Proceedings of the 2018 Association
for Innovative Technology Integration in Education Conference:

Blended Learning: Integrating Technology into Instruction

Edited by:

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AITIE

Creative minds innovate to transform the world.

They innovate through forward-thinking ideas to create the desired values.

Beyond the politics of educational research for certification lies the politics of educational research for transformation.

Only the network of dedicated and technology literate individuals can constructively integrate technology to support learning.

Through creative thinking, research and praxes we must Domesticate, Innovate and Integrate Technology for

Instruction

Integration of curriculum computing: innovative approach to blended teaching-learning interactions

This conference is dedicated to educators globally, the legends and pioneers who have made contributions into integration of media in the Nigerian educational system and to the members of the Association for Innovative Technology Integration in Education (AITIE) who have the desire to facilitate learning in variety of educational settings through innovative and creative use of technology

Vision
To be the foremost professional association in the integration of technologies for teaching, learning, research and administrative purposes in conventional and distance education settings.

Mission
We seek to be a force for qualitative accessible education, through the promotion of scholarship and best practices in the design, development, use, and innovative management of technologies for effective teaching and learning in a variety of educational settings.

Core Values

The following principles guide our work and define the mission of AITIE:
- **access to quality education:** a commitment to access to quality education for all, irrespective of location, gender, race, religion, disability, etc., as education is human rights and an instrument for poverty alleviation and sustainable human development;
- **excellence:** promotion of quality research, teaching, learning, and life changing scholarship and value-based service, through innovative use of technology
- **innovation and creativity:** encouragement of intellectual inquisitiveness through the promoting of technology for enhanced lifelong learning
- **team work**: encouragement of collaboration among individual and institutional members and promotion of shared values in the integration of information and communication technology in all aspects of education;
- **continuing professional education**: promotion of quality professional education for members and graduates already in workforce;
- **association, institutions and industry collaboration**: encouraging closer social, and economic ties among the Association, other professional associations, educational institutions, and the industry;
- **academic and professional integrity**: commitment to maintaining academic quality and standards, and integrity in all programmes of the association;
- **resources for teaching and learning**: commitment to providing resources for teaching, learning, research, and administration in conventional and distance education settings; and
- **professionalism**: expertise and judgment of educational technology and related media professionals are critical to successful integration of technology in education. AITIE maintains the highest professional standards, and expects the status, compensation, and respect due all professionals.

Presidential Address at the 2018 AITIE Conference

Protocol Measured

I feel highly privileged to be here as the President of our august association, the Association for Innovative Technology Integration in Education (AITIE), to welcome you to the 2nd Workshop and Convention of the Association in the city of Port Harcourt, *the treasure base of the Nigerian nation*.

It is almost a year since we had our successful inaugural workshops and convention in Ilorin, Kwara State. Thereafter, our collective efforts have ensured the modest achievements we have made. This year we are building on our major focus, the development of our members' capacity to integrate technology, so as to facilitate teaching and learning in all educational contexts.

It is apt at this point in our educational development, as a nation, that we create an enabling learner-centred learning environment, where students can learn, unlearn and relearn as envisioned by *Alvin Toffler*. He had affirmed in his famous book: *Powershift: Knowledge, Wealth, and Power at the Edge of the 21st Century, "The illiterate of the 21st Century are not those who cannot read and write but those who cannot learn, unlearn and relearn"*. We need to create a guaranteed 24/7 learning environment– anytime, anywhere in the distributed environment. Our intention to create a roadmap as educators for anytime anywhere learners in Nigeria engenders the theme of this year's convention - *Blended Learning: Integrating Technology into Instruction.* The two-day pre-conference workshop sessions (9th to 10th July of 2018) on *free online tools for instruction/blended learning; designing e-learning courses; and statistical tools for educational research;* which are precursors to this formal opening served as hands-on appetisers for theoretical and empirical reports on blended learning in Nigeria. The theme and the workshops fit perfectly into the contemporary developments in higher education within the Nigerian context. While conventional universities are adopting blended learning to create constructivist and connectivists learner-centred learning contexts, single and dual mode distance learning institutions are required by the National Universities Commission (NUC) to adopt blended pedagogical learning modes.

Blended learning, also known as hybrid learning, is an eclectic teaching and learning model involving face-to-face (f2f) class or tutorial combined with an online or e-learning component. Just introducing technology into the school system cannot assure nor ensure effective and efficient blended learning. Best practices must be adopted in the application of blended learning. With the plethora of online learning objects, we don't need to reinvent the wheel. We must exploit the potentials of online resources to improve the quality of our classroom instruction. The AITIE 2018 workshops and convention provide us with opportunities to address the challenges related to blended learning. These include the development of blended learning pedagogy; teacher educators, teacher-support and their professional development; technological challenges; contextual issues related to culture and innovation, among others. As part of the outcomes of 2018 AITIE workshops and convention, we hope to come up with an edited textbook on blended learning in Nigeria.

It is with great pleasure that I would like to sincerely thank Prof. Ebi Bio Awotua-Efebo, Chairman, Local Organising Committee for the unique leadership exemplified through his physical, moral and financial commitments; Dr. (Mrs.) Esther Fomsi, Local Organising Secretary; and the entire LOC team of AITIE 2018 for their dedicated hard work to put up the fantastic workshops and convention. I can never, ever thank you enough. Finally, I would like to thank members of the National Executive Committee and other members of the Association for their commitments.

Wishing you all a happy and fruitful time in Port Harcourt.

Prof. Mudasiru Olalere Yusuf
National President

Conference Communiqué of the 2nd AITIE Conference, Held at the University of Port Harcourt (12th July, 2018)

Introduction:

The 2nd annual international conference and workshop of the Association for Innovative Technology integration in Education (AITIE) was successfully hosted and held in University of Port Harcourt from 9th 12th July, 2018. The Chief Host of the occasion, Prof N. E. S. Lale (Vice Chancellor, University of Port Harcourt) and the host, Prof T. T. Orunabuka (Dean, Faculty of Education) were at home to receive educationists who attended the workshop and conference from various institutions across Nigeria. The theme of the Annual conference was "Blended Learning: Integrating Technology into Instruction".

Local Organising Committee:

Overview:

The 4-day conference had the presence of academics from about 20 Universities and Colleges of Education in Nigeria. Prof Yusuf M. O. (Director COMSIT Unilorin), presided over the opening ceremony and technical sessions while the former executive secretary of the National Universities Commission (NUC), Prof Peter Okebukola (OFR) delivered a well-articulated keynote address. Three practically oriented workshops were held and participants included Staff and Postgraduate students of Universities and Colleges of Educations that came in from places across Nigeria. The conference addresses every issues that relates with integrating technology into instruction using blended learning approaches and strategies. Subthemes considered during the conference include: Blended Learning Approaches and Strategies; Contemporary issues in Blended learning; Theories/philosophies of Blended Learning; Use of Web-based platforms and Mobile Technologies in Blended Learning; Open Education Resources (OER) in Blended Learning and; Assessment in Blended learning.

Presentations and discussions:

The Local Organising Committee (LOC) Chairman, Prof E. B. Awotua- Efebo gave the welcome address where he expressed gratitude to the Vice Chancellor, University of Lagos for accepting to host the event in the University. Prof Awotua-Efebo also thanked AITIE for granting the university the hosting rights of the 2nd edition of the annual international conference and wished the participants a fruitful deliberation. Prof Awotua-Efebo's welcome address served as the ice breaker to what the participants should expect from the President's speech and the Keynote address.

Immediately after the welcome address was the president's speech by Prof M.O. Yusuf. In his speech, the President mentioned that, until the potentials of online resources are fully exploited to improve the quality

of classroom instruction, effective and efficient blended learning cannot be assured. As such, the 2018 AITIE workshops and conference was held to provide participants with opportunities that would enable them address challenges related to blended learning. Prof M.O. Yusuf summarised his speech by stating that the essence of this training and conference is so that participants can create an enabling learner-centred learning environment through digital literacy where everyone can learn, unlearned and relearn.

The Vice Chancellor of the University, Prof N. E. S. Lale, ably represented by the Deputy Vice-Chancellor(Admin) gave the opening remarks to welcome participants to the 2nd AITIE international conference and workshops and also to declare the event open. Prof. Lale, expressed his gladness to be the Chief host of the event and expressed gratitude to the Keynote speaker, Prof Peter Okebukola OFR, for his presence at the event.

This was immediately followed by the Keynote Address by the former Executive secretary of the National Universities Commission (NUC) and Chairman of Council, Crawford University, Prof Peter Okebukola. In his keynote address, Prof Okebukola took the participants through the practical means of applying blended learning in the Classroom. Worthy of mention in Prof Okebukola's address is the proper definition of the term blended learning to reflect the learning aspect of the name, which was an improvement from the generic definition that limits blended learning to the teaching part alone. The Keynote speaker encouraged the teachers and academicians to take learning to where students/learners like to be which is mostly on social media and internet. Different blended learning approaches were treated in the keynote address but emphasis was laid on a particular model developed by Prof Okebukola and his team in 2014. The model has been empirically tested and has been used to develop an e-learning environment for secondary school students in Lagos State.

The first Lead Paper was presented by Prof (Mrs) C. N. Olele, Professor of Instructional Design and Educational Technology at University of Port Harcourt on 9th July 2018. The title of the paper was

The second Lead Paper titled "Emerging Technologies: Indispensable Tools for Blended Learning and Innovation" was delivered by Dr. Olasunkanmi Maruf Alimi, Director Centre for ICT and Distance Learning, and Senior Lecturer at Al-Hikmah University, Ilorin on 9th July 2018. Dr. Alimi's lecture exposed the participants to emerging technologies like the miniaturation, 5G broadband, Big data technology, Robotics, Artificial Intelligence among others. The lecture explains how the technologies could be integrated into blended learning while not leaving out the attending possible challenges user might face. His lecture concluded that academicians needs to optimally utilise ICT related emerging technologies progressively to improve mode of lecture delivery, learning and education in general. Hence, the Lead paper 2 presenter recommended some best practises for the participants and conference attendees in order to get the best results out of blended learning integration in education.

Integration of curriculum computing: innovative approach to blended teaching-learning interactions

The goodwill message was delivered by

Dr Esther Fomsi delivered the vote of thanks message after which the conference participants were grouped into 3 based on classifications of the article/paper submitted by the attendees to present at the conference. The plenary sessions were held and the following conclusions and recommendations were mined.

Prof. Yusuf M. O.

President

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Integration of curriculum computing: innovative approach to blended teaching-learning interactions

INTEGRATION OF CURRICULUM COMPUTING: INNOVATIVE APPROACH TO BLENDED TEACHING-LEARNING INTERACTIONS

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Abstract

Computing is simply made clear as an approach of taking an input to be processed with the goal of giving out an output at a very fast speed, thus introducing same analytical process into the curriculum goes a very long way in achieving a measurable goal which is the aim of Education in its entirety. Teachers' perspectives enable us to discover what challenges this presents, and also the strategies teachers claim to be using successfully in teaching the subject across all sectors in education. Blended learning is no panacea. It's a scalable strategy that can break the trade-offs inherent in the traditional school design to allow teachers to reach students in ways never before possible. But for it to work, school leaders must not start with blended learning or technology for its own sake, but instead undertake a careful design process to unlock its potential. Blended learning typically includes a mix of online learning, simulation, team training, one-on-one coaching, and even in-person seminars. The value of each piece fits a specific need for the outcome desired at the end of the learning journey. One major means of inculcating blended learning is to employ computing strategies in implementing curriculum theory and practices that is simply Curriculum Computing. It is about using computational thinking to solve problems and make permanent change in behaviour occur in learners. Every decision taken within the school must be to support learning. Blended learning offers several important advantages but it is not the panacea that some think it is. Although valuable lessons may be learned from best practices around the world, there is no one formula for determining the optimal level of Blended Learning integration in the educational system. Significant challenges that policymakers and planners, educators, education administrators, and other stakeholders need to consider include educational policy and planning, infrastructure, language and content, capacity building, and financing. The study proposed in this paper would be carried out where teachers are preparing for the mandatory inclusion of Blended Learning into the curriculum and instruction. Algorithm approach would be used to elicit their curriculum implementation in the perspectives strategies whereby extrinsic and intrinsic motivation would be taken into consideration for both teachers and students. In addition, a variety of pedagogical strategies would be employed. In categorising approaches taken by teaching to support students, contextualisation of tasks and developing computational thinking would be demonstrated. Further investigation could support whether these strategies can alleviate the challenges of teaching and learning of Learning Contents for students and teachers. In particular developing teachers & students' resilience is seen as a benefit while many other strategies could be suggested. The results of this study will be useful for teachers at all level of teaching to ensure evident based learning outcomes if the mindset is embraced in teaching/learning interactions.

Keywords: Blended Learning, Teaching-Learning Interaction, Curriculum, Computing Algorithm.

Introduction

Teaching- learning process is a very interesting activity in the delivery of any curriculum content. It is the continuous process by which permanent change expected in the learner's behavior is inculcated. The entire process briefly mentioned is the simplest description of Education which if implemented accordingly as expected bring about result, this explains the importance of bearing in mind the art of computing steps as an innovative means of motivation for learners and teaching methodology for the teachers to achieve the objectives set for any contents intended to teach. Teaching/learning interactions employed by many remain traditional, teacher-centred and fairly rigid or even authoritarian. Hence the need for an innovative, motivational curriculum computing teaching/learning method.

Curriculum computing is simply using computational thinking to solve problems and make things for a purpose. It generally, may not always, involve writing programs. It is taken to mean showing learners how to use what they have learned in the study of IPO algorithms to **solve** problems and make things for others. So a key outcome from the IPO algorithm is that pupils can make, test and refine a digital artefact for a specific purpose. Curriculum Computing is an Active, standards-based participation methods. Education principles now support and empower both teachers and students through democratic processes which increasingly defines quality in the 21st century. Curriculum Computing is an example of how schools might organize learning activities around these principles. Among other things, Curriculum computing type of learning activity promotes critical thinking, problem solving, teamwork, and community involvement. Such activities can build the attitudes and values in children that contribute to democratic societies.

Learning begins with quality content. Quality content refers to the intended and taught curriculum of schools. National goals for education, and outcome statements that translate those goals into measurable objectives, which provide the starting point for the development and implementation of curriculum (UNICEF, 2000). Learning must be Student-centred, non-discriminatory, standards-based curriculum in structures. Research on educational practices and projections about future needs in society contribute to current understanding of the structure of school curriculum. In general, curriculum should emphasize deep rather than broad coverage of important areas of knowledge, authentic and contextualized problems of study, and problem-solving that stresses skills development as well as knowledge acquisition. Curriculum should also provide for individual differences, closely coordinate and selectively integrate subject matter, and focus on results or standards and targets for student learning (Glatthorn & Jailall, 2000)

Educational quality centres on system inputs, such as infrastructure and pupil-teacher ratios, and on curricular content. In recent years, however, more attention has been paid to educational processes — how teachers and administrators use inputs to frame meaningful learning experiences for students. Their work represents a key factor in ensuring quality school processes. This also requires Professional learning for teachers. The highest quality teachers are those most capable of helping their students learn, have deep mastery of both their subject matter and pedagogy (Darling-Hammond, 1997). The preparation that teachers receive before beginning their work in the classroom, however, varies significantly around the world and even within the least developed countries. Teacher competence and school efficiency is measured by whether a teacher uses traditional or more current methods of instruction, efficient use of school time has a significant impact on student learning. Teachers' presence in the classroom represents the starting point because Learners require teachers engaging them with consistent motivating activities even with the availability of new technology and innovative programs, in other word, learning occurs when teachers engage students in instructional activities, rather than attending to administrative or other non-instructional processes.

Continuous professional development cannot be overemphasized as Professional development can help overcome shortcomings that may have been part of teachers' pre-service education, it will keep teachers abreast of new knowledge and practices in the field. The Input-Process-Output methodology innovation described as curriculum computing is a typical example of such knowledge and practices required. The teacher must adopt the mindset to make the learner imbibe such which will in turn serve as means of motivation for learners in knowledge acquisition. The training for teachers has direct impact on student Continuing support for student-centred learning. Teacher education, both pre-service and in-service, help teachers develop teaching methods and skills that take new understandings of how children learn into account. Just as curriculum should be child-centred and relevant, so should instructional methods. The limited view of teaching as presentation of knowledge no longer fits with current understandings of how and what students learn.

Instruction should help students build on prior knowledge to develop attitudes, beliefs and cognitive skills; as well as expand their knowledge base. Teachers in their teaching practices should make the curriculum learner-centred and relevant to student's lives, this require linking lessons to the daily life of pupils with the view of bringing input for process to achieve outcome at a very fast speed which simply is computing mind-set hence the algorithm

of computing is put in to the curriculum. Greater understanding of student-centred learning can be encouraged through programmes such as the Multiple Ways of Teaching and Learning as it helps improve teachers' skills by integrating brain research and multiple intelligences theory. Curriculum computing is a Teaching method that facilitate active student learning rather than promote passivity and rote memorization that represent a new and difficult paradigm for many teachers, the Curriculum Computing needs to be understood and put into practice if learning outcomes are to improve.

Life skills is a term which UNICEF uses in two main ways, (i) to refer to a broad group of psychosocial and interpersonal skills, and (ii) to refer to the process of teaching and learning about these skills. As such, it is important to discuss life skills in terms of essential content relating to life skill-based education. Teaching and learning about life skills requires interactive, student-centred methods. Since skills are by definition active, competency is unlikely to be developed without active practice.

Teacher feedback mechanism is of great importance. Good teachers are skilled not only in instructional methods, but also in evaluation and assessment practices that allow them to gauge individual student learning and adapt activities according to student needs. This process should include both performance assessment and assessment of factual knowledge. If teachers are very poorly trained in evaluation techniques, the reality will be far from the continuous evaluation procedures even if recommended by official programmes. Indeed, many teachers and educational systems continue to rely almost exclusively on traditional paper-and-pencil tests of factual knowledge that tend to promote rote memorization rather than higher order thinking skills (Colby, 2000).

Teacher beliefs should be that all students can learn. The way time is used is also related to school priorities and expectations. Quality education puts students at the centre of the process; student achievement must be the school's first priority. Since schools exist because of students, this would seem self-evident. Perhaps because of the complexity of educational systems, however, teachers may not always believe in the school's ability to help all students. Low expectations for student achievement permeate educational systems, high standards must be set and believing that students can meet them, teachers and administrators should work against the students dropping out or fail, Schools committed to student learning communicate expectations clearly, give frequent and challenging assignments, monitor performance regularly, and give students the chance to participate in and take responsibility for diverse school activities

Continuing support should be given to student-centred learning. Teacher education, both pre-service and in-service, should help teachers develop teaching methods and skills that take new understandings of how children learn into account. Just as curriculum should be child-centred and relevant, so should instructional methods. The limited view of teaching as presentation of knowledge no longer fits with current understandings of how and what students learn which is the aim of this paper on curriculum computing as innovation means of blended learning integration such that instruction could help students build on prior knowledge to develop attitudes, beliefs and cognitive skills; as well as expand their knowledge base.

V. Conclusion & Summary using Instrument

Instrument (Teaching/Learning Interactions TLI)

Components of Teaching/Learning Interactions

TEACHING/LEARNING INTERACTIONS. (TLI)

(a) Staffing for the Subject: Input on the part of the Government & School

S/N	NAME OF TEACHER	QUALIFICATION	SUBJECT TAUGHT

(b) <u>Brief Comments on the Staffing Position:</u> Input on the part of the Government & School

    (i) <u>Quality and Quantity</u>: Either Adequate or Not,

    (ii) <u>Total Number of Classes involved in the subject</u>:

(c) <u>Allocation of periods per week</u>: Input on the part of the School & Teacher

    (i) <u>Number of periods (specifying number in terms of single /double)</u>:

    (ii) <u>Duration (suitability in terms of placement on the time table)</u>:

<u>Textbook(list) comment should reflect/link with government approved list:</u> Input on the part of the Government, School, Teacher, Parents & Learners

S/N	Author	Year of Production	Title	Edition

<u>RECORDS</u>:   Input on the part of the Teachers

(a) <u>Scheme of work for each term</u>:

(b) <u>Records of work</u>:

(c) <u>Marks' books and other CAS records</u>:

(d) <u>Note of lesson</u>:

<u>TEACHING</u>: Process

    (i)   <u>Class Taught</u>:

    (ii)   <u>Topic taught</u>:

    (iii)   <u>Lesson note</u>:

    (vi)   <u>Teacher's appearance</u>:

    (v)   <u>Class appearance</u>:

    (vi)   <u>Laboratory</u>:-

<u>OBSERVATIONS</u>:

    (a)   <u>Introduction of the lesson</u>: Process

    (b)   <u>Class Control</u>: Process

    (c)   <u>Use of Teaching Aids</u>: Input-Process

(d)   <u>Students' written work</u>: Process-Output

(e)   <u>Evaluation of the lesson</u>: Process-Output

(g)   <u>Assignment given to the Students</u>: Teachers' Input-Learners' Output

(h)   Students' participation & performance: Output

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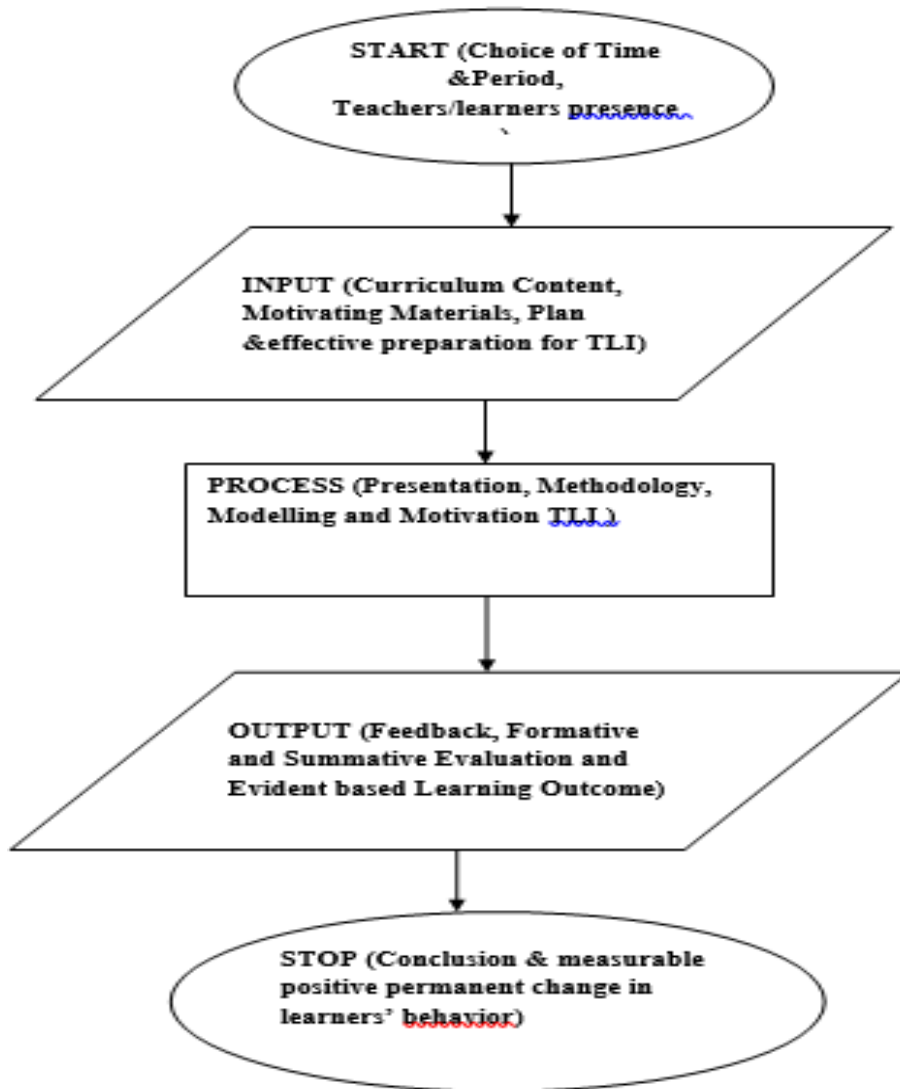
Figure 1: Architecture of Curriculum Algorithm

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UNDERGRADUATES' PERCEPTION AND ATTITUDE TOWARDS THE USE OF MOBILE TECHNOLOGY FOR BLENDED LEARNING IN UNIVERSITY OF ILORIN, NIGERIA

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Abstract

This study examined undergraduates' perception and attitude towards utilization of mobile technologies for blended learning in University of Ilorin, Nigeria. The study was a descriptive design of the survey type. Random Sampling technique was adopted to select 339 undergraduate undergraduates from selected faculties in University of Ilorin. Data generated through a designed structured questionnaire were analyzed through frequency count and percentage. Three research questions were raised and answered using frequency count and percentage, while t-test was used to test the one hypothesis generated. The result revealed that (i) mobile technology facilitates blended learning for undergraduates to easily view course materials which make school work easily accessible and interesting, (ii) undergraduates use mobile devices for gaming, chatting, and socializing, instead of learning, (iii) there is no significant difference in undergraduate's attitude towards the use of mobile technology for blended learning based on gender t(292) = 2.86, p > .05]. The study concludes that mobile technology has the potential to increase undergraduates' learning pace, accessibility and communication in a blended learning environment. Based on the findings, it was recommended that universities should increase the internet bandwidth. Lecturers should be encouraged to engage the undergraduates in a blended learning environment.

