectiveness in the performance of a specified job. Skill acquisition is the process of developing capacities through all levels of education and training, occurring in formal, non-formal, and on-the-job settings, which enable individuals in all areas of the economy to be fully and productively engaged in livelihoods and to have the capacity to adapt their skills to meet the changing demands and opportunities of the economy and labour market especially in the e-world. (Enang and Okute, 2019). Skill acquisition is being an expert on a particular task with the ability of acquiring knowledge through the process of trained and re-trained. Ekwe and Abuja in David, A. E. and Fabian, U. U. (2022). Sees it as that aspect of study poised to impact the learners with the needed knowledge, skills, attitude and competence necessary for ready employment. Every nation or society is desire and clamoring to have or maintain a sustainable level of economic development. This could not be achieved if an individual citizen were not realized or trained to acquire skills that would make them realized their ability or self-esteem to improve their national resources.

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development is the ability of a society to maintain and improve the social wellbeing of its

members by providing them with opportunity to acquire and developing the necessary skills to make the society a better place. According to Lawal and Olawoyin in Olawoyin, R. O. & Anthony, N. E. (2020) described national development as the overall development or a collective socio-economic, political as well as religious advancement of a country or nation. The overall goal of sustainable development (SD) is the long-term stability of the economy and environment; this is only achievable through the integration and acknowledgement of economic, environmental, and social concerns throughout the decision making process.

Skills according to Olawoyin & Adegoke-Samuel. (2018) is referred to as ability and dexterity which if employed on a particular task such as business, the result will commensurate with the predetermined objective and thus brings about improved economic status. Skills is an ability and capacity acquired through deliberate, systematic, and sustained effort to smoothly and adaptively carry-out complex activities or job functions involving ideas (cognitive skills), things (technical skills), and/or people (interpersonal skills). Awodun, M. O. (2018). In order to maintain sustainable development in Nigeria, it is an effort by every individual citizen not government alone, has to equip themselves with adequate skills such as goal setting skills, self motivational skills and marketing skills.

Goal setting is the process of identifying a task one want to accomplish and establishing measurable objectives and timeframes to achieve it. Awodun, M. O. (2018) opined that goal setting is an observable and measurable end result having one or more objectives to be achieved within a more or less fixed timeframe. A specific result that a person or system aims to achieve within a timeframe and with available resources. Goal setting is the act of declaring what one want to achieve and putting some specific parameters around the end result. Goal setting involve what, when, where, why and how.

Self motivational skill is the ability of inner force capable of driving one to do things. Motivation may be defined as the degree to which individuals commit effort to achieve goals that they perceive as being meaningful and worthwhile. Johnson, & Johnson (2003). For one to be self motivated, he/she must maintain his/her self driven to succeed and fulfill one's desires or goal setting. The meaning of being self-driven is the capacity to begin and succeed at a task without being forced into it by others or any means. Self motivation is very important because it helps in accomplish goals. There are varieties of self motivational skills, these include initiative skill, commitment to goals settings, resilience, self-efficacy, desire to improve and personal drive to achieve.

Enoh in Olawoyin & Adegoke (2018), identified marketing skills needed for business to succeed to include ability to set market goals, skills to determine the customers' needs,

ability to choose the markets to serve, ability to identify advantages over other competitors, ability to determine reasonable prices for the right products, competency in serving the greatest possible number of customers, ability to demonstrate effective sales promotion/advertising, ability to determine why existing products are selling well or poorly, ability to determine when to introduce new products which the customers need, skills to determine when to allow reasonable credit facilities to trusted customers, competency to set strategic plans to serve the identified market, ability to anticipate seasonal market fluctuations.

Lifelong Skills involves the development of human potential through a continuously supportive process which stimulates individuals to acquire all the necessary abilities they require throughout their lifetimes and apply them with confidence in all circumstances and environments. Edokpolor & Murtala (2018). Thus, lifelong skills self-efficacy can be seen as the acquisition of cognitive attributes that stimulate the individual's decisions to learn throughout their entire lifespan (Edokpolor & Omiunu, 2017).

Statement of the Problem

Nowadays, every nation economy is clamoring for sustainability, research has shown that there are still numerous skills lacked by business education recipient which as a result leads to underdevelopment especially here in Nigeria. Most students of Business Education do not study to be self reliance but rather study to have white collar job. Some scholars (Adekoya, 2010; Ekpo, 2011; Olorundare & Kayode 2014; Olajide, 2015) have lamented over the increasing rates of unemployment and underemployment, together with high incidence of student's dropout. These social problems have reflected the poor perceptions of Nigerian youths towards Lifelong Skills Acquisition. Although, Government have been put more efforts to implement skills developing programmers so as to help in developing entrepreneurial skills and Lifelong Skills for career efficacy among students especially the recipient of business education program. However, not many researchers have taken up the challenge to empirically determine if lifelong skills acquisition by business education students is capable of maintaining the sustainability of the economy of the nation. There is therefore an obvious gap in the academic literature concerning the assessment of Lifelong Skills Acquisition for sustainable development which in turn attracted the attention of the author of this research. Moreover, the skills acquisition in Business Education is more than enough to maintain the sustainable development in Nigeria. It is based on these identified gaps that the author of this research attempt to provide an empirical data regarding the

influence of business education in developing Lifelong Skills for sustainable development among the students in Alhikmah University Adeta, Ilorin.

Purpose of the Study

The purpose of this study was to determine the lifelong skills needed by business education students for sustainable development in Nigeria. Specifically, the study sought to determine:

1. Goal setting skills needed by Business Education students for sustainable development.
2. Self motivational skills needed by Business Education students for sustainable development.
3. Marketing skills needed by Business Education students for sustainable development.

Research Questions

The following research questions guided the study:

1. What are the Goal Setting Skills needed by Business Education Students for sustainable development?
2. What are the Self Motivational Skills needed by Business Education Students for sustainable development?
3. What are the Marketing Skills needed by Business Education Students for sustainable development?

Methodology

The design for the study was descriptive survey. The study was carried out in Al-hikmah University Adeta, Ilorin. The population for the study consisted of 76 Business Education undergraduate students of the institution. The population was manageable and there was no sample for the study. The instrument for data collection was a structured questionnaire, the instrument was titled Lifelong Skills Acquisition in Business Education Program for Sustainable Development in Nigeria (LSABEPSDQ) was developed by the researcher to collect the data for the study. The instrument consisted 23 items measured on a four point likerd scale of Strongly Agreed (SA=4 points), Agreed (A=3 points), Disagreed (D= 2 points), and Strongly Disagreed (SD= 1point).

The instrument was divided into two parts A and B. Part A of the instrument contained personal information of the respondents while Part B was divided into three sections: section 1 with 8 items on goal setting skills, which addressed research question 1, section 2 with 7 items on motivational skills which addressed research question 2, while section 3 with 8 items on marketing skills which addressed research question 3. The reliability of the instrument was determined through application of Cronbach statistical method and a reliability co-efficient of 0.81 was obtained. Three experts in the field of Business Education validated the instrument. The instrument was administered through direct contact with the respondents by the researcher. 76 copies of research instrument were administered on the respondents and their responses were subjected to analysis. The data were analyzed using Mean and Standard Deviation. The Mean was used to answer the research questions while Standard Deviation was used to determine the extent to which responses were clustered to, or deviated from Mean.

In answering the research questions, any mean found between 2.50 and 4.00 was regarded as Needed (N) while mean below 2.50 was regarded as Not Needed (NN). The standard deviation was also employed to indicate how clustered or close the opinions of the respondents are around the mean. Where the Standard Deviation was high, the individual responses varied greatly, where the Standard Deviation was low and the respondents were taken to be close in their opinions.

Results

Table 1: Mean Ratings and Standard Deviation on Goal Setting Skills Needed By Business Education Students for Sustainable Development in Nigeria

(N = 76)

S/N	Items	Mean	SD	Remarks
1.	Ability to set short and long-term goals	3.63	0.28	Needed
2.	Ability to identify information not already available to meet the goal	3.22	0.18	Needed
3.	Ability to identify the steps needed to accomplish the goal setting	3.26	0.24	Needed
4.	Ability to put the steps in the order they need to be done	3.63	0.28	Needed
5.	Ability to determine what individuals or groups in the organization will be involved in the implementation	3.18	0.23	Needed
6.	Ability to set deadline for each step to achieve the goals	3.94	0.31	Needed
7.	Ability to evaluate the goals periodically	3.01	0.21	Needed
8.	Ability to make decision after the goals have been evaluated	3.34	0.24	Needed

Table 1 shows that all mean scores are above the cut-off point of 3.0 therefore, all goal setting skills are needed by Business Education Students for sustainable development. The standard Deviation of the respondents are low and not far from each other, it means that the respondent's ratings of goal setting skill are closely related.

Table 2: Mean Rating and Standard Deviation on Motivational Skills Needed by Business Education Students For Sustainable Development in Nigeria

(N=76)

S/N	Items	Mean	SD	Remarks
9.	Ability to be motivated enough to achieve physiological needs	3.58	0.27	Needed
10.	Ability to establish a sense of predictability through the need for safety	3.16	0.23	Needed
11.	Ability to feel a sense of belonging	3.13	0.22	Needed
12.	Ability to maintain high self-esteem from accomplishments	3.47	0.26	Needed
13.	Ability to establish self-confidence through self actualization	3.37	0.25	Needed
14.	Ability to improve or maintain self-efficiency	3.39	0.25	Needed
15.	Ability to initiate intrinsic and extrinsic motivation	3.16	0.23	Needed

Table 2 shows that all mean scores are above the cut-off point of 2.50, therefore, motivational skills are needed by Business Education students for sustainable development. the standard deviation of the respondents are low and not far from each other. It means that the opinions of the respondents regarding the motivation skills are closely related.

Table 3: Mean Rating And Standard Deviation On Marketing skills needed by Business Education Students For Sustainable Development in Nigeria

(N=76)

S/N	Items	Mean	SD	Remarks
16.	Ability to determine customer needs	3.68	0.28	Needed
17.	Ability to choose the markets to serve	3.47	0.26	Needed
18.	Ability to identify advantages over competitors	3.26	0.24	Needed
19.	Ability to set strategic plan to serve the identified markets	3.26	0.24	Needed
20	Ability to determine reasonable prices for the right product	3.55	0.27	Needed
21	Ability to determine the need for new product by customers at the appropriate time	3.142	0.25	Needed
22	Ability to set strategic plan to serve the identified markets	3.26	0.24	Needed
23	Ability to demonstrate effective sales promotion/advertising	3.34	0.24	Needed

Table 3 reveals that mean scores are above the cut-off point of 2.50. it therefore means that marketing skills are needed by Business Education students for sustainable

development. the standard deviation of the respondents are low and not far from each other. It means that the opinions of the respondents regarding the motivation skills are closely related.

Discussion of Results

Analysis in Table one shows that all goal setting skills were needed by every Business Education Students as Lifelong Skills for maintaining the sustainability of the economy. According to Fred C. L. (2011) Goals setting motivate people to develop strategies that will enable them to perform at the required goal levels. He further claimed that accomplishing the goal can lead to satisfaction and further motivation, or frustration and lower motivation if the goal is not accomplished. The Business Education recipient would benefit greatly when are able to set an achievable and challenging goals as it will enable them focus throughout their life time to achieve immensely in their endeavors.

Result in Table 2 indicates that all motivational skills were highly needed by Business Education recipients in order to achieve the stated goals, as it equip one to maintain focus on the various needs that motivate people and the notion that a satisfied need is no longer a motivator. The study is in consonance with Mehmet, A. S. (2020). Who sees self-motivation as the key to living a satisfying life. He further indicated that motivational skills enable one to make self-assessment as often as one can which discloses one's strengths and weakness by which one can increase strength and strive to overcome weaknesses. These skills will help an individual maintain the willingness on the part of his/her to put in their 100% effort to achieve the stated goals and strive to overcome weaknesses along the line.

Result in Table 3 reveals that Business Education recipients needed marketing skills for sustainable development. This finding leads credence to the findings of Olawoyin, R. O. (2018) who found that marketing skills acquired by Business Education graduates will enable them set good market goals determine customer's needs in the environment of their business and identify advantages over other competitors. The skill acquired will help individual Business Education recipient identify customer's needs, set market not already exist to meet customer's needs, determine prices that will attract customer and make goods available for customer's satisfaction.

Conclusion

Business education is a skill-based course which inculcates skills needed in its recipient to achieve self efficacy capable of maintaining sustainability. This study established that Business education has the potentials that could lead to the acquisition of skills for

identifying viable investment opportunities, proper marketing skills, ability to set short and long time goals, proper management of motivational skills and avoidance of business failure. The implication of this work is that, for Nigeria to achieve the sustainable development reduce unemployment and help the practicing entrepreneurs to be successful and achieve the aim of making their ventures to be going-concerns, Business education should be taken serious and highly encouraged; otherwise, the desire of Nigeria to encourage self-employment through Business Education Programme may end up as a mirage.

Recommendations

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

1. Government and other major stakeholders of business education should endeavor to collaboratively optimize sufficient amount of funds so that qualified manpower and state of-the-art instructional facilities can be made available in order to help in developing entrepreneurial and lifelong skills for career self-efficacy capable of maintaining economy sustainability among students.

2. Business Education policy makers and curriculum designers should endeavor to implement experiential learning strategies so that theoretical underpinnings and practical applications would be in harmony in order to help in developing lifelong skills for career self-efficacy among students.

3. Business Education policy makers and curriculum designers should endeavor to implement career development mechanisms so that business education students can be provided with relevant information, practical experience, and one-to-one or group advice in order to inculcate in them the spirit of entrepreneurship and lifelong skills.

4. Our youths should be stimulated to study Business education. This could be done through career counseling both at home and school as well as creation of awareness through the National Orientation Agency (NOA). The essence of this is because Business education could lead to the production of high level and competent entrepreneurs. These people would also be able to encourage other people to venture into entrepreneurship and turn Nigeria for better.

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