CHAPTER ONE

INTRODUCTION

Background to the Study

In education, instruction is the facilitation of learning towards achieving identified learning goals. Oladosu (2009) viewed instruction as the process whereby the environment of the learner or an individual is deliberately managed to enable him/her learn to exhibit certain behaviours under specified condition(s) or as a response to a specified situation. Instructionis the direction of learning process towards imparting knowledge and skills which leads to learners acquiring certain capabilities.Educational instructioncould be provided through traditional/teacher centered approach or student-centered approach. Traditional instruction provision involves the use of conventional means which is largely face-to-face to convey instructional materials through the use of classrooms and study centers. The traditional instruction delivery entails the physical presence of students to take place (Alaneme, Olayiwola&Reju, 2008). Riordan (1993) noted that traditional instruction delivery in higher education involves lecturing and presentation of information, and teaching taking place predominantly within the classroom. Redmann and Kotrlik (2008) described the traditional learner as one who would listen to class lecture, take notes and prepare for written test. Fowler and Mayes (2000) statedthat the traditional delivery of instruction is a representational view of learning, where acquisition of knowledge is illustrated in the learners' memorization or rote learning which occurs out of context.

In most tertiary institutions in Nigeria, instructional delivery of business education programmes is characterized with face-to-face method of teaching and learning. Mamman and Nwabufo (2014) affirmed that instructional provision in business education programme is carried out using conventional methods in which students are told what to learn, where to learn as well as when and how to learn. The traditional learning environment cannot prepare the students for the contemporary world of work and business environment which exists today.Igberaharha (2009) noted that traditional teacher-centered instruction in tertiary institutions has proved ineffective for producing graduates who can perform optimally. Rapp (2005) stated that teacher-centered instruction is no longer a viable learning for today's digital age learner.Polka (2001) noted the need for institutions to migrate from using a teacher-centered model of instruction to a student-centered model of instruction. The author explained student-centered model of instruction as an instructional model where learners use their experiences to actively construct understanding that makes sense to them, rather than have understanding delivered to them in already organized form.The pedagogical model that is student centered focuses on collaboration between teachers and students.

The advent of internet and technological devices has presented challenges to teacher centered mode of instruction delivery. Barnett, Keating, Harwook andSaam (2004) asserted that internet technologies such as e-mail, course websites and news groups have added value to teacher centered traditional classroom knowledge delivery and have impacted course delivery and design in many colleges and

universities. The advent of the internet and associated learning technologies has produced a climate in which online learning is seen as a means of improving higher education instructional delivery. Yuen, Yaoyuneyong and Yuen (2011) asserted that the advent of Web 2.0 as a learning technology has transformed the internet into a global network of interconnected learning communities and have changed the ways teachers and students interact.

Web 2.0 is an internet-enabled web application which allows people to collaborate, get actively involved in creating content, generate knowledge and shareinformation online. Williams and Chinn (2009) noted that Web 2.0 technologies such as blogs, wikis, podcasts, social networks, and virtual worlds have become popular and have made their way into the classroom. Wilclox, Winn andFyvie-Guald (2005) asserted that Web 2.0 technologies enhance learning, teaching and assessment strategies, quality of staff/student relationships and collaborative approaches to student learning.Highlighting the benefits of Web 2.0 technologies usage to the student, Franklin and Hermelen (2007) noted that Web 2.0 help students become creators of content (not just consumers) who participate in learning activities and gain the opportunity to innovate and create in a collaborative multi-media environment. The authors further noted that Web 2.0 technologies have the potential to enhance and interconnect school communities to widen participation, keep alumni in contact and expand educational institutions' ability to symbiotically co-exist with industry.

The purpose of teaching is to impart learning and promote understanding.Enonbun (2010) stated that teaching is the process of passing knowledge and information to students and a coaching process that can be modified to suit the learning needs of the students.Business educator as a teacher is expected to be abreast with the use of technology to effectively cater for the learning needs of today's learner who are referred to as 'digital natives'(young learners who access and process information quickly, multitask more easily, prefer graphics to text, random to sequential access, thrive on instant gratification and rewards, and prefer games to serious work –(Prensky, 2001). Business educator is a teacher who imparts knowledge and skills needed to prepare individuals for the workplace and for self-reliance. A business educator in the context of this study is same as teacher or lecturer in business education programme.

The role of a teacher (business educator)in the instructional process is to make student learning possible. Emphasis is placed on a learning procedure where learner participation is enhanced with the use of technological devices. Okpala (2014) stressed that teachers are responsible for monitoring changes in technologies, determining if they apply to their learners and seeking ways to use technologies to compliment and support instructional methodologies. Okolocha, Ile and Okolocha (2012) noted that for business educators to apply on-line delivery of instruction, they must first be familiar with hi-tech tools and utilize effectively the tools in teaching and learning process. Bates (2011) further noted how critical it is for educational institutions to have processes in place that encourage dynamic

change, innovative uses of technology, monitoring and evaluation of what works and what does not. Ramsden (2003) advocated that teachers should think deeply about what and how they want their students to learn, placing emphasison active participation and social aspects of learning guided by the discipline they teach in. The author further promoted that active participation and social aspects of learning should serve as the framework for the design of learning experiences which will ensure that students develop the understanding and abilities they need in order to respond and shape the world they live in.

The integration and adoption of Web 2.0 technologies in higher education/institutions of advanced countries has witnessed rapid growth. Studies such as Barnett, Keating, Harwook andSaam (2004), Jones, Gaffney-Rhys and Jones (2011), Yacipic and Hevendanli (2013) have shown that most tertiary institutions in developed countries adopt Web 2.0 technologies in their educational activities to facilitate delivery of lectures, provision of study guide and sharing of articles and publications. In Nigeria, the integration of Web 2.0 technologies in teaching and learning in tertiary institutions has witnessed slow growth (Dike, 2011). This may be as a result of mass unawareness, as Manir (2009) stated, that a large number of people are still unaware of the use of technology in education.

Certain factors could influence awareness and adoption of Web 2.0 in the teaching and learning process. Gender can be an influencing factor in awareness and adoption of technologies by business educators forinstructional delivery. Research studies have found that male teachers tend to be aware and

adopttechnologies in teaching than their female counterparts (Kay, 2006; Wozney, Venkatesh&Abrami, 2006, Collins & Hide, 2010).Age could be an impelling factor on awareness and adoption of Web 2.0 technologies by teachers. Asfari (2009) reported that young educators tend to adopt technologies in teaching more than older teachers. Proctor, Williams, Stewart, Poschen, Snee, Voss and Asgari-Targhi (2010) also found young educators to be more aware of the educational benefits of Web 2.0 than adult educators.

In addition, teaching experience could influence teachers' adoption of Web 2.0 technologies in instruction delivery.Baek, Jong and Kim (2008) and Yeun, Yaouyuneyong and Yeun (2011) reported that experienced teachers are less ready to utilize technologies than less experienced teachers. The reason for this disparity could be that fresh teachers are more exposed to the use of technology in the course of their training than older teachers.

The introduction of modern technologies in instructional process has transformed pedagogical practices. Al-Daihani (2010) asserted that instructional paradigms have shifted focus from the memorization of material by students to the application of knowledge to particular problems. Web 2.0 exerts significant impact on instruction as it provides multiple opportunities for students' engagement, communication, active and self-driven as well as collaborative learning.

The researcher is worried that business education students seem not to harness the enormous educational potentials of Web 2.0 technologies as they are constantly busy with their laptops and mobile phones taking pictures, chatting,

updating profiles even when classes/lectures are on. This ugly situation could be traced to whether or not business educators are aware of the educational benefits of Web 2.0 and whether they adopt it in the instructional process. Ezenwafor (2012) affirmed that the extent students are exposed to the use of technologies depends on lecturers' competency and use of technologies to engage them in practice sessions. The extent Web 2.0 can benefit business education students is enormous but what is not known is the extent lecturers' are aware and adopt the resources for imparting knowledge and relevant skills. It is against this backdrop that this study was conceived to empirically reveal the status of business educators on the use of Web 2.0 technologies for instruction which will guide objective actions to improve students' use of these technologies for learning effectiveness.

Statement of the Problem

Todays' young learners are heavily immersed in the use of Web 2.0 technologies seeking for current and trending information.The use of web tool changes the values and interest of students and when educational instruction is attuned with students' interest, academic achievement and learning goals are bound to improve greatly.

It has been observed that Web 2.0 tools are rarely used by teachers to concretize learning. Traditional modes of instruction provision characterized by lectures, chalk and talk method is predominantly used by business educators to provide educational instruction to students. This teacher-centered mode of instruction is not very attractive to the new age learner, and this make students play

with their phones and handheld devices during classes and get disenchanted with lectures.

Business educators need sophisticated abilities in the use of Web 2.0 technologies to make learning interesting for the new generation learners as the traditional instructional environment cannot effectively prepare students for today's workplace where the use of web tools guide information gathering and sharing.

Purpose of the Study

The main purpose of this study was to determinethe extent business educators are aware andadopt Web 2.0 technologies for instructional purposes in tertiary institutions in South East, Nigeria. Specifically, the studydetermined the extent:

1. Business educators in tertiary institutions in southeast Nigeria are aware ofWeb 2.0 technologies.
2. Business educators in tertiary institutions in southeast Nigeria are aware of educational benefits of Web 2.0 technologies.
3. Business educators in tertiary institutions in southeast Nigeriaadopt Web 2.0 technologiesfor course planning.
4. Business educators in tertiary institutions in southeast Nigeria adopt Web 2.0 technologies for class interaction.
5. Business educators in tertiary institutions in southeast Nigeria adopt Web 2.0 technologies for assessment.

Significance of the Study

The findings of this study could be of immense benefits to:business education students, business educators, management of tertiary institutions, curriculum planners and futureresearchers.

The findings of this study could be of benefit to business education students as they could use Web 2.0 technologies for educational activities. This will encourage student-centered learning in a social environment and in turn enhance their learning experiences and academic achievement.

Findings of this study would benefit business educators as it would expose aspects of educational use of Web 2.0 technologies which they are not competent in. This will enable them undergo training in order to possess relevant skills to effectively adopt Web 2.0 technologies in the instructional process.

Findings and recommendations of this study would benefit management of tertiary institutions in the area of the study and other zones in the country. The findings will expose the strengths and weaknesses of business educators in the institutions relative to Web 2.0 technologies usage. This exposure could motivate and compel management of the institutions to sponsor the training of business educators. The findings could also help institutions' management to discover their roles in providing free and low cost access to internet and technologicalresources for lecturers and students for easy access to web information.

Furthermore, findings of this study would benefit business education curriculum planners as it will expose the needs of business educators towards enhanced performance.By discovering the level of business educators'awareness of Web 2.0 technologies, curriculum planners would be suitably guided in reviewing and/or redesigning the curriculum of business education in tertiary institutions to incorporate technological innovations that will enhance its implementation.

Findings of this study could contribute to current literature on educational benefits of Web 2.0 technologies and its adoption for instructional purposes, which will serve as a rich reference material for future researchers.

Scope of the Study

The focus of this study was to determine business educators' awareness and adoption of Web 2.0 technologies in instructional delivery in tertiary institutions in south east Nigeria. The study isdelimited to business education lecturers in universities and colleges of education in south east Nigeria. The study was also delimited to Web 2.0 as it is the version of the web that currently provides framework for use in the instructional process.The studycovered only the extent of business educators' awareness of Web 2.0 technologies and their educational benefits as well as extent Web 2.0 technologies is adopted for instructional purposes. The study delimited testing hypotheses to four independent variables (gender, age, years of experience in teaching and type of institution) and two dependent variables (awareness of educational benefits of Web 2.0 technologies and adoption of Web 2.0 for class interaction). Awareness of educational benefits of Web 2.0 was considered necessary to be tested against the independent variables listed because, Web 2.0 usage in the context of the study, is as it relates to education and instruction, while class interaction was stipulated and tested because it is the simplest activity an educator can perform with his/her student using Web 2.0 platforms.

Research Questions

The following research questionsguided the study:

1. To what extent are business educators in tertiary institutions in south east Nigeria aware of Web 2.0 technologies?
2. To what extent are business educators in tertiary institutions in southeast Nigeria aware of the educational benefits of Web 2.0 technologies?
3. To what extent do business educators in tertiary institutions in southeast Nigeriaadopt Web 2.0 technologies for course planning?
4. To what extent dobusiness educators in tertiary institutions in southeast Nigeria adoptWeb 2.0 technologies for class interaction?
5. To what extent do business educators in tertiary institutions in southeast Nigeria adopt Web 2.0 technologies for assessment?

Hypotheses

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

1. Male and female business educators in tertiary institutions in southeast Nigeria do not differ significantly in their mean rating of their awareness ofthe educational benefits of Web 2.0 technologies.
2. Business educators aged below 45 years and business educators aged 45 years and above in tertiary institutions in southeast Nigeria do not differ significantly in their mean rating of awarenessof the educational benefits of Web 2.0 technologies.
3. Experienced and less experienced business educators in tertiary institutions in southeast Nigeria do not differ significantly in their mean rating of awareness of the educational benefits of Web 2.0 technologies.
4. Business educators in universities and colleges of educationin southeast Nigeria do not differ significantly in their mean rating of awareness of the educational benefits of Web 2.0 technologies.

5. Male and female business educators in tertiary institutions in south east Nigeria do not differ significantly in their mean rating of adoption of Web 2.0 technologies for class interaction.

6. Business educators aged below 45 years and business educators aged 45 years and above in tertiary institutions in south east Nigeria do not differ significantly in their mean rating of adoption of Web 2.0 technologies for class interaction.

7. Experienced and less experienced business educators in tertiary institutions in south east Nigeria do not differ significantly in their mean rating of adoption of Web 2.0 technologies for class interaction.

8. Business educators in universities and colleges of education in south east Nigeriado not differ significantly in their mean rating of adoption of Web 2.0 technologies for class interaction.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter dealt with the review of related literature to the research topic under the following sub-headings:

Conceptual Framework

Business educator

Web 2.0

Theoretical Framework

Social constructivism theory

Distributed Cognition theory

Situated Learning theory

Theoretical Studies

History of Web 2.0

Components of Web 2.0

Benefits of Web 2.0 in instructional process

Ways a teacher can use Web 2.0 for instruction

Empirical Studies

Summary of related literature

Conceptual Framework

Business educator

Business educator is as a professional teacher who imparts knowledge necessary for effective performance in the business field. Business educator is one who possesses technical competences in one or more areas of business occupation with the knowledge of principles and methods in teaching them (Osuala, 1995). National Business Education Association (2002) noted a business educator as one who is expected to demonstrate specific skills, apply knowledge, and possess professional qualities as a result of their preparation. Okute (2010) described an ideal business educator as one with the responsibility and mandate to embrace innovative technologies, integrate them into business education curriculum and implement it in order to make business education graduates relevant in the ICT-permeated global society.

Okoli (2012) noted that a business educator as an agent of change who is not just expected to transmit knowledge in the present day information driven economy but to be mentors and facilitators in helping their students to navigate through the ocean of information for effective performance in the business world. Udoye and Ndum (2013) viewed a business educator as a teacher who demonstrate specific skills, applies knowledge and possess professional qualities which will enable the teacher prepare students who can meet society's demands for high performance. Business educator, according to Agboola (2014), is anyone who has undergone professional training in a business or business related course and has, in addition,

undergone training in the pedagogy of that course. The author further referred to an ideal business educator as one with academic and professional qualifications in one field, plus teaching qualifications attesting to the mastery in the pedagogy of that field. Enang (2014) noted a business educator as one with high-order teaching skills, deep level of content knowledge, sense of continual collaboration, on the job learning and a greater responsibility over what happens in the classroom.

The researcher however viewed a business educator as one who possess skills, competencies, knowledge and a positive attitude towards teaching, and have the ability to bequeath skills and knowledge acquired to students for self-dependence and for work.

Web 2.0

Web 2.0, pronounced Web-Two-Point Zero, is a concept that describes a set of dazzling technologies in rapid development. In the views of Maloney (2007), Web 2.0 is the 'read/write web' which provides online users with interactive services, in which they have control over their own data and information. O'Reilly (2007) defined Web 2.0 as web platform and web applications that run on the platform that provides users control over their own content and facilitate collaboration between individuals and groups. O'Reilly further described it as a social web where users build networks (professional, recreational etc.), people are the content of sites and emphasis is made on online sharing and collaboration. Mcloughlin and Lee (2007) defined Web 2.0 as a second generation, or more personalized communicative form of the World Wide Web that emphasizes active

participation, connectivity, collaboration and sharing of knowledge and ideas among others.Crook, Cummings, Fisher, Graber, Harrison, Lewin, Logan, Lukin, Oliver and Sharples (2008) referred to Web 2.0 as a set of internet services and practices that give a voice to individual users by encouraging internet users to participate in various communities of knowledge building and knowledge sharing through the ever-extending reach of the world wide web.

Carstensen (2009) referred to Web 2.0 as a second generation of internet development and design, where websites enable users to do more than just retrieve information. Tu,Blocher&Ntoruru (2008) posited that Web 2.0 is a web technology which aims to enhance creativity, information sharing and collaboration among users.Snee (2008) viewed Web 2.0 as a social medium which creates and facilitates interactions between people. McGee and Begg (2008) agreed with the above definitions and noted Web 2.0 as a collection of web-based technologies which share a user-focused approach to design and functionality where users actively participate in content sharing and editing through open collaboration between members of communities of practice.

Aharony (2009) noted that the concept of Web 2.0

> ….emphasizes the value of user generated content. It is about sharing and about communication and it opens the long tail which allows small groups of individuals to benefit from key pieces of the platform while fulfilling their own needs'. Pg. 229

Harris and Lea (2009) referred to Web 2.0 as second generation of web development and design that facilitates communication and secures information sharing, interoperability and collaboration on the World Wide Web. Boateng, Mbarika and Thomas (2010) defined Web 2.0 as a term that has connotations with collaboration and interaction for the purpose of knowledge sharing.Baxter, Connolly, Stansfield, Gould, Tsvetkova, Kushena, Stoimenova, Penkova, Legurska and Dimitrova (2011) stated that the above definitions of Web 2.0 is associated with the notion of openness and transparency in terms of how individuals share information among one another when engaged in using a platform that supports the use of Web 2.0 tools.

Yim and Shin (2013) described Web 2.0 as the movement of open information, through which services and platforms facilitate information sharing and voluntary participation within communities, which increases the value of information.Baxter and Connolly (2014) also viewed Web 2.0 from a social interaction perspective and described it as the social use of world wide web, and describe the social characteristics emanated by groups of individuals through using Web 2.0 tools in a particular way.The researcher however views Web 2.0 as web applications and web platforms that allow knowledge, content and information sharing in a social setting. It should be noted that Web 2.0 is likened to e-learning (learning that is enabled by electronic technology) as Downes (2005) stated that the application of Web 2.0 idea in both e-learning technology and methodology is denoted as e-learning 2.0.

Theoretical Framework

Theory is an ordered set of assertions about a generic behaviouror structure assumed to hold throughout a significantly broad range of specific instances (Sutherland, 1975). Bacharach (1989) viewed theory as a system of constructs and variables in which the constructs and variables are related to each other by a hypothesis. The author noted that the primary goal of a theory is to answer the questions how, when (or where) and why. There are many theories associated with Web 2.0, however, this study is guided by social constructivism by Lev Vygotsky, distributed cognition theory by Edwin Hutchins and situated cognition by Jean Lave and Etienne Wenger.

Social Constructivism Theory

This theory was propounded by Vygostskywho lived from 1896-1934 during the Russian revolution. His work was largely unknown to the West until it was published in 1962. Vygotsky's theories stress the fundamental role of social interaction in the development of cognition (Vygotsky, 1962). Two main principles of Vygotsky's work are: More Knowledgeable Otherand Zone of Proximal Development.

More Knowledgeable Other (MKO) – refers to someone who has a better ability or a higher ability level than the learner with respect to a particular task, process or concept. The MKO is thought of as being a teacher, coach, or older adult. It can also be peer group member, a younger person or even a computer. The

MKO may not be a person but must have (or be programmed with) more knowledge about the topic being learned than the learner does.

Vygotsky (1978) defined Zone of Proximal Development (ZPD) as the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peer. Vygotsky believed that when a student is at the zone of proximal development for a particular task, providing the appropriate assistance (scaffolding), will give the student enough boost to achieve the task. Once the student, with the benefit of scaffolding, masters the task, the scaffolding can then be removed and the student will then be able to complete the task again on his own.

The implication of Vygotsky social constructivism theory to the study is that Web 2.0 is ideal for mediating social interactions and collaboration, as learning is an active process which requires collaboration between teachers and students in order to facilitate meaning construction in students.

Distributed Cognition Theory

Distributed cognition is a learning theory developed by Hutchins in 1980. This theory stem from the work of Vygotsky. Distributed cognition broadens the spectrum beyond the boundaries of the individual including interactions between people and with resources and materials in the environment. This theory is based on the idea that knowledge is distributed across many individuals and devices, and

each person or device involved holds certain and unique information that only when brought together helps create complete understanding. Distributed cognition recognizes the following aspects of cognition.

- Cognition processes are distributed across members of a social group.

- Cognition processes may be distributed in the sense that operation of the cognitive system involved coordination between internal and external (material or environmental) structure.

- Cognition processes may be distributed through time in such a way that the products of earlier events can transform the nature of later events.

Distributed cognition has been greatly influential in understanding how humans work with technology. Specifically, it has been widely applied in the field of human-computer interaction with particular emphasis on computer supported collaborative learning.

This theory relates to the study as Web 2.0 is an application that is highly interactive and serves as an ideal tool that enables meaningful collaboration between individuals and the computer. Examples of its application include collaborative tagging on the internet offered on websites like YouTube, and writing and editing application as GoogleDoc which allow multiple people to edit a shared document at the same time.

Situated Learning Theory

Situated learning theory was developed by Lave and Wenger in 1988. The advocators owed their work to John Dewey and Lev Vygotsky. Lave and Wenger propounded that learning is situated and occurs by means of legitimate peripheral participation within a community of practice (a group of people who evolve naturally because of members' common interest in a particular area or domain). Lave and Wenger (1991) argued that learning should not be viewed as simply the transmission of abstract and decontextualized knowledge from one individual to another but a social process whereby knowledge is co-constructed. According to the authors, learning is situated in a specific context and embedded within a particular social and physical environment. In other words, learning in a natural setting occurs as a function of activities, context or culture in which it is situated.

This theory helps educators understand how to take advantage of knowledge and skills that their students may already possess in order to help them learn new content and skills. The theory relates to this study as Web 2.0 applications provide and serve as the environment that do not only make learning by doing possible but also enhances participatory learning through rich opportunities and experiences.

With reference to the theories discussed above, Web 2.0 views knowledge constructions from a social context (social constructivism), distributed among individuals involved (distributed cognition) and occurring in situations around an individual (situated cognition). Therefore, Web 2.0 aretechnologies noted to enhance collaboration and information sharing among individuals, which when

adopted in instructional delivery promotes students understanding of contents by using medium and platforms students are familiar with.

Theoretical Studies

Theoretical studies associated with this study are reviewed under the following subheadings: brief history of Web 2.0, components of Web 2.0 and educational benefits of Web 2.0 in instructional delivery.

Brief History of Web 2.0

The history of Web 2.0 can be traced to the invention of the internet, when a psychologist and computer scientist, Joseph Licklider, put out the idea in 1960 of a network of computers connected together by 'wide band communication lines' through which data could be shared and information stored. Licklider, was hired as the head of computer research by Defense Advanced Research Projects Agency (DARPA) and his small idea took off (Leiner, Cerf, Kahn, Kleinrock, Lynch, Roberts & Wolff, 1997).

Lawrence Roberts developed a plan for ARPANET, a computer network designed to withstand power outages, even if a few of the computers were inactive. The first ARPANET link was made on 29th October, 1969 between University of California and the Stanford Research Institute, two letters were sent before the crash of the system, but that was all the encouragement the researchers needed (Kleinrock, 2010).

As the system stabilized in 1981, more universities and hosts were added to ARPANET to reach over 200 hosts on the system. However, with many differing systems, something had to be developed to integrate these systems into one. Therefore in 1977, Robert Kahn and Vinton Cerf of Stanford University worked together and developed the Internet Protocol suite which was used to seamlessly link three different computers. Using this new protocol for data transmission, the National Science Foundation created NSFNET in 1986 which was capable of handling 1.5 megabits of data per second. Thus NSFNET replaced ARPANETas outdated(Leiner et al, 1997).

In 1989, Tim Berners-Lee, a software engineer with the European Organization for Nuclear Research (CERN) created the World Wide Web as a means to navigate the extensive system of connected computers. Berners-Lee developed a rudimentary hypertext program called ENQUIRE, which was designed to make information readily available to users and allow a user to explore relationships between different pages (Berners-Lee, 1998).

The first generation of the web comprised of fairly static information, mostly impersonal and professional kind, with little interaction between sites. It provided limited user interactions or content contributions and only allowed users to search for and read information (Aghaei, Netmatbakhsh&Farsani, 2012).Web 1.0 was the first generation which could be considered as the read only web. It presents information with almost no user control, which can be compared with a one-way communication, a lecture or monologue (Anwaruddin, 2013).

The dream behind the web was to create a common information space in which people communicate by sharing information (Berners-Lee, 1999). Realizing the limitations of the first generation web and the need for the web to reach its full potential, Tim Berners-Lee in 1994 founded the World Wide Web Consortium (W3C), This became a place for stakeholders to reach consensus around the specification and guidelines to ensure that the web works for everyone, and to further develop ease of use and accessibility of the web (Berners-Lee, 1998). Numerous web-based applications appeared during the dot-com bubble of 1995-2001 and in 1999 the term Web 2.0 was coined by Darcy DiNucci.The term was popularized by Tim O'Reilly at the O'Reilly Media conference in 2004, where the term Web 2.0 was officially defined (O'Reilly, 2007).

Components of Web 2.0

Web 2.0 is a web application that enables a user in idea, information, content and knowledge sharing. There are different application programme that make up Web 2.0 technologies. The tools are explained as follows;

Blogs

Blog is the short form of weblog. The phrase 'weblog' was created by Jorn Barger in 1997 resulting from the amalgamation of two words 'web' and 'log' (Kaiser, Muller-Seitz, Lopes &Pina e Cunha, 2007). Blogs are websites maintained by an individual with regular commentary entries, event descriptions, or other material such as graphics or video. Herring, Scheidt, Wright and Bonus (2005) described blogs as frequently modified webpages in which dated entries are listed

in reverse chronological sequence. Avram (2006) reinforced the personalized nature of blogs and stated that a weblog is highly subjective as it reflects the thoughts, opinions and preferences of its author(s). Baxter, Connolly, Stansfield, Gould, Tsvetkova, Kushena,Stoimenova, Penkova, Legurska andDimitrova (2011) noted that due to the association of blogs to 'log', blogs are likened to diaries or journals which can be publicly accessible to everyone. The authors further noted thatblogs can be used for private reflections(e.g. Wordpress.com) which provide the creators of a blog the option of whether to set their blog to private or public status. They however, explained that due to technological advancements, blogs are no longer viewed solely as a medium for personal reflection but are being used collectively and often administered by multiple authors.

The educational applications of blogs as researching, tracking, interpreting and evaluating (Alexander, 2006). Baxter, Connolly, Stansfield, Tsvetkova andStoimenova (2011) explained that the diary-like format of blogs promote thinking by writing and allows bloggers to insert posts to reflect the context of personal experience. They further explained that depending on the purpose,a blog can be created to allow several students to add posts as well as comments because blogging is perceived as being community driven.Richardson (2006) enumerated the educational benefits of blogs as:

- promote critical and analytical thinking
- promote creative, intuitive and associational thinking
- promote analogical thinking
- provide potential for increased access

- exposure to quality information, and to have a combination of solitary and socialinteraction.

Baker (2003) noted what instructors can use blogs fornetworking and personal knowledge sharing, instructional tips for students, course announcements and readings, annotated links for reading or reference, knowledge and experience sharing and content-related blogs in professional practice.

Wikis

The term wiki originated from the Hawaiian word 'wiki' meaning fast, and was used to denote how quickly content can be generated with a wiki (Baxter, Stoimenova et al, 2011). Ajjan and Hartshorne (2008) asserted that Wikis (What I Know Is) refer to collaborative websites that allow users to interact by adding, removing, or editing site contents. Stern (2008) defined wiki as a page or collection of webpages designed to enable anyone who accesses them to contribute or modify the content easily. A wiki is a collection of webpages designed to enable anyone with access to contribute or modify content, using a simplified markup language, and is often used to create collaborative websites (Enonbun, 2010). One of the best known Wiki is Wikipedia. Baxter, Stoimenova et al (2011) explained that a useful feature of wikis is that they maintain a revision history of co-authored pages that allow knowledge to be shared among students over a sustained period.

Wikis are useful in educational settings in that they support individualized learning, allow for more socially defined search structures and promote collaboration through group editing and peer review (Alexander, 2006). The pedagogical potential of using wikis in educational setting is acknowledged

becauseone of the primary uses of wikis in higher education is to support group work among students (Ramanau&Geng, 2009). Guth (2007) noted that wikis can support collective ownership and authoring of course work among students. It can, therefore, be argued that wikis provide students with a sense of autonomy to learn collectively from one another through reciprocal feedback. Harris and Lea (2009) further added that wikis can be used in project development with peer review as a group authoring tool to track group project, collect data for a class project, class and teacher evaluation, and tracking research groups. In addition, instructors can use wikis for collaborative curriculum design and course content authoring.

Social Networks

Stern (2008) described social networks as websites which provide a virtual community for people interested in a particular subject, where members create their own online profile page with biological data, pictures, likes, dislikes and any other information they choose to post. Social network is a social structure made of nodes, generally individuals and organizations which are connected by one or more specific types of interdependency (Enonbun, 2010). Social networks allow a user to create personal files and establish a variety of networks that connect him/her with family, friends and colleagues (Lenhart and Madden, 2007). Boyd and Ellison (2007) referred to social network sites as web based services that allow individuals to:

- Construct a public or semi-public profile within a bounded system
- Articulate a list of other users with whom they share a connection, and

- View and transverse their list of connections and those made by others within the system.

Emphasizing the evolving use of social networks in education, KtoridouandStavrides (2012) stated that educators are turning to Web 2.0 tools, drawing upon their ability to assist in creating, collaborating and sharing content. OzkanandMckenzie (2008) added that it is important for students to use and understand social networks in their learning processes, to develop academic identities in online communities and to interrogate and criticize the social dimensions of such networks.

Crook, Cummings, Fisher, Graber, Harrison, Lewin, Logan, Lukin, Oliver &Sharples (2008) explained that mainstream social networking sites typically include education oriented friendship groups.They observed that some sites convene members online based on alumni relations (Friends reunited), Business curriculum vitae and professional connections (LinkedIn) while somehave strong student base (Facebook), some more media oriented (MySpace) and others create social links based on users tagging their personal goals (43things).Other sites provide student-oriented design and security service for cross-site collaboration (Schoolnetglobal), teachers also create learning communities (Learnhub) while tools exist for special interest groups to design their own social network sites (ning). However, Crook et al (2008)added that the greatest success has been in social networking sites that allow users to create digital spaces into which they can invite 'friends' to share messages, texts, videos among others. Social networking sites include: Facebook, Twitter, YouTube, Bebo, Friendster, WhatsApp, Badoo,

Flickr and others.Juceviciene and Valievicience (2010) stated four main factors that determine adoption of social network in higher education as academic service support, student support, social and co-operate learning and achievement representation.

Podcasting

Podcasting involves placing recorded material on a website from which it can be downloaded and listened to at a later time (Scutter, Stupans, Sawyer & King, 2010). Enonbun (2010) described a podcast as a digital media file, usually audio or video that is freely available for download from the internet; the file can then be played on a personal computer or mobile device at the learner's convenience. Enonbun (2010) further noted that the digital media file may be audio, audio enhanced with graphics (quite often with slides from a PowerPoint presentation), or full video.

YouTube is the most popular site to post and see podcasts. Harris and Lea (2009) explained the three types of podcasts as:

- Audio podcast which is the most common type of podcast and usually an MP3 file.
- Enhanced podcasts which have images to go along with the audio, with chapter markers, making it easier to skip to different portions of an episode and may be an AAC file, which is not supported by all devices.
- Video podcasts which can be in a variety of formats with MPEG-4 as the most popular.

One of the reasons for the popularity of podcasts is that they can be played using laptop computers, ipods, PDAs, mobile phones, MP3 players or other portable devices. Stern (2008) noted that one does not need any other special software other than the audio/video player already on the computer to play a podcast. However, to subscribe to a podcast 'feed', one needs to install 'pod catcher' software on the computer, and the most popular pod catcher is iTunes.

Harris and Lea (2009) asserted that podcasts can be used in online courses as a method of delivering content to students, and also to supplement lectures or class presentations, and allow educators to rapidly and timely address students' needs and concerns as they arise.McGarr (2009) categorized the purpose of podcasting in education into three; enhancing the flexibility of learning, increasing accessibility to learning (particularly in relation to enabling mobile access) and enhancing the students' learning experiences (particularly in on campus courses through the use of more blended learning experiences).

Virtual Worlds/Virtual Learning Environment

Collins, Bently and Conto (2008) asserted that virtual worlds are great tools that allow hundreds of thousands of users to engage each other in real time. Harris and Lea (2009) defined virtual world as a computer simulated environment that enables users to interact with each other without geographical confines. Real people are characterized by avatar (which is a cartoon character/virtual representation of the person creating it), and meet, interact and exchange ideas with each other at virtual locations. Light and Polin (2010) referred to virtual learning environment as

software platform that provides a private (password-protected) virtual classroom space which teachers can perform static and interactive tasks and provide classroom resources. Collins et al referred to virtual worlds as a 3D computer based simulated environment where individuals create an avatar, which is a virtual entity that can resemble anything from the actual individual or any other imaginable alter-ego. The most active virtual world in higher education is SecondLife (Baker, Wentz & Woods, 2009)

Baker, Wentz and Woods (2009) asserted that virtual worlds are useful tools in online teaching because of their ability to engage students in interactions with the instructor and others in the class as well as with their environment. Interactions in a virtual world help to build a sense of community in classes that otherwise might not be possible in a face-to-face setting. The authors added that using an online virtual world increases students' engagement, particularly for online classes, by providing opportunities for real time (virtual) face-to-face student-faculty and student-student interaction. Students who are reluctant to comment or ask questions in class might feel comfortable doing so in a virtual world. Collins et al (2008) highlighted the features of virtual worlds and noted that PowerPoint presentation, images, and links to websites, course materials and 3-D objects can be aggregated into a dynamic learning hub. The authors added that virtual worlds can deliver dynamic content, promote interactivity and social bonding which students need to further their learning and instructors need to further the growth of education. Mantovani(2001) outlined some benefits of using virtual worlds in teaching and learning as:

visualization and reification as an alternative method of presentation of materials, learning in contexts impossible or difficult to experience in real life, motivation enhancement, fosters collaboration, offering possibility for learning tailored to learners characteristics and needs, evaluation and assessment- easy monitoring and recording of sessions in virtual environment.Salt, Atkins, and Blackall (2008) also identified educationaluses of SecondLife as used to; enhance reality spaces for learning, metaphorical representations of abstract concepts, construction of own meaning and learning through interaction with SecondLife objects, simulations of real world activities, practicing life skills, and allows for simulation of situations which makes the environment particularly interesting for special education. Light and Polin (2010) noted educational activities and tools supported in virtual learning environment as- classroom management tools, quiz and test building tools, e-learning authoring tools, document or resource-storing tools.

Online Forum

Online forum sometimes referred to as online discussion boards or online bulletin boards is one of the oldest types of technologies used for information sharing and collaboration (Wagner &Bolloju, 2005). Online discussion fora are web based application used to bring people together with shared interests and mind set (Saade& Huang, 2009). Vieira Da Cunha and Orlikowski (2008) described online forums as many-to-many communication space where participants can post a new topic and reply to an existing one, the communication archived, and all threads are always available for reading and posting. Baxter, Connolly, Stansfield, Tsvetkova

andStoimenova (2011) referred to topics posted on online forum as 'threads' and the replies as'posts'. Ward (2012) defined online discussion board as a part of an online site where instructors and students can exchange questions and answers. Blackboard was noted as an example of an online discussion forum.

The use of online discussion forum emerged as a common tool and an effective way of engaging students outside the classroom (Balaji&Chakrabarti, 2010). Defining the online discussion board as a learning tool, the authors explained that it is as an e-learning platform that allows students to post messages to the discussion threads, interact and receive feedback from other students and instructor to foster deeper understanding of a subject under study. Web discussion forumserve as means for students to extend the classroom discussions. It provides better cognitive and exploratory learning, increases student-to-student discussion and co-operation, superior learner empowerment and upgraded critical thinking skills (Kassop, 2003). Highlighting the benefits of online discussion forums in education, Karacapilidis and Papadias (2001) asserted that usingthe tools can remove some communication impediments associated with face-to-face lecturesand provide a forum to address issues through argumentative and collaborative discourse.TeacherStream (2009) noted that well-designed discussion board activities encourage demonstration of knowledge of key educational concepts, community building, reflection, consensus building, critical thinking and student leadership.

Educational Benefits of Web 2.0 Technologies

Educational use of Web 2.0 refers to use of Web 2.0 in or outside the classroom for learning (Sendag, Erol, Sezgin&Dulkadir, 2015).Web 2.0 technologies have significant impact in teaching and learning, especially as it occurs in tertiary institutions. Ajjan and Hartshorne (2008) affirmed that the use of Web 2.0 technologies have significant potential in supporting and enhancing teaching and learning in higher education. The authors noted that an effective environment fosters collaboration among students and faculty andallows students to create and share information as well as support the connection of different pieces of information.

Studies have shown that Web 2.0 technologies social computing tools and application in education and training enhance participatory learning, collaboration, knowledge and information sharing (Redecker, 2009; McLoughlin& Lee, 2007). Jimoyiannis, Tsiotakis, Roussinos and Siorenta (2013)defined theeducational Web 2.0 by revealing six interrelated aspects:

- **Participatory web:** This aspect is rooted in the features of Web 2.0 tools which promote students' engagement and make publication an easy task for both teachers and students.
- **Open web:** The open features inherent in Web 2.0 support creativity through learner generated content and peer review, and the evolution of a collective intelligence within the Web 2.0 environments.
- **Collaboration:** Web 2.0 tools effectively support collaborative work and learning throughdiscovering, sharing and transforming media, co-creating new content, concepts, ideas and, finally,developing new forms of thinking.

- **Sociability:** Web 2.0 offers enhanced opportunities for communication and interaction amongparticipants, developing social groups and networks (social networking), and at the end supportingautonomous communities of learning.

- **Open classroom:** Web 2.0 transforms the notion of classroom by extending students' learning spaces (both physical and virtual) beyond the walls of the classroom.

- **Web as a learning platform:** This conception is tightly related to the five notions above whichdetermine the new learning paradigm supported by Web 2.0.

Echeng, Usoro and Majewski (2013) noted that Web 2.0 enables sharing of learning experiences, exchange of information about the subjects being taught, provides moral support and assessment requirements. Baxter, Stoimenova et al (2011) designed implementation framework of Web 2.0 in course planning stated that teachers should; assess educational culture, decide on Web 2.0 boundaries, agree on context of Web 2.0 platforms and timescales.Yuen, Yaoyuneyong and Yuen (2011) noted that teachers can use Web 2.0 tools to captivate students, hold their attention and enhance their learning experiences. According to Elliott (2008), Web 2.0 for assessment is denoted as assessment 2.0 and noted its characteristics as:

Authentic – involving real world knowledge and skills,
Personalized –tailored to the knowledge, skills and interests of each student,
Negotiated – agreed between the learner and teacher,

Problem-oriented –original tasks requiring problem solving skills,

Socially constructed – using the students social networks,

Collaboratively produced – in partnership with fellow students,

recognize existing skill- willing to accredit the students existing work.

Web 2.0 technologies provide a reach, shared virtual learning, where interactions are taking place not only between learners and technology but among learners who share a mutual aim, and the interactions facilitated by an instructor (Vrettaros, Tagoulis, Giannopoulou&Drigas, 2009). Light and Polin (2010) noted that Web 2.0 in education offers resources in four categorizes; tools that create or support a virtual learning environment, tools that support communication and cultivate relationship, resources to support teaching and learning, tools enabling students to create artifacts representing what they are learning. (See details in Appendix E).

Enonbun (2010) noted the advantages incorporating Web 2.0 technologies afford the instructor and learner as; increased learner involvement, the world as a classroom, collaboration encourages learning and classroom been open twenty-four hours in a week.Weller (2013) stated some significant gains of using Web 2.0 for instruction are: same application can be assessed on different devices (smartphones, tablets, netbooks etc), accessible from any computer anywhere in the world, many are free to use, application written in html (which is the common language of internet) is certain to run on all devices that have an up-to-date web browser. Additionally, An and Williams (2010) asserted four primary advantages of integrating Web 2.0 technologies into instruction and leaning environment:

- Use of Web 2.0 tools increase students feeling of being members of a learning community by increasing interaction, communication and collaboration.

- Help create an environment where the teacher acts as a facilitator of student knowledge creation rather than a distributor of content.
- Flexibility and ease-of-use of Web 2.0 technologies, which make them suitable for students and instructors who do not have advanced technical skills.
- Improved students' writing skills and ability to apply and use technology.

Affirming that Web 2.0 technologies are tools used to promote diverse educational outcomes in higher institutions, Usher (2013) stated that they are used to heighten engagement processes necessary for encouraging critical thinking amongst university students. The author listed some of the impacts of Web 2.0 to learning such as: dialogue for group work and discussions/forum, sharing resources, critical reading and responding in a constructive and public way to other people's work.Others are learning to add complexity to concepts in a given field through system engagement and analysis with work produced by more advanced students, specialists and experts and heightening learning environments through multimodalities, networkability, message-tailoring capabilities and temporary flexibility.

Baxter, Dimitrova et al (2011) noted that the use of Web 2.0 in education gives students greater degree of independence on how and when they learn and teachers are viewed as supporters in the use of Web 2.0 technologies who coordinate learning and providefeedback to students in their engagement with Web 2.0.Warlick (no date) stated the 10 reasons educators should use Web 2.0 tools in their class practices as:

1. *Audience:* An authentic audience provides a sense of purpose for the students. The learner knowing that someone other just one teacher is reviewing and appreciating their educational products motivates students to provide best quality product.

2. *Relevance:* Educators should take advantage of web tools to make learning relevant to the generation of young learners who are always active on the internet.

3. *Appropriate conduct:* As students relate to each other digitally, teachers should provide opportunities to develop communication skills that are appropriate. Educators need to be teaching accountability for improper behaviour and conduct. As communication is done over digital media, educators and learners need to be reminded to appreciate the humanity and dignity of the person on the other side of the computer.

4. *Global citizenship:* Most schools have infrastructure to support ongoing communication and relationships with people beyond their borders. Individuals' being able to communicate effectively between cultures is important. Students require these 21st century skills as they are likely to collaborate at a distance with their future colleagues and peers.

5. *Teaching skills:* Online web tools have great impact on teaching abilities.

6. *Learning goals:* Access to Web 2.0 tools have positive impact on learning gains of student.

7. *Anchoring and filtering:* Web 2.0 is used to address the skills of anchoring and filtering. Anchoring is the skill of keeping focus on the task at hand,

while filtering is the skill of discerning which information is critical, relevant and appropriate to the task at hand.

8. *Evaluation and authentication:* Access to a never-ending supply of information requires students to critically evaluate and authenticate facts and information. Without being familiar with effective search techniques, educators will not be effectively preparing students for these important skills.

9. *Opportunities to collaborate:* Web 2.0 provide opportunities for students and teachers to collaborate easily and effectively. Important peer review skills can be learned as students have easy access to each other's work.

10. *Transparency and openness:* Just as students are able to effectively collaborate with Web 2.0 tools, so can teachers collaborate with others teachers to share best practices and become even more effective educators. Web 2.0 tools facilitate transparency and openness by displaying our content to a global audience who can provide feedback as well as take our products and knowledge to an even deeper level.

Crook, Cummings, Fisher, Graber, Harrison, Lewin, Logan, Lukin, Oliver and Sharples (2008), however, cautioned that in using Web 2.0 in education, closer attention should be given to matters of pedagogy rather than channeling all attention to novel internet configurations. To achieve this, the authors recommended that the underlying curriculum, educational management and delivery and regimes of assessment should be designed in consonance with the use of web tools. They further added that positive disposition towards pedagogy and

Web 2.0 innovations acknowledges the multi-perspective nature of knowledge, the reality of multiple literacies, the value of collaborative thinking and the significance of creativity.

Ways a teacher can use Web 2.0 technologiesforinstructional delivery

There are diverse ways a teacher can use Web 2.0 tools for instructional delivery which are discussed as follows:

Blogs

In describing the ways a teacher can use blogs in the classroom, kharbach(2012) stated that the teacher can:

- Provide assignments for students to work on.
- Have students work in small groups to write and post summaries of content covered in class to build a compendium for content covered over a semester.
- Get students to do their writing assignments in the form of blog posts.
- Encourage students to post comments on each other's postings.
- Use blogs for peer learning.
- Get students to read their colleagues writings and underline spelling and grammatical mistakes.
- Use blogs for classroom projects where students can include videos, clips, audio, text and images.
- Create a specific section just for website links and references to other interesting content online.
- Use activities, games, puzzles to enrich students learning experiences.
- Use blogs to conduct an online survey in relation to students learning needs. The teacher can also include parents in the surveys.

- Post classroom guidelines and code of conduct on classroom blog for students to review.
- Publish a list of the objectives (general as well as specific goals).
- Challenge students to write, record and post tutorials about certain concepts of things they were taught by the teacher.

Wikis

Kharbach (2012) stated that in using wikis forteaching and learning, a teacher can:

- Share documents, media, and PDF files on classroom wiki.
- Use Wikis as a portal for all lessons.
- Use the discussion feature in Wikis to connect with students and give them extra help.
- Expand their teaching beyond the classroom walls.
- Use Wiki to share presentations with students.
- Make it a class project to collaboratively write a reference book that others can use.
- Post assignments and study guides on Wiki for the class to work on.
- Get class to create summary pages on every unit they learn.
- Encourage students to share links and other helpful pieces of information on classroom wiki.
- Allow students to make drafts on the wiki and ask others to comment on them.
- Assign portfolio pages to each student and allow them to display and discuss their work.
- Use wiki for peer editing, for example students can edit each other's work for spelling, grammar, or anything else you want them to learn.
- Use Wikis to get feedback from students by asking them to post comments on wiki pages.

- Use Wikis to track projects allowing students to see which tasks have been completed and which have not.
- Create a news outlet ona wiki page.
- Create an achievement page where parents/guardian can log in to see what their kids/wards have accomplished.
- Use wikis for professional development and to connect with other educators from other places to discuss, share and learn from each other.

Social Networking Sites

Social networking sites can be used by the teacher for educational purpose as stated by Kharbach (2012) who noted that the teacher can:

- Create a group for his/her class and strengthen the communication between the teacher and students.
- Schedule events for the entire class.
- Use message utility in Facebook to send messageto students about unexpected absences, rescheduling of exams...etc.,
- Share multimedia content like videos, photos, clips and more with the entire class.
- Post class notes for students to review in case they were absent.
- Involve students who are normally shy in the classroom.
- Facilitate classroom connections through letting students know each other more. This is particularly helpful in large classes.
- Use social networking sites to send reminders, announcements, upcoming due dates or any other classroom news.
- Sharing online content with students such as interesting websites, blogs, wikis, and more.
- Add educational applications to the social networking site group.
- Encourage students to post content of their own such as videos, images, news, stories and other media that relate back to their lessons.

- Look for other classrooms online that are willing to collaborate on educational projects, assignments and discussions.
- Use the events section to remind students of any upcoming field trips.

Podcast

Podcasts are used for educational activities by teachers.Bharti (2014) noted the under-listed as how a teacher can use podcasts for educational purposes. The writer personalized it as:

1. *Recording*
   In order to record one's voice, the teacher will need a microphone as well as audio recording software (Software is available with instructions to help users to guide in the recording process). However, before one starts recording the voice, the teacher should ensurehe/she is confident enough while speaking; there should be practice before recording.

2. *Review the Podcast*

   Before the teacher live the podcast, the teacher should ensure tolisten to it properly. Until and unless the teacher is satisfied completely,the teacher should not post the podcast; reviewing is important.

3. *Publish the Podcast*

   The podcast can be published online using the teacher's blog. It can be also be submitted on various podcast directory such as iTunes Music Store, OurMedia.org, Podcast Alley, or Podcast Pickle.

4. *Share the Podcast*

Whenthe podcast is published, the teacher can afterwards popularize the podcast by promoting it on various social media website. It can be done by using the podcast link through making an RSS Feed document and it will help users subscribe to it.

Virtual Worlds/Virtual Learning Environment

For educational purposes, Mulrine (2007) outlined the following as way a teacher can use virtual worlds for instructional delivery.

- *Create a virtual thematic unit*: A teacher can create virtual thematic unit. Thematic units are used as strategy to integrate abstract, complex ideas into the curriculum (Riley, 2003). Teachers can use internet to find thematic units on topics of choice, these units include lesson plans, activities and other interesting information.

- *Hyperlinks to lessons*: A teacher should locate virtual lessons from the internet to enrich the concepts from their unit.

- *Assistive technology*: A teacher needs to adapt lesson for students with special needs. Example; students with low vision.

- *Virtual museum tours*: A teacher identifies any internet resources that might enhance the concepts within the unit and make lessons more interesting.

- *Online learning games*: A teacher may enhance learning concepts from the unit through the use of simulation (online learning games).

- *Assessment rubrics*: A teacher can find rubrics online to help assess the learning objectives developed for the unit.

Online Forum

Online forum or online discussion boards can be used by a teacher for instructional delivery. Shaw (2014) stated strategies that can be used to promote student learning while reducing instructor workload in using online forum:

- The instructor should review course learning outcomes prior to the beginning of the term and tailor discussion content to extend and enrich the material presented in the readings and module content.
- The instructor should post the initial response to all discussion forums. Interesting resources, insights, and additional questions can be posted to further student learning. This will establish the instructor's online presence before a student even makes the first post.
- For each week of the course, the instructor should create and save a series of daily discussion posts that can be cut and pasted into the forum. These posts should contain instructor thoughts on the topic, links to resources, or scholarship to further engage students in the discussion. These posts can be recycled each term. The instructor will be able to make daily contributions without breaking a sweat.
- If students are not participating early in the week in the discussion forum, the instructor should consider posting additional prompt encouraging students. This will facilitate student-to-student engagement and allow the instructor to simply facilitate the communication.
- YouTube videos, news articles, etc. should be posted to make the discussions technologically rich, while requiring less typing from the instructor.

- Narrative comments should be posted as part of assignment feedback directing students to revisit and comment on something in the discussion forum. This allows the instructor to save template comments that can be used each term to connect learning outcomes between assignments and discussions.

- The instructor should respond to the initial post a student makes in each forum. In that post, either ask a question, affirm something the student stated, redirect if the student is off-topic, or provide a link to a resource the student might enjoy.

TeacherStream (2009) stated tips a teacher should note to avoid discussion pitfalls as follows:

- Structure online discussion board activities carefully - provide clear guidelines for posting material, how often to comment, length of comment, what information to include in the comments. Ask students to respond using specifics from their textbook readings or other sources.

- Encourage students to contact you if they don't understand the assignment or are having technical difficulties.

- Demonstrate ways to support arguments, cite textbook references/online resources to support a point of view in your own postings.

- Establish guidelines for giving students credit for discussion board participation - give points for posting regularly, responding to classmates' posts, staying on topic and responding in a thoughtful manner.

- Use small group activities to help build community and establish peer communication and connection.

- Encourage students to interact informally. Create discussion threads or areas for personal introductions and social interaction.

- Establish clear Netiquette guidelines and acceptable behavior policies at the very beginning. Monitor discussion boards regularly to ensure no inappropriate behavior is occurring. Contact students privately regarding inappropriate behavior and be prepared to ban individual students from posting on discussion boards if necessary.

Related Empirical Studies

This section of the literature review dealt with empirical studies that have some relationship with the present study. The studies were hereunder reviewed.

Ajjan and Hartshorne (2008) carried out a study to ascertain faculty's decisions to adopt Web 2.0 technologies to supplement class learning in a university in United States of America. A total of 136 participants (lecturers) were examined in the study. Seven hypotheses were formulated and a questionnaire on a five point scale was used to elicit the opinion of the respondents. Data collected were analyzed using percentages. Findings from the study revealed that most of the faculties showed positive attitude and strong behaviour predictors to their intention to adopt Web 2.0 technologies to supplement class learning. The study concluded that the positive attitude of faculty was a strong indication of their preference to adopt Web 2.0 to supplement class learning and recommended for further studies to explore the factors that influence faculty perceptions of several Web 2.0 applications as well as use.

Ajjan and Hartshorne's study is related to the present study in that both dealt with Web 2.0 technology usage in teaching and learning in tertiary institutions. The studies are also related in the use of questionnaire to obtain respondents' views on

the subject matter. However, Ajjan and Hartshorne's study differed from the present study in the sense that they investigated faculty's adoption of Web 2.0 technologies in a university while the present study investigated faculty's awareness and adoption of Web 2.0 technologies in universities and colleges of education in a geographical zone.Ajjan and Hartshorne's study also differed from the present in that Ajjan and Hartshorne's study designed a model/framework to describe the behaviour of the respondents, whereas in the present study, there was no model design. Ajjan and Hartshornebased their study on Decomposed Theory of Planned Behaviour (DTPB) while the present study is based on Social Constructivism Learning Theory.

Tyagi (2012) conducted a study to explore faculties' usage of Web 2.0 technologies in the learning environment in India. The study used a structured questionnaire to elicit the opinion of 147 professors, associate professors and assistant professors of different departments in 6 Indian universities. The findings of the study revealed that majority of the faculty members were using Web 2.0 tools for three major purposes: for web based teaching and research, for interactive learning features and to keep themselves up to date on related topic of interest. The study further revealed that faculty attitude and their perceived behavioural control are strong predictors to their intention to use Web 2.0. The study concluded that faculty has strong intention to use Web 2.0 and afterwards recommended that administrators should focus on improving the perceived usefulness, ease of use, and

compatibility (with current practices) of Web 2.0 applications as well as improving faculty's self-efficacy with these emerging technological tools.

Tyagi's study is similar to the present study in that both study sought academic staff opinion on adoption of Web 2.0 technologies in teaching and learning. Tyagi's study differed from the present study in that it elicited information from academics in universities alone while the present study solicited the opinion of academics in Universities and colleges of education. Tyagi's study usedpercentages while the present study used mean, standard deviationand t-test in data analysis.

Calvi and Cassella (2013) carried out a study to ascertain research and teaching activities researching staff in University of Breda, Netherlands put Web 2.0 tools to.Online questionnaire was used to collect data from 12 junior and senior lecturers in fields of arts and humanities, social sciences, computer science and business, marketing and management. Data collected were analyzed using percentages. The study found that rarely use Web 2.0 tools for research activities and use Web 2.0 for teaching and learning. The study concluded that a Web 2.0 tools usage in teaching and learning was consolidated at both personal and institutional level and recommended that educators should choose Web 2.0 tools according to their teaching needs, course aims and personal attitudes.

Calvi and Cassella' s study is related to the present study in the sense that both studies focused on Web 2.0 technologies usage in tertiary institutions. Calviand Cassella's study differed from the present study in the sense that Calvi and Cassella's study focused on the purpose and frequency of use of Web 2.0 tools

by lecturers while the present study specified aspects of instruction lecturers use Web 2.0 in education. Furthermore, Calvi and Cassella's study used respondents in one type of institution (universities) and limited number of respondents (12) while the present study considered the opinion of respondents in universities and colleges of education who are 144 in number.

Echeng, Usoro and Majewski (2013) carried out a study to investigate students' perceptions, attitudes and acceptance of Web 2.0 in e-learning in Nigeria. A conceptual model of 8 variables (perceived usefulness, social factor, prior knowledge,facilitating condition, perceived ease of use, motivation to use, behavioural intention and performance expectancy) and associated hypotheses were designed, and the model was operationalized into a questionnaire that was used to collect data from 317 students from 5 universities in Nigeria. The findings of the study indicated that all the variables except motivation via learning management systems affect intention to use Web 2.0 in e-learning in Nigeria. The major conclusion and recommendation of the study was the utilization of Web 2.0 facilities to stimulate participation in learning.

Echeng, Usoro and Majewski's study was similar to the present study in that both study dealt with Web 2.0 usage in higher education in Nigeria and both studies use questionnaire to elicit the opinion of respondents. Echeng et al's study differed from the present study in that it designed a model for the study while in the present study there was no model design. Echeng et al's study sought the opinion of students on acceptance of use of Web 2.0 in learning while the present study sought

the opinion of teachers on their awareness and adoption of Web 2.0 technologies in instructional delivery.

Ajise and Fagbola (2013) conducted a study on the level of awareness and usage of Web 2.0 tools among lecturers in Nigerian universities. A total of 121 university lecturers selected from five federal universities in south west, Nigeria were examined in the study. A questionnaire was used to collect data from the lecturers. The findings of the study revealed a high level of awareness and use of Web 2.0 tools among lecturers. The study recommended among others the provision of infrastructural support for Web 2.0 tools by management of universities in Nigeria.

Ajise and Fagbola's study is related to the present study in that both study examined the response of university lecturers on awareness and use of Web 2.0 and used questionnaire to elicit the opinion of respondents. However, Ajise and Fagbola's study differed from the present study in the sense that the present study examined lecturers in universities while the present study sought and compared the opinion of lecturers in universities and colleges of education. The present study also differs from Ajise and Fagbola's study in that the present study examined the opinion of lecturers in federal, state and private universities and colleges of education in south east, Nigeria while Ajise and Fagbola's study examined only the opinion of lecturers in federal universities in south west, Nigeria. The present study also examined lecturers' adoption of Web 2.0 in teaching and learning activities

while Ajise and Fagbola's study examined only lecturers' personal use of Web 2.0 tools.

Nazatul-Aini (2014) examined undergraduates' integration of Web 2.0 tools using PQR (Preview, Question and Reflect) strategyin their learning programme in a University in Malaysia. The study used a 7-point scaled questionnaire to elicit information from 39 undergraduates. Data collected were analyzed using frequency distribution and mean. The study revealed that students agreed that learning based on PQR using Web 2.0 technologiesmake learningeffective and attractive. The study concluded the learning plan captured the interest of students for optimizing their learning experience and also cateredfor the needs of all students with different levels of thinking. The study recommended development of learning plans using PQR strategy.

The above study was similar to the present study in that both are concerned with the use of Web 2.0 technologies in instruction. Both studies used questionnaire to elicit the opinion of respondents and also used percentages and mean for data analysis. However, the previous study differed from the present study as it examined students' use of Web 2.0 technologies using a particular strategy (Perview, Question and Reflect) while the present studysought lecturers adoption of Web 2.0 for aspects of instruction (course planning, class interaction and assessment).

Mtega, Dulle, Malekani, and Chailla (2014) conducted a study on extent agricultural researchers and extension workers are aware of Web 2.0 technologies

and put them into practice in Tanzania. A questionnaire was used to collect data from 107 respondents in the first phase and 148 respondents in the second phasefrom agricultural research and training institutions. Data collected were analyzed using percentages. Findings of the study revealed that Facebook and Wikipedia were found to be the most used Web 2.0 tools by many respondents while Delicious, Pbworks, Picasa and Digg were identified as among the less commonly used tools by majority of the respondents. Recommendations were made among others, on the need to provide appropriate Web 2.0 training packages to agricultural extension workers, researchers, trainers and other stakeholders in order to enhance knowledge sharing among them for improved agricultural productivity in Tanzania.

Mtega, Dulle, Malekani, and Chailla's study was related to the present study in that both studies dealt with Web 2.0 technologies awareness and usage. Mtega, Dulle, Malekani, and Chailla's study differed from the present study in that it sought the opinion of agricultural extension workers, researchers and trainers while the present study sought the opinion of business educators on the adoption of Web 2.0 technologies in instructional delivery. Mtegaet al's study used frequency and percentages toanalyse data collected from respondents while the present study used mean, standard deviation and t-test to for data analysis.Mtega et al's study was conducted in Tanzania while the present study was conducted in Nigeria.

Mamman and Nwabufo (2014) carried out a study to examine the barriers of integrating Web 2.0 technologies in the teaching/learning of business courses in

Nigerian universities. One research question guided that study and one hypothesis was formulated and tested. Aquestionnaire was used to collect data from 121 students and 21 lecturers from three universities namely Kwara State University, Malete, Ahmadu Bello University, Zaria and Tai Solarin University of Education, Ijagun. Data collected were analyzed using mean, standard deviation and t-test statistic. The study revealed all the items listed except two as factors that constituted a barrier to the integration of Web 2.0 technologies in teaching/learning of business education courses in Nigerian universities. The study concluded that graduates of business education programmewould not be able to acquire the needed skills and competencies to function effectively in the 21st century world of works, because of the inherent barriers to the integration of Web 2.0 technologies in teaching/learning of business education courses. The study recommended among others the need for business educators to revise and develop business education curriculum to fit the emerging Web technologies.

Mamman and Nwabufo's study was similar to the present study in that both dealt with the use of Web 2.0 in teaching and learning. Questionnaire was used by both study to elicit the opinion of the respondents and both studies were conducted in Nigeria.Mamman and Nwabufo's study differed from the present study in the sense that the previous study examined the factors that constitute a barrier to integration of Web 2.0 while the present study ascertained the extent of awareness and adoption of Web 2.0 by business educators. Also, Mamman and Nwabufo's study differed from the present study in that the previous study examined sample

from the population while the present study examined the entire population. Mammanand Nwabufo's study also differed from the present study in that Mamman and Nwabufo's study used a four-point rating scale for the questionnaire and solicited the opinion of lecturers and students in universities while the present study used a five-pointrating scale for the questionnaire and solicited the opinion of only lecturers in universities and colleges of education.

Summary of Review of Related Literature

The review started with major concepts in the title from the perspectives of various authors discussed the theories underpinning Web 2.0 usage in education covering constructivism theory, situated cognition theory and distributed cognition theory.

Brief history of Web 2.0 was reviewed as reported by different authors and researchers and highlighted some components of Web 2.0 technologies such as wikis, blog, online forum, podcast, virtual worlds and social networks. Educational benefits of Web 2.0 technologies and ways a teacher can use the different tools for instructional delivery were discussed.

Studies related to the present work were also reviewed in terms of where and how the study was carried, the group used for the study, findings, conclusion and recommendations. The review also highlighted the similarities as well as the differences between the reviewed studies and the present study. Generally, all the previous studies were on the use of Web 2.0 in education, but none focused on the awareness and adoption of Web 2.0 technologies by business educators in

instructional delivery in tertiary institutions in South East, Nigeria. This gap is,therefore, what the present study sought to fill and this further strengthened its justification.

CHAPTER THREE

METHOD

This chapter dealt with the method and procedure used in carrying out the study. The presentation was made under: design of the study, area of the study, population of the study, instrument for data collection, validation of the instrument, reliability of the instrument, method of data collection and method of data analysis.

Design of the Study

The survey research design was used for the study. Osuala (2001) defined survey research design as the type of research design that focuses on people, their beliefs, opinions, attitudes and behaviour. Supporting, Nworgu (2006) noted that survey method is appropriate for seeking individuals' opinions, attitudes and perceptions in their natural setting. Survey research design was deemed appropriate for this study as it soughtopinions of business educatorsregarding adoption of Web 2.0 technologies. Survey design is also deemed appropriate for this study becauseAjjan and Hartshorne (2008) used it to successfully elicit the opinions of faculty members on the use of Web 2.0 in teaching and learning.Vrettaros, Tagoulis, Giannopoulou and Drigas(2009) also used survey design to successfully carry out a study on usage of Web 2.0 technologies in teaching and learning and obtained the desired response.

Area of the Study

Uzoagulu (2011) defined the area of the study as the geographical area or boundaries where the study is carried out. The present study was conducted in the

South East zone of Nigeria. The zone is one of the geographical zones in Nigeria and covers five Igbostates ofAbia, Anambra, Ebonyi, Enugu and Imo.The area is located east of the River Niger and is bounded in the south by south-south zone (the boundary states are: Delta, Cross-rivers, Rivers, and Akwa-Ibomstates) and in the north by north central geo-political zone(the boundary states are Benue and Kogistates). People in the south east zone are known for their quest for academics, entrepreneurial spirit, resourcefulness and agriculture. As a result of the knowledge and academics by the people in the zone, it has numerous tertiary institutions (universities, polytechnics and colleges of education) that are publicly and privately owned.The researcher chosethe south east geo-political zone for the study because of the inhabitants' penchant for exploring new knowledge areas.

Population of the Study

The population of this study comprised 144business education lecturers in universities and colleges of education in South East, Nigeria. The figure was obtained from the registry and office of the heads of relevant departments in the various institutions. The population distribution is attached as Appendix D Pg. 113. The entire population was used for the study because the number is not too large to warrant sampling.

Instrument for Data Collection

The instrument for data collection wasa structured questionnaire constructed by the researcher following insight gained from literature. The questionnaire titled

"Business Educators' Awareness and Adoption of Web 2.0 Technologies"(BEAAWT) contained five sections. Section A required the demographic data of the respondents. Section B contained sixteen Web 2.0 technologies to which the respondents were required to indicate the extent they are aware of them, while Section C contained20 items relating to respondents' awareness of educational benefits of Web 2.0 technologies.Section D, E and F containedsixteen itemseach which requested the respondents to indicate the extent they adopt Web 2.0 technologies for course planning, class interaction and assessment respectively.The responses were structured on a five-point rating scale of Very High Extent (5), High Extent (4), Moderate Extent (3), Low Extent (2) and Very Low Extent (1).

Validation of the Instrument

The instrument was subjected to face validation. The researcher submitted the questionnaire together with the research topic, purpose, research questions and hypotheses to one expert in measurement and evaluation and one ICT expert in the Faculty of Education both in NnamdiAzikiwe University, Awka. The response of the validators on appropriateness of the items, clarity of the language used and layout of the instrument were sought. Their inputs were harmonized and used to produce the final copy of the instrument which the research supervisor approved for the study.

Reliability of the Instrument

In order to establish the reliability of the instrument, the instrument was administered on 16 business educatorswho were randomly selected from tertiary institutions outside the area of the study (9 from universities and colleges of education in South West, 4 from universities in south-south and 3 from colleges of education in North Central). The researcher met these business educators at a conference and distributed the questionnaire to them to respond to the questionnaire and return immediately. Split half method was used to test the reliability of the instrument. The questionnaire items were split into two halves (odd and even). The scores of the two halves were correlated using Spearman rank order. Spearman Brown prophecy formula was used to estimate the reliability of the question items which yielded 0.73, 0.84, 0.99, 0.96 and 0.86 for sections B, C, D, E and F. In addition, the reliability of all sections of the instrument yielded 0.98. (See Appendix C).

Method of Data Collection

The researcher and four research assistants administeredthe questionnaire to the respondents. The research assistants werebriefed by the researcher on the objectives of the study for proper administration of the instrument.The respondents were requested to fill the questionnaire and return same to their office administrative officer(s) from whom the researcher/research assistantspicked them up. Out of 144 copies of questionnaire administered, 125 (86.8%) copies were duly returned and were used for data analysis.

Method of Data Analysis

Data collected were analyzed using mean, standard deviation and paired t-test. Mean and standard deviation was used to analyze data from sections B –E. The mean ratings were interpreted using real limit of numbersshown as follows:

Response	Rating Scale	Real limit of numbers
Very High Extent	5	4.50 – 5.00
High Extent	4	3.50 – 4.49
Moderate Extent	3	2.50 – 3.49
Low Extent	2	1.50 – 2.49
Very Low Extent	1	0.50 - 1.49

t-test was used to test the null hypotheses to ascertain whether significant difference exists between stated variables. Statistical Package for Social Sciences (SPSS) was used for data capturing and analysis.

The real limit of numbers above was applied in taking decisions regarding the research questions. In this regard, any item with mean rating between 4.50 - 5.00means that the respondents are aware or adopt to a very high extent. Any item with mean rating between 3.50 - 4.49 means that the respondents are aware of or adopt to a high extent, any item with a mean rating between 2.50 - 3.49 means that the respondents are aware of and adopt to a moderate extent. Also, any item with mean rating between1.50- 2.49 means that the respondents are aware of and adopt to a low extent while any item with mean rating between 0.50 - 1.49 means that the respondents are aware of and adopt to a very low extent.

Standard deviation was used to determine how close or far apart the responses of the respondents are from the mean.A standard deviation value close to 0 is an indication of homogeneity in agreement among the respondents, that is,

greater number of respondents agree on the issue or case raised while a standard deviation value far from 0 is an indication that the agreement among the respondents is loose, wide apart or heterogeneous. For this study, a standard deviation value of 0.50 and above is considered asa value far from 0 therefore, a wide apart or heterogeneous response among the respondents while a standard deviation value less than 0.50 is considered as a value close to 0 therefore, a close or homogeneous response among the respondents.

For the hypotheses, the decision rule was to accept the null hypothesis where the p-valueis greater than 0.05 and reject the null hypothesis where p-value is less than or equal to 0.05.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

This chapter presents the data and statistical analysis of the study. The presentation, analysis of data and results were stated in the following heading: demographic information, answering of research questions and hypotheses testing.

Demographic Information

Table 1
Demographic information of respondents

Factors		Frequency	Percentage (%)
Gender	Male	68	54.4
	Female	57	45.6
	Total	125	100
Age	45 years and above	76	60.8
	Below 45 years	49	39.2
	Total	125	100
Years of Experience in Teaching	10 years and above	51	40.8
	Below 10 years	74	59.2
	Total	125	100
Type of institution	University	73	58.4
	College of Education	52	41.6
	Total	125	100

From Table 1, gender distribution of the respondents reveal that 68(54.4%) are male and 57(45.6%) are female. Age distribution showed that respondents 45 years and above are 76(60.8%) and those below 45 years are 49(39.2%). Respondents with 10 years and above teaching experience are 51(40.8%) and those who have below 10 years teaching experience are 74(59.2%). Regarding type of institution, respondents in universities are 73(58.4%) while those in colleges of education are 52(41.6%).

Research Question 1

To what extent are business educators in tertiary institutions in south east Nigeria aware of Web 2.0 technologies?

Table 2

Respondents' mean ratings and standard deviation of awareness of Web 2.0 technologies

S/N	Web 2.0 technologies	Mean	SD	Remarks
1	Blogs	3.38	0.03	Moderate Extent
2	Wikis	4.09	0.43	High Extent
3	Facebook	4.84	0.54	Very High Extent
4	Twitter	4.27	0.14	High Extent
5	Bebo	3.44	0.55	Moderate Extent
6	LinkedIn	3.93	0.24	High Extent
7	Friendster	3.83	0.76	High Extent
8	WhatsApp	4.13	0.54	High Extent
9	MySpace	3.83	0.14	High Extent
10	YouTube	3.49	0.55	Moderate Extent
11	Flickr	4.27	0.24	High Extent
12	2go	3.44	0.76	Moderate Extent
13	Badoo	3.88	0.54	Moderate Extent
14	Virtual Worlds/Virtual Learning Environment	3.83	0.43	Moderate Extent
15	Podcast	3.12	0.54	Moderate Extent
16	Online discussion forum	4.39	0.14	High Extent
Mean of Means		**3.89**		**High Extent**

The data in Table 2 reveal the respondents' rating of awareness of Web 2.0 technologies. The table showed thatseven items out of sixteen items had mean values ranging from 3.12 to 3.49 which fell within the range regarded as moderate extent. Eight items had mean values ranging from 3.83 to 4.39 which fell within the range regarded as high extent while one item had a mean value of 4.84 which fell within the range regarded as very high extent. However, with themean of means of 3.89 which fell within the high extent range,it showed that the respondents were aware of Web 2.0 to a high extent. Additionally, Friendster and 2go had a standard deviation value of 0.76 each; this showed how wide apart the opinions of the respondents were in rating the web tools.

Research Question 2

To what extent are business educators in tertiary institutions in South East aware of the educational benefits of Web 2.0 technologies?

Table 3

Respondents' mean rating and standard deviation of awareness of educational benefits of Web 2.0 technologies.

S/N	Educational benefits of Web 2.0 technologies	Mean	SD	Remarks
17	Increase students active participation in discussion boards (created in social networking sites)	3.06	0.31	Moderate Extent
18	Provide opportunities for students and teachers to share valuable information.	3.21	0.45	Moderate Extent
19	Provide opportunities for students and teachers to share valuable ideas within work groups	4.32	0.11	High Extent
20	Provide opportunities for students and teachers to share valuable sources within work groups	3.85	0.14	High Extent
21	Allow increased use of multimedia videos for effective giving of instruction.	3.93	0.05	High Extent
22	Permits increased use of multimedia texts for effective passing of knowledge	2.63	0.04	Moderate Extent
23	Allow increased use of multimedia pictures for effective giving of instruction	3.43	0.16	Moderate Extent
24	Allow increased use of multimedia audios for effective passing of information	4.10	0.24	High Extent
25	Establish effective communication between students and educators using platforms students are familiar with.	3.47	0.04	Moderate Extent
26	Helps students in developing critical thinking skill as to solve problem.	3.88	0.05	High Extent
27	Allows online delivery of course materials/sources.	2.84	0.04	Moderate Extent
28	Enhance interaction between students and teachers for effective learning and consequent understanding.	3.07	0.04	Moderate Extent
29	Allows online giving of course related tasks	2.54	0.03	Moderate Extent
30	Permits online retrieval of home works/assignments.	3.03	0.04	Moderate Extent
31	Allows forming groups in line with the common interests of students.	2.65	0.04	Moderate Extent
32	Permits forming of groups in line with the needs of students.	3.23	0.05	Moderate Extent
33	Allows student provide feedbacks on understanding of course/subject content.	4.32	0.06	High Extent
34	Provide opportunities for teachers to understand their students in a social learning environment.	3.85	0.14	High Extent
35	Provide students opportunity to take the role of producer in creating content.	3.93	0.03	High Extent
36	Providing students opportunity to take the role of consumer in creating content.	2.63	0.06	Moderate Extent
Mean of Means		**3.40**		**Moderate Extent**

The data in Table 3 show that twelve out of twenty items on educational benefits of Web 2.0 technologies had mean values of 2.54 to 3.43 which fell within the range regarded as moderate extent while eight items had mean value which fell within the range of 3.85 to 4.32 regarded as high extent. However, with a mean of means of 3.40, the analysis showed that the respondents were aware of the educational benefits of Web 2.0 technologiesto a moderate extent.Furthermore, with the standard deviation ranging from 0.03 to 0.45 shows how homogeneous the opinions of the respondents are in rating the items.

Research Question 3
To what extent do business educators in tertiary institutions in south east Nigeria adopt Web 2.0 technologies for course planning?

Table 4
Respondents' mean rating and standard deviation on adoption of Web 2.0 technologies for course planning.

S/N	Applications of Web 2.0 for course planning	Mean	SD	Remarks
37	Use blogs to post articulated course goals for students to read	1.41	0.23	Very Low Extent
38	Use blogs to read students' post on objectives attainment.	1.28	0.71	Very Low Extent
39	Use blogs to plan study activities to be covered within the duration of the course with students.	2.09	0.40	Low Extent
40	Use blogs to post class conduct policies for students to review.	2.11	0.51	Low Extent
41	Use wikis to create summary pages on unit to be learnt.	1.47	0.52	Very Low Extent
42	Use wikis to create achievement page for parents/guardian to go log in.	1.23	0.18	Very Low Extent
43	Use wikis to delete misleading entry behaviour.	1.21	0.55	Very Low Extent
44	Use social networks to provide links for obtaining additional information about a course.	1.18	0.21	Very Low Extent
45	Use social networks to create group page to plan learning objectives for students to reflect on.	2.07	0.73	Low Extent
46	Use social networks to plan test of students' entry behaviour.	1.38	0.76	Very Low Extent
47	Use podcasts for audio recording of lesson activities to be covered for students to download.	1.45	0.45	Very Low Extent
48	Use podcasts for video recording of lesson activities to be covered for students to download.	1.23	0.54	Very Low Extent
49	Use virtual worlds/Virtual Learning Environment games to simulate students understanding towards achieving course goals.	1.10	0.13	Very Low Extent
50	Create virtual thematic units on topics of choice to be covered.	1.12	0.15	Very Low Extent
51	Use online forum to provide structure for class communication.	1.44	0.45	Very Low Extent
52	Use online forum to plan introduction of lesson to set mood for class discussion.	1.13	0.43	Very Low Extent
	Mean of Means	**1.43**		**Very Low Extent**

The data in Table 4 revealed that 3out of sixteen items had mean values ranging from 2.07 to 2.11 which fell within the range regarded as low extent. The remaining thirteen items had mean values ranging from 1.10 to 1.47 which fell within the range regarded as very low extent. With themean of means at1.43 which fell within the range regarded as very low extent indicated that the respondents generally adopt Web 2.0 for course planning to a very low extent. The standard deviation which span from 0.13 to 0.76 showed the heterogeneity of the opinion of the respondents in rating the items.

Research Question 4

To what extent are business educators in tertiary institutions in south east Nigeria adopt Web 2.0 for class interaction?

Table 5

Respondents' mean rating and standard deviation on adoption of Web 2.0 technologies for class interaction

S/N	Applications of Web 2.0 for class interaction	Mean	SD	Remarks
53	Use blogs to read contents from students.	1.25	0.34	Very Low Extent
54	Use blogs to explain concepts for students.	1.31	0.51	Very Low Extent
55	Use blogs to post study guides to students.	2.24	0.44	Low Extent
56	Use blogs to group students for collaborative peer learning.	2.18	0.32	Low Extent
57	Use wikis to share digital files with students.	1.32	0.24	Very Low Extent
58	Use wikis to modify contents in collaboration with students.	1.18	0.18	Very Low Extent
59	Use wikis to assign portfolio pages for students to display work.	1.26	0.45	Very Low Extent
60	Use social networks group page to send announcements about class to students.	1.19	0.34	Very Low Extent
61	Use social networks group page to schedule events that related to lesson for students.	2.08	0.64	Low Extent
62	Use social networks group page to post notes for students to read.	1.53	0.52	Low Extent
63	Use podcasts to air audio lecture recording for students to download.	1.23	0.41	Very Low Extent
64	Use podcasts to publish video demonstrations for students to download.	1.27	0.34	Very Low Extent
65	Use virtual worlds/Virtual Learning Environment to simulate lessons for students with special needs.	1.08	0.19	Very Low Extent
66	Use virtual worlds to create thematic units to explain complex ideas.	1.01	0.13	Very Low Extent
67	Use online forum to clarify rules/expectations to students.	1.24	0.25	Very Low Extent
68	Use online forum for lesson discussion with students.	1.23	0.32	Very Low Extent
	Mean of Means	**1.41**		**Very Low Extent**

The data in Table 5 show that 4out of the sixteen items on adoption of Web 2.0 for class interaction had mean values of 2.08 to 2.24 which fell within the range regarded as low extent whilethe remainingtwelve items had mean values ranging from 1.01 to 1.32 which fell within the range regarded as very low extent. Nevertheless, with the mean of means at 1.41 which fell within the range regarded as very low extent show thatthe respondents adopt Web 2.0 for class interaction to a very low extent.The standard deviation which ranged from 0.13 to 0.64 shows how wide apart the respondents opinion is in rating the items.

Research Question 5

To what extent are business educators in tertiary institutions in south east Nigeria adopt Web 2.0 for assessment?

Table 6
Respondents' mean rating and standard deviation on adoption of Web 2.0 for assessment.

S/N	Applications of Web 2.0 in assessment	Mean	SD	Remarks
69	Use blogs to provide assignments for students to work on.	1.43	0.24	Very Low Extent
70	Use blogs to check students' grammatical errors.	1.22	0.76	Very Low Extent
71	Use blogs to evaluate students' projects.	1.38	0.54	Very Low Extent
72	Use blogs to survey students learning needs.	2.11	0.43	Low Extent
73	Use wikis to create assessment criteria.	1.47	0.54	Very Low Extent
74	Use wikis to measure students' course tasks.	1.23	0.14	Very Low Extent
75	Use wikis to edit students' spelling errors.	1.22	0.55	Very Low Extent
76	Use social networks to evaluate home works.	1.17	0.24	Very Low Extent
77	Use social networks group page to grade tests.	1.11	0.78	Very Low Extent
78	Use social networks to give quizzes to students.	1.35	0.45	Very Low Extent
79	Use podcasts to evaluate students' audio recordings.	1.43	0.76	Very Low Extent
80	Use podcasts to grade students' video recordings.	1.47	0.54	Very Low Extent
81	Use virtual worlds/Virtual Learning Environment to measure time spent on course tasks.	1.11	0.14	Very Low Extent
82	Use virtual worlds /Virtual Learning Environment to assess students' participation.	1.12	0.16	Very Low Extent
83	Use online forum to grade students' class contribution.	1.44	0.55	Very Low Extent
84	Use online forum to grade students' collaborative engagements.	1.21	0.43	Very Low Extent
	Mean of Means	**1.34**		**Very Low Extent**

The data in Table 6 show that 1 out of the sixteen items on adoption of Web 2.0 for assessment had a mean value of 2.11 which fell within the range regarded as low extent while remaining fifteen items had mean values ranging from 1.11 to 1.47 which fell within the range regarded as very low extent. However, with the mean of means of 1.34 which fell within the range regarded as very low extent show that the respondents adopt Web 2.0 for assessment to a very low extent. The standard deviation which range from 0.14 to 0.78 shows how wide apart the respondents' opinion is in rating the items.

Hypotheses Testing

Hypothesis 1

Male and female business educators in tertiary institutions in south east Nigeria do not differ significantly in their mean rating of their awareness ofthe educational benefits of Web 2.0 technologies.

Table 7
t-testof difference between mean ratingofmale and female business educators on awareness of educational benefits of Web 2.0 technologies.

Gender	N	$\overline{X}$	SD	DF	t-value	p-value	Remarks
Male	22	3.81	0.43				
				20	0.74	0.47	Not Significant
Female	22	3.72	0.55				

The data in Table 7show t-test of difference between mean rating of male and female business educators regarding educational benefits of Web 2.0 technologies. The p-value of the test is 0.47 which is greater than 0.05. This provides evidence that the null hypothesis of no significant difference is not rejected.This means that male and female business educators do not differ significantly in their mean rating of awareness of educational benefits of Web 2.0 technologies.

Hypothesis 2

Business educators aged below 45 years and business educators aged 45 years and above in tertiary institutions in south east Nigeria do not differ on their mean rating of awareness of the educational benefits of Web 2.0 technologies.

Table 8

t-test of difference between the mean rating of business educators agedbelow 45 years and aged 45 years and above on awareness of educational benefits of Web 2.0 technologies.

Age	N	$\bar{X}$	SD	DF	t-value	p-value	Remarks
Below 45 years	22	4.19	0.60				
				20	7.78	0.00	Significant
45 years& above	22	2.62	0.68				

The data in Table 8 show t-test of difference between business educators below 45 years of age and business educators 45 years and above oneducational benefits of Web 2.0 technologies. The p-value of the test is 0.00 which is less than 0.05, thisprovide evidence that the null hypothesis of no significant difference is rejected. This means that business educators differed significantly in their mean rating of awareness of educational benefits of Web 2.0 technologies as a result of their age.

Hypothesis 3

Experienced and less experienced business educators in tertiary institutions in south east Nigeria do not differ in their mean rating of awareness of educational benefits of Web 2.0 technologies.

Table 9

t-testof difference betweenthe mean rating of experienced and less experienced business educators on awareness of educational benefits of Web 2.0 technologies.

Years of experience in teaching	N	$\bar{X}$	SD	DF	t-value	p-value	Remarks
Experienced		22	4.18	0.53				
				20	0.61	0.55	Not significant
Less Experienced		22	4.09	0.53				

The data in Table 9reveal t-test of difference betweenthe mean rating of experienced and less experienced business educators oneducational benefits of Web 2.0 technologies. The p-value of the test is 0.55 which is greater than 0.05, thisprovide evidence that the null hypothesis of no significant difference isnot rejected. This means that experienced and less experienced business educators do not differ significantly in their mean rating of awareness of educational benefits of Web 2.0 technologies.

Hypothesis 4

Business educators universities and colleges of education in tertiary institutions in south east Nigeria do not differ in their mean rating of awareness of the educational benefits of Web 2.0 technologies.

Table 10

t-testof difference between the mean rating ofbusiness educators in universities and colleges of education on awareness of educational benefits of Web 2.0 technologies.

Type of Institution	N	$\bar{X}$	SD	DF	t-value	p-value	Remarks
University	22	4.14	0.60				
				20	2.17	0.14	Not Significant
College of Education	22	3.95	0.51				

The data in Table 10 show t-test of difference between mean ratings ofbusiness educators in universities and colleges of education on educational benefits of Web 2.0 technologies. The p-value of the test is 0.14 which is greater than 0.05, thisprovide evidence that the null hypothesis of no significant difference isnot rejected. This means that business educators in universities and colleges of educationdo not differ significantly in their mean rating of awareness of educational benefits of Web 2.0 technologies.

Hypothesis 5

Male and female business educators in tertiary institutions in south east Nigeria do not differ in their mean rating of adoption of Web 2.0 technologies for class interaction.

Table 11

t-testof difference between the mean rating of male and female business educators on adoption of Web 2.0 technologies for class interaction.

Gender	N	$\bar{X}$	SD	DF	t-value	p-value	Remarks
Male	14	2.19	0.65				
				20	1.24	0.24	Not Significant
Female	14	1.91	0.44				

The data in Table 11reveal t-test of difference between the mean ratings of male and female business educatorson the adoption of Web 2.0 technologies for class interaction. The p-value of the test is 0.24 which is greater than 0.05, thisprovide evidence that the null hypothesis of no significant difference isnot rejected. This means that there is no significant difference between the mean ratings

of male and femalebusiness educators regarding adoption of Web 2.0 for class interaction.

Hypothesis 6

Business educators aged below 45 years and business educators aged 45 years and above in tertiary institutions in south east Nigeria do not differ on their mean rating of adoption of Web 2.0 technologies for class interaction.

Table 12

t-testof difference between mean ratings ofbusiness educators below 45 years and businesseducators 45 years &above on adoption of Web 2.0 technologies for class interaction.

Age	N	$\bar{X}$	SD	DF	t-value	p-value	Remarks
Below 45 years	14	2.01	0.35				
				20	5.06	0.00	Significant
45 years& above	14	1.33	0.34				

The data in Table 12 show t-test of difference between mean rating of business educators below 45 years of age and business educators 45 years and aboveonadoption of Web 2.0 technologies for class interaction. The p-value of the test is 0.00 which is less than 0.05, thisprovide evidence that the null hypothesis of no significant difference isrejected. This means that there is a significant difference between the mean ratings of business educators below 45 years of age and business educators 45 years and above on adoption of Web 2.0 for class interaction.

Hypothesis 7

Experienced and less experienced business educators in tertiary institutions in south east Nigeria do not differ in their mean rating of adoption of Web 2.0 technologies for class interaction.

Table 13

t-testof difference between the mean rating of experienced and less experienced business educators on adoption of Web 2.0 technologies for class interaction.

Years of experience in teaching	N	$\bar{X}$	SD	DF	t-value	p-value	Remarks
Experienced	14	1.98	0.50				
				20	0.41	0.69	Not Significant
Less Experienced	14	2.05	0.60				

The data in Table 13 show t-test of difference between mean rating of experienced and less experienced business educators onadoption of Web 2.0 technologies for class interaction. The p-value of the test is 0.69 which is greater than 0.05, thisprovide evidence that the null hypothesis of no significant difference isnot rejected. This means that there is no significant difference between the mean ratings of experienced and less experiencedbusiness educators regarding adoption of Web 2.0 technologies for class interaction.

Hypothesis 8

Business educators in universities and colleges of education in south east Nigeria do not differ in their mean rating of adoption of Web 2.0 technologies for class interaction.

Table 14

t-testof difference between the mean rating of business educators in universities and colleges of education on adoption of Web 2.0 technologies for class interaction

Type of institution	N	$\bar{X}$	SD	DF	t-value	p-value	Remarks
University	14	1.99	0.69				

| | 200.77 | 0.45 | Not Significant |
| College of Education | 14 | 2.15 | 0.56 |

The data in Table 14 reveal t-test of difference between the mean rating of business educators in universities and colleges of education on adoption of Web 2.0 technologies for class interaction. The p-value of the test is 0.45 which is greater than 0.05, thisprovide evidence that the null hypothesis of no significant difference isnot rejected. This means that there is no significant difference between the mean ratings of business educators in universities and colleges of education regarding adoption of Web 2.0 technologies for class interaction.

Summary of Major Findings

The major findings from data analyzed revealed thatbusiness educators in tertiary institutions in south east Nigeria are highly aware of Web 2.0 technologies but not quite aware of the educational benefits of Web 2.0 technologies. Furthermore, business educators adopt Web 2.0 technologies for course planning, class interaction and assessment to a very low extent. It was also revealed that the variation that occurred in awareness and adoption of Web 2.0 by business educators in south east Nigeria was not as a result of gender, years of experience and type of institution but as a result of age.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the concluding part of this study under the following sub –headings: discussion of results, conclusions, implications of the study, recommendations, and suggestions for implications of the study.

Discussion of Results

The findings from the study are discussed under sub-themes according to the research questions raised and hypotheses tested.

Findings of the study regarding the extent business educators are aware of Web 2.0 technologies, which was analyzed and presented in Table 2, showed that business educators in tertiary institutions south east Nigeria are aware of Web 2.0 to a high extent. This finding is in disparity with the findings of Mtega, Dulle, Malekani and Chailla (2014) who reported that teaching staff in Tanzania are not aware of Web 2.0 tools. This findingis however in agreement with the findings of Ajise and Fagbola (2013) who reported a high level of awareness of Web 2.0 by lecturers in tertiary institutions in Nigeria. Web 2.0 technologieswhich business educators are aware of most include Facebook, Wikis, Twitter, WhatsApp and online discussion forum. Business educators' awareness of these technologies could be as a result of the presence of Web 2.0 tools in smartphones, tablets, netbooks which people use for day-to-day communication and interaction.

Findings of the study regarding the extent business educators in tertiary institutions in south-east Nigeria are aware of educational benefits of Web 2.0 technologies, showed that twentyeducationalbenefits of Web 2.0 technologies were listed out of which the respondents were aware of twelve to a moderate extent and the other 8to a high extent. However, the mean of means of 3.40, which fell within the range of moderate extent, indicated that the respondents are aware of the educational benefits of Web 2.0 to a moderate extent. This finding corroborated with the findings of Echeng, Usoro and Majewski (2013) who reported that many Nigerians are not quite aware of the benefits of Web 2.0 technologies in the teaching and learning process. The findings also agrees with Mtega, Dulle, Malekani and Chailla (2014) who noted that faculties' awareness of the usefulness and academic benefits of Web 2.0 tools could enhanceits adoption. Business educators need to be aware of the educational values of Web 2.0 as to use these tools to actively engage students in educational activities.

With reference to the adoption of Web 2.0 technologies for course planning, sixteen activities on course planning were listed. Adoption of 3 activities out of the sixteen activities was rated low extent while the adoption of the remaining thirteen activities was rated very low extent by the respondents. Nevertheless, with the mean of means at 1.43, which fell within the range of very low extent indicated that respondents adopt Web 2.0 technologies for course planning to a very low extent.This finding is in disagreement with the findings of Nazatul-Aini (2014) who reported that university faculties in Malaysia use Web 2.0 tools for learning plan

not only to capture the interest of students to optimize learning experience but to cater for the needs of students with different levels of thinking.Most people will readily agree that poor adoption of Web 2.0 technologies for course planning could be attributed to traditional/teacher-centered form of course planning adopted by lecturers in most tertiary institutions in Nigeria. Ajise and Fagbola (2013) who reportedlecturers' high level of usage of Web 2.0 is with regards to activities which excludes instruction.Harris and Lea (2009) notedthatWeb 2.0technologies are beneficial to instructors to collaborate with students in planning and delivery of course content.

With regards to the adoption of Web 2.0 technologies for class interaction, sixteen activities using Web 2.0 for class interaction were listed. Adoption of 4 activities out of the sixteen activities was rated low extent while the adoption of the remaining twelve activities was rated very low extent by the respondents. On the other hand, with the mean of means at 1.41, which fell within the range of very low extent indicated that respondents adopt Web 2.0 technologies for class interaction to a very low extent. This findingis in line with the findings of Olasina (2011) who reported a low adoption of Web 2.0 in teaching and learning process. Light and Polin (2010) emphasized that the use of Web 2.0 enhance interaction and communication among students, between students and teachers and among educators. In addition, Weller (2013) noted that teachers need to be able to interact and deliver lessons in or out of class using Web 2.0 technologies as it's not only beneficial for students' class task but fun to use.Echeng, Usoro and

Majewski(2013) recommendedthat a better learner centered approach can be achieved when education and training institutions adopt 21st-century technologies like Web 2.0 to improve learner engagement.

With regards to adoption of Web 2.0 technologies for assessment, sixteen activities using Web 2.0 for assessment were listed. The adoption of 1 activity out of the sixteen activities was rated low extent while the adoption of the remaining fifteen activities was rated very low extent by the respondents. However, with the mean of means at 1.34, which fell within the range of very low extent showed that the respondents adopt Web 2.0 technologies for assessment to a very low extent. This finding corroborated with the findings of Anunobi and Ogbonna (2012) who decried that despite the opportunities offered by Web 2.0 technologies in teaching and learning, their adoption is very low. Elliot (2008) observed that one of the ways assessment can evolve to suite the digital age learner is to adopt Web 2.0 for assessment in the educational process.

With reference to hypothesis 1, male and female business educators in tertiary institutions in south east Nigeria rated awareness of educational benefits of Web 2.0 technologies. The finding revealed that male and female business educators do not differ significantly in their rating of awareness of educational benefits of Web 2.0 technologies.Gender is therefore not a factor in business educators' awareness of educational benefits of Web 2.0 technologies. Thefinding contradicts the finding of Collins and Hide (2010) who reported that male teachers are more aware of usefulness of Web 2.0 tools than female teachers because male

teachers show positive attitude towards the use of Web 2.0 than female teachers. Individuals irrespective of their gender use different Web 2.0 technologies readily accessible in computers and handheld devices and are likely to be aware of certain educational potentials of Web 2.0 technologies.

With reference to the second hypothesis, business educators below 45 years and those who are 45 years and above rated their awareness of educational benefits of Web 2.0 technologies. The result showed that business educators 45 years & aboveand business educators below 45 years differ significantly in their rating of awareness of educational benefits of Web 2.0 technologies. The finding revealed that business educators below45 years are aware of the educational benefits of Web 2.0 technologies than business educators 45 years and above as they retained a high mean. This finding is in accordance with the finding of Collins and Hide (2010) who found that young teachers are more aware of Web 2.0 in education than old lecturers because young lecturers always explore the various use of web technologies. Young people tend to be more aware of web technologies than older individuals as they are always on the web scouting for information and new ways of accomplishing tasks.

With regards to the third hypothesis, experienced and less experienced business educators rated their awareness of educational benefits of Web 2.0 technologies. The mean rating of experienced and less experienced business educators in tertiary institutions in south east Nigeria showed that experienced and less business educators do not differ significantly in their rating of awareness of

educational benefits of Web 2.0 technologies. This result is in opposition with the finding of Yeun, Yaoyuneyong and Yeun (2011) who reported that years of experience in teaching predicts one's interest, perception and overall experience with Web 2.0 tools, noting that experienced teachers aremore aware of the benefits of Web 2.0 tools than teachers who have fewer years of experience in teaching.

With regards to the fourth hypothesis, business educators in universities and colleges of education rated their awareness ofeducational benefits of Web 2.0 technologies to find out whether there was a difference in their response. The result revealed that business educators in universities and colleges of education do not differ significantly in their rating of awareness of educational benefits of Web 2.0 technologies. This result is in disagreement with the report of Meyer and Xu (2009) who found that university lecturers are aware of the benefits of web technology than college lecturers because university lecturers focus on researchand teaching while college lecturers focus more on teaching rather than research.

With reference to the fifth hypothesis, male and female business educators rated the adoption of Web 2.0 technologies for class interaction. The findings revealed that male and female business educators do not differ significantly in their mean rating of adoption of Web 2.0 for class interaction. This means that gender is not a factor in the respondents' adoption of Web 2.0 for class interaction. This finding is in line with the findings of Quadri (2014) who found that age does not have significant effect on teachers' use of Web 2.0 to teach. This finding, however, contradicts the findings of Collins and Hide (2010)who reported that male teachers

adopt and use Web 2.0 than females teachers because male have positive attitude towards the use of Web 2.0 tools and provide alternative ways to form networks.

With reference to the sixth hypothesis, business educators 45 & above and business educators below 45 years rated adoption of Web 2.0 for class interaction. The finding revealed a significant difference in the mean rating of the respondents. The finding further revealed that business educators below 45 years adopt Web 2.0 technologiesfor class interaction more than business educators 45 years and above. This finding is in consonance with the report of Procter, Williams, Stewart, Poschen, Snee, Voss, and Asgari-Targhi (2010) who reported that young people adopt and use Web 2.0 technologies in teaching easily than adults because of their eagerness to learn and use new technologies.

With regards to the seventh hypothesis, experienced and less experienced business educators rated the adoption of Web 2.0 technologies for class interaction. The finding showed no significant difference in the mean rating of the respondents. This finding is in line with the discovery of Yeun,Yaoyuneyong and Yeun (2011) who stated that years of experience in teaching does not affect teachersadoption of Web 2.0 in teaching and learning.

With reference to the eighth hypothesis, business educators in universities and colleges of education in tertiary institutions rated the adoption of Web 2.0 for class interaction. The finding indicateda no significant difference in the rating of therespondents. The finding is in disagreement with the findings of Meyer and Xu (2009) who found that research facultiesuse Web 2.0 tools in teaching and learning

than college faculties. This disparity is because of the nature of the institution where the former is concerned with research and teaching while the latter is concerned basically with teaching. The finding of the eight hypothesis may be attributed to the fact that lecturers in universities and colleges of education akin to traditional mode of instruction presentation.

Conclusion

It was concluded from the findings that awareness of Web 2.0 technologies and its educational benefitsby business educators have not resulted in its adoption in the instructional process. Business educators' degree of awareness of these web tools is not matched with their utilization for educational instruction. It was also concluded that young business educators use Web 2.0 technologies for instructional purposes than older business educators. This could be because the older business educators are digital immigrants who were not educated with these web tools.

Implications of the Study

The findings of the study have the following implications:

1. The fact that business educators are not quite aware of the educational benefits of Web 2.0 technologiesimplies that they may not effectively harness the potentials of these technologies. This means that they will find it difficult to tackle the needs of digital age learners. There is thus the need for business educators to enhance their learning experiences and

facilitatelifelong learning, through enriched interactions and collaboration, using technologies students otherwise use for recreation and entertainment.

2. Business educators' poor adoption of Web 2.0 for instructional purposes implies that educators rarely use tools that provide new planned model for education and instruction that will prepare individuals and industry workers better for knowledge-based society.

3. Learners are rarely provided the opportunity to create their own digital learning materials, personal study environment and social groups as to demonstrate and exhibit their knowledge and aptitude.

4. Instructional delivery in tertiary institutions in south east Nigeria isnot structured around individuals' interest as to allow the learners to seek appropriate resources, to support the development of learning outcomes. The adoption of Web 2.0 technologies will help to bridge the gap between the requirements of academic rigor and the daily lives of contemporary learners.

5. The fact that age is a critical factor in business educators' awareness and adoption of Web 2.0 technologies for instructional purposes implies that it would be necessary to sensitize and train digital immigrant business educators(business educators above 44 years) on the usage of Web 2.0 technologies for instruction.

Recommendations

In the light of the findings of the study and the conclusion drawn, the researcher proffers the following recommendations:

1. Business education curriculum planners, developers and implementers should revise the curriculum framework of business education programme to ensure the inclusion of web technologies in order to enhance collaboration, inclusive participation and interaction between teachers and students.

2. Management of tertiary institutions in south east Nigeria should provide electronic learning facilities such as computer studios withhigh-speed internet access facilities to enable lecturers and students have adequate access to the web.

3. Business educators of all age brackets should keep abreast of emerging web technologies and adopt it for instruction to effectively cater for the learning needs of today's learner. This is to ensure that all business educators are attuned with the current methods and application of web technologies in education.

4. Tertiary institution management and professional bodies such as Association of Business Educators of Nigeria (ABEN)should organize workshops, symposia and seminars to train business educators on the use of Web 2.0 technologies. This would strengthen business educators' instructional delivery capabilities.

Limitations of the Study

The researcher would have conducted an experiment to ascertain the effect of Web 2.0 on academic achievement of students in south east Nigeria, but was deterred by poor internet provision for students within the institutions surveyed for the

experiment.Although most of the students had smartphones and personal computers with diverse Web 2.0 applications, the challenge was access to broadband internet access for students to adequately and effectively use the web technologies for educational instruction.

Suggestions for further Studies

Following the findings of the present study, the researcher suggests the following areas for further studies:

1. Business educators' awareness and adoption of Web 2.0 in other geographical zones of Nigeria.

2. Effect of Web 2.0 technologies usage on academic achievement of business education students in tertiary institutions in south east Nigeria.

3. Business education students' awareness and usage of Web 2.0 in learning activities.

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APPENDIX A

Letter of Transmittal

Department of Vocational Education,
NnamdiAzikiwe University,
Awka.

5thMarch, 2014.

Dear Business Educator,

Request to Complete a Questionnaire

I am a post graduate student of the above-mentioned institution. I am conducting a study to ascertain business educators' level of awareness and adoption of Web 2.0 technologies for instructional purposes.

As a business educator, you are requested to complete the attached questionnaire sincerely. Your response will help in arriving at a conclusion on this subject matter.

It is my promise that all information obtained from your response will be treated in strict confidence and used for academic purpose only.

Thank you for your co-operation.

Yours faithfully,

Ementa, Christiana Ngozi
08063747161

APPENDIX B

BUSINESS EDUCATORS' AWARENESS AND ADOPTION OF WEB 2.0 TECHNOLOGIES(BEAAWT)

Section A: Personal Data

Please indicate with a tick (√) for items 1, 2, 3 and 4 as they apply to you.

1. Gender:

   Male ☐

   Female ☐

2. Age:

   Below 45 years ☐

   45 years& above ☐

3. Years of experience in teaching:

   10 years & above ☐

   Below 10 years ☐

4. Type of institution:

   University ☐

   College of education ☐

Instruction: You are requested to respond to the sections below using the following keys:

Very High Extent   – VHE
High Extent   -   HE
Moderate Extent   – ME
Low Extent   – LE
Very Low Extent   - VLE

SECTION B – Awareness of Web 2.0 technologies

Web 2.0 is a web technology that allows an individual to share knowledge, contents and permits one to collaborate with others. In your opinion as a business educator, kindly indicate with a tick (√) the extent you are aware of each of the listed Web 2.0 technologies.

S/N	Web 2.0 Technologies	VHE	HE	ME	LE	VLE
1	Blogs					
2	Wikis					
3	Facebook					
4	Twitter					
5	Bebo					
6	LinkedIn					
7	Friendster					
8	WhatsApp					
9	Flickr					
10	YouTube					
11	MySpace					
12	Friendite					
13	Badoo					
14	Virtual Worlds/Virtual Learning Environment					
15	Podcast					
16	Online discussion forum					

SECTION C: Awareness of educational benefits of Web 2. 0 technologies

Listed below are suggested educational benefits of Web 2.0 technologies. Kindly indicate with a tick (√) the extent you are aware that Web 2.0 technologies could yield each of the listed benefits.

S/N	Educational benefits of Web 2.0 Technologies	VHE	HE	ME	LE	VLE
17	Increase students active participation in discussion boards (created in social networking sites)					
18	Provide opportunities for students and teachers to share valuable information.					
19	Provide opportunities for students and teachers to share valuable ideas within work groups					
20	Provide opportunities for students and teachers to share valuable sources within work groups					
21	Allow increased use of multimedia videos for effective giving of instruction.					
22	Permits increased use of multimedia texts for effective passing of knowledge					
23	Allow increased use of multimedia pictures for effective giving of instruction					
24	Allow increased use of multimedia audios for effective passing of information					
25	Establish effective communication between students and educators using platforms students are familiar with.					
26	Helps students in developing critical thinking skill as to solve problem.					
27	Allows online delivery of course materials/sources.					
28	Enhance interaction between students and teachers for effective learning and consequent understanding.					
29	Allows online giving of course related tasks					
30	Permits online retrieval of home works/assignments.					
31	Allows forming groups in line with the common interests of students.					
32	Permits forming of groups in line with the needs of students.					
33	Allow students provide feedbacks on understanding of course/subject content.					
34	Provide opportunity for teachers to understand their students in a social learning environment.					
35	Provide students opportunity to take the role of producer in creating content.					
36	Providing students opportunity to take the role of consumer in creating content.					

Section D – Adoption of Web 2.0 technologies for Course Planning

Listed below are ideal uses of Web 2.0 in planning a course. Please indicate with a tick (√) in the appropriate column that best describes the extent you adopt each of the listed Web 2.0 technologies in planning your course.

S/N	Applications of Web 2.0 Technologies in course planning	VHE	HE	ME	LE	VLE
37	Use blogs to post articulated course goals for students to read					
38	Use blogs to read students' post on objectives attainment.					
39	Use blogs to plan study activities to be covered within the duration of the course with students.					
40	Use blogs to post class conduct policies for students to review.					
41	Use wikis to create summary pages on unit to be learnt.					
42	Use wikis to create achievement page for parents/guardian to go log in.					
43	Use wikis to delete misleading entry behaviour.					
44	Use social networks to provide links for obtaining additional information about a course.					
45	Use social networks to create group page to plan learning objectives for students to reflect on.					
46	Use social networks to plan test of students' entry behaviour.					
47	Use podcasts for audio recording of lesson activities to be covered for students to download.					
48	Use podcasts for video recording of lesson activities to be covered for students to download.					
49	Use virtual worlds/Virtual Learning Environment games to simulate students understanding towards achieving course goals.					
50	Create virtual thematic units on topics of choice to be covered.					
51	Use online forum to provide structure for class communication.					
52	Use online forum to plan introduction of lesson to set mood for class discussion.					

Section E – Adoption of Web 2.0 technologies for class interaction

Listed below are ideal uses of Web 2.0 for class interaction. Please indicate with a tick (√) in the appropriate column that best describes the extent you adopt each of the listed Web 2.0 technologies for class interaction with your students.

S/N	Applications of Web 2.0 Technologies in class interaction	VHE	HE	ME	LE	VLE
53	Use blogs to read contents from students.					
54	Use blogs to explain concepts for students.					
55	Use blogs to post study guides to students.					
56	Use blogs to group students for collaborative peer learning.					
57	Use wikis to share digital files with students.					
58	Use wikis to modify contents in collaboration with students.					
59	Use wikis to assign portfolio pages for students to display work.					
60	Use social networks group page to send announcements about class to students.					
61	Use social networks group page to schedule events that related to lesson for students.					
62	Use social networks group page to post notes for students to read.					
63	Use podcasts to air audio lecture recording for students to download.					
64	Use podcasts to publish video demonstrations for students to download.					
65	Use virtual worlds/Virtual Learning Environment to simulate lessons for students with special needs.					
66	Use virtual worlds to create thematic units to explain complex ideas.					
67	Use online forum to clarify rules/expectations to students.					
68	Use online forum for lesson discussion with students.					

Section F – Adoption of Web 2.0 technologies for assessment

Listed below are ideal uses of Web 2.0 for assessment. Please indicate with a tick (√) in the appropriate column that best describes the extent you adopt each of the listed Web 2.0 technologies for assessment.

S/N	Applications of Web 2.0 Technologies for assessment	VHE	HE	ME	LE	VLE
69	Use blogs to provide assignments for students to work on.					
70	Use blogs to check students' grammatical errors.					
71	Use blogs to evaluate students' projects.					
72	Use blogs to survey students learning needs.					
73	Use wikis to create assessment criteria.					
74	Use wikis to measure students' course tasks.					
75	Use wikis to edit students' spelling errors.					
76	Use social networks to evaluate home works.					
77	Use social networks group page to grade tests.					
78	Use social networks to give quizzes to students.					
79	Use podcasts to evaluate students' audio recordings.					
80	Use podcasts to grade students' video recordings.					
81	Use virtual worlds/Virtual Learning Environment to measure time spent on course tasks.					
82	Use virtual worlds /Virtual Learning Environment to assess students' participation.					
83	Use online forum to grade students' class contribution.					
84	Use online forum to grade students' collaborative engagements.					

APPENDIX C

CALCULATION OF RELIABILITY COEFFICIENT

SECTION B

S/N	Odd Scores	Even Scores	Odd Rank Order	Even Rank Order	Difference (D)	D^2
1	26	29	7	8.5	-1.5	2.25
2	27	31	5.5	3	2.5	6.25
3	23	30	12	5.5	6.5	42.25
4	29	28	3	11	-8	64
5	19	24	15	14	1	1
6	25	30	9	5.5	3.5	12.25
7	25	28	9	11	-2	4
8	31	33	1	1	0	0
9	13	13	16	16	0	0
10	28	28	4	11	-7	49
11	24	27	11	13	-2	4
12	20	30	14	5.5	8.5	72.25
13	27	29	5.5	8.5	-3	9
14	25	30	9	5.5	3.5	12.25
15	30	32	2	2	0	0
16	22	22	13	15	-2	4
						282.5

Using Spearman Rank Order Correlation Coefficient:

$$S = 1 - \frac{6\sum D^2}{N(N^2-1)} = 1 - \frac{6 \times 282.5}{16(16^2-1)} = 1 - \frac{1695}{4080} = 1 - 0.42$$

$$S = 0.58$$

Using Spearman Brown Prophecy Formula:

$$R = \frac{2S}{1+S} = \frac{2 \times 0.58}{1+0.58} = \frac{1.16}{1.58} = \mathbf{0.73}$$

SECTION C

S/N	Odd Scores	Even Scores	Odd Rank Order	Even Rank Order	Difference (D)	D^2
1	31	35	15	15.5	-0.5	0.25
2	49	46	1	1	0	0
3	37	35	12.5	15.5	-3	9
4	39	36	10	14	-4	16
5	43	38	4	11.5	-7.5	56.25
6	36	39	14	7.5	6.5	42.25
7	40	40	8.5	4.5	4	16
8	43	39	4	7.5	-3.5	12.25
9	41	39	6.5	7.5	-1	1
10	40	39	8.5	7.5	1	1
11	26	38	16	11.5	4.5	20.25
12	43	42	4	2	2	4
13	37	38	12.5	11.5	1	1
14	41	40	6.5	4.5	2	2
15	38	38	11	11.5	-0.5	0.25
16	45	41	2	3	-1	1
						182.5

Using Spearman Rank Order Correlation Coefficient:

$$S = 1 - \frac{6\sum D^2}{N(N^2-1)} = 1 - \frac{6 \times 182.5}{16(16^2-1)} = 1 - \frac{1095}{4080} = 1 - 0.27$$

$$S = 0.73$$

Using Spearman Brown Prophecy Formula:

$$R = \frac{2S}{1+S} = \frac{2 \times 0.73}{1 + 0.73} = \frac{1.46}{1.73} = \mathbf{0.84}$$

SECTION D

S/N	Odd Scores	Even Scores	Odd Rank Order	Even Rank Order	Difference (D)	D^2
1	13	14	9.5	10	-0.5	0.25
2	16	16	6.5	6	0.5	0.25
3	12	14	11.5	10	1.5	2.25
4	8	8	16	15	1	1
5	16	15	6.5	8	-1.5	2.25
6	16	16	6.5	6	0.5	0.25
7	12	13	11.5	12	-0.5	0.25
8	20	20	4	4	0	0
9	11	10	13	13.5	-0.5	0.25
10	22	23	2.5	1.5	1	1
11	9	10	15	13.5	1.5	2.25
12	24	23	1	1.5	-0.5	0.25
13	16	16	6.5	6	0.5	0.25
14	10	7	14	16	-2	4
15	22	22	2.5	3	-0.5	0.25
16	13	14	9.5	10	0.5	0.25
						15

Using Spearman Rank Order Correlation Coefficient:

$$S = 1 - \frac{6\sum D^2}{N(N^2-1)} = 1 - \frac{6 \times 15}{16(16^2-1)} = 1 - \frac{90}{4080} = 1 - 0.02$$

$$S = 0.98$$

Using Spearman Brown Prophecy Formula:

$$R = \frac{2S}{1+S} = \frac{2 \times 0.98}{1 + 0.98} = \frac{1.96}{1.98} = \mathbf{0.99}$$

SECTION E

S/N	Odd Scores	Even Scores	Odd Rank Order	Even Rank Order	Difference (D)	D^2
1	15	12	10.5	12	-1.5	2.25
2	16	14	8.5	10	-1.5	2.25
3	21	20	3.5	5	-1.5	2.25
4	8	8	16	16	0	0
5	18	19	6	6	0	0
6	16	16	8.5	8	0.5	0.25
7	14	12	12.5	12	0.5	0.25
8	18	18	6	7	1	1
9	11	10	15	15	0	0
10	21	22	3.5	1	2.5	6.25
11	14	11	12.5	14	-1.5	2.25
12	24	21	1.5	3	-1.5	2.25
13	18	21	6	3	3	9
14	15	12	10.5	12	-1.5	2.25
15	24	21	1.5	3	-1.5	2.25
16	12	15	14	9	5	25
						57.5

Using Spearman Rank Order Correlation Coefficient:

$$S = 1 - \frac{6\sum D^2}{N(N^2-1)} = 1 - \frac{6 \times 57.5}{16(16^2-1)} = 1 - \frac{345}{4080} = 1 - 0.08$$

$$S = 0.92$$

Using Spearman Brown Prophecy Formula:

$$R = \frac{2S}{1+S} = \frac{2 \times 0.92}{1 + 0.92} = \frac{1.84}{1.92} = \mathbf{0.96}$$

SECTION F

S/N	Odd Scores	Even Scores	Odd Rank Order	Even Rank Order	Difference (D)	D²
1	12	11	12	12	0	0
2	18	16	8.5	9.5	-0.1	0.01
3	19	20	6	3.5	2.5	6.25
4	9	9	15	15.5	-0.5	0.25
5	20	18	3	6.5	-3.5	12.25
6	19	23	6	1	5	25
7	13	10	11	13.5	-2.5	6.25
8	20	16	3	9.5	-6.5	42.25
9	11	10	13	13.5	-0.5	0.25
10	20	18	3	6.5	-3.5	12.25
11	9	9	15	15.5	-0.5	0.25
12	23	20	1	3.5	-2.5	6.25
13	19	21	6	2	4	16
14	9	12	15	11	4	16
15	18	17	8.5	8	-0.5	0.25
16	16	19	10	5	5	25
						168.5

Using Spearman Rank Order Correlation Coefficient:

$$S = 1 - \frac{6\sum D^2}{N(N^2-1)} = 1 - \frac{6 \times 168.5}{16(16^2-1)} = 1 - \frac{1011}{4080} = 1 - 0.25$$

$$S = 0.75$$

Using Spearman Brown Prophecy Formula:

$$R = \frac{2S}{1+S} = \frac{2 \times 0.75}{1 + 0.75} = \frac{1.50}{1.75} = \mathbf{0.86}$$

RELIABILITY OF ENTIRE SECTION

S/N	Odd Scores	Even Scores	Odd Rank Order	Even Rank Order	Difference (D)	D²
1	97	101	13	12.5	0.5	0.25
2	126	123	5	7	2	4
3	112	119	8.5	8	0.5	0.25
4	93	89	14	15	1	1
5	116	114	7	9	2	4
6	112	124	8.5	6	2.5	6.25
7	104	103	11	11	0	0
8	132	126	2.5	4	-1.5	2.25
9	87	82	15	16	-1	1
10	131	130	4	2.5	1.5	2.25
11	82	95	16	14	2	4
12	134	136	1	1	0	0
13	117	125	6	5	1	1
14	100	101	12	12.5	-0.5	0.25
15	132	130	2.5	2.5	0	0
16	108	111	10	10	0	0
						26.5

Using Spearman Rank Order Correlation Coefficient:

$$S = 1 - \frac{6\sum D^2}{N(N^2-1)} = 1 - \frac{6 \times 26.5}{16(16^2-1)} = 1 - \frac{159}{4080} = 1 - 0.04$$

$$S = 0.96$$

Using Spearman Brown Prophecy Formula:

$$R = \frac{2S}{1+S} = \frac{2 \times 0.96}{1 + 0.96} = \frac{1.92}{1.96} = \mathbf{0.98}$$

APPENDIX D

Population distribution of business educators in tertiary institutions in South East, Nigeria

Type of Institution	States					
	Abia	Anambra	Ebonyi	Enugu	Imo	Total
University	11	18	10	10	8	**57**
College of Education	9	30	10	31	17	**87**
Total						**144**

Source: Field survey, 2014

APPENDIX E

WEB 2.0 EDUCATIONAL ACTIVITIES

Tools that create or support a virtual learning environment		
Application	**Description**	**URL**
Edmodo	social platform and learning management system	http://www.edmodo.com/
Blackboard	learning management system	http://www.blackboard.com/
Quia	builds activities, quizzes, online worksheets	http://www.quia.com/
GoKnow	learning environment for mobile devices	http://www.goknow.com/
ExamView	builds comprehensive tests	http://www.einstruction.com/products/assessment/examview/index.html
iWeb	Apple software for building websites	http://www.apple.com/ilife/iweb/
Trackstar	Lesson plan storage/depository	http://trackstar.4teachers.org/trackstar/
ActivExpression	basic application on the Promethean board	http://www.prometheanworld.com/server.php?show=nav.15997
Sharepoint	Microsoft collaborative work space	http://sharepoint.microsoft.com
Puzzlemaker	makes puzzles	http://puzzlemaker.discoveryeducation.com/
DropBox	stores and shares files and folders over the Internet	https://www.dropbox.com/
Schoology	learning management system	https://www.schoology.com/home.php
MyUdutu	rapid e-learning authoring tool	http://www.myudutu.com/
Raptivity	rapid e-learning authoring tool	http://www.raptivity.com/

Tools that support communication and cultivate relationship		
Application	**Description**	**URL**
Twitter	social networking tool	http://twitter.com/
Jing	social networking tool	http://www.jingproject.com/
Comunicator	Microsoft product that supports communication and collaboration	http://office.microsoft.com/enus/communicator/?CTT=97
Diigo	social networking bookmarking tool	http://www.diigo.com/
Delicious	social networking bookmarking tool	http://delicious.com/
ePals	online international learning community	http://www.epals.com/

Resources to support teaching and learning		
Application	**Description**	**URL**
YouTube	video-sharing site	http://www.youtube.com/
Study Island	online standards-based learning tools	http://www.studyisland.com/
Study Mate	creates interactive assessment activities	http://www.respondus.com/studymate/samples.shtml
Kto8.com	database of exercises that reinforce critical skills	http://kto8.com/
Mountain Math/Language /Science	skill-building and test preparation software	http://www.mtmath.com/forum/mtmath.php
Grammar Girl	audio and text "mini-talks" on grammar	http://grammar.quickanddirtytips.com/
GoAnimate	cartoon maker	http://goanimate.com/
Starfall	phonics website	http://www.starfall.com/
Google Earth	satellite images of the Earth	http://earth.google.com/
Brainpop	animated, curriculum-based content activities	http://www.brainpop.com/
SurveyMonkey	online survey tool	http://www.surveymonkey.com/
ReadPlease	text to speech software	http://www.readplease.com/
Thinkfinity	standards-based lesson plans and resources	http://www.thinkfinity.org/
Holt Online	online textbook and grading system	http://my.hrw.com/
Curriculum Associates	online curricular materials	http://www.curriculumassociates.com/

Tools enabling students to create artifacts representing what they are learning		
Application	**Description**	**URL**
Voicethread	creates online picture documentary with text or voice descriptions	http://voicethread.com/#home
Glogster	creates interactive posters	http://www.glogster.com/
Wordle	Program that creates graphic representation of word usage	http://www.wordle.net/
Google Docs	document sharing	https://www.google.com/
BibMe	creates citations	http://www.bibme.org/
Picnik	photo editing	http://www.picnik.com/
Mixbook	creates picture books	http://www.mixbook.com/
PhotoPeach	slideshows with photos, text, sound	http://photopeach.com/
Notetaker	note-taking software for students	http://www.apple.com/downloads/macosx/home_learning/notetaker_aquamindssoftware.html
Frontpage	Microsoft Web design software	http://www.microsoftfrontpage.com/
KidPix	drawing software	http://www.mackiev.com/kid_pix.html
Sketchy	animation and drawing tool	http://www.goknow.com/Products/Sketchy/
Prezi	online presentation tool	http://prezi.com/
Newsmaker	platform to make student newscasts	http://www.aboutnewsmaker.com/
Camtasia	video production tool	http://www.techsmith.com/camtasia.asp
ArtRage	painting and drawing software	http://www.artrage.com/
Tuxpaint	drawing program for ages 3–12	www.tuxpaint.org/
Audacity	open-source software for recording and editing sounds.	http://audacity.sourceforge.net/
Garage Band	Apple software for recording and editing audio file.	http://www.apple.com/ilife/garageband/
Snagit	screen capture tool	http://www.techsmith.com/screen-capture.asp
Animoto	video production tool	http://animoto.com/
Picasa	free photo-editing software from Google	https://www.google.com/
Slideshare	upload and share presentations	http://www.slideshare.net/

Source: Light and Polin (2010).