Keywords: Attitude, Blended Learning, Mobile Technology, Perception, Undergraduate

Introduction

Information and communication technology (ICT) plays a vital role in learner's achievement at all educational levels and its significant in education cannot be overemphasized. ICT are tools for both students and teachers. ICT has the potential of being used to meet the learning needs of individual students, increase self-efficacy and independent of learning among students and improve students' development. Through ICT, there is cooperative learning that assists students in gaining more knowledge and techniques as they interact with each other. Ogunlade (2015) defines ICT as a driver for change in higher education. ICT is being used effectively in education and learning environments, due to its spread of internet use that has different dimensions globally. Most countries have used the privilege of ICT to transform the structure of education programmes at all levels for disseminating instruction. The use of ICT in schools has widened accessibility to quality education and improved the management of education learning systems. ICT is considered a powerful tool for educational change and reform. ICT is used as productivity tools or enrichment resources to support the traditional teacher-led mode of instruction, optimize undergraduates-centered pedagogical methods, develop broad and generic skills, and provide quicker and easier access to more extensive and current information (Ogundairo, 2015).

Cobcroft, Towers, Smith and Axel (2006) opined that mobile technologies within the education context can allow undergraduates the opportunity to undertake 'user-led education', constructing

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knowledge, collaborating with peers and learning communities within and beyond the classroom or computer centre. Valk, Rashid, and Elder (2010) demonstrated how mobile technology-facilitated learning can give undergraduates in developing countries increased access to educational materials and services, particularly in rural and urban areas. Mobile technologies are new generation educational tools that afford creative use and instant access to a wealth of online resources (Pamela, 2011). They are 'revolutionary' devices that hold great potential for transforming learning. One of the benefits of mobile devices is that they enable learning anywhere, anytime. This allows a shift away from the industrial era model where the classroom is the central place of learning driven by the teacher and limited to instruction within the school day. Use of mobile devices encourages undergraduates' interaction, the teacher is no longer at the centre of the learning process and the instructional time can transcend the school day. The portability of mobile devices provides users with access to a broader and more flexible source of learning materials than what is offered in classroom settings. With over 500,000 apps (mobile applications) available to download from the App Store, undergraduates have access to an abundance of learning materials for use on mobile devices (Shuler, 2012).

Advances in mobile technologies have enabled educators to send instructional messages in flexible ways. With mobile technologies, instructors and undergraduates can communicate through voice and image as well as text. Using mobile devices for educational purposes is becoming a common expectation of learners (Lan & Huang, 2012). Also, mobile technology supports independent learning and development of metacognitive skills in young learners (Sha, Looi et al. 2011). Wong (2012) supported that access to mobile technology allows undergraduates to design their own learning contexts in terms of when, where, how and their learning style thereby becomes increasingly self-directed.

Abdulrahman and Soetan (2018) defined mobile learning as a form of learning using wireless devices that can be used wherever the learner is with unbroken transmission signals. These include mobile devices like smartphones, tablet computers, laptops and persona digital aids (PDAs). It is also defined as the exploitation of ubiquitous hand-held technologies, together with wireless and mobile phone networks, to facilitate, support, enhance and extend the reach of teaching and learning. Nikana (2000) identifies several potential advantages of mobile learning which includes increased understanding of the material/curriculum content. Through different collaborative methods and delivery approaches, undergraduates are provided with an increased understanding and depth of knowledge regarding the material/curriculum content. Undergraduates' motivation may increase through the use of mobile devices because undergraduates could be participating in group discussion and dialogue more often and receive quick and effective feedback, which reinforces learning and increases memory retention. Another view, however is that, increased motivation to learn will be directly associated with the use of the mobile device, rather than the task completed with it (Goodison, 2001).

Online learning has evolved from web-based and distance learning programs, which has come to represent the leading edge in rethinking course design and personalized instruction using digital content and innovative tools for instructional delivery. As social software provides interesting possibilities for building collaborative learning environments, the wireless networks allow flexibility in setting up learning environments where needed (Mikko et al, 2010). Undergraduates incorporate various means like blended learning to study. Lalima and Kiran (2017) defined blended learning as an innovative concept that embraces the advantages of both traditional teaching in the classroom and ICT supported learning including both offline learning and online learning. It has the scope for constructive learning, collaborative learning and computer assisted learning. Blended learning is also referred to as hybrid learning that combines the best features of traditional schooling with the advantages of online learning to deliver personalized, differentiated instruction across a group of learners. Undergraduates in formal blended

Undergraduates' perception and attitude towards the use of mobile technology for blended learning in university of Ilorin, Nigeria

learning educational programs spend part of their time learning online and also have the benefit of face-to-face instruction and supervision to maximize their learning and to best fit their own needs (Allison et al, 2015).

According to Garrison and Kanuka (2004), the simplest model of blended learning "is the thoughtful integration of classroom face-to-face learning experiences with online learning experiences" aiming at taking advantage of a synchronous face-to-face situation and the asynchronous, text-based Internet. Kose (2010) suggested a more advanced way of utilizing the idea of blended learning by connecting the possibilities of face-to-face situation and online environments in several ways, both simultaneously and non-simultaneously. Garfield (2005) expressed that the innovation of technology-based learning continues to challenge educators to develop new teaching and learning methods. Unfortunately, many teachers and undergraduates resist change in teaching and learning with new technology because they do not think of themselves as part of a new learning culture. Clarke, Zimmermann and Svanaes (2013) submitted that undergraduates perceived mobile technology as a tool that facilitates access to personalized learning content with the ability to learn outside traditional classroom settings.

Perception is referred to as how people are aware of, or view a particular thing. Perception is formed by individuals' social experience and interaction within school, family, peer groups and religion. Various factors have been revealed to influence undergraduates' perception about blended learning environments among which includes; individuals' experience, intension and social needs, individuals' ability to grasp the world and anticipate future happenings, ability to act accordingly through an activity of higher mental processes, and so on. The perceived level of integrating mobile technology into blended learning among undergraduates in higher institutions has increased greatly over the years, ranging from the use of social apps to utility apps and likes (Yeboah & Ewur, 2014). Undergraduates understand that mobile technology enables them to create their own understanding of content. However, Mather (2015) noted that lack of structure on use of mobile devices can negatively impact undergraduates' learning. If undergraduates find their mobile devices useful, they tend to integrate in into their task, routines and even learning.

Undergraduates' perception towards a blended learning environment may have an effect on their behavior, which is referred to as attitude. Attitude is defined as an individual behavior or feeling about something, formed in a situation influenced by cognitive process of information. Attitude is divided into three categories namely: cognitive, affective and psychomotor. Bada (2017) defined attitude as an umbrella expression covering such concepts as preferences, feelings, emotions, beliefs, expectations, judgments, appraisals, values, principles, opinions, and intentions. Consequently, adoption or rejection of a specific behavior may be affected by attitude. However, undergraduates' perception and attitude towards a learning environment determines the amount of learning that will take place. It was further expressed that undergraduates' attitudes to the use of mobile technology for learning is positive as it is used to support teaching and learning.

Yet for such initiatives (blended learning) to improve undergraduates' learning and teaching effectiveness, these initiatives must be accepted by undergraduates. Cavus and Ibrahim (2009) expressed that undergraduate's attitude and perception is essential for effective implementation of mobile technology to learning. Maniar, Bennett, Hand, and Allan (2008) posited that small screen size was found to create cognitive disadvantages related to undergraduates' attention and visual perception. However, undergraduates have also reported wanting to have more options to make learning tools more convenient so they can study when and where they want to. Typically, the use of personal devices affords undergraduates' ownership of learning, which may lead to positive language learning experiences (Kukulska-Hulme, 2009).

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Many educational institutions have implemented ubiquitous or required laptop, notebook, or tablet personal computing programs for their undergraduates. Yet, limited evidence exists to validate the acceptance of this implementation among undergraduates. In that regard, the objective of this research is to determine undergraduates' perception and attitude towards the use of mobile technology for blended learning. The research contributes to a better understanding of the introduction of information technology (IT) based initiatives in education with a particular emphasis on mobile technology and blended learning.

Research Questions

The study sought answers to the following research questions:

1. How do undergraduates   perceive the use of mobile technology for blended learning?
2. What is the attitude of undergraduates towards the use of mobile technology for blended learning?
3. Does gender has influence in undergraduates' attitudes towards the use of mobile technology for blended learning?

Research Hypothesis

H_{01}:   There is no significant difference in the undergraduate's attitudes towards the use of mobile technology for blended learning based on gender

Methodology

The study was a descriptive research of the survey   method which describes the current situation. The survey was conducted to collect the data on undergraduates' perception and attitude towards the use of mobile technology for blended learning. A total of eight faculties were randomly selected from University of Ilorin, while 50 respondents were selected from each faculty. 400 questionnaires were administered out of which 339 copies were found usable for the purpose of this research. This was used for the data analysis. The instrument for this study was a researcher designed questionnaire titled: "Undergraduates perception and Attitude towards the use of mobile technology for blended learning in University of Ilorin". The questionnaire was divided into three (3) sections. Section A consisted of demographic information of the respondents while Section B and C sought information on the variables selected from the study. The questionnaire consisted of twelve (12) questions and modified Likert attitudinal scale with reference option of SA = Strongly Agree, A = Agree, SD = Strongly Disagree, D = Disagree. The questionnaire was chosen as the research instrument for this study because it is useful for gathering data in real time from a large sample within a short period.

The data obtained through the questionnaire was subjected to descriptive and inferential statistics. The descriptive analysis (frequency count and percentage) was used to answer the research questions while t-test was used to answer the research hypothesis. Data collected was coded and analyzed using Statistical Package for Social Sciences (SPSS) version 20.0 for windows at 0.05 level of significance.

Undergraduates' perception and attitude towards the use of mobile technology for blended learning in university of Ilorin, Nigeria

Table 1:

Distribution of respondents

Demographics	Frequency	Percentage%
GENDER		
Male	166	49%
Female	173	51%
Total	339	100.0
FACULTY		
Agriculture	43	12.7%
Arts	44	13%
Communication and Information Science	47	13.9%
Education	44	13%
Life Science	44	13%
Management Science	39	11.5%
Physical Science	40	11.8%
Law	38	11.2%
Total	339	100%
AGE		
15-18 years	50	14.7%
19-22 years	170	50.1%
23-26 years	78	23%
27 and above	41	12.1%
Total	339	100%
LEVEL		
100 level	21	6.2%
200 level	160	47.2%
300 level	102	30.1%
400 level	56	16.5%
Total	339	100%

The demographic information of respondents who took part in the study in table 1 revealed that 166 (49%) respondents were male while 174 (51%) respondents were female. This indicates that more female than male respondent took part in the study. Based on demographic faculty factor, 43 (12.7%) respondents were from Agriculture, followed by Arts with 44 (13%) respondents, 47 (13.9%) respondents were from Science, 44 (13%) respondents were from Education, 44 (13%) respondents (13%) were from Life Science, 39 respondents (11.5%) were from Management Science, 40 (11.8%) respondents (11.8%) were from Physical science, while 38 respondents representing (11.2%) where from Law. This shows that the majority of the respondents were from faculty of Communication and Information Science. The age distribution of the respondents revealed that 50 (14.7%) respondents falls within the age range of 15-18 years, 170 (50.1%) respondents were in range of 19 – 22 years, 78 respondents (23%) falls within the age range 23-26, while 41 (12.1%) respondents fall within the age range of 27 and above. This shows that majority of respondents are between the ages 19 – 22years. This is followed by the year of study of respondents which indicates that 21 (6.2%) respondents of those surveyed are in 100 level,

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while 160 representing (47.2%) respondents are in their 200 level of study. Also, 102 (30.1%) respondents are in their 300 level of study, while those in their 400 level year of study account for 56 (16.5%) respondents respectively.

Results

Research Question 1: How do undergraduates perceive the use of mobile technology for blended learning?

T**able 2:**
Undergraduates perception on the use of mobile technology for blended learning

S/No	Items	Strongly Disagree (%)	Disagree (%)	Agree (%)	Strongly Agree (%)
1	The learning activities and assignments of courses taught with mobile technology met my learning expectations	46 (13.6%)	77 (22.7%)	126 (37.2%)	90 (26.5%)
2	I can easily view course materials on my mobile phones which make school work easily accessible and interesting	20 (5.9%)	56 (16.5%)	147 (43.4%)	116 (34.2%)
3	Blended learning through mobile technology gave me more opportunities to reflect on what I had learnt	33 (9.7%)	112 (33%)	74 (21.8%)	120 (35.4%)
4	My university provides the resources necessary for undergraduates to succeed in blended courses	57 (16.8%)	156 (46%)	85 (25.1%)	41 (12.1%)
5	Blended learning helped me to understand the course content better	29 (8.6%)	96 (28.3%)	140 (41.3%)	74 (21.8%)
6	Blended learning through mobile technology is not time consuming, not expensive and not very tasking.	77 (22.7%)	123 (36.3%)	85 (25.1%)	54 (15.9%)
7	The use of mobile technology creates an easy communication within the undergraduates and lecturers.	34 (10%)	100 (29.5%)	39 (11.5%)	166 (49%)

The result from table 2 indicates that respondents agreed that the learning activities and assignments of courses taught with mobile technology met their learning expectations with 216 (63.7%). Also, 263 (77.6%) respondents indicated that they can easily view course materials on their mobile phones which make school work easily accessible and interesting. However, 194 respondents (57.2%) agreed that blended learning through mobile technology gave them more opportunities to reflect on what they had learnt, while 145 respondents (42.7%) disagreed with this statement. 213 respondents (62.8%) indicated that universities do not provide the resources necessary for undergraduates to succeed in blended courses. Also, respondents agreed that blended learning through mobile technology is time consuming, expensive and very tasking with 200 (59%). 205 respondents (60.5%) agreed that the use of mobile technology creates an easy communication within the undergraduates and lecturers. From the responses as interpreted, it was deduced that undergraduates can easily view course materials on their mobile phones which make school work easily accessible and interesting. Also, blended learning through mobile technology helps in retaining knowledge and understanding the course content better. The use of mobile technology creates an easy communication within the undergraduates and lecturers.

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Research Question 2: What is the attitude of undergraduates towards the use of mobile technology for blended learning?

Table 3:

Undergraduates' attitudes towards the use of mobile technology for learning

S/No	Item	Strongly Disagree (%)	Disagree (%)	Agree (%)	Strongly Agree (%)
1	The use of mobile technology motivates undergraduates to perform excellently in their academics	21 (6.2%)	101 (29.8%)	92 (27.1%)	125 (36.9%)
2	Undergraduates are eager to learn more about the topics been taught in class with the use of mobile technology.	50 (14.7%)	36 (10.6%)	233 (68.7%)	20 (5.9%)
3	There is increase in the undergraduate's performance since the integration of blended learning.	53 (15.6%)	120 (35.4%)	112 (33%)	54 (15.9%)
4	Undergraduates put in a great deal of effort to learn to use the social networking application of participating in classroom discussions.	56 (16.5%)	50 (14.7%)	88 (26%)	145 (42.8%)
5	Undergraduates primarily use mobile technology for gaming, chatting, and socializing.	30 (8.8%)	95 (28%)	141 (41.6%)	73 (21.5%)

The result on table 3 on undergraduates' attitudes towards the use of mobile technology for blended learning showed that, 215 respondents (64%) agreed that the use of mobile technology motivates undergraduates to perform excellently in their academics, while 122 representing 36% disagreed with this statement. Also, undergraduates are eager to learn more about the topics been taught in class with the use of mobile technology with 253 (74.6%) respondents supporting this claim. However, 51% of the total respondents disagreed that there is increase in the undergraduates' performance since the integration of blended learning. 233 respondents (68.8%) agreed that undergraduates put in a great deal of effort to learn to use the social networking application of participating in classroom discussions, while 106 respondents (31.2%) disagreed with this statement. Also, 214 (63.1%) respondents agreed that undergraduates primarily use mobile technology for gaming, chatting and socializing, while 125 (36.8%) respondents disagreed with this claim.

It can be deduced from Table 3 that the use of mobile technology motivates undergraduates to perform excellently in their academics, thereby makes them eager to learn more about the topics taught in class using blended learning. Furthermore, undergraduates primary use mobile technology for gaming, chatting and socializing, instead of learning.

Hypothesis Testing

H_{01}:   *There is no significant difference in the undergraduate's attitudes towards the use of mobile technology for blended learning based on gender*

Undergraduates' perception and attitude towards the use of mobile technology for blended learning in university of Ilorin, Nigeria

Table 4:
Undergraduate's attitudes towards the use of mobile technology for blended learning

Variable	N	X	SD	Df	t	Sig	Remarks
Male	98	3.11	0.895	292			
					2.86	0.511	Accepted
Female	102	3.03	0.884				

Table 4, revealed that df =292, t = 2.86, p = 0.511 This means that the hypothesis was accepted. This was as a result of t-value of 2.86, resulting in 0.511 p value greater than 0.05 significant alpha level. By implication, the stated hypothesis established that there is no significant difference in the undergraduate's attitudes towards the use of mobile technology for blended learning based on gender.

Discussions

This study investigated undergraduates' perception and attitudes towards the use of mobile technology for blended learning in University of Ilorin. It examined the perception and attitude of undergraduates towards the use of mobile technology for learning, and the influence of gender on undergraduates' attitudes towards the use of mobile technologies for blended learning.

Findings showed that the overall learning activities and assignments of courses taught with mobile technology met the undergraduates' learning expectation. Also, undergraduates can easily view course materials on their mobile phones which make school work easily accessible and interesting. Furthermore, blended learning through mobile technology helps in retaining knowledge and understanding the course content better. Communication between undergraduates and lecturers is a vital factor in blended learning environment; mobile technology creates an easy communication between undergraduates and lecturers.

The second findings in this study showed that undergraduates can easily view course materials on their mobile phones which make school work easily accessible and interesting. Also, in blended learning environment, mobile technology is not used for the purpose for which it is designed for, but primarily used mobile technology for gaming, chatting and socializing, instead of learning. It is of note that blended learning through mobile technology help in retaining knowledge and understanding the course content better. The third findings indicated that there is no significant difference in the undergraduate's attitudes towards the use of mobile technology for blended learning based on gender.

Conclusion and Recommendation

It was concluded that mobile technology has the potential to increase undergraduates' learning pace, accessibility and communication in a blended learning environment, mobile learning facilitates learning as it enables the undergraduates view course materials easily, access online materials and makes learning interesting. Furthermore, undergraduates that were primarily using mobile devices for gaming, chatting and socializing instead of learning, have a positive attitude towards the use of mobile devices for learning. Finally, gender has no influence on the undergraduates' attitudes towards the use of mobile technology for blended learning. The study therefore recommended that: i) Universities should increase the schools' internet bandwidth in order to foster effective blended learning environment and; ii) Lecturers should be encouraged to engage the undergraduates in a blended learning environment.

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LECTURERS' PERCEPTION OF INTEGRATING BLENDED APPROACH STRATEGIES IN TEACHER EDUCATION CURRICULUM: A CASE FOR SOUTH EAST FACULTIES OF EDUCATION OF NIGERIAN UNIVERSITIES

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Abstract

The teeming population of Nigerian youths seeking admission into the Nigerian Universities has continued to grow despite National Universities Commission's (NUC) regulation on quota to curb overpopulation for effective teaching and learning and for quality assurance. This paper examined lecturer's perception on the integrating blended approach strategies in education courses. Three research questions guided the study. Twenty-five item structured questionnaires on modified Likert point scale was administered on two hundred and fifty (250) teacher educators in the faculties of education in five universities in the south East Geopolitical zone. The data were analysed using simple mean and t test. The results from the findings show that teacher educators support the need to integrate blended approach strategies in teaching education courses. The findings have a far reaching effect on the 21st Century teaching and learning. Suggestions towards effective integration of blended approach strategies in education curriculum were made.

Keywords: Blended Approach, Education Curriculum, Over Population, And Teacher Educator

Introduction

The Nigerian higher education system currently has 767 higher Institutions, 40 Federal, 44 State owned universities, 74 private own universities and about 160 other tertiary institutions including , 85 Colleges of education, 66 Polytechnics, 25 Monotechnics spread across the 36 states of the federation. Every year, about a million students apply to enrol into these universities but barely 10% of them are enrolled. A lot of concern is growing in the teeming population of youths who want to be educated but were unable to gain admission into the universities. In 2012, for instance a total number of 1,503,931 candidates wrote the 2012 UTME. This year, 2017/2018, six years after, the number of candidates grew to 1,840,225 million, and they were competing for only 850,000 admission slots and by implication, 850,000 will be left after the exercise. (Adeselu, 2017) (Vanguard Newspaper) Out of the number admitted by JAMB, many students can still be disqualified by Institution of choice as a result of carrying capacity of the Faculties. Such students reapply to be placed in another faculty or are placed in other faculties by the admissions unit of the institution. Students often welcome the idea of change of course instead of staying idle at home. The faculty of education is among the worst hit with these alternative arrangements

The change in courses though most often accepted grudgingly by the students lead to the increase in the population of students taking courses in education. The growing population of students has an impact on the human resources, facilities and infrastructure. The resultant effect is large class size. Large class size occurs at the foundation level courses (FLC), the General studies courses (GSC) while in the faculty of education, it occurs at all levels from first year to final year. The teacher in a face to face classroom is challenged with teaching a large group of students with a small hall capacity, clashes on the timetable due to accommodation problem and inability to take attendance of students to lectures. Effective teaching, feedback, grading of students' scripts become more of stress

than a professional duty. In some cases lectures are stretched far into the evenings on the same group of students. These have both health and social implications.

Teaching, through blended approach is an alternative strategy that will address some of the problems highlighted earlier. Blended learning according to (Graham, 2005, p. 3) is the combination of instruction from two historically separate models of teaching and learning: traditional Face to Face, (F2F) learning systems and distributed learning systems. It emphasizes the central role of computer-based in Faee-to-Face classroom methods in which students can, in part, control the time, pace and place of their learning. It is a mix of technology and traditional face-to-face instruction. This generally applies to the practice of using both online and in-person learning experiences when teaching students.

In a blended learning course, for example, students might attend a class taught by a teacher in a traditional classroom setting, while also independently completing online components of the course outside of the classroom. In this case, in-class time may be either replaced or supplemented by online learning experiences, and students would learn about the same topics online as they do in class- i.e., the online and the in-person would parallel and complement one another. Online learning may be a minor component part of a classroom-based course, or text chats, and other digitally enabled learning activities may be a student's primary instructional interaction with a teacher. In some cases, students may work independently on online lessons, projects and assignment at home or elsewhere, only periodically meeting with teachers to review their learning progress, discuss their work, ask questions, or receive assistance with difficult concepts. In other cases, students may spend their entire day in a traditional school building. But they will spend more time working online and independently that they do receive instruction from a teacher.

Education courses are the mapped out courses the intern teachers are expected to cover in course of their programme in the faculty of education. These education courses are housed mainly in the different educational department and disciplines. They include Curriculum, psychology, Educational foundations, sociology of education The nomenclature differ from institution to institution, but the basic fact is that the courses seek to offer a rich, challenging, dynamic education that stretches students academically, personally and professionally. A major characteristic of the education courses is that it attracts large classes. It brings a diverse range of students together and provides a cohort of about 500 to 600 students as the case may be. Other estimates of population that make a large class are Buchana & Rogers (1990) 80 students and more, (Enerson, Johnson & Milner, 1999) in the University of Pretoria, version 2 had an estimate of 100, Aborishade, (2012), 150 students and above with one teacher and for an extra-large class with a range of 700 students with up to four teachers. The population outage is peculiar to the Faculty of Education courses, first year core courses and General studies courses. Students offering courses in the listed faculties /level outstretch both staff and infrastructure. this study will however, pay attention large class size in the faculty of Education.

The percentage rise in class size appears to grow annually especially, with the emphasis on access to education. UNESCO (2015) sees education as a public good, a fundamental human right and a basis for guaranteeing the realization of other rights. The Sustainable Development Goal 4 therefore emphasised on the need for equity, inclusiveness in education. the Universal Basic education by implication has exposed all to the values of education the large class are not with their attendant problems, Some of the problems associated with large class include: shortage of accommodation, ineffective teaching and learning and poor performances of students. others as outlined in the University of Pretoria version 2 include: Diminished opportunity for all learners to participate

actively in the learning process; Teachers resorting predominantly to lecture and Limited opportunities to meet individual learner needs for self-activity, inquiry, motivation, discipline, safety and socialization.

The implication, large class as observed by Adeyemi,(2005) show that overcrowded class leads to distraction and indiscipline. The Telegraph of 26/02/2012 echoed Adeyemi's observation in a report "more teachers quit the classroom over indiscipline" the report showed that the teachers in England were retiring before the statutory retirement age as a result of indiscipline arising in the school system. Majanga, Nasongo and Sylivia (2011) were of the view that large class minimizes interaction in the class.

In the area of quality evaluation, assessment and feedback, Osim, Uchendu and Isaac (2012) were of the view that large class size affects the quality of evaluation, assessment and feedback, Adeyemi, agreed with Osim et al by pointing out that the quality of evaluation is the means through which the output in education is measured. Performances of the students in public examinations attest to learning outcomes. a chronology of students performance show thus:. Adeyegbe (2002) found that there was a decline in students' performance in SSC examinations. Onipede (2003) reported that students performed below expectation in Senior Secondary Certificate (SSC) examinations in (Adeyemi, 2011). The percentages of students who passed WAEC, NECO during the years 2007, 2008, 2009, 2010 and 2011 were reported to be 22, 54, 13.76, 22.54, 24.94, and 25.99 percent respectively. (Okorie, 2014). The poor performances are often attributed to teacher variable among others.

A lot of criticisms have been made against the traditional classroom setting. Most of the accusing fingers point towards the teacher. Muir-Herzig(2003)" observed that activity is more of teacher domain, while learners were more of listeners and followers". The situation seems to be worst in a large class size as studies have shown limitations in interaction and collaboration, poor performances and indiscipline. (Osims, et al (2012); Majanga et al (2011) Van- Amreom (2005). Overcoming the challenges of the criticisms made against the traditional classroom setting especially teaching large class calls for an alternative strategy that will put into cognisance the short fall of teaching large class in a F2F classroom.

One of the goals of Teacher education according to the National Policy on Education (NPE, 2004) is to provide teachers with the intellectual and professional background adequate for their assignment and make them adaptable to the changing situations. One of such intellectual abilities to be inculcated in the teacher is the knowledge of ICT. The knowledge of ICT is a basic requirement for teaching and learning in the 21st Century. UNESCO (2002) observed that with the emerging technologies, the teaching profession is evolving from an emphasis on teacher- centred education, lecture- based instruction to student – centred, interactive learning environment. The student –centred interactive learning environment is based on Kolb's and Vygotsky's(1978) theories of constructivism and socialization which allows the learner to experience the environment through problem solving and inquiry learning and socialization processes. An approach that will support Vygotsky's theories of constructivism and socialization is the blended approach

Blended strategy is an online teaching strategy that supports and helps to improve the F2F approach. It involves the integration of classroom face-to-face learning experiences with online learning experiences" (Garrison, 2004,) (Garrison & Kanuka, 2004, 96) It involves teaching beyond the class with the assistance of technology such as Ipad, smart phones, laptops and print materials which (Winters, (2009)) believed is based on an Engestrom's activity theory which supports learning in different context Wali, Nial & Oliver (2009) hence the listed devices can be classified as mobile devices. Blended strategy encourages synchronous and asynchronous learning which involves the use of face to face and the online learning. The strategy supports Vygotsky's social constructivism

and constructionism, geared towards making the learner active, curious and in a position to develop original idea that is lacking in the face to face classroom. The constructivism nature in blended approach allows the use of tools such as live chat, email, threaded discussion news group and the bulletin board and file attachment wikis and blogs. These tools are not strange to the Nigerian university students Bello (2012) observed that 75% percent of Nigerian students are involved in social networking. The social networking has exposed most of the students to the benefits of using the online technology

Means in Muir- Herzig (2003) opined that blended approach can help students including at risk students learn and practice varieties of skills and improves their attitudes to learning. Waston and Reigrluth (2008) was of the view that it is a learner centred education with its accompanying changes in pedagogy, assessment and support system. Zuchic and Feldman (nd) however noted that online is effective in the hands of a competent teacher This paper therefore investigates lecturers' perception on the integration of the blended approach strategy in the teaching of education courses.

Statement of the Problem

Students' enrolment in the tertiary institution has continued to outnumber staff, facilities and infrastructure. It is compounding the already existing problem of teacher centred instruction that have affected the active participation of the learner and the overall performance of the learner. Blended approach strategy, advocates for use of mobile devices in learning, learning beyond physical classroom location. Learning using the face to face and online environment experiences. Students in this case are made remote learners not by virtue of distance but due to lack of facilities and infrastructure This study investigated the extent the use of blended approach strategy in the teaching education courses can resolve accommodation problem and improve the quality of teaching and learning in five selected Universities in the South East Geopolitical zone.

Research Questions

1. To what extent will the use blended approach strategy in teaching education courses help to reduce classroom accommodation problems in the Universities?
2. To what extent will the use of blended approach strategy in teaching education courses promote active participation of learners?
3. To what extent will the use of blended approach strategy in teaching education courses promote constructivism in the learners?
4. To what extent will the use of blended approach strategy in teaching education courses promote leaning in different context?

Methodology

The study is a descriptive survey. It investigated the extent to which the use of blended teaching strategy in teaching education courses can reduce accommodation problems, promote active participation of the learner, enhance constructivism in learning and promote learning in different contexts in the selected faculties of education in the South East of Nigeria. The area of study comprised of all the five faculties of education in the south East Geo political zone. The target population include all the 2810 teacher educators in the faculties of Education in the Nigerian Universities in the South East. Through a purposive sampling technique, a total of 255 of teacher educators teaching in the four education departments were sampled., namely; Curriculum and instruction 67, Educational foundations; 63; Psychology; 65 and Modified four Likert point scale was used for data collection. The questionnaire was divided into three parts. The first part elicited information on the extent blended approach strategy can resolve the accommodation problem, the second part elicited information on the extent blended teaching beyond the classroom can improve active participation i a large class while the third part sought for information on the extent the blended approach strategy can enhance learning in different context and learners' ability to use

constructivism in a large class. The data were analysed using the mean. A mean score of 2.5 and above was accepted while a mean score of 2.5 and below was rejected. The responses of the teacher educators across the universities were compared using a chi square

Findings

Research Question 1: To what extent will blended approach strategy improve accommodation problem?

Table 1:
Mean scores of the respondents on how blended approach strategy can improve accommodation problem

S/No	Item	SA	A	D	SD	Total
1	Blended approach can reduce problem of space	480	204	96	29	809
2	Students can work within and outside the classroom	312	204	120	39	675
3	Online helps to explore other learning environments	340	222	104	34	700
4	Online offers opportunity to think of new ways of teaching outside the classroom teaching outside the classroom	480	162	120	11	773
5	Online beyond the classroom reduces over crowdedness experienced in a F2F classroom over crowdedness in a f2f class	324	204	116	38	682

The result in Table 1 shows the findings to Research question 1. A mean score of 3.1and 3.5 respectively from both students and the lecturers show that by accessing lectures using online technology, learning can take place outside the classroom.

Research Question 2. To what extent will online teaching beyond the classroom improve teaching and learning?

Table 2:
Mean scores of the respondents on how online teaching beyond the classroom can improve teaching and learning

S/No	Item	SA	A	D	SD	TOTAL
1	Lectures can be accessed online.	490	180	80	25	775
2	Lectures can be accessed from anywhere and anytime. Using mobile technologies such as phones, iPad, laptops such as smart phones black berry, iPhone	467	147	80	40	734
3	Logging in on time will help to participate in the lecture	400	135	84	60	679
4	Students can chart or email the lecturer from anywhere	320	195	100	156	771
5	Students can get instant feedback from the lecturer	376	108	200	15	699
6	Students can be as active outside the classroom as they will be when in the classroom as they will be in a f2f class	480	204	96	29	809
7	Students can work in groups outside the classroom	312	204	120	39	675

A grand mean of 2.85 and 2.94 respectively from both students and the lecturers in Table 2 shows that most teacher educators agreed that online teaching beyond the classroom can serve as an alternative strategy of reducing the problem associated with large classes. The results in Table 2. Show that with a grand mean of 3.04 and 3.05 from the lecturers and the students the online teaching beyond the classroom will improve teaching and learning experienced in a large class .

Research question 3: To what extent has ICT facilities helped to improve teachers and student competencies?

Table 3:
Mean score responses on the extent ICT facilities have helped students and teachers' competencies.

S/No	Statements	SA	A	D	SD	T	Mean
1	Government provided computers and laptops for students and lecturers	740	90	28	16	874	3.5
2	The broadband for the school helps internet accessibility	520	186	60	23	789	3.2
3	The school has ICT technical support staff	540	240	66	8	854	3.4
4	Training programmes on ICT are provided	560	192	40	21	813	3.4
5	School has enough power supply for effective ICT usage	572	258	48	7	885	3.6

The result in Table 3 shows that the lecturers had a mean score of 1.7 while the students had a mean score of 1.4.

The result from the findings show that there is great need to use online teaching beyond the classroom as an alternative strategy to reduce the accommodation problem and at the same time improve and increase teaching strategies.

Discussion

The result in Table 1 shows the findings to Research question 1. A mean score of 3.1and 3.5 respectively from both students and the lecturers show that by accessing lectures using online technology, learning can take place outside the classroom. The findings agree with Wali et al (2011) learning can occur in different physical locations with the support of technology. It shows that with different portable devices learning can occur beyond the classroom. The online technology will enable the students engage the lecturer through emails and the lecturer will provide instant feedback to the learner. By this gesture of the students engaging the lecturers and indeed the other students through emails, the students are not only active but is involved in constructivism and constructionism which Amila believes makes the approach a learner centered one. The approach equally shows the possibility of using mental group work rather than physical group work that leads to distractions in f2f classroom the findings agree with Adeyemi(2005) view that large class leads to distraction and indiscipline. The sole or group online learning helps to minimize the lack of space encountered in a normal classroom situation. The mean scores from the respondents show that both lecturers and students feel the impact of the Scorching heat from an overcrowded class.The use of online teaching beyond the classroom enhances the economic and educational values in the sense that money to be used in building more physical buildings should be used to provide and equip ICT centres that will offer the students and lecturers the opportunity to utilise Ict facilities for their academic work.

Research question 2 sought to determine the extent online teaching and learning beyond the classroom will improve lesson delivery. The grand mean of 3.04 and 3.05 from the respondents show that using online teaching can bring an improvement in lesson delivery. A mean of 2.7 and 2.8 from the respondents shows that through online students' attendance to class will be monitored. Attendance to class is compulsory and according to the minimum standard, a student must complete 75% attendance for such student to be eligible for a semester examination. Ability to take attendance of the students in a large class seemed to have defied all strategies because, it wastes time coupled with students uncooperative attitude. The online attendance monitoring participation sheet is such that you need to show an actual participation by showing what you did through assignments, discussions or posting a mail. The online participation sheet encourages self discipline. The online teaching encourages threaded discussion, the mean score of 3.1 from the students is not surprising, Bello(2012) had earlier noted that 75% of Nigerian under graduates are involved in social networking. However, the idea of student must post a mail, which will be responded to by other students, while the student responds to other peoples mails promotes interaction, collaboration, and socialization. Majanga, Nasongo and Sylivia (2011) had earlier observed that lack of interaction in the class affects student's active participation.

There was a disparity in the responses of the students and the lecturers on the view that assignments given through the web reduces one source of information. The students agreed with a mean score of 3.2 the lecturers rejected it with a mean score of 2.4. The rejection on the part of the lecturers may not be unconnected with the hand-outs they prepare for the students. The hand out may not be enough source of information, because instead of the students constructing information from the lecturers' hand out they resort to memorizing the facts. Online information will make the students versatile and they should be able to make comparisons. The respondents agreed that results published online minimize student visits to the lecturers in search of their results. In some cases such visits has led to the exploitation of students. The students on their own have also tempted lecturers with gratifications to amend their results. The online publication of the results will go a long way to reduce stress students go through in search of results. A mean score of 3.1, and 3.3 shows that results stored and retrieved online will minimize the idea of missing scripts or inability to find students' results. Most students have fallen victims of not being able to track their results. Such issues will be resolved using online.

Research question 3 sought to find out the Government's commitment towards ensuring ict competencies for both staff and students. The mean responses from the students and staff show that they disagreed with statements. In the case of provision of computers and laptops to schools. A mean score of 1.7 and 1.4 show that the Government is yet to fulfil her promises on the supply of computers to schools. Lack of power supply is equally lacking. There is no way competencies can be achieved without the source of power supply and the ict equipment. It is not enough making unfulfilled promises to her citizenry. Ict is a sensitive and fast moving innovation, if Nigeria cannot move at the pace of ict, she will be involved in digital divide, more so the intern teacher will not be properly equipped to meet the 21st classroom challenges

The Government should expedite action to ensure adequate power supply because it is the bone of contention as long as ICT is concerned. Provision of the ict tools are very essential if both students and lecturers must be competent in the use of Ict. It is by having these ict materials that both teachers and lecturers must achieve effective lesson delivery. Teaching beyond the classroom is a new phenomenon there is need to try experimenting with it as it will go a long way to solve school and community educational problems.

UTILIZATION OF CLOUD COMPUTING TECHNOLOGY AMONG LEARNERS FOR ACADEMIC PURPOSES IN NIGERIA: A CASE STUDY OF IGNATIUS AJURU UNIVERSITY OF EDUCATION, PORT HARCOURT, RIVERS STATE

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Abstract

The use of Cloud Computing Technology (CCT) as a way to enhance Blended Learning (BL) has placed information and knowledge at the door step of every individual learner. It has bridged the gap between the source of information and the user of the information. Studies have shown that it has made tremendous impact in learning; both in access and quality of learning. It is against this backdrop that the author investigated into the extent of the use of CCT amongst learners in higher institutions in Nigeria for academic purposes using Ignatius Ajuru University of Education, Port Harcourt as a case study. For this investigation a 4-point Likert scale questionnaire instrument titled CCT Availability and Utilization Question (CCTAUQ) was used. Four research question were raised which were validated with the reliability ascertained and a co-efficient of .70 was found. Two hypotheses were formulated and tested at .05 alpha levels. The findings showed that the learners had knowledge of CCT platforms and used them regularly, that CCT tools were used by the males than the females for academic purposes. Some CCT tools, laptops (53.0%), browser phones (56.3%), internet (60.0%), and email (59.0%) were available while flash drives (44.2%), modem (48.4%) and computer (34.9%) were not available, and that the learners commonly used the internet (93%), Google (81.4%), Facebook (84.9%), email (92.1%) and WhatsApp (93.0%). The study recommended that; provision of CCT environment for both lecturers and learners and making them accessible, training/workshops on the use of such devices and platforms for academic purposes, sensitizing the staff and students of such facilities for its usage, training academic staff on the application and integration of CCT in the teaching-learning process as this is key to the learners using them effectively for academic purposes.

Keyword: Blended Learning (BL), E-learning, Cloud Computing Technology (CCT)

Introduction

E-learning comes from the word electronic learning. It is any form of learning where the learner learns through electronic media, whether through synchronous or asynchronous mode. The media serves as the means of getting the learner information and skills other than the physical face-to-face contact with the teacher. It is an emergent ICT that has redefined the 21st century teaching-learning environment, transforming the traditional classroom into a digitalized and virtual learning environment. It has collapsed every boundary of knowledge and information and broken every barrier merging the world into a highly interwired system where information and knowledge travels across poles with the speed of light. Gone are the days when learners carry loads and heaps of text materials that are in most cases obsolete. Today the "cloud" has taken over. Learners now are more active and participatory in learning, taking responsibility for their learning.

Blended learning (BL) is an aspect of e-learning that has made this possible. It combines both the e-learning modes and the convectional face-to-face modes for effective teaching-learning process. Victor-Ishikaku (2015) defined it as a teaching mode which combines the internet and digital media with the conventional classroom teaching-learning process. To Wikipedia (2014), it is an innovative teaching technique that combines different learning resources and techniques to create effective learning environment. Simply, it combines ICT tools and other learning tools for teaching and learning. Cloud Computing Technology (CCT) is one innovative technology that has given great boost to Blended Learning. It has created information and knowledge bank, providing current and

authentic information to the beck and call of users from all over the world in recorded time all, hosted in the "cloud". Using handy devices like smart phones, ipads, palmtops, laptops amongst others with very high capacity memory card that could hold information contained in a school library, learners can now access information and learning resources online or offline, synchronous or asynchronous. The learner toady in the era of CCT is living in an environment of sophisticated and high level technology. Potpott (2012) in Gusen & Ebeleozoji (2015) observed that social networking media is the most popular issue talked about in institution of higher learning the world over. Its usage cuts across all rank and file; age, race, profession, industry and practice. So also its impact is felt in every human activity and its benefits tremendous. As observed by Olele (2014) cloud computing devices are strong instructional tools for teaching and learning that education cannot ignore, though learners use them for communication with peers and entertainment mostly. Supporting this, Bizetto-More (2012) cited in Ebo (2015) stated that in many cases learners spend much more time online in informal learning environment and interaction with peers than they do with their teachers in traditional classroom. It is to this intent that the study wants to investigate the level of the utilization of some of this CCT tools and platforms for academic purposes by Ignatius Ajuru University of Education (IAUE) students.

"Cloud" is a metaphor for the internet (Net). In computer technology palace it stands for a massive storage system for information and data. It represents the warehouse or information bank for knowledge, information and learning resources. Cloud computing therefore is a mass of networked computers working together to process and store information and data, and allows access to individual users from different locations at anytime. It is a storage tank for information and data process which is made available to users at anytime and anywhere. Victor-Ishikaku (2016) defined cloud computing as a mass of internet based activity networked to allow centralized information and data processing, storage and making such information available to users through online devices. Its business is to process information centrally and to provide and send such information to users who are connected to the central information processing system. The individual user borrows a space in the instructional process instead of purchasing such expensive hardware for information processing. According to Inyang-Abia (2014), cloud computing relies on sharing information and learning resources processed centrally instead of individuals having to own such devices or servers to handle the application. Cloud computing technology therefore gives users access to the internet using their personal software devices to get whatever resources they need but does not have control over the resources in the cloud. It creates a platform for sharing information and data by connected users from all over the globe. This is the beauty and potential of Cloud Computing Technology for education enhancement; collapsing the entire globe into a virtual classroom where a learner can have access to any information and learning resources from all over the globe, can connect to any individual from wherever at anytime from all over the globe, share ideas, collaborate by sharing learning resources amongst others.

Studies has shown that Cloud Computing Technology has a lot of potential in enhancing learning, such potentials as increased peer interaction, teacher-learner collaboration, learner specific pacing, increased learner engagement in learning activities (Ebo, 2012 & Bart, 2014), flexibility in learning due to its potential to do both synchronous and asynchronous activities, enhanced academic achievement due to supportive associational life, facilitating emotional support, builds team spirit, helps maintain relationships, provides access to up-to-date, cheap and affordable cost of learning resources and services, enhanced development of skills, reduced tension in learning, access to more and enhanced learning, provides concrete base for constructive and conceptual thinking and learning (Ike, Adiala and Ohaka 2015; Inyang-Abia 2015; Wikipedia free Encyclopedia, 2014 and Ebo, 2012).

The Cloud Computing Technology has defined the world and activities of the learner. It is therefore logical to ask if this technology has also defined their academic activities and learning pattern, and whether it has made any significant impact in their learning activities and achievements. Cloud computing devices and facilities such as smartphones, tablets, ipads, palmtops, android phones, laptops, mobile phones, flash drives, internet, and modem amongst others are owned by individuals and even more popular with learners in our institutions of higher learning. Knowing the potentials of these devices in accessing information and learning resources in enhancing learning, it is very logical that one should ask how effective does the learners utilize these devices for academic purpose, hence the need for this study.

Consequent upon the immerse potential of Cloud Computing Technology, universities have upgraded their libraries to digital libraries, ICT centres are established, computers and its accessories are supplied to schools at all levels by both government, corporate and private bodies, regular workshops are organized for both staff and learners at various levels. Several e-learning strategies have been introduced to complement the traditional teaching-learning classroom interaction. The question then is amidst these efforts, how accessible are these tools to the learners and to what extent do the learners use them for academic purposes?

Statement of Problem

Cloud Computing Technology is the paradigm in the teaching-learning process that has made a lot of impact in acquisition of functional knowledge and skills. The teacher they say is the fulcrum on which the education system hinges. It is also said that no education system can rise above the level of its teachers. And so, it is necessary that the teacher who will manage the 21st century digital classroom should be prepared for that role, hence the need to investigate the level of the utilization of this technology amongst trainee teachers in Ignatius Ajuru University of Education. Cloud computing is part of our every day life and like Potpott (2013) in Gusen & Ebeleozoji (2015) observed, it is very popular amongst student in higher institutions. The question then arises, how often do they use it for learning purposes? In Ignatius Ajuru University of Education there are e-library facilities, ICT centres and private owned cyber cafes both within and outside the school environment at the learners disposal. Many of the students also have devices for online access to information. How has these resources enhanced their access to learning through Cloud Computing Technology? The study wants to ascertain the level of accessibility and utilization of these technologies amongst trainee-teachers for academic purposes in Ignatius Ajuru University of Education.

Purpose of the Study

The aim of this study is to ascertain the availability and level of utilization of cloud computing technology amongst trainee-teachers in Ignatius Ajuru University of Education for academic purposes. Specifically, the study:

1. find out the level of the availability of Cloud Computing Technology tools in Ignatius Ajuru University of Education.
2. identified the Cloud Computing Technology platform commonly used by Ignatius Ajuru University of Education students
3. ascertained the level to which the Cloud Computing Technology platform are used for academic purposes by Ignatius Ajuru University of Education.

Research Question

1. What Cloud Computing Technology tools are available to Ignatius Ajuru University of Education students?
2. What Cloud Computing Technology platforms are commonly used by Ignatius Ajuru University of Education students?
3. What proportion of male and female students of Ignatius Ajuru University of Education use CCT for academic purposes.

Hypotheses

Two hypotheses were formulated for this study. They were tested at .05 level of significance.

Ho_1: There are is no significant difference in the mean usage score between the male and female students in their utilization of cloud computing technology for academic purposes.

Ho_2: There is no significant difference in the mean usage score between the Ignatius Ajuru University of Education students that use cloud computing technology for academic purposes and those that do not.

Methodology

The descriptive survey design was adopted. The population consisted of all the students in the Ignatius Ajuru University of Education undergoing training in the B.Ed regular programme. The school has 6 faculties. From the 6 faculties, one faculty was picked through random sampling technique. This became the sample group. From this sample group the year three (3) students were purposefully chosen, the reason been that at that level they have a better knowledge of the school environment and its faculties, and should know what cloud computing platforms are. They were 342 in number and so this formed the sample for this study. For data collection a set of researcher made questionnaire titled Ignatius Ajuru University of Education students CCT utilization questionnaire was used (CCTAUQ). It was made up of 2 sections; A and B with 37 question items. Section A dealt on personal data of the respondent and B on the issues under investigation The items on the questionnaire were arranged in clusters with each cluster addressing a particular research question.

The questionnaire was given to three (3) experts in the field; two from measurement and evaluation and one from educational technology departments respectively. Their comments and observations were used to modify the instrument before administering it to the respondent. This step was taken to ensure the instrument measured the expected items under investigation. For the purpose of reliability, the questionnaire was administered to ten (10) students who were not part of the sample group twice at the interval of 2 weeks. The score from both questionnaires were collated and computed using the Pearson product moment correlation coefficient. The reliability coefficient index was .67. This showed high level of reliability. The questionnaire was then used for the study. It was administered to the sample individually using representatives of the sample group and was retrieved at the spot. About 298 were retrieved which showed about 82% return. After sorting the questionnaires; 215 were valid while 83 were invalid. The 215 valid questionnaires were used for the study.

The data was analyzed using descriptive statistics; percentages. The score of 50% and above was accepted as available   or used while below 50% was considered not available or not used. The hypotheses were tested using the t-test of significance at an alpha level of .05.

Presentation of Results

Research Question 1: What cloud computing technology tools are available to Ignatius Ajuru University of Education students?

Table 1:
Percentage of student's responses on the availability of cloud computing technology tools

S. No	CCT Tools	Available (%)		Not Available(%)		Decision
1	Computer	75	34.9	140	65.1	Not available
2	Laptops	114	53.0	101	47.0	Available
3	Modem	104	48.4	111	51.6	Not available
4	Browser phones	121	56.3	94	43.7	Available
5	Email	127	59.0	88	40.9	Available
6	Internet	129	60.0	86	40.0	Available
7	Flash drives	95	44.2	120	55.8	Not available

Decision Rule: Percentage of 50 and above is adjudged available while less than 50 are adjudged not available.

On the cloud computing technology tools available to the students, Table 1 indicated that laptops (53.0%), browser phones (56.3%), e-mail (59.0%) and internet (60.0%) were available while flash drives (55.8%), modem and computers were not available.

Research Question 2: What cloud computing technology platforms are commonly used by Ignatius Ajuru University of Education students?

Table 2:
Percentage of students responses on the type of cloud computing technology platforms commonly used

S/N	Item	Commonly used	% use	Not used	% not used	Decision
1	Online forum	65	30.2	150	69.8	Not used
2	Blog	75	34.9	`140	65.1	Not used
3	Youtube	83	38.6	132	61.4	Not used
4	Internet	200	93.0	15	7.0	Used
5	News group	6	2.8	209	97.2	Not used
6	Google	175	81.4	40	18.6	Used
7	Facebook	181	84.9	34	15.8	Used
8	Twitter	71	33.0	144	67.0	Not used
9	E-mail	198	92.1	17	7.9	Used
10	Linkedin	73	34.0	142	66.0	Not used
11	Skype	75	34.9	140	65.1	Not used
12	Whatsapp	200	93.0	15	7.0	Not used
13	Chat	173	80.5	42	19.5	Used
14	Instagram	106	49.3	109	50.7	Not used
15	Firefox	100	46.5	115	53.5	Not used

Decision Rule: Percentage of 50 and above is commonly used while below 50 is not used.

From Table 2 the data show that cloud computing technology platform commonly used by students are internet (93.0%), google (81.4%), facebook (84.9%), email (92.1%), Whatsapp (93.0%), and chat (80.5%). Others not

commonly used are online forum (30.2%), blog (34.9%), youtube (38.6%), news group (2.8%), twitter (33.0%), Linkedin (34.9%), skype (34.9%), instagram (49.3%) and firefox (46.5%).

Research Question 3: What percent of Ignatius Ajuru University of Education students uses cloud computing technology platform for academic purposes.

Table 3:
Percent of student's responses on the use of cloud computing platforms for academic purposes

S/No	Item	Males	%	Females	%
1	Online forum	118	54.9	97	45.1
2	Blog	80	37.2	135	62.8
3	Youtube	131	60.9	84	39.1
4	Internet	102	47.4	113	52.6
5	News group	145	67.4	70	32.6
6	Google	115	53.5	100	46.5
7	Facebook	68	31.6	147	68.4
8	Twitter	153	71.1	62	28.8
9	E-mail	108	50.2	107	49.8
10	Linkedin	122	56.7	93	43.2
11	Skype	91	42.3	124	57.7
12	Whatsapp	79	36.7	136	63.2
13	Chat	85	39.5	130	60.5
14	Instagram	98	45.6	117	54.4
15	Firefox	115	53.5	100	46.5

Decision Rule: Percent of 50 and above is taken as used while below 50 is not used.

The data on Table 3 reveal that more males with 54.9% use online forum while females that use it is 45.1%, blog has 62.8% female while the males are 37.2%, for youtube males had 60.9% while females had 39.1%, for internet 47.4% males used it while 32.6% females did. For news group and google 67.4% and 53.5% males respectively used it more than the female with the percent of 32.6 and 46.5. Facebook and twitter had for males 31.6% and 71.1% respectively while that of the females were 68.4 and 28.8. In the use of email and linkedin males use was 50.2% and 56.7% respectively while for females is 49.8 and 43.2 respectively. For items 11 and 12, the percent use of males are 42.3 and 36.7 while that of the females are 57.7 and 63.2, while for items 13,14 and 15 males scored 39.5, 45.6 and 53.5 while the females scored 60.5, 54.4 and 46.5 respectively.

Ho$_1$: There is no significant difference in the mean score usage between the male and female students in the use of CCT for academic purposes.

Table 4:
t-test analysis showing gender difference in the usage of CCT

Gender	N	Mean	Std. Dev	df	t-cal	Sig	Decision
Male	102	78.24	14.12				
Female	113	70.63	18.75	213	3.33	0.00	S

Table 4 shows that the calculated t-value is 3.33 while its corresponding table value (t-critical) is 1.96 at .05 alpha level. The calculated value is greater than the critical value. There is a significant difference between the male and female students in the usage of CCT for academic purposes. This implies that gender has a significant effect on the usage of CCT for academic purposes. Therefore, hypothesis 1 is rejected.

Ho$_2$: There is no significant difference in the mean score usage between the IAUE students that use CCT for academic purpose and those that do not.

Table 5:
t-test analysis showing the usage of CCT

Variable	N	Mean	Std. Dev	df	t-cal	Sig	Decision
Those that use	102	78.24	14.12				
Those that do not use	113	70.63	18.75	213	3.33	0.00	S

Table 5 shows that the calculated t-value is -1.97 while its corresponding table value (t-critical) is 1.96 at .05 alpha level. The calculated value is lesser than critical value. There is no significant difference between the IAUE students that use CCT for academic purpose and those that do not. Therefore, hypothesis 2 is upheld.

Summary of Findings

From the data collected, the study showed that;

1. Basic cloud computing technology tools were available to the students such as laptops, browser phones, email facilities, internet and flash drives.
2. The students had good knowledge of existing cloud computing technology platforms and some of the students use them frequently.
3. That the males used the cloud computing technology platforms for academic purposes more than the female.

Discussion of Results

This study investigated into the variable associated with the level of use of cloud computing tools and platforms amongst trainee teacher in Ignatius Ajuru University of Education for academic purposes. The results as shown on the Tables are as follows:

Table 1: The basic cloud computing technology tools such as laptops, modem, browser phones, email facilities, internet and flash drives were available to the students. This probably will be due to the fact that the importance of cloud computing technology tools today is very obvious to every individual in the society as its impact is felt in very sphere of life. The school authorities and the individual learners are therefore making every effort to provide and utilize such facilities to tap its enormous potentials which have been seen to be key in the education system for acquiring knowledge, information and skills (Riman 2013), increased peer interaction and teacher-learning collaboration (Inyang-Abia (2015), increased learner engagement (Ebo (2012), and enhanced flexibility in learning, learning at your convenience and at any place (Wikipedia 2012). The result showing other cloud computing technology tools available and not computer implies that it is most likely that the students provide the tools for themselves. This could mean that the school did not allow the students access to the computers or the internet connectivity were not provided and so depended only on the ones they could provide for themselves. This is in line

with the finding of Nuhu (2013), that though computers were available, the students did not have access to them rather they had access to browser phones, laptops, flash drives, email, internet etc which they could provide for themselves (Ebizie and Ezike 2015) support this finding.

Table 2: The result revealed that the students have knowledge of cloud computing technology platforms and also use them. This confirms the fact that they are digital natives who cloud computing technology is part of their everyday life as seen by Inyang-Abia (2015) and Ebo (2015). It showed that the students played with all the cloud computing technology platforms investigated but in various degrees. Some were very popular with the students such as internet, google, facebook, email, whatsapp and chatting while some were minimally used. The popular ones commonly used are mainly for communication with friends and acquaintances. This could account for its popularity amongst the students as this is in line with the findings of Olele (2014) and Ebo (2015) that students spend more time online for chatting and communication with friends more than they spend in classroom interaction. Those not commonly used were more than those used (9 out of 15 items). This is worrisome as it shows that students use cloud computing technology platforms mainly for other things other than academic purposes.

Table 3: The result revealed also that both the male and female students use different cloud computing technology platform at varying degrees. Out of the 15 platforms listed males used 8 more for academic purposes while the females use 7 more. The males used more of those that are for sourcing information such as online forum, newsgroup, google, email, linkedin and firefox while the females used more of the social platform. This could imply that the males are more involved in academic work using cloud computing technology platforms more than their female counterparts. This could call for further investigation to find out if this has any effect on their academic achievements.

The implication of the findings of this study is that students though use cloud computing technology platforms, their use for academic purposes is minimal. And so, the potentials of cloud computing technology for education purposes are not being tapped to a great extent. This could again call for an investigation to ascertain if the students actually know the potentials of cloud computing technology for enhanced learning and better academic achievement.

Conclusion

Cloud computing technology has come to stay and playing very prominent roles in the scheme of things in every facet of life. It is important that stakeholders in education know this and use it to the advantage of the education system especially to train our trainee-teachers.

Trainee-teachers using the cloud computing technology for only chatting and communication with friends and acquaintances are underscoring its potentials for helping them become effective teachers of tomorrow who can man the digital teaching-learning environment of the present age. Application of technology in the teaching-learning process is fundamental in the technology driven classroom of today.

Recommendations

The following recommendations are therefore made:

1. The Ignatius Ajuru University Education authorities should sensitize and encourage students to use cloud computing technology by providing and giving the learners access to such facilities and making the facilities functional.
2. Lecturers of the institution should use cloud computing technology platform for teaching-learning activities to engage the students meaningfully for academic purposes.
3. Federal and state government and NGO should collaborate in the provision of cloud computing technology tools for schools, not just the computer but the internet connectivity for effective cloud computing.

4. The university authorities should organize re-fresher courses/ seminar and hands on workshops for students on the effective use of cloud computing technology for academic activities.
5. Workshops also should be organized for the lecturers on the effective integration of CCT platforms for teaching-learning activities.

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PERCEPTION OF STUDENTS ON THE USE OF EDMODO FOR MOBILE CLASSROOM

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Abstract

The study investigated perception of students on the use of Edmodo for mobile classroom. The study was conducted at University of Port Harcourt. Two research objectives and two research questions were used for the study. The population of the study comprised all fourth year students in Department of Educational Foundation, Faculty of Education, University of Port Harcourt. A sample of 140 students was randomly selected for the study. Simple random sampling techniques were used for this study and the instrument used to collect data was a structured questionnaire entitled Perception of Students on the use of Edmodo for Mobile Classroom (PSEMC) with 15 items. Mean scores and Standard Deviation were the statistical tools used in the study. The instrument was given to experts in the field of Educational Technology to ensure its validity. Test retest was applied to ensure reliability of the instrument and a reliability of 0.63 was obtained. The study found that students perceived perception level of Edmodo is high and it is because Edmodo is a social learning platform for teachers and students and can improve their achievement and their relationship with content studied. It was also found that students did not face any barrier to Edmodo usage. Based on these findings, recommendation was made: Edmodo platform should be incorporated into University Curriculum since mobile classroom can improve student's achievement.

Keywords: Edmodo, Mobile classroom.

Introduction

Mobile learning, also known as m-learning is an educational system. Mobile learning supports, with the help of mobile devices, a continuous access. Mobile learning can be many things to different groups of people. Superficially, it appears from the outside to be learning via mobile devices such as Smartphones, MP3 players, laptops and tablets. Early definitions of m-learning which focused predominantly on the attributes of mobile technology have given way to more sophisticated conceptualisations suggesting that mobility is the central issue (Winters, 2006). This denotes not just physical mobility but the opportunity to overcome physical constraints by having access to people and digital learning resources, regardless of place and time (Kukulska-Hulme, 2010).

But mobile learning is more than just using a mobile device to access content and communicate with others-it is about the mobility of the learning (Mobile learning, 2017). M-learning has shown increasing penetration at the professional level as well. As revealed by Pulchino (2006) in research published for the E-learning guild, collaboration of several different business organizations is underway. Pulchino sent questionnaire to a group of companied now using mobile computing to educate their workforce and to companies that were considering the option to upgrade from traditional computer assisted practices to mobile learning. He found that mobile devices were being used primarily for audio and text content and that wireless laptops were still the devices of choice. However, the iPod and cell phone were popular as well.

Corlett, Sharples, Chan and Bull (2005) report on a small class of students at the University of Birmingham who were given wireless PDA's for a semester to enable them take part in an experiment on the possibilities and limitations of M-learning in a college atmosphere. Students were familiarized with the capabilities and limitations of the hardware and then proceeded to use them for class work. The problem students reported to researchers were mostly technical in nature, for example having problems with limited memory of the handheld device or the battery life being too short. There were also some issues with the software used for the trial. The hardware limitations of

the devices used and software issues were enough for the students to offer somewhat lower rating to M-learning approaches than in some other studies.

Nevertheless, Corlett et al (2005) saw the data as supporting information that can help improve upon the hardware and technology as these devices become increasingly ubiquitous in educational settings. The importance of M-learning in some parts of the global knowledge enterprise is obviously growing (Douglas, Matt and Michael, 2008). And a quick search on LexisNexis (2007) reveals more than one hundred related articles ranging from news on recent M-learning conference.

Savill (2010): Tutors who have used M-learning programs and techniques have made the following value statements in favour of M-Learning.

- ➢ It is important to bring new technology into the classroom
- ➢ Devices used are more lightweight than books and PCs
- ➢ Mobile learning can be used to diversify the types of learning activities students partake in (or blended learning approach)
- ➢ Mobile learning supports the learning process rather than being integral to it
- ➢ Mobile learning can be a useful add-on tool for students with special needs. However, for SMS and MMS this might be dependent on the students' disabilities or difficulties involved.
- ➢ Mobile learning can be used as hook to re-engage disaffected youth.

Elias (2011) asserted that benefits of M-Learning include:

1. Relatively inexpensive opportunities, as the cost of mobile devices are significantly less than PCs and laptops
2. Multimedia content delivery and creation options
3. Continuous and situated learning support
4. Decrease in training cost
5. Potentially a more rewarding learning experience
6. Improving levels of literacy, numeracy and participation in education amongst young adults
7. Using the communication features of a mobile phone as part of a larger learning activity e.g., sending media or texts into a central portfolio, or exporting audio files from a learning platform to your phone.

Edmodo is a free and secure educational learning network used to provide a simple way for teachers to create and manage an online classroom community as well as enables students to connect and work anywhere and anytime. Edmodo utilizes quiz builder or poll features to assess students learning during or after a unit of study. It helps students understand key historical and literacy events by re-enacting them through role playing activities in Edmodo. Edmodo places students in small groups and have them post their work to their groups for peer review and feedback. It enables students to tap into individualisation and build self-esteem by sharing their writing projects with each other in Edmodo. It also enforces online etiquette guidelines for students when using Edmodo to help them build digital citizenship skills. Encourages students to practice their language skills, as well as spelling grammar, through conversations in Edmodo. It organizes a book group in Edmodo to encourage students to read and discuss books with each other. It gives students the opportunity to learn about their world cultures by connecting their classroom with classrooms around the globe via an Edmodo group.

Teachers can use Edmodo to communicate with their students when they are out of the classroom, or provide updates to students who are absent from class. Edmodo promotes discussion and brings more interaction to classroom by engaging students. Integrating the Edmodo mobile application into classroom curriculum can help make learning interactive anytime, anywhere (Edmodo, 2016). With Edmodo, teachers can truly bring the classroom online. With the ability to give assignments, quizzes and polls to students, Edmodo users can manage their classes and consolidate all of their activities in one place. Users also have limited options in terms of sharing digital content. Teachers can embed instructional videos, create learning groups for students, and manage calendar events. Communities allow teachers to browse subjects in order to find and share information within a broad stream of content and conversations related to that topic. The platform offers numerous organizational features for teachers, even offering an option for users to print rosters for substitutes. Badges are another fun feature, allowing educators to monitor the progress of student groups and issue awards for their achievement. Enterprising educators can even use Edmodo to connect with other classrooms around the globe (Jason, 2013).

Statement of the Problem

Nowadays, mobile devices integrated into classroom since majority of studies use mobile devices such as Smartphones, tablets, PCs, iPods and e-books. It is still difficult to get students attention in classroom. Students find it very difficult to copy their notes or return their assignments because of the many distractions around them. Therefore, this study tends to investigate perception of students towards the use of Edmodo for mobile classroom.

Purpose of the Study

1. Identify perception of students towards Edmodo for mobile classroom
2. Identify the barriers facing the students in Edmodo for mobile classroom

Research Questions

1. What are perception levels of students towards Edmodo for mobile classroom?
2. What are the barriers facing students' usage of Edmodo for mobile classroom?

Methodology

This study is a descriptive survey designed to investigate the perception of students on the use of Edmodo for a mobile classroom. The population of the study comprised all fourth year students in Department of Educational Foundation (Faculty of Education) offering computer in education course in University of Port Harcourt. A Sample of 140 students was used for the study. Simple random sampling techniques were used for the study. The instrument used to collect data from respondents was a structured questionnaire entitled Perception of students on the use of Edmodo for mobile classroom (PSEMC) with 15 items. To ensure validity, the instrument designed by the researchers was given to experts in the field of Educational Technology. This was done to help the researcher assess the quality of each item in the content of clarity, ambiguity and generality of the items. Their various comments and assessment gave the researcher the conviction that the instrument is appropriate and valid for the research.

To determine the reliability of the instrument, test- retest was applied; 20 copies of the instrument were administered to some students at two different occasions within three weeks. Their responses to the questionnaire items in the two separate responses were correlated to obtain the reliability coefficient of 0.63. The responses from the questionnaire were weighted on the point four Likert type scale of Strongly Agreed, Agreed, Strongly Disagreed and Disagreed. Data obtained were analysed using Mean and Standard Deviation.

Results and Discussion

Research Question 1: What are perception levels of students towards Edmodo for mobile classroom in University of Port Harcourt?

Table 1:

Perception levels of students towards Edmodo for mobile classroom

S/N	Items	Mean	SD
1.	Edmodo can be used for mobile classroom to increase the motivation to learn	3.14	0.35
2.	Edmodo helps in getting immediate feedback	3.22	0.42
3.	My achievement of the course increased after the use of Edmodo for mobile classroom	3.45	0.49
4.	Edmodo helps in evaluating a course continuously	3.46	0.50
5.	Edmodo helps in developing critical thinking	3.46	0.50
6.	It can be used to enhance traditional learning	3.42	0.49
7.	It helps develop self- learning skills among students	3.52	0.50
8.	Edmodo helps to learn at the right time	3.45	0.49
9.	Learning using Edmodo helps stronger social relationship between students	3.61	0.48
10.	Edmodo fosters the collective cooperation among students	3.45	0.49
	Grand Mean	**3.41**	**0.47**

Table 1 revealed that students accepted all the items as their perception levels on the use of Edmodo for mobile classroom. This is because the entire item mean was above the criterion mean of 2.50.

Research Question 2: What are the barriers facing the students towards usage of Edmodo for mobile classroom?

Table 2:

Barriers facing the students towards usage of Edmodo for mobile classroom

S/N	Items	Mean	SD
1.	It is difficult to use Edmodo as mobile learning application	1.20	0.40
2.	I feel bored when I read my course by Edmodo	1.28	0.45
3.	I do not trust the authenticity of the information that I get through mobile phone and Edmodo	1.19	0.39
4.	Edmodo as a mobile learning application leads to social isolation for students	1.17	0.37
5.	It is difficult to organize a discussion or educational dialogue	1.25	0.43
	Grand Mean	**1.21**	**0.40**

The table revealed that students showed positive usage towards Edmodo for mobile classroom since they are not facing any barrier. This is because they seem to be comfortable using Edmodo for mobile classroom.

Discussion of Findings

The study found that students perceived level of Edmodo is high. This is because Edmodo is a social learning platform for teachers, students and parents. It can be incorporated into classrooms through a variety of applications currently used include posting assignments, where they could be sorted for example by either who did not turn in their assignment or graded and not graded. Edmodo allows the students to upload assignment for the

teachers to view and grade students who are normally shy in the classroom, can take advantage of Edmodo and use it to speak privately with the teacher. Parents can also do an account which will allow them to see their children's assignment and grades. Teachers can also send alerts to parents about school events, missed assignment and other important notices through Edmodo. Additional research needs to be conducted to determine how well Edmodo can be used by teachers and students to improve their classroom online.

The result of the present study is in agreement with those of Khaleel (2015) who found that there is effect of Edmodo on their perception on increased contribution of interaction and communication between them and their teachers. Kandappan, Jaykumar and Leena (2014) also found that students prefer to use Edmodo for submission of assignment and course content.

The study also found that students do not face any barrier towards usage of Edmodo for mobile classroom. This is because they do not feel bored using Edmodo, Edmodo, can be trusted when they get information through their phones. It is fun solving exercises and activities using application of Edmodo for mobile learning. It also does not lead to social isolation for students. Additional research needs to be conducted to find out how students face barriers towards usage of Edmodo for mobile classroom. The result of the present study is in agreement with those of Saleem (2011) who found that there was no barrier facing the students in Edmodo and M-learning since the students are used to their phones and the platform. Addison (2011) also found that there was no barrier facing the students in Edmodo and M-learning.

Conclusion and Recommendation

Edmodo is the leading social learning platform for schools. It does not require private information from students. Students join Edmodo at the invitation of their teachers using a unique code the teacher generates within their Edmodo account. Teachers maintain full control of their Edmodo group and can delete posts before they go live and even set individual students or groups of students to read- only access. Edmodo has the feature built with students' safety in mind. Edmodo differs from other social networks, while uniquely fitting the needs of the education environment. However, using Edmodo for mobile classroom can really improve students' achievement. Based on the conclusion, the study recommends that Edmodo platform should be incorporated into University curriculum since mobile classroom can improve students' achievement.

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EFFECTS OF MOBILE TECHNOLOGY ON STUDENTS' LEARNING OUTCOMES IN MATHEMATICS

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Abstract
Conventional teaching method is often used in our classrooms but always end up in poor achievement. Mobile technologies have great potential for facilitating more innovative learning approach. This approach in educational methods will likely not only help subject content learning, but may also facilitate the development of communication, problem-solving, creativity and other high-level skills among students. Despite the proposed advantages of mobile technology in teaching and learning, researchers have found mixed results regarding the effects of the usage of mobile devices for academic purpose This study considered the effect of mobile technology on students' learning outcomes in mathematics. A pretest posttest control *quasi*-experimental design was adopted. Three federal government colleges in Lagos were purposively selected following the pattern of their gender; boys only, girls only and one coeducational. Five SSI students were purposively selected from each of the single sex schools and ten (five boys and five girls) were randomly selected from the mixed school. The single schools were assigned to the experimental group while the coeducational school was assigned to the control group. Two validated instruments Mathematics Achievement Test on Trigonometry (MATT, r=.75) and Students' Attitudes Questionnaire on Mathematics (SAQM) were used to collect data. Two research hypotheses were formulated. The data was analysed using Analysis of Covariance (ANCOVA). There was no significant effect of mobile learning on students' learning outcomes however, students exposed to mobile learning (mean=14.673) achieved higher than their counterpart in conventional method (mean=12.327). Mobile learning approach is better than conventional method. This study recommended that education should be beyond the four walls of classrooms. Educators need to be convinced that mobile learning is effective and will benefit them in the delivery of instruction.
Keywords: Mobile learning, Trigonometry, Learning outcome, Hand phone, Device

Introduction

Mathematics as it were, a subject that is all-important to every aspect of human lives and endeavours. It is bedevilled with learning anxiety by many and being dreaded by some. It is naturally abstract with logical symbolisms, which contribute to its being dreaded by the learners. On the part of teachers, the instructional approach requires dedication to logical and sequential presentation that must not me missed out. The teacher must think out appropriate instructional materials and instructional strategies that are appropriate for each aspect of the concepts to be taught. The teacher must therefore constantly work hard. Not all the teachers of mathematics have the skill to make them verse in presentation, in most cases, conventional approach is mostly used (Abimbade & Afolabi, 2012). According to the Chief Examiner, West African Examinations Council (2007), it was reported that candidates showed poor understanding of mathematical concepts and some lack the skill required to form appropriate mathematical models to solve the problems before them. The report also said that mass failure has caused many students to develop negative attitude towards mathematics.

Modern technology can make mathematics instruction easier. One of such technology oriented approach is the use of blended learning. Blended learning approach is an instructional approach which combines digital approach with the conventional instructional method. According to Watanabe-Crockett (2017), blended learning is characterized with any or all of these: some part of the learning is delivered using digital or online media; some of the learning is directed by the student in terms of place, pace, path and time; According to him, blended learning

provides a welcoming learning experience which also delivers successful learning outcomes. This study made use of both mobile technology and conventional instructional approach in mathematics instruction. The use of mobile devices in instruction may have the tendency to enhance positive attitude to mathematics. According to Traxler (2009), mobile learning is the use of mobile or wireless devices such as cell phones, smartphones, palmtops, and handheld computers; tablet PCs, laptops, and personal media players for the purpose of learning while on the move. Brown (2007) in his summary of definition of terms said mobile learning is an extension of e-learning.

It is imperative to justify this study based on some learning theories; these are Transactional Distance Theory (TDT) of Moore (2007) and Naismith (2010) Constructivist Approach

Transactional Distance Theory (Moore, 2007) is an educational theory that defines the critical concepts of distance learning. Moore (2007) presents a definition of distance education which implies the separation of teachers and learners. In transactional distance theory the idea of distance is not limited to geographical distance but pedagogical construct. As a result, the theory enables the inclusion of both types of education- that is, a program in which the sole (or a time principal) form of communication is through technology and where technology-mediated communication is ancillary to the classroom. This is especially important for mobile learning because mobile devices sometimes enter the school setting as an ancillary element but mostly they extend beyond the classroom to non-traditional, informal, and non-institutional settings. The inclusive nature of transactional distance theory and its applicability and flexibility illustrates its important contribution to the framework for mobile learning. For this reason, Shearer (2007) defined TDT as the interplay of teachers and learners in environments that have the special characteristics of their being spatially separate from one another. Summarily, transactional distance is the extent of psychological separation between the learner and the instructor.

According to the proponent, three interrelated factors are in control of transactional distance:

These are;
1. the program's structure;
2. the dialogue that the teacher and learners exchange; and
3. the learners' autonomy.

Moore (2007) perspective of these factors are that they emanated from the analysis of curricula of the distance learning program, communication between teachers and learners; and the role of learners in deciding on what to learn how to learn, where to learn and how much to learn.

Naismith (2010) Constructivist Approach; This is also germane to the study. Constructivist approach is that in which learning is understood as a process where learners actively build new knowledge based on current and previous experiences and knowledge. An example is a system where the learner is involved in a realistic situation, and uses support tools to deal with the situation at hand and communicates, interacts and shares his or her knowledge with other learners (Peters, 2007).

The social constructivist theory is a variant of constructivist theory. This is very germane to this study. This is because mobile devices in the hands of the learners will enhance the development of critical, creative, collaborative and communicative skills of the learners.

Cobcroft (2008) put forward the justification for the favourable use of mobile learning nowadays.

1. Changing nature of learners. This 21st century learners are in the jet age. They are well exposed to a number of digital technologies, thus making them to be a new breed of students whose key traits are digital literacy, permanent online presence, mobility, and community-orientation. They are versed even more than their parents in the use of technologies and multi-tasking, these learners interact with each other using a variety of forms of communication.

2. Technological advances have made their way in the field of mobile learning. There is the broadband access to the internet. Mobile technological advances enable learners to stay permanently connected with their peers, and access rich multimedia content.
3. Pedagogical development: recent developments in the field of pedagogy and instructional design have led to a better understanding of how mobile technologies can be applied in various learning contexts. A justifiable reason for incorporating mobile device in instruction is that mobile devices have become very useful in the development of critical, creative, collaborative and communicative skills of the learners.

The purpose of this study is to see the impact of mobile technology in mathematics instruction. The main objective is to consider the application of mobile technology to enhance mathematics achievement and increase positive attitude of students towards mathematics. It is hoped that the result would yield a significant effect of variation of achievement on the experimental group sufficiently enough for imitation and replication by other researchers in other areas. By this learning would be a fun for all.

Statement of the Problem

There is problem with the teaching and learning of mathematics worldwide and Nigeria is not excluded, hence, it is in need of serious reform through introduction and use of Information Communication Technology devices into teaching and learning processes. Most of the learning tools in ICT are either not available or unaffordable. At times, the ad-joint accessories and resources such as power supply, internet and computer system may not be adequately available to make use of these tools. Incidentally, most young people have phones, and this provides an opportunity to transform instruction. They could hardly do without their hand phones. This can be harness into advantageous use for mathematics instruction. This will serve as a way of routing the mathematics concepts through their path of interest. If mathematics can be instructed through mobile devices, both the attitude and achievement can be enhanced. A serious problem of boredom and inability to sit at it for learning can be reduced. With mobile device, instructional materials can always be with the students. By this, learning can take place anywhere any time. Thus, this paper is considering the effect of mobile technology on students' learning outcome in mathematics.

Research Hypotheses

H_{01}: There is no significant effect of mobile learning on students' achievement in mathematics

H_{02}: There is no significant effect of mobile learning on students' attitude towards mathematics

Methodology

The study adopted a pretest-posttest, control group quasi experimental design. The pretest was used as covariate in order to partial out the initial differences existing among the groups. The population comprised students of Government Colleges (Federal, public schools) in Lagos state. 3 colleges were purposively selected as: one girls only, one boys only and the third is co-educational. 10 students were randomly selected from the coeducational group, while five were purposively selected from each of the single schools, making 20 students. The criteria for the selection were to enable measurement of the learning outcomes across gender; and to be able to get sizeable number of students who have access to a compliant mobile phone. 2 Instruments Mathematics Attitude Questionnaire for Students (MAQS), r=0.8, with Cronbach Alpha) and Mathematics Achievement Tests on Trigonometry (MATT, r=.75 with Guttman Split-half) were used for data collection from the students. MAQS comprise of 15 items on 4-point rating scale of strongly agreed, agreed, disagreed and strongly disagreed in section

B while section A was biodata. MATT has 25 items on trigonometry, which were multiple choice answered by the students.

Experts in research validated these instruments. After taking the pretests, the single schools were assigned to experimental (mobile learning group) and the co-educational school was assigned to control (conventional) groups.

Administration of the instrument:

The video lecture (MP4, available at www.iscore.co.nf & www.iscore.org.ng) prepared by the researcher on a mathematics topic - Trigonometry served as the teaching medium for the experimental group after a brief introduction of the topic by the researcher. Two of the schools which were single sex (one boys only and one girls only) were assigned to the experimental group while the mixed group was assigned to the conventional group. The MP4 is a self-paced and individualized instruction with easy step-by-step interactive tutorial courseware. The video lecture worked properly on computer, tablets, android and every other mobile device in that category. Two students worked together on a tablet within two days. They had opportunity to discuss the text they read and clarify solutions to problems between the two of them as and when they choose to do so. This is to say that the treatment involved collaborative work between two students. This opportunity for combination of collaborative work and the computer-aided instruction is what distinguishes the treatment group. When the two collaborating students did not understand the solution to a given problem, they informed the teacher through a social medial (Whatsapp) for clarification.

The lesson consists of four major aspects; Types of triangle, Pythagoras theorem, Application of relationships in trigonometric ratios (SOHCAHTOA), Angle of Elevation and Depression. In each of the subtopics, there were 2 or 3 Practice questions. At the end of the lesson was the posttest. The concept of trigonometry is essential for consideration in this study because it is the foundational basis for understanding of polygons and geometry, which are often dreaded by students.

The traditional method consisted of lecture given by the teacher, and class activities involving the topics discussed during the class. The topics and contents were the same as those given to the experimental groups. The students used a local textbook entitled New General Mathematics. Each one had a copy of this book. At the end of each lesson, there were activities and practice problems that the students worked on. Some of these problems were done in class and the others were given as homework to be submitted the following day. The students were allowed to use hand held calculators.

The achievement pre-test was given in 40 minutes. The test was to measure entry knowledge that both groups had before the treatments. The control group (mixed) was taught using the traditional method of teaching and the experimental group through mobile learning technology. The teaching period took up to four weeks. After the treatment, they were given 3 days off before the post-test. Thereafter, the same 40 minutes achievement post-test was administered alongside with the attitude questionnaire. The data was analysed using Analysis of Covariance (ANCOVA) at 0.05 level of significance.

Findings and Discussions

H_{01}: There is no significant effect of mobile learning on students' achievement in mathematics

Table 1:
ANCOVA Summary of Post-test Scores for Effect of Treatment

Sources	Type III Sum of Square	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	52.035	2	26.018	2.417	.119	.221
Intercept	82.161	1	82.161	7.634	.013	.310
Pre-test	18.235	1	18.235	1.694	.210	.091
Treatment	27.060	1	27.060	2.514	.131	.129
Error	182.965	17	10.763			
Total	3880.000	20				
Corrected Total	235.000	19				

P= .05

Table 1 above shows the Analysis of Covariance (ANCOVA), a summary table of the effect of treatment (mobile learning) on students' achievement in mathematics. From the table it can be seen that the treatment does not have significant effect on students' achievement in mathematics ($F_{(1, 20)} = 2.514$; p = .131 >.05). Hypothesis 1 is not rejected. It is thus, concluded that mobile learning has no significant effect on students' achievement in mathematics under this study. The effect size represented by partial eta squared is .129 is a moderate value. Although there is no statistical significant difference in achievement due to treatment, it would be necessary to see which group achieved higher.

Table 2 is that of the estimated partial mean. This represents the actual mean difference between the mobile learning group and the conventional group. The mean for the mobile learning group is 14.673 while that of the conventional group is 12.327 This is an indication that the students that were taught with mobile learning achieve higher than those exposed to conventional method.

Table 2:
Estimated Marginal Means of Students' Mathematics Achievement

Treatment	Mean	Standard Error
Mobile Learning	14.673	1.042
Conventional	12.327	1.042

H$_{02}$: There is no significant effect of mobile learning on students' attitude towards mathematics

Table 3:
ANCOVA Summary of Post-test Scores for Effect of Treatment on Attitude Towards Mathematics

Sources	Type III Sum of Squares	Df	Mean Square	F	Sig. (p=.05)	Partial Squared	Eta
Corrected Model	25.083	2	12.541	.454	.642	.051	
Intercept	312.867	1	312.867	11.329	.004	.400	
Pre-test	7.033	1	7.033	.255	.620	.015	
Treatment	10.636	1	10.636	.385	.543	.022	
Error	469.467	17	27.616				
Total	42539.000	20					
Corrected Total	494.550	19					

Table 3 above is that of ANCOVA showing the summary of posttest effect of treatment on attitude. It indicates the effect of treatment on students' attitude towards mathematics. The result shows that treatment has no significant effect on students' attitude towards mathematics. This is indicated with F$_{(1, 20)}$ = 10'636; p =.543 > .05. Hypothesis 2 is not rejected. It is concluded that mobile learning has no significant effect on students' attitude to mathematics.

Although the treatment may not be statistically significant, it is necessary to examine the level of variation. This is done by considering the estimated marginal means (Table 4)

Table 4:
Estimated Marginal Means of Attitude

Treatment	Mean	Standard Error
Mobile Learning	45.086	1.702
Conventional	46.614	1.702

Students exposed to mobile learning performed averagely better than those exposed to conventional/traditional teaching. Even though there is no statistical significant difference of treatment on the group, the mobile learning is still more efficacious in improving achievement. This is so because students exposed to mobile learning have no restriction to learn from their colleagues and teachers even outside the school. They had opportunity to ask questions on the areas that are not too clear to them or not covered in class because of time factors. The investigation of this possibility is the impulse of this study. Teaching and learning should not be limited to the four walls of the classroom. Opportunities should be created for students to learn on the go. As seen in the results of the analysis, mobile learning enhances learning and improves achievement.

The second hypothesis bothers on the analysis of the attitude between students exposed to mobile learning and conventional teaching. The results of the analysis indicated that there is no significant difference in attitude of students exposed to mobile learning and conventional teaching. It should be noted that this comparison is across the experimental and control groups which have been exposed to different teaching methods. It will be of interest to consider attitudinal change within the group (mobile learning) in order to the impact of this method on the group. The major effect of attitudinal changes can really be measured within the group.

Recently, there have been many research studies and applications of mobile learning in both formal and informal learning. This research studies have shown benefits of using mobile technology in learning. Since mobile

learning is new in education, best practices and standards for mobile learning must be identified. Considerable research is needed on how to design learning materials for delivery on mobile devices and what is the right mix of technology for distance delivery. This is important for students, workers, and citizens who are mobile and need to access information and learning materials from wherever they are located. The study showed that there is higher achievement of students exposed to mobile learning above their counterpart in conventional group but the difference is not statistically significant. There is no significant difference in attitude towards mathematics between students exposed to mobile learning and conventional teaching.

Conclusion

The use of the mobile devices in learning provides the opportunity for students to interact with each other and with the teacher using the mobile devices. More research is needed on how to use mobile devices as a communication tool to provide support in education. The use of mobile technology is good for formal learning where learners can access information and learning materials from anywhere and at any time. Mobile device makes learning of mathematics a fun.

Because the use of mobile learning is new in education, it is important for educators, researchers, and practitioners to share what works and what does not work in mobile learning so that the field of mobile learning can be implemented in a timelier and effective manner. Mobile learning has effect on students' academic achievement in mathematics; hence, learning should be made mobile. The inculcation of mobile learning into the nation's educational system would definitely revive the system and bring a significant change, as we have seen it work in schools all over the world. Academic achievement is of no sex bias. Male or female students tend to perform well if they are given the same treatment regardless of sex factor. The difference in performance is based on individual innate ability.

Recommendation

This study recommends therefore that education should be beyond the four walls of classrooms. Educators need to be convinced that mobile learning is effective and will benefit them in the delivery of instruction. Technology in instruction should be communicated to educators so that they can see the benefits of using mobile technology in instruction. For example, the mobile learning projects reported by UNESCO shows how mobile learning can be used successfully in education. Educators should be provided with training on how to design learning materials for delivery on mobile devices and how to use the mobile devices for delivery and support. One approach to follow is to use a blended format where mobile learning is used for some parts of a subject and other delivery methods are used for other parts of the subject. This will make the transition easier for educators and trainers. This study also recommends that no learner should be denied the chance of good education irrespective of sex.

Teaching methods has a lot of impacts on students' attitude as well as academic achievement. Schools should have a continuous review of their teaching methodology in other to boost students achievements in various subjects areas. Mobile technology is not sex biased, therefore should be used by all schools to support learning.

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PERCEPTION OF BUSINESS EDUCATION STUDENTS TOWARDS ONLINE ASSESSMENT VIA A LEARNING MANAGEMENT SYSTEM (MOODLE)

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Abstract

Assessment of students has been plagued with many irregularities as students and examiners engage in malpractices that demean the purpose of assessment. The introduction of online assessment may help to curb the malpractices but has its own challenges, one of which is students' attitude to its application. This study, therefore, focused on assessing the perception of 81 graduate students of Business Education Department, Rivers State University, Port Harcourt, who undertook a research course with blended learning approach, towards the online assessment that was carried out on a learning management system (Moodle). The descriptive survey research design was used. Two research questions were raised and two hypotheses tested at 0.05 level of significance. The instrument for data collection was a questionnaire adapted from literature. The instrument was validated by experts in the field of Business Education. The reliability of the instrument was ascertained using Cronbach Alpha which yielded a coefficient of 0.81. The results of the study show that students perceived the access to the online assessment to be easy. The students had positive attitude towards the adoption on online assessments using Moodle. It was recommended that lecturers show begin to adopt the integration of blended learning approaches in their teaching so that students can get used to the system. Also, usage of computer should be a criteria for admitted students into post graduate programs.

Keywords: Online Assessment, Learning Management System, Blended Learning, Moodle

Introduction

Assessing students after instruction delivery is key to determining whether students understood what was taught. Spanella (2018) pointed out that assessment is a critical step in the learning process that measures whether the learning objectives of the course have been achieved. It is pivotal in revealing the extent to which students have comprehended the lessons taught by the teacher and can also be used to measure teachers' effectiveness (Goe, Bell, & Little, 2008; Jabbarifar, 2009). Assessment helps to reveal students learning outcome which also provides feedback to the teacher and influences the teaching approach that will be applied in the next class. Olufemi and Tayo (2014) posited that assessment helps to determine if a student needs additional instruction on a topic, if the student is qualified to go to the next class and whether the teaching method used is appropriate and effective.

Students can be assessed using test, assignments, group works, projects, practical works and other conventional assessment techniques (Afemikhe & Omo-Egbekuse, n.d.). Some other areas in which students can be assessed include performance in extra-curricular activities, discipline, and punctuality, and so on (Olufemi & Tayo, 2014). However, this study focuses on the assessment of students in the cognitive domain. As important as it is to assess students' performance using the conventional test method, there are problems that could generate concerns. Assessing students can become challenging as there are problems teachers will encounter. According to Akoroda and Ugboh (2012), and Ifiokobong (2015), these problems include improper record keeping and storage of students' result, large number of students, unqualified personnel, time and energy in marking and keeping the records. These challenges may be handled with the introduction of online assessment. Online assessment is the process of giving quizzes, tests or examinations on a computer system instead of using paper and pen. It could also mean the assessment of students' performance in a course using internet-enabled devices which could range from computers to mobile devices. Tests, quizzes, essays and other assessment tools are loaded on a website for students to assess and attempt at a particular time.

The advantages of using online assessment includes efficiency, convenience, automatic scoring, analytics and reports, accessibility, re-usability, controlling cheating and reduction of human errors (ProProfs Training Makers, 2015). Online assessments are more efficient as they save the time and energy of the teacher. It is also convenient for students as they can assess the quiz or test from wherever they are. Reports and analysis of students are easily made as the results from the online test are automatically scored and generated. The teacher does not need to do so much computing to come up with the result analysis. Many online applications and Learning Management Systems help the teacher to compute results with little effort. Online tests can be re-used and, by shuffling the questions, help to reduce exam malpractice. This is better done by using a Learning Management System (LMS).

Learning Management System (LMS) refers to a software application that coordinates the learning activities of an organization which includes teaching, assessing, tracking results, getting feedback and presentation of reports of the entire process. As defined by News Ghana (2013), it is a software application that is an excellent medium for training, evaluating and tracking results and that enables teachers to deliver the right kind of content to the learners. LMS, as defined by IGIglobal (n.d.), is a software application that can be used to plan, implement, assess and track learning processes. Learning Management System helps teachers to create and deliver content, monitor and assess students, and coordinate the entire learning process in other to achieve the objectives of the course. This can be done with the use of online discussion chats, forums, discussion boards, individualized assignment platforms, threaded discussions, audio and video conferencing (Carnevale cited in Mafuna & Wadasango, 2016). All these are provided for, in one learning management systems and as such, if adopted, could make teaching and learning process easier (Noe & Lee, 2013; Mtebe, 2015). Examples of LMS that can be used include, but not limited to, Blackboard, Google classroom, Moodle, aTutor, Canvas, ecollege, and Desire2learn. Other online platforms that can be used for blending the learning activities include blogs, social networking sites such as Facebook, WhatsApp, Instagram, and YouTube and so on. In this study, the LMS that was used for the online assessment is Moodle.

Moodle (Modular Object Oriented Development Learning Environment) is an open source Learning Management System that enables teachers to arrange their materials in a student-friendly manner. Moodle is a free open source LMS built on a sound educational philosophy through collaboration from members of the Moodle community (Cole, 2005). It is open source because each user has assess to the software source code and can design the environment to suit any perculiarities. As a result, Moodle can be used in the blended learning approach as teachers can post educational resources and links online where students can access at any time and place as long as there is internet conection. Moodle also has an activity section that enables the teacher to set different types of assessment ranging from assignments, quiz, forum, survey and so on. The quiz could be structured in short-answer, multi-choice, true/false, matching, drag and drop formats, and so on.

Online assessment can only be possible if the teacher and the students have the right perception towards the use of technology and its integration in the learning process. Bupo (2016) opined that students' attitude towards the integration of technology in the learning process could influence their performance in the subjects taught with technology. Maduekwe, as cited by Gadanya (2015) posited that attitudinal factors are also responsible for the slow integration of Information and Communication Technologies in the teaching and learning process. Gogo (2018) found out that teaching e-learning course using Moodle had a positive impact on students' peformance and their attitude towards the course. The perception of students towards online assessment could also affect its effective usage in the Nigerian educational setting.

The adoption of online assessment in the Business Education programme in Nigeria, has witnessed slow progress despite all the advantages it provides. There appears to be slow integration of e-learning, blended learning and online learning approaches in the execution of the Business Education programme. Could this be as a result of students' perception towards the ease of use of technology for assessment? Or could it be the general attitude of Business Education students towards the adoption of online assessment? These formed the crux of this research.

Research Questions

The following research questions guided this study:

1. How do the business education students perceive the ease of access to the online assessment on Moodle?
2. What is the attitude of business education students towards the adoption of online assessment using Moodle?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance

Ho$_1$:   Male and female business education students do not differ significantly in how they perceive the ease of access to the online assessment on Moodle.

Ho$_2$:   There is no significant association between the business education students' attitude to the adoption of online assessment and their gender.

Methodology

The research design adopted for this study was the descriptive survey design. The population of the study comprised of 81 post graduate business education students from Rivers State University who undertook an advanced educational research course. The entire population was used for the study, hence there was no need for a sample. The course was taught using conventional face-to-face approach. However, some learning materials were placed online on a Moodle site recently hosted by the Department (www.rsudbe.com.ng). The students were authenticated on the Moodle site and enrolled into the course by the lecturer, using the manual enrollment method. Upon authentication, each student was given a username and a password with which they can access the site.
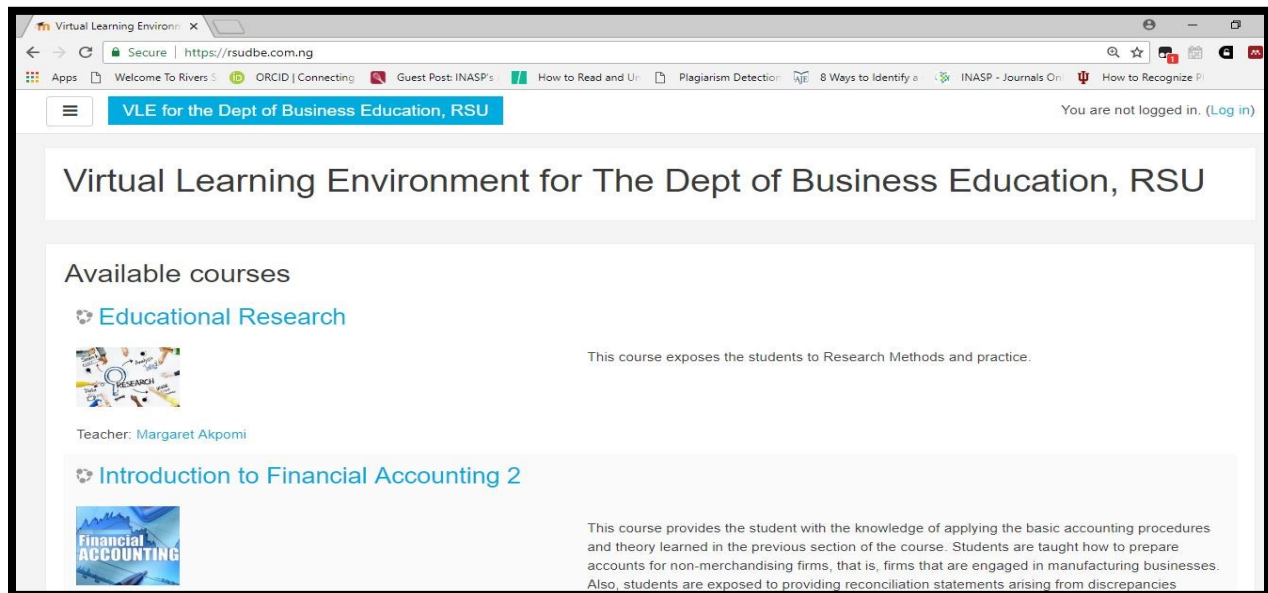
Figure 1: Screenshot showing the landing page of the Moodle site
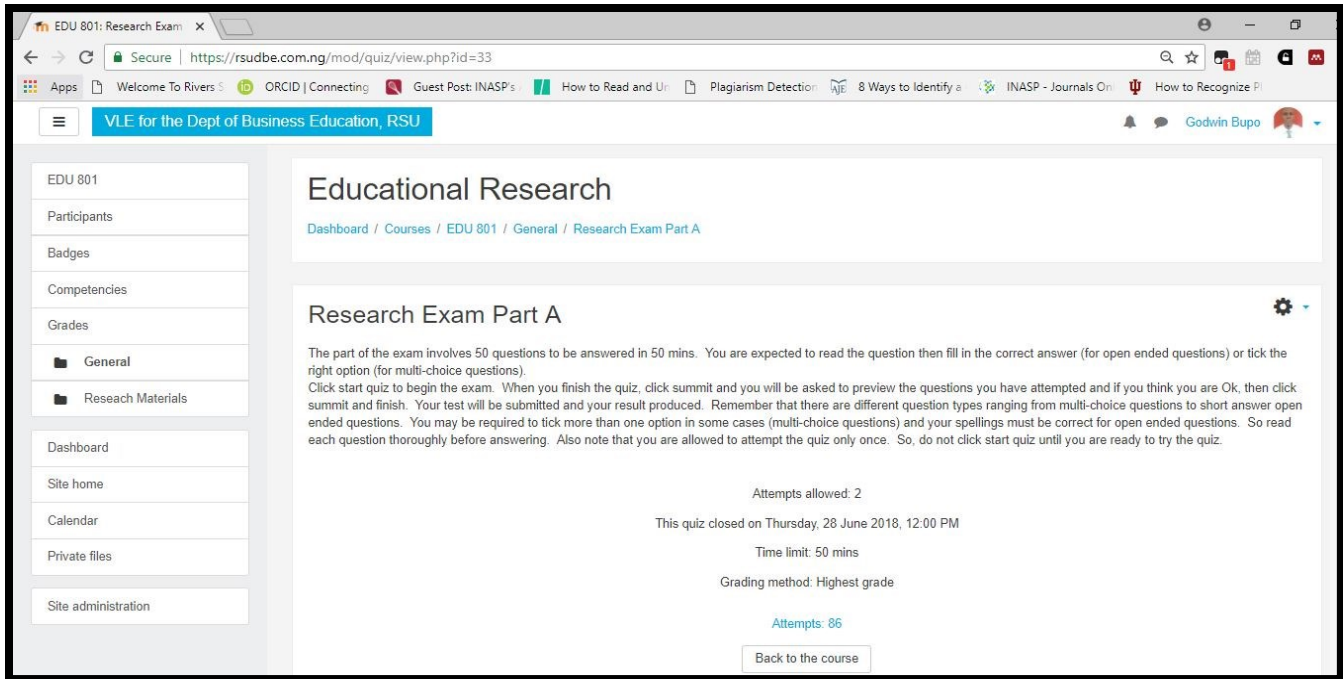
Figure 2: Screenshot showing the Assessment Page on the Moodle Site

The students were given two mini pre-tests on the platform to confirm that they could access the site and to prepare their minds for the main assessment. The mini tests were taken by the students from home and with any internet-enabled device. To ensure that students did not have internet issues, the main assessment was conducted in the University's Information Technology Centre. The online assessment contained 50 questions and the time allotted was 50 minutes. The quiz was made up of multi-choice questions, short-answer questions and true and false questions.

The Instrument used for data collection was a self-structured questionnaire designed from literature. The questionnaire had two sections that elicited data on perception of ease of use and students' attitude towards the adoption of online assessment. The Instrument was subjected to face validation by two experts in Business Education. The reliability of instrument was established using Cronbach Alpha which yielded a coefficient of 0.81. The instrument was administered to the students immediately they finished the online examination. Filled copies of the questionnaire was retrieved immediately by the researchers. Descriptive statistics (percentages, mean and standard deviation) were used to answer the research questions while z-test statistics and Cross tabulation with Chi-test were used to test the hypotheses. The decision rule was to retain the null hypothesis if z-calculated value was less than z-critical value and to reject the null hypothesis if z- calculated was greater than or equal to Z-table value

Results

Research Question 1: How do the business education students perceive the ease of access to the online assessment on Moodle?

Table 1:
Respondents Perception of the Ease of Access to the Online Assessment

S/N	Item	Very Easy	Easy	Difficult	Very Difficult	$\bar{x}$	s^2	Remark
1	Logging in to the Moodle Site	23	30	22	6	2.86	0.92	Easy
2	Accessing the online Exam	26	41	13	1	3.14	0.72	Easy
3	Attempting the Exam	21	48	11	1	3.10	0.66	Easy
4	Submitting the Exam	21	45	13	2	3.05	0.72	Easy
5	Viewing my result after the exam	27	37	13	4	3.07	0.83	Easy
6	Navigating through the Moodle site	11	43	24	3	2.77	0.73	Easy
7	Accessing the Online materials on the Moodle Site	14	44	19	4	2.84	0.77	Easy
	Grand Mean					**2.98**	**0.76**	**Easy**

The result in the table 1 shows that the students found logging in to the Moodle site easy ($\bar{x}$=2.86). The students also found assessing the online exam, attempting the exam, submitting the exam, viewing my result after the exam, navigating through the Moodle site and accessing the online materials on the Moodle site, easy. The grand mean of 2.98 indicate the students perceive the access to the online assessment on Moodle to be easy. However the standard deviation of 0.92 for item 1 and 0.83 for item 5 show that some respondents had varying opinion. The student did not find navigating through the Moodle site as easy as attempting and submitting the exam (see Figure 3).
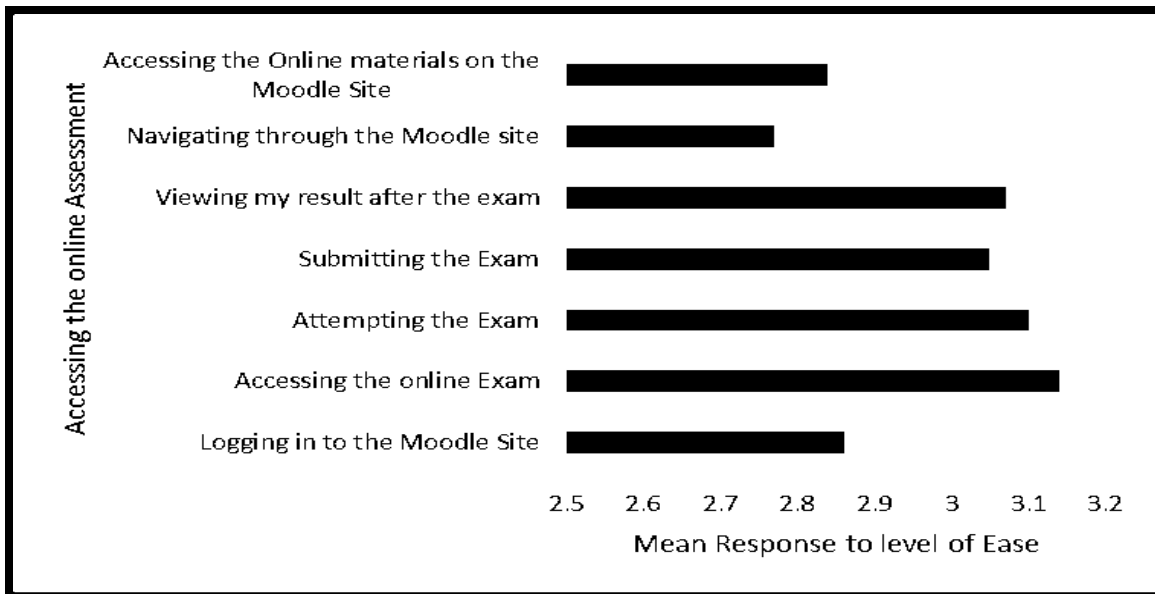
Figure 3: Bar chart showing students' perception of the Ease of Access to online Assessment

Research Question 2: What is the attitude of business education students towards the adoption of online assessment using Moodle?

Table 2:
Students' attitude towards the adoption of online assessment using Moodle

S/N	Item	Agree	Disagree	I don't think we are ready for it	It May not work
1	Moodle and other online platforms should be used for online learning delivery	50 (61.7%)	6 (7.4%)	21 (25.9%)	4 (4.9%)
2	I think that this site should be used for exams	53 (65.4%)	15 (18.5%)	12 (14.8%)	1 (1.2%)
3	All courses should be blended using online and face to face approach	45 (55.6%)	19 (23.5%)	11 (13.6%)	6 (7.4%)
4	I enjoy using the Moodle site	56 (69.1%)	15 (18.5%)	8 (9.9%)	2 (2.5%)
5	The learning materials posted online were enlightening	66 (81.5%)	8 (9.9%)	3 (3.7%)	4 (4.9%)

The result in Table 2 shows the attitude of the students to adoption of online assessment using Moodle. 61.7% of the respondents agreed to the use of Moodle and other online platforms for online learning and assessment. While six respondents disagreed, 21 other respondents were of the view that we are not ready for it. 53 respondents were of the view that the Moodle site should be used for exams (65.4%), 15 of them disagreed, 12 respondents opined that we are not ready for it and one person was of the opinion that it would not work if adopted. Fifty-Six percent of the respondents said that they enjoyed using Moodle, 18.5% disagreed, 8% of the students said that we are not ready for using Moodle while 2 students were of the view that it may not work. On the whole, the students had a positive attitude towards the adoption of online assessment using Moodle. The result is graphically shown in Figure 4.
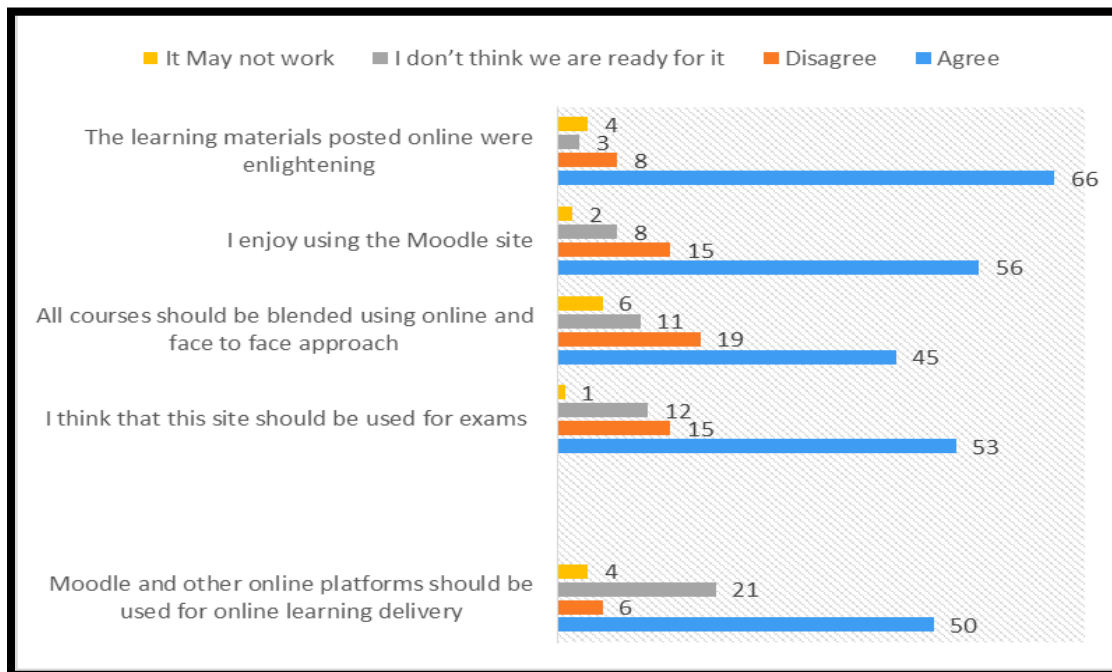
Figure 4: Cluster Bar Chart showing students attitude to the adoption of online assessment using the Moodle site

Hypothesis 1

Male and female business education students do not differ significantly in how they perceive the ease of access to the online assessment on Moodle.

The hyothesis was tested using z-test and the results presented in Table 3.

Table 3:
Z-test result showing the difference in the male and female students' perception to the ease of acces to the online assessmen on Moodle

Gender	N	$\bar{x}$	S	z-cal	α	df	z-crit	Remark
Male	29	2.97	0.55					
Female	52	2.98	0.43	-0.13	0.05	79	1.96	Retained

The hypothesis was tested at 0.05 level of significance with degree of freedom of 79. The z-calculated is -0.13 while the z-critical value is 1.96 at 0.05 level of significance. Therefore the null hypothesis is retained (z-cal -0.13 < z-crit 1.96). This means that Male and female business education studens do not differ significantly in how they perceive the ease of access to the online assessment on Moodle.

Hypothesis 2

There is no significant association between the business education students' attitude to the adoption of online assessment and their gender.

To test this hypothesis, cross tabulation with Chi-square test was done. The result is presented in tables 4 and 5

Table 4:
Cross Tabulation of Students' gender and their attitude towards the adoption of online Assessment.

			Male	Female	Total
			Sex		
Moodle and other online platforms should be used for online learning delivery and assessment	It may not work	Count	1	3	4
		Expected Count	1.4	2.6	4.0
	I don't think we are ready	Count	9	12	21
		Expected Count	7.5	13.5	21.0
	Disagree	Count	3	3	6
		Expected Count	2.1	3.9	6.0
	Agree	Count	16	34	50
		Expected Count	17.9	32.1	50.0
Total		Count	29	52	81
		Expected Count	29.0	52.0	81.0

Table 5:
Chi-Square Tests showing association between Gender and Attitude

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.499[a]	3	.683
Likelihood Ratio	1.483	3	.686
Linear-by-Linear Association	.334	1	.563
N of Valid Cases	81		

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is 1.43.

The data in tables 4 and 5 show the 4 x 2 cross tabulation of attitude and gender of respondents, and also the Chi-Square test to check for independence of the two variables. The assumption for a 4 x 2 cross tabulation is that no more than 20% of the cells should have expected counts less than 5 (McHugh, 2013; Brunel, 2013). Since 50% of the cells have expected counts less than 5, the assumptions have been violated, the Likelihood Ratio p-value will be used as the Asymptomatic value (Brunel, 2013). The Chi-statistic is 1.483 at a degree of freedom of 3 and the P-value is 0.686. Since P > 0.05, the null hypothesis is therefore accepted which means that there is no association between students' gender and their attitude towards the adoption of online assessment.

Discussion

The findings of the study on the first research question reveal business education students' perception on the ease of access to the online assessment on Moodle. It shows that students found it easy to log in to the Moodle site (mean of 2.86). They found it easy to access the exam. This is because Moodle has a time line that posts recent activities in order to remind students of deadlines. Once students log on to the site, the dashboard indicates any activity that have been scheduled for the students. This made it very easy for the students to access the exam. However, some students were not able to navigate the Moodle very easily. The reduced mean score of 2.77 to item 6 on the questionnaire showed this. Some of the students were using the Moodle site for the first time. This result is in line with the findings of Pektas and Gurel (2014) who found out that students were able to access learning materials easily on a Moodle site.

The findings of the study on the second research question showed the students attitude to the adoption of online assessment using Moodle. More than 50% of the respondents have a positive attitude to the adoption of online assessment. About 19.5% of the students disagreed, 16.75% of them said that we are not ready for such adoption and 5.2% of the students feel that adoption of online assessment will not work. The negative attitude of the minority of the students towards online assessment is not irrational considering the many educational innovations introduced in the Country but have not been successfully implemented. This collaborates the opinion of Manir (2009) who posited that the integration of e-learning in Nigeria was still in its infancy stage.

The results show that male and female business education students do not differ significantly in how they perceive the ease of access to the online assessment on Moodle. Gender, therefore, is not a factor that affects ease of use of technology in learning. This is in line with the writings of several authors (Bupo & Ndinechi, 2015; Bupo, 2016) who have discovered that gender does not significantly affect use of technology in education. On the contrary, the result is in contrast to the works of Grodlen (2015), Dixon, Correa, Straubhaa et.al. (2014), and Cai, Fan and Du (2017) who discovered the males are more favourably disposed to technology usage than females.

Conclusion
From the findings of the study, we hereby conclude that Business Education students perceive accessing the online assessment on Moodle to be easy. The students also have a positive attitude towards the adoption of online assessments using a Learning Management System (like Moodle).

Recommendation

Based on the results of the study, the following recommendations are made:

1. Management of tertiary institutions in Nigeria should generate policies that encourage the use of online assessments. One policy that can facilitate this, is the compulsory ownership of laptops by Post Graduate students. It should be compulsory for PG students to own a laptop at the point of admission.
2. Business Education Lecturers should begin to adopt blended learning approaches in their teaching. Learning contents can be made available to students online while face-to-face teaching can go on the class. This will encourage more students to have positive attitude towards the adoption of online assessment.
3. Heads of Department of Business Education should organize regular trainings for staff and students on the use of Learning Management Systems.

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MAPPING AS AN INDEPENDENT LEARNING STRATEGY FOR STUDENTS' LEARNING OUTCOME IN PHYSICS

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Abstract

This study was carried out in an attempt to investigate the effectiveness of mind mapping approach as learning strategy in the learning outcomes of students in physics. The study adopted a quasi-experimental nonequivalent pretest posttest design, comprising of four intact classes (two experimental groups and two control groups). The sample for this was senior secondary school 1 (ss1) students made up of 133 male and 109 female students. A physics Achievement Test (PAT) was used to generate data. Two research questions and two hypotheses were answered and z test statistics were used in data analysis. The result from study showed that the experimental group performed better than the control group and there was no significant difference on the mean scores of the male and female students. This study concluded that mind mapping approach improved students learning outcome and teaching method is not gender biased.

Keywords; Mind mapping, Independent Learning, Learning

Introduction

The sages are right when they opined that nothing remains the same forever. The society has experienced rapid advancement in science and technology as such; countries are now classified as being world powers, developed, developing and underdeveloped based majorly on their scientific and technological strength. Today, we cannot live our life without technology revolving around it every second. Technology has become a yardstick to measuring the level of development a nation has attained. For any nation to achieve a reasonable level of development, its citizens must be empowered with adequate knowledge of science and technology. The national policy on Education (FRN 2004) stated the need to train students to be able to make use of their environment in order to enhance the scientific and technological need of the society. While science involves the study of the Universe in its entirety, technology is the application of the knowledge of science.

The importance of Physics as a science subject is as vital as the technological invention all around us today. A typical scenario to show the importance of Physics is the research on the Physics of semi-conductors which enabled the first transistors to be developed in 1947. This rather simple device is the key components in all our electronic systems and it is now considered one of the most important invention in human history. It is also the law of optics which describes the way light behaves that have led the development of optical fiber networks which has gradually brought the world closer together. There are countless more examples of research in Physics leading to the development of important technologies.

Physics as a branch of natural science which deals with the interaction between energy and Matter and the laws governing them interplayed under precise measurements and accurate results has found application in every facet of human endeavor ranging from breathtaking inventions in the field of medicine, agriculture, transportation, entertainment to innovation in information and communication technologies. The assertion by Frank (2015) that in Physics, you don't have to go around making trouble for yourself, but nature does it for you, shows clearly that physics is one of the most active among the physical sciences and its principles form the basis in information technology which has reduced the world to a global village (Oluwatosin & Bello 2015). The study of physics in schools and Universities is undoubtedly relevant to society today, however, there is no denying that physics is a tedious subject to study but its importance to the society is far reaching. In recent time, available statistics have shown low student enrolment, poor teaching methods, limited number of professional trained physics teachers and poor performance of students in the subject (Ogunniyi 2009; Bello 2012, and Owolabi & Oginni 2013).

According to the Nigerian Educational Research and Development Council (NERDC), studies have revealed that the academic performance of Nigerian students in ordinary level physics was generally and consistently poor over the years (Isola, 2010). Research evidences abound and statistics gathered have reviewed weakness in the performance of students in ordinary level Physics. In order to address these issues, research in science education in Nigeria and other educational boards have made concerted effort to seeking better ways of teaching to facilitate students understanding, assimilation and maximize meaningful learning.

Meaningful learning maybe seen as the concept that the learned knowledge is fully understood by an individual and that the individual knows how that specific fact relates to other stored facts. Meaningful learning is opposed to rote learning and refers to a learning method where the new knowledge to be acquired is related with previous knowledge (Ausubel 2000). Meaningful learning therefore allows the student freedom to reconcile new knowledge to existing one. Interest development is one of the goals of meaningful learning, as students who are interested generally learn more effectively (Heddy, et al 2016). Independent learning refers to the method where learners have ownership and control of their learning, they learn by their own actions and direct, regulate and assess their own learning. The independent learner is able to set goals, make choices, and decisions about how to meet his learning needs, take responsibility for constructing and carrying out his own learning, monitor his progress toward achieving his learning goals, and self-assess the learning outcomes. The concept of independent learning is associated with, a part of other educational concepts and wider policy agendas, such as improving the educational experiences and outcomes for learners through student-centred learning approaches that personalize learning and enable the learner to take ownership of the learning process, (Meyer, Haywood, Sachdeva, Faraday 2008).

When the concept of independent learning is brought to the fore in the learning of Physics, the learners have greater control on the pace of learning and can assess his/her set learning goals to determine meaningful learning. Mindmap which was popularized by Tony Buzan, is the use of diagrams that visually map information using branching and radial maps traces back centuries. Mind mapping is a learning technique that was developed in the 1970's that allows users to generate documents or maps in a graphic form that allows the user(s) or readers to see clearly the interrelationships between ideas and facts. It has been shown to be a very powerful tool in the transfer of details and knowledge while emphasizing the interconnection of this information. This is the true power of the mind mapping and it has been validated through the results of research findings.

Mind maps can be generated in two ways, the first being a manual technique where the maps are hand drawn. With manual techniques, there is a learning curve that must be overcome to generate maps effectively. It takes some practice in defining locations and placement of topics and details. It has been noted that the use of colors and symbols can positively influence the information retention of the presented information. If the maps are to be shared, the photocopying or scanning must be used which can slow the transfer of the map to others. It also makes the maps a reference document, not a living document for changes.

Mind mapping has seen a growth in interest and use based on the ability to create the maps in a digital format; this is the second way in which maps can be generated. The electronic software that is now available allows the maps to be created quickly and reliably. These maps offer the same value as manual maps with the added benefits of being easily exchanged or viewed during courses or meetings while also allowing for the inclusion of other artifacts such as documents, drawings, pictures, multi-media, and internet links. Teams can use one map as a common placeholder of information and use it to grow the map into further detail, solutions, or ideas. This makes it a natural tool for creativity and innovation. These features have strongly impacted the acceptance of mind mapping not only on an individual level but also as a worthwhile tool in businesses.

Mind mapping is a revolutionary approach to both teaching and learning. Using mind maps as an innovative thinking tool in education helps students to visualise and externalise concepts and understand the connections between different ideas. It is commonly used in presentations, critical thinking, brainstorming, decision making and project management. Mind maps are highly effective visual aids that enable students to group together different ideas and enable teachers to present ideas visually and assess their students' conceptual development and

understanding. Studies have shown that the use of mind mapping improves results, enhances simulation learning and makes a significant contribution to a positive learning experience. Mindmap is a diagram used visually to organize information. A mindmap is hierarchical and shows relationship among pieces of the whole. It is often created around a single concept, draw as an image in the center of a blank page, to which associated representation of ideas such as images, words and parts of words are added.

Mindmap just like other diagramming tools can be used to generate, visualize, structure, and classifyideas, and as an aid to studying and organizing information, solving problems, making decisions and writing. According to Owolabi&Oginni (2013), graphic organizers allow students to follow along with the lecture and build learners' understanding of each concept with the instructor. It also allows the instructor to informally assess students' knowledge as the lesson progresses. Thomas (2007) defined a mind map as a powerful graphic technique which harnesses the full range of cortical skills such as word, image, number, logic, rhythm, colour and spatial awareness in a single, powerful manner. It therefore gives the freedom to roam the infinite expanses of the brain. Mind mapping helps students to understand and absorb information. Research shows that the use of mind maps increases critical thinking and memory skills, particularly for students who are visual learners. Mind maps capture each individual's thought process and make it easier for students to communicate and present their ideas.

The diagrammatic form of mind mapping is a useful tool for successful study skills and independent learning, as students can recall information more easily through creating mind maps and can show understanding of cause and effect. There are significant benefits of mind mapping in education for teachers, too. Teachers use mind mapping as a creativity building tool, whereby they can encourage students to look at problems from a new angle and introduce discussion and debate about the relationships between ideas. One of the key benefits of mind mapping for teachers is that the visual nature of these thinking tools allows teachers to monitor and assess their students' understanding of the topics covered. By doing this, they can structure future lessons so that they can fill any identified gaps in learning and further develop students' knowledge and understanding. Mind maps always begin with a core concept or idea which is often represented with an image or single word in the centre of a page. Once the core concept has been chosen and visualised, branches are then created that represent single words which connect to the main concept. From there, sub-branches can be created that further develop ideas and concepts from the main branches. All of the ideas and concepts are connected to the overall theme of the whole mind map; this allows the teacher to engage students with the bigger picture as well as the finer details. Through the creation of a mind map, students can understand the interconnectivity between ideas.

Mind maps can be created in two key stages – brainstorming and mind mapping. The brainstorming stage is also known as the "free thinking" stage where the idea is first visualised and written in the middle of the page. Ideas should flow freely and all input is valuable. In the second stage, students can begin to map the relationships between the ideas and crucially identify the type of relationship between the ideas. The type of relationship could be cause, effect, similarity or contrast. Causality in particular introduces the concept that one idea might cause or be caused by the other. Cunningham (2005) conducted a user study in which 80% of the students thought mindmapping helped them understand concept and ideas in science. Mindmapping increases students, creativity and productivity because it is an excellent tool to generate more ideas, identify relationship among different data information, and effectively improves memory and retention. Mindmapping facilitates learning activities and thus can be used as a valuable instructional technique to refine, improve learning and engage students in reflective thinking.

Objective of Study

This paper aims to investigate the extent to which mindmapping subsumed in independent learning can be used to improve learning outcomes of secondary school students in Physics. Concerted efforts have been made to study the effects of mindmapping on students' achievements on other science subjects, however little studies have been done on Physics which is the most active of the core science subjects.

The specific objectives of this study are thus to;

1. Determine the effectiveness of mindmapping on students learning achievement in Physics.
2. Examine the effect of gender difference on students' achievement in Physics.

Research Questions

1. What is the mean achievement score of students taught physics using mind mapping approach and the students taught physics using conventional method?
2. What is the mean achievement score of secondary school male and female students in Physics?

Research Hypotheses

Ho_1: There is no significant difference between the mean achievement score of secondary school students taught Physics using mind mapping approach and the student taught physics with conventional method.

Ho_2: There is no significant difference between the mean achievement scores of secondary school male and female students in Physics.

Methodology

This study adopted a quasi-experimental nonequivalent pretest posttest control group design to identify the efficacy of mind mapping approach on students learning outcomes in Physics. This research design is used because secondary schools exist in intact classes and the randomization of students into groups for the purpose of experiment will not simply be allowed to avoid class disintegration.

The design is schematically represented as follows;

O1 X1 O3   Experimental group

O2 X2 O4   Control group

Where O1 and O2 are the pretest scores of Experimental and control groups respectively, also O3 and O4 represent their post test scores.

X1 = Mind mapping approach (Experimental group); X2 = Conventional teaching approach (Control group)

The population of this study consists all the senior secondary school class 1 (ss1) students in Port Harcourt Local Government of Rivers State. The sample of consisted of 234 (133boys &101 girls) Physics students. Purposive sampling technique was used to select two schools that are mixed and have at least two streams offering Physics.

The two schools selected were randomly assigned into four intact groups out which there were two experimental and two control groups. The experimental group comprised of 125 students (72 boys and 53 girls) while the control group had 109 (61 boys and 48 girls)

The instrument used for data analysis was a Physics Achievement Test (PAT) which consisted of Twenty (20) structured multiple choice objective questions. The PAT was used as a pretest to be sure of the equivalent ability of the students and it was as well used as a posttest after the treatment has been administered to determine the effect of the treatment on the students' academic performances. The instrument was given to four secondary school physics teachers for validation.

The test retest method was used to generate two sets of scores from the students and the scores were correlated to determine its internal consistency. The reliability coefficient of the instrument was 0.76. The researcher carried out the data collection procedure in stages lasting about three weeks. The researcher visited the selected school for permission in using the students and some of the school facilities. Afterwards the Physics Achievement Test (PAT) was administered as a pretest to both the experiment and control groups to ascertain their equivalence in ability. In the second stage, the experimental groups were taught using mind mapping approach, taking cognizance of the students' previous knowledge on the concept of ELECTROSTATICS. The students were actively engaged and were encouraged to interact in groups, while the control groups were also taught ELECTROSTATICS using the conventional method where there no proper teaching model and no interaction among students. One period of 40 minutes was allocated for each group three times in a week. In the final stage, the PAT was rearranged and administered to the two groups as a post test. The post test was scored and used to generate quantitative data which was analyzed using Z-test. Significance level of 0.05 was used to test the null hypotheses.

Results

The results of the analysis of the post test scores in PAT for the experiment and control group were analyzed and the results are presented below.

Hypothesis 1: There is no significant difference between the mean score of students taught Physics using mind mapping approach and the mean score of student taught physics with conventional method.

Table 1:

Group	Mean	S.D	n	S.F	DF	Standard Error	Z-Cal	Z-Crit	Decision
Experimental	14.4	3.07	125						Rejected
Control	9.45	4.18	109	0.05	232	0.485	10.20	1.96	

The data presented in table 1 above shows that the Z- calculated value of 10.20 is greater than the Z- critical value of 1.96 at 0.05 level of significance with 232 degree of freedom. The null hypothesis(Ho1) was rejected. This means there is significant difference between the mean score of students taught Physics using mind mapping approach and the mean score of students taught physics with conventional method.

Hypothesis 2: There is no significant difference between the mean achievement scores of male and female students in Physics.

Table 2:

Group	Mean	S.D	n	S.F	DF	Standard error	Z-cal	Z-crit	Decision
Male	14.35	2.97	133						Accepted
				0.05	232	0.36	1.67	1.96	
Female	14.95	2.46	101						

The data in table 2 above shows that the Z- calculated value of 1.67 is less than the Z- critical value of 1.96 at 0.05 level of significance with degree of freedom of 232. The null hypothesis (Ho2) was accepted. This means that there

is no significant difference between the mean achievement score of secondary school male and mean score of female students in physics achievement.

Discussion of Finding

The findings of the study revealed that there was no significant difference in the performance of Physics students before they were taught Physics using mind mapping approach and the conventional approach. This suggests that the two groups were quite homogenous at the start of the study. It implies that students used for the study have relatively equal background knowledge of Physics. The finding is also in agreement that teaching with independent strategies improves learner performance and metacognitive awareness of their own learning. It was also found that the teaching method is not gender bias and therefore significantly enhanced the achievement of both the male and female students. The result also showed that the students in the mind mapping approach group performed better than those in the control group. This is in agreement with Farrand, Hussan& Hennessy (2002) who opined that mind mapping approach improved the performance of medical students, and Rooda (1994) that mind mapping is an effective tool for improving the performance of student in nursing. It has been argued that conventional teaching method is content centered in which teachers remain more active, more cognitive and less effective (Singh, 2004).

Recommendations and Conclusion

The study was able to show that mind mapping approach is more effective in improving the academic performance of students in Physics when compared with conventional teaching method. This implies that mind mapping approach has the capacity to help students associate ideas, think creatively, and make connections that might not be achievable in the conventional note taking approach.

Based on the results obtained from this study, the following recommendations are then put forward;

1. Teachers should adopt mind mapping strategies when delivering instructions to enable meaningful learning and better assimilation among students.
2. Teachers should structure their lessons to include a number of strategies that can captivate students to explore, experiment and develop their creative activities/skills, (Opara 2010)
3. Students on the other hand should be actively involved in the learning process and encouraged to adopt mind mapping as a note taking strategy to maximize learning.
4. Educational policy makers and Government should organize regular workshops for teachers to be abreast of latest and innovative

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USE OF BLENDED LEARNING IN NIGERIAN EDUCATIONAL SYSTEM: OPPORTUNITIES, BENEFITS AND CHALLENGES

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Abstract

Learning is an inherently social process, and different strategies for effective learning can be implemented. Blended learning - a new era of technology is bringing promising prospects, accompanied by numerous new challenges for educators. Traditional methods, such as face-to-face teaching, are experiencing substantial transformations by utilizing these innovative technologies, many of which are instructional tools. This paper examined the term blended learning, its difference with E-Learning, its benefits, opportunities and challenges including: developing blended pedagogy, teacher support and professional development, technological challenges, student preparation/support and transition, unrealistic expectations, assessment considerations and culture and innovation.

Keywords: E-Learning; Blended Learning, Traditional method of learning

Introduction

The global and contemporary society involves dynamic, frequently unpredictable changes, which call for graduates able to interact fluently and to adapt to a variable social professional environment (Homer-Dixon, 2000; Singer, 2006). In the current contemporary world, the development of university education process is marked by the overwhelming influence of information technology. As a consequence, the learning process is adopted in an exquisite and dandified manner. Modern society globalization has led, the labour market, the emergence of new professions, resulting in reconfigurations of specializations within universities and transformation of traditional classroom functions into integrated learning that encompasses the research needs. Classrooms today have received a significant overhaul with the inclusion of ICT and new learning pedagogies. Advancements in computing and multimedia technologies in education have resulted in an emerging breed of technologically proficient learners (Mai, as cited by Ambikai and Muhd 2015). Today's students are digital natives and condoned by the transformative environment created by the advanced technology which is an efficacious mode for civilization and globalization.

Traditional methods of learning have been inspected and found wanting, for example in terms of the need for flexible thinking and technological implementation. Traditional classroom-based learning in which students are passive recipients of information provided by the expert, have in certain circumstances been replaced by e-learning. The implicit assumption behind moves to full e-learning is that e-learning is the best way to achieve educational improvement, in all subjects, for all students. New educational paradigms have emerged, with the learner seen as an active agent. One way of facilitating such activity is to make the learner the information seeker. Thus, most educational institutions aim to adopt e-learning with an assumption that this will reap greatest educational improvement. (Ruba and Woodcock 2014). This can be referred as online learning or E-learning. In the early 1980"s, the computer industry and multimedia organizations started to constitute e-learning as a reality (Charp, 1997). Companies and educational institutions were steadily hiring instructors to train their students. In higher education, teachers had just begun to use PowerPoint, a program that allowed people to create visually enhanced presentations. They were also able to play explanatory videos that could assist student learning during the class. This period was referred to as Computer-Based Training.

Online Learning according to Rosenberg (2001), the online learning or e-learning experience offers various possibilities in terms of relating information and instruction as vehicles to develop and preserve intellectual capital. E-learning is defined as instruction delivered on a digital device such as a computer or mobile device that is intended

to support learning be it self-study (asynchronous) or instructor-led e-learning (synchronous) (Clark & Mayer, 2011). Ellis (2004) believes that teaching through digital referencing may help the students to enlighten their info seeking, besides, promoting knowledge extraction from multiple resources. Web 2.0 in education is one of the primary catalysts that motivate the seeking engine in teaching and learning process (Hicks and Graber, 2010). In contrast, Milson (2002) reported that many students simply took a path of least resistance when it came to gathering and working with information. Students sought to use sites that would yield the answer quickly, as opposed to examining a range of sites to pull together a more nuanced perspective. Similarly to Ambikai and Muhd (2015), students experiencing technology frustration might encounter initial disappointment in terms of technology's inherent ability to facilitate inquiry. In certain cases, the students did worse at the end-of-unit experimental result as traditional approaches. Ambikai and Muhd(2015) suggest that teachers must provide scaffolding to support and monitor students in using technology as a tool to facilitate inquiry.

Ambikai and Muhd (2015) viewing the e-learning process takes one on a never-ending journey of exploration. E-learning includes web-based courses, computer-mediated communications and multimedia enhanced delivery medium, which has the potential to make the learning process an active one. In the past, academic literatures have indulged in discussions for e-learning and blended learning (Graham, 2005; Garrison & Kanuta, 2004, and Graham et al., 2003). However, technology enhanced learning has been ignored to a certain extent. Technology and the ease with which it can be accessed have changed the way we live and work. Today's students will not only compete with students that sit next to them, but also with their peers from across the globe. The world has truly become "flat" and, for students to compete in this new reality, they must develop the skills to use technology appropriately and ethically to enhance their learning.

Technology became embedded in instruction practically from the time it was invented. But with the meteoric expansion of the Internet and its utility in instruction, the difference between blended learning and learning online must be clarified, as they are often used simultaneously to explain the same model. It is believed that instruction provided completely online is a different kind of model and should not be confused with blended learning. In addition, blended learning includes multiple technologies, not simply online technology. There are compelling reasons to differentiate the two models. For most students switching from an in the-classroom education to a complete online education program is not necessarily a good alternative. Students, especially elementary age students, benefit from classroom structure, age-appropriate activities and information, a sense of community that a public school offers, and an interaction with peers, teachers, education support professionals, and other members of the education team. These integrated processes constitute the focus of this paper review which is centered on blended learning.

To have a clearer view on the definition of blended learning, we would examine the classroom and the teachers. Historically, classroom teachers have used a range of learning activities and resources to assist learners to achieve learning objectives. Face-to-face presentations, visual material, paper-based assessments, online research and group activities have been the mainstay of classroom teaching for many decades. More recently mobile technologies and collaborative Web 2.0 tools have expanded opportunities for learning. Blended learning is really no more than a combination of all of these approaches.   For some teachers, blended learning is describing what they've been doing successfully for years: that is, using a range of resources and activities to provide individualized, student-centered learning experiences for their students. The real difference today is the unparalleled access to the internet with its rich sources of information and services and more importantly, the connectivity it offers students and teachers, particularly the ability to create online communities and support networks. In addition, there is a growing use of mobile technologies such as flip cameras, voice recorders, mobile phones and GPS devices extending learning beyond the classroom walls. For other teachers, blended learning represents a challenge. They are not comfortable with nor do they fully understand the technologies and media that their students use every day, or the potential that these can offer their learners. To assist teachers in implementing blended learning activities, this paper reinforces the concept that blended learning comes in many guises and isn"t a "one-size-fits-all" educational solution.

Definitions of blended learning range from the very broad where practically any learning experience that integrates some use of ICTs qualifies, to others that focus on specific percentages of online curriculum and face-to-face instruction. Most people agree that blended learning combines teaching and learning methods from face-to-face, mobile and online learning and that it includes elements of both synchronous and asynchronous online learning options. The integration of new mobile technologies and online media is proving highly effective in helping schools meet the expectations of 21st century learners while addressing the challenges of limited resources and the special needs of many students. However, not everyone is happy with the term blended learning. Oliver and Tingwell (2003) in their article „Can blended learning be redeemed? " argue that blended learning is ill-defined and muddled as a description of particular forms of teaching with technology. They argue that the term blended learning may be redundant and gratuitous, as the practice of mixing traditional classroom methods with technology is widespread. This summary acknowledges that a broad continuum of definitions exists and that its definition will continue to evolve in the literature as new technology and associated skill sets emerge. Blended learning is realized in teaching and learning environments where there is an effective integration of different modes of delivery, models of teaching and styles of learning as a result of adopting a strategic and systematic approach to the use of technology combined with the best features of face to face interaction.

Blended courses (also known as hybrid or mixed--mode courses) are classes where a portion of the traditional face--to--face instruction is replaced by web--based online learning. McGee and Reis (2012) point out that while there is no absolute agreement with in higher education on the exact make--up of a blended course, institutions generally use "blended" (or related terms) to refer to some combination of on--campus class meeting and online activities. Graham, Henrie, and Gibbons (2014) concur that "models adopting the (combining online and face--to--face instruction) definition are the most prominent in the research" Blended learning is a phenomenon subjected to much on--going research. Additionally, Dziuban, Picciano, Graham and Moskal (2016) have edited a new collection of research on blended learning as a sequel to the two landmark books previously published. Nevertheless, practical questions often predominate in the minds of teachers and designers new to blended learning. For instance, how much of the face--to--face instruction must be replaced by online coursework? This question will vary greatly by class, discipline, and learning objectives. The Sloan Consortium (a professional organization dedicated to postsecondary online learning) defines blended learning as a course where 30%--70% of the instruction is delivered online. While this is a useful guideline, it may not be sufficient to cover every blended learning configuration.

A blended learning model incorporates the best aspects of both face-to-face and online instruction:

➢ Classroom time can be used to engage students in advanced interactive experiences.
➢ The flexibility and convenience of the technological/ online portion of the course can provide students with multimedia-rich content at any time of day, wherever the student has Internet access.
➢ Early evidence suggests that a blended instructional approach can result in learning outcome gains and increased enrolment retention.
➢ From the above views, blended learning can best be described as the integration of different teaching methodologies, the application of technology and the face to face delivery approach to the learners.

According to Griffith University (2010) Blended learning is about effectively integrating ICTs into course design to enhance the teaching and learning experiences for students and teachers by enabling them to engage in ways that would not normally be available or effective in their usual environment, whether it is primarily face-to-face or distance mode. In many cases the act of "blending" achieves better student experiences and outcomes, and more efficient teaching and course management practices. It can involve a mix of delivery modes, teaching

approaches and learning styles. Advances in technology provide new opportunities for teachers to design and deliver their courses in ways that support and enhance the teachers' role, the students' individual cognitive experiences, as well as the social environment; three key elements in successful learning and teaching. Blended learning technologies can:

1. Broaden the spaces and opportunities available for learning;
2. Support course management activities (e.g., communication, assessment submission, marking and feedback);
3. Support the provision of information and resources to students;
4. Engage and motivate students through interactivity and collaboration.

So it is not just about using technology because it is available; blended learning is about finding better ways of supporting students in achieving the learning objectives and providing them with the best possible learning and teaching experiences, as well as supporting teachers in their role (including the management and administration of courses). Of course, the integration of blended learning in courses will naturally vary according to such factors as: discipline, year level, student characteristics and needs, course or program learning objectives, as well as the academic's approach to teaching,

Examples of blended learning

1. Managing the marking, entering and releasing of grades for a course with over 700 students using an online grade centre in creating efficiency and accuracy for multiple markers and the course convener by reducing double handling, while giving students flexible and timely access to their results and feedback.
2. Delivering a lecture to on and off campus students simultaneously using an online virtual classroom tool helps to create a sense of community for the whole group and reduces workload for the lecturer by presenting only once.
3. Small group problem based learning activities are managed more effectively and efficiently within a large class by using an online collaborative workspace, allowing for greater transparency in group work assessment as well as providing an archive of resources for current and future students.
4. Weekly online practice quizzes to support lecture and textbook material using automatic marking functionality producing immediate and automatic feedback to individual students about their understanding

A current report suggests that, "the push toward blended learning is motivated by two factors: A huge industry out there 'that's dying to make money,' and the idea that in the long run this will save money on teachers—a claim that so far does not have research to substantiate it." Other research recommends that small scale blended learning pilots are necessary to determine the value and success of the proposed program. They caution that without pilot testing, "…this is a very costly, large-scale experiment on our children." But whatever the rationale, most research reveals that a clear and consistent teacher presence is essential to the "blending" of technological/online resources with in class time.

The students:

1. Facilitates learning, even within an online environment
2. Develops student-centered courses—not traditional lecture-based classes
3. Organizes online learning to contain small-group activities and team projects where students must collaborate
4. Communicates clear expectations for students where activities and assessments should account for different learning styles and best practices are implemented
5. Prepares for the challenges of online instruction and the use of all kinds of technology, and is proficient in the content area

A teacher in an effective blended learning environment would:

1. Use modern information, communication, and learning tools
2. Promote online dialogue to deepen the learning experience
3. Use adaptive technologies to meet individual needs
4. Assist students with speech impairments, e.g., computers that speak through speech synthesis, and text messaging-equipped mobile phones
5. Use effective written communication
6. Collaborate with students online to further student participation
7. Understand how the content management system (such as the "Cloud") works and how they can help facilitate the learning

Blended course have proven to be among the most popular choices for students at institutions w here they are offered (Olson, 2003 cited in Drysdale, Graham, Spring, and Halverson, 2013 and Kaleta, Garnham, and Aycock, 2005). At first glance, this popularity seems intuitive because blended courses al low students and faculty to take advantage of much of the flexibility and convenience of an online cour se while retaining the benefits of the face--to-- face classroom experience. Ezekoka (2015) also agreed that the use of blended learning can also potentially elicit another good practice principle, which is to give prompt feedback, as blended learning usually involves online interaction. However prompt feedback depends on how frequently the instructor and students use the relevant online platform. Although fully online learning has become well established in higher education in Nigeria , many institutions appear to be struggling with conceptualizing and implementing blended learning. Yet, where blended courses have succeeded, they have most often done so when strategically aligned with a n institution's mission and goals. The development and delivery of blended courses can be used to addr ess a variety of institutional, faculty, and student needs.

For universities, blended courses can be part of a strategy to compensate for limited classroom s pace, as well as a way to think differently about encouraging faculty collaboration. For faculty, blended courses can be a method to infuse new engagement opportunities into established c ourses or, for some, provide a transitional opportunity between fully face--to--face and fully online instruction. For students, blended courses offer the conveniences of online learning combined with the social and in structional interactions that may not lend themselves to online delivery (e.g., lab sections or proctored a ssessments).

➢ inclusion of more differentiated/personalized instruction
➢ increased access to resources, experts and learning opportunities
➢ more authentic and student driven tasks being incorporated into the curriculum
➢ higher student engagement
➢ greater opportunities for collaboration (especially beyond the classroom and involving the wider school community)
➢ exposure to a wide range of Web 2.0 technologies and acquisition of contemporary literacy skills
➢ better access to infrastructure and, anytime, anywhere learning

If an institution's blended learning strategy can be designed to address the needs and dynamics of all three constituencies (institution, faculty, and student) simultaneously, then blended learning can beco me a powerful force for institutional transformation. As cited in the U.S. Department of Education's (2010) "Evaluation of Evidence--Based Practices in Online Learning: A Meta--Analysis and Review of Online Learning Studies," "Students in online conditions performed modestly b etter, on average, than those learning the same material through traditional face--to--face instruction" and, notably, "Instruction combining online and face--to-

-face   elements   had   a   larger   advantage   relative   to   purely   face--to-
-face instruction than did purely online instruction"

Not only do students perform better in blended courses, but the electronic resources inherent in t he modality offer other advantages as well. For example, student performance analytics can be used to study and better understand student learning. Data analytics can also identify students who need early in tervention, thus increasing retention. The online tools available in blended courses can also significantly enhance student engagement, ensuring that all students participate in course discussions and benefit from collaborative   learning.
When properly implemented, blended learning can result in improved student success, satisfaction, and re tention. For instance, the University of Central Florida has consistently seen such results over the 17 ye ars of their own blended learning initiative. Since beginning this initiative, as of the end of the 2015--2016 academic year, UCF has delivered 10,941 blended course sections containing 394,962 student regi strations and generating 820,492 semester credit hours.

Blended learning aims to incorporate the best aspects of face-to-face classroom learning experiences with the best of mobile and online learning experiences. This allows:

1. An increase in learning outcome measures and lowering of attrition rates compared to fully online courses (Dziuban, Hartman & Moskal, 2004)
2. An opportunity for students to practice technology skills in navigating online course materials and creating their own digital content for assessment
3. An increase in student-teacher and student-student interaction through the use of communication tools like discussion forums, blogs and shared web content on the electronic whiteboard
4. The ability to reserve face-to-face time for interactive activities, such as higher-level discussions, small group work, debates, demonstrations, or lab activities. For students, the appeal of blended learning includes:
5. Flexibility and the freedom to learn anytime, anywhere
6. Some level of control over the pacing of their learning. Difficult concepts can be reviewed as often as necessary
7. More engaging content that they can create and use their own initiative, and networks to shape
8. The opportunity to engage and draw on expertise that would otherwise not be available to them without costly travel, such as virtual conferencing with zoo/museum/galley staff or virtual excursions to overseas historical or culturally significant landmarks.

The trial projects have identified a number of challenges for teachers and students to implementing blended learning strategies: developing blended pedagogy, teacher support and professional development, technological challenges, student preparation/support and transition, unrealistic expectations, assessment considerations and culture and innovation. Teaching using a blended approach can be challenging for some as it may require the acquisition of different teaching skills, re-designing the curriculum and the inclusion of new teaching and learning opportunities, managing the learning content both online, in-class and beyond the classroom walls, and preparing students to work in blended modes. Most negative feelings towards blended forms of learning tend to be generated by poorly designed approaches. It takes a great deal of thought and careful planning to deliver a quality learning experience regardless of the mode of delivery (Idaho Digital Learning Professional Development, 2009). Adopting a blended learning approach must start with a re-examination of the intended learn outcomes? The teacher needs to design learning activities that support these intended learning outcomes, personalize or differentiate learning and then integrate these activities effectively with the required assessment tools. Teachers should prepare their students for the blended learning style and discuss the new roles and responsibilities. Some students won't be used to working independently or may be unfamiliar with some of the technologies, so support mechanisms will need to be put in place for these students.

Feedback from the trials indicated the capacity for teachers to incorporate new technologies into teaching and learning programs may be limited without an expanded time commitment, and better support from IT staff and additional professional development.   Professional development options to be considered include adding new competencies to the curricula, assessment schemes more suited to blended delivery, and graduate training to encourage blended teaching and learning approaches across all curriculum areas. Other options might include motivating and/or rewarding teachers for the innovative use of blended learning approaches to improve student outcomes plus support from peers and technical experts. Teacher training needs to include and refine competencies of teachers in taking on a more facilitative role: skills such as questioning, creativity, observation, differentiation/scaffolding, and facilitating collaboration and networking opportunities and especially in understanding of and imparting of knowledge of online protocols (such as cyber ethics and intellectual property). Support for teachers can often come from peers. The Overcoming ICT Barrier in the Seven Hills Cluster (2010) project allowed the teachers from each school to communicate more effectively, and to plan curriculum tasks together, where previously they would only meet on cluster days or on an ad-hoc basis. Some teachers in these trials were able to pair up with literacy and Ultranet coaches, as well as cultural partners (zoo, museum, Gallery, State library experts) to achieve better outcomes from blended learning projects.

Access to devices is generally a major issue in the Nigerian education system, as schools are not provided with a grant to enable them to purchase devices. However, even schools where government provides, the grants are not sufficient to support one-to-one access. Teachers are however handicapped to employed techniques to enable devices to be shared - by having class sets and using rotations and/or by sharing device functionality through headphone splitters or interactive whiteboards, or assigning collaborative tasks that require sharing. Teachers in Nigeria who have embraced blended learning as innovative teaching methodology have pointed out that technical support is not generally available and it is becoming an issue because devices are becoming more expensive, teachers are not offered professional development and most schools don't have allocation of funds for technical support. Both students and teachers acquired more knowledge of the devices through personal development. Collaborative teaching reduced the reliance on one teacher problem-solving technical issues. Access to technical assistance and ICT training opportunities remains the outstanding issue for some educators in the Nigeria system.

Another challenge related to technology is the pervasive access the technology affords. Although the flexibility to learn online and from a distance provided by blended learning is perceive as advantageous, the pervasive access may also be invasive to learner's personal lives. For some, the online component results in more time devoted to study, and less to personal concerns. This can lead to participants feeling overwhelmed and tired. Ezekoka (2015). It's not only the teachers who need support for the transition to a blended learning environment. Students also need preparation and support for the transition to becoming more independent learners and self-managers. Support for Students – the role of the wider workforce including paraprofessionals. Díaz and Entonado (2009) noted that the important role of teachers in blended learning is in "facilitating of the teaching/learning process, combining the explanation of theoretical contents with activities, and encouraging interaction". Students also required additional assistance in understanding internet protocols especially those of cyber safety and intellectual property. Intercultural understanding was also an area that required guidance. Students can also engage expert non-teachers (paraprofessionals) to assist with specific content teaching, for example scientists, especially through the use of Web 2.0 technologies. Ezekoka(2015) citing Poon(2013) suggests that students enrolled in blended courses can sometimes have unrealistic expectations. The students sometimes assumed that fewer classes meant less work, had inadequate time management skills and experienced problems with accepting responsibility for personal learning. Students in such courses as also reported feeling isolated due to the reduced opportunities for social interaction in a face to face classroom environment. Ezekoka(2015)

Assessment Considerations

> The way in which teachers assessed student outcomes in these blended learning projects changed, for example:

- ➢ Reflection was encouraged, so students could go back to revisit their products such as podcasts and refine them
- ➢ Teachers were able to assess many more skills than just traditional literacy (e.g. reading, writing) in activities such as digital story creation e.g. group work, media literacy and technical editing skills
- ➢ Technologies that enabled frequent feedback (online quizzes) allowed for differentiated intervention
- ➢ Engaging students in creating their own podcasts, films and games allowed teachers to assess deeper conceptual thinking and creativity
- ➢ Monitoring using ICT was often instantaneous and timely, offering immediate opportunities for remedial action
- ➢ Collaboration and peer review became part of the formal assessment using ICTs especially through blogging, discussion boards and film making, and this encouraged better performance
- ➢ Assessment criteria in these projects were also more transparent to students (possibly due to the use of rubrics), raising expectations in performance
- ➢ The public nature of students" work and having an authentic audience (through blogging, web pages, online chat etc) made students more aware of social etiquette, the need to present better products and encouraged healthy competition between students raising academic achievement.

Culture and Innovation

The system and cultural influences on student performance, teacher practice and device access were profound. Student's shows support by showing interest in the learning, providing encouragement/ assistance, and by creating an expectation that there would be a flow-on effect across the school. This raised expectations, empowered teachers and students, contributing to better outcomes. An Innovative Culture, A culture that encouraged innovation is typical for the success of these blended learning projects. In general the culture must be accepting of change and risk and looked to overcome issues and to challenge students to do better.

Conclusion

In this study we considered the meaning of blended learning , opportunities, benefits and challenges associated with blended learning. Blended learning is more than just a hot new trend in education— it's the way classrooms of the future will work. The concept behind blended learning is to take the best elements of in-person classroom instruction and online instruction and combine them. In a blended classroom, students attend classes in person and watch lecture videos or complete online activities. By combining online and in-person elements, educators today are creating the best learning environment possible through blended learning. Blended learning has become extremely popular in higher education settings. Blended classrooms allow greater flexibility for students and can encourage non-traditional students to pursue higher education. This approach also saves teachers time, as they can record a lecture one time and use it indefinitely, rather than delivering the same lecture to multiple classes each semester. Although there are challenges in the use of blended learning, efforts should be made towards overcoming these since blended learning has numerous benefits.

Recommendations

From the above discussion, blended learning can be more effective if the suggested views are integrated

1. Training of teachers and students in the relevant ICT skills
2. Familiarity with Web 2.0 tools and other ICT gadgets
3. A commitment to collaboration and student-centred learning that should underpin the languages program
4. Sufficient class access to the internet and relevant hardware especially in our secondary schools
5. Sufficient time for professional learning, program planning and resourcing

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IMPLICATION OF BLENDING THE TRADITIONAL LEARNING OF ACCOUNTING WITH INFORMATION AND COMMUNICATION TECHNOLOGY IN IMO STATE SENIOR SECONDARY SCHOOLS

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Abstract

Introduction

In the recent past, the aspect of Accounting that involve data management was taught in schools using the traditional method where ledgers used in offices and other Accounting data management tools were drawn and shown to students using chalk and chalkboard. This method (traditional) was effective in teaching and learning of accounting since paper ledger was the major data management tool facing the Accounting students in the labor market (Baldwin and Reckers, 2008). However, with the introduction ICT which includes computer and various computer software ledgers presentation in paper was becoming moribund, resulting in students' loss of interest and subsequently poor performance as they are no longer prefer presentation in papers, hence paper ledgers are beginning to slowly disappear from our financial institutions and replaced by various spreadsheet software managed by computers. This prompted the desire to ensure that the traditional approach is blended with modern technology in teaching accounting to improve on the students' interest and performance.

According to Jamie, (2000), Accounting is the systematic and comprehensive recording of financial transaction pertaining to a business. "The American Institute of Certified Public Accountants (AICPA) defines accounting as the act of recording, classifying, and summarizing in significant manner and in terms of money, transactions and events which are in parts at least of financial character and interpreting the results thereof". Accounting is also defined as the system of recording and summarizing of business and financial transaction and analyzing, verifying, and reporting the results as well as the principles and procedures of this system. The name that looms largest in early accounting history is Luca Pacioli, who in 1494 first described the system of double entry bookkeeping used by venetian merchants in his Summa de Arihetica, Geometria, Proportion et Proportionalita". The history of accounting or accountancy is thousands of years old and can be traced to ancient civilizations.

The early development of accounting dates back to ancient Mesopotamia and is closely related to developments in writing, counting of money and Babylonians. By the end of Roman Empire, the government had access to detailed financial information. The Italian Luca Pacioli, recognized as the father of accounting and bookkeeping was the first person to publish a work on double entry bookkeeping and introduced the field in Italy. The modern profession of the chartered accountant originated in Scotland in the nineteenth century. Accounting in recent years has made significant impact on socio-economic and political development especially on recording, preparing, interpretation, auditing and investment. Other impacts includes: merger, acquisition planning, controlling and storage of business operation. Above all is the impact on the decision making process, (Remi, 2006)

Educational planning, human resources (HR) training and development have evolved as discipline to guide the allocation and utilization of educational resources in the school system. This is required to arrest areas of waste of resources to make educational production more effective. In this regard, educational planning have become indispensable tools in the management of the school system in order to achieve the desired goals of education systems around the world (Olulube, 2013a, b).

It is obvious that quality decision is derived from quality of information received. Accounting information has been the guiding principles in formulating policy and criteria for selection among alternatives. However, in

every organization including secondary schools, accounting information has been a guide in the acquisition of materials and equipment into the resource center for learning purposes. No economy will stand well economically if records are not kept and acted upon. Accounting is one of the primary vehicles of record keeping. Data are gathered from their various sources, organized, analyzed, interpreted and communicated to the end users for an informed economic decision making that will in the long run yield positive fruit. Frauds can only be discovered and prevented in an environment where there is good internal control in place and a good internal control cannot be in place where there is no form of keeping track of events. Accounting and accounting information system is the only way of keeping track of all these in an effective and efficient manner.

ICT refers to technologies that provide access to information through telecommunication. It is an improvement on Information Technology (IT), but focuses primarily on communication technologies. More recently, Information and Communication Technology (ICT) is also being used to define the merging of several different technologies each having vastly different types of data sets and format from one another. However, in order to be considered successful anywhere today, be it academics, employment or even just to be a responsible citizen, having at least some basic know how of Information Communication Technology (ICT) and how to make use of it to be more productive is essential and determines how capable we will be as part of the modern society which relies upon Information and Communication Technology (ICT) for almost everything. This is why digital literacy is extremely important in today's world.

Information and Communication Technology (ICT) or digital literacy must be recognized as a basic form of education in modern society by our schools and must be taught to all students from an early age. ICTs can enhance the quality of education in several ways by increasing learning motivation and engagement by facilitating the acquisition of basic skills and by enhancing teacher training .ICTs are also transformational tools which when used appropriately can promote the shift to a learner-centered environment. ICT integration is described as the means of using any ICT tools such as   internet, e-learning technologies and CD ROMs to assist teaching and learning. Use of Information and Communication Technologies (ICTs) in education has been reported to result in many learning benefits though it is quite demanding. ICTs in this study include the computer, the internet and CD ROMs. Adequate preparation must be put in place for ICT integration in education to succeed. It requires keen planning, effective teacher preparation and sustained regular teacher professional support and visionary leadership that recognize the need to prepare the learners to live and work in the technological world of the 21st century. It also requires a teachers' attitude that is adaptive to change and appreciation of the fact that in many ways modern technology enriched pedagogies. To achieve this, teachers might also require training and sustained professional development.

In order to approximately integrate ICT for improved education quality both technology and pedagogy must be addressed in the aspect Koehler calls Technological Pedagogic Content Knowledge (TPACK). Inappropriate use of technology in education can lead to negative effects and that should be avoided. Effective use of ICTs as teaching learning resources has been found to significantly increase students' achievement and it promotes students critical thinking and problem solving skills needed in life. By this, the researcher implies the adoption of ICT as a supplementary to the traditional method of teaching accounting.

Blended learning is an education program (Formal or non-formal) that combines online digital media with traditional classroom methods. It requires the physical presence of both teacher and student, with some element of student control over time, place, path, or pace. While students still attend "brick and mortar" schools with a teacher present, face to face classroom practices where computer mediated activities are integrated into it.
Blended learning is also used in professional development and training settings. The lack of consensus on a definition of blended learning has led to difficulties in research on its effectiveness in the classroom. Blended learning is also highly context-dependent and therefore a universal conception of it is hard to come by. Blended learning is sometime used in the same breath as "Personalized learning" and "Differentiated learning".

The term "Blended Learning", "hybrid learning", "teaching-mediated instruction", "web-enhanced instruction" and "mixed-mode instruction" are often used inter changeably in research literature. Although the concepts behind blended learning first developed in the 1960s; the formal technology to describe it did not take its current form until the late 1990s. In 2006, the term became more concrete with the publication of the first handbook of blended learning by Bonk and Graham.

Graham challenged the breath and ambiguity of the term's definition and defined "blended learning system" as learning system that "combine face to face instruction with computer mediated instruction". In a report titled "Defining blended learning" researcher norm suggests that, in its current form blended learning "designates the range of possibilities presented by combing forms that requires the physical co-presence of teacher and students.

There are distinct blended learning models suggested by some researchers and educational think tanks. These models include:

1. Face to Face: Where the teacher drives the instruction and augment with digital tools.
2. Rotation: Students' cycle through a schedule of independent online study and face to face classroom time.
3. Flex: Most of the curriculum is delivered through a digital platform and teachers are available for face to face consultation and support.
4. Online Driver: Students complete an entire course through an online platform with possible teacher checking. All curriculum and teaching is delivered through a digital platform and face to face meeting are scheduled or made available if necessary.
5. Labor: The entire curriculum is delivered through a digital platform but in a consistent physical location. Students usually take traditional classes in this model as well.
6. Project-Based: Is a model in which the students uses both online learning either in the form of courses or self directed access and face to face instruction and collaborated to design, and publish project-based learning assignment, products and related artifacts.
7. Mastery Based: Students rotate between online and face to face learning (activities, assessments, and projects) based on the completion of mastery based learning objectives.

Purpose of the Study

The general purpose of this study is to ascertain if the integration of ICT into classroom instruction helps to improve on senior secondary school students' performance in Accounting. Specifically, this study sort to:

1. ascertain if blending the traditional learning of accounting with information and communication technology increases students' interest in accounting.
2. ascertain if teachers' blending of traditional teaching approach with information and communication technology influences students' performance in accounting.
3. ascertain if the availability of public power supply affect senior secondary school students interest in learning Accounting.

Research Question

Three research questions were asked to guide the study:

1. To what extent does the use of computer improves senior secondary school students' interest in learning Accounting?
2. To what extent do teachers' blending of traditional teaching approach with information and communication technology influence students' performance in accounting?
3. What problems hinder the use of ICT in teaching accounting in secondary schools?

Hypothesis

The extent to which the use of computer improve students interest in learning accounting is not significantly below 2.50.

Methodology

A survey research design was adopted in the conduct of this study. The area of the study was the Senior Secondary Schools in Owerri Municipal Council of Imo State in the in south-east zone of Nigeria. The population comprised all the 62 accounting teachers in all the senior secondary schools in the municipal council. Since the population is not much, there was no sampling as the population equally formed the sample The instrument was a 15-items researchers developed questionnaire, structured on a four point modified Likert scale.

Table 1:
Distribution of accounting teachers in the public senior secondary schools

S/No	Name of School	Accounts Teachers
1	Alvana Model Secondary School, Owerri	9
2	Boys Secondary School, Owerri.	6
3	Comprehensive Developments Secondary School, Owerri.	6
4	Emmanuel College, Owerri.	5
5	Government Technical College.	4
6	Government College Owerri	11
7	Holy Ghost College, Owerri	7
8	Imo Girls Secondary School	4
9	Owerri Girls Secondary School.	5
10	Urban Development Secondary School	5
Total		62

The twenty items instrument was validated by two experts, one in the accounting education department of Faculty of Education, Imo State University, Owerri and one senior accounting teacher in Egbu Girls Secondary School, Owerri. Test-retest method was used to estimate the reliability of the instrument and it yielded a coefficient of 0.79. The instrument was personally administered to the respondents with the aid of one trained research assistant who was adequately instructed on what to do. The issued copies of the questionnaire were collected by the researchers and the assistant. Research questions were answered using mean and standard deviation.

Table 2:

S/No	The use of computer to improve senior secondary school students' interest in learning Accounting.	$\overline{X}$	S
1	Students participate more effectively when teaching is done using computers.	3.11	0.75
2	Students attend classes more regularly when accounting practical is done on computers	3.29	0.76
3	Spread sheets look more attractive on computers.	3.43	0.83
4	ledgers are preferred by students when seen on computer screen.	3.28	0.78
5	The adoption of online teaching entices the accounting students a lot.	3.41	0.75
Cluster Mean		**3.30**	**0.77**

Table2: Revealed in item one that Students participate more effectively when teaching is done using computers with a mean of 3.11 which is above the criterion mean of 2.50. The same was applicable to items 2, 3, 4 and 5 as all their means scores were above 2.50. This confirms that the use of computer in teaching Accounting subject improves senior secondary school students' interest in learning Accounting Students participate more effectively when teaching is done using computers.

Table 3:

To what extent does teachers' blending of traditional teaching approach with information and communication technology influence students' performance in accounting?

S/No	Influence of blending traditional teaching approach with Information and Communication Technology on students' performance in accounting	$\overline{X}$	S
1	The use of Excel Access software spread sheet enhances students' performance in accounting.	3.37	0.72
2	Storage of previous work on computers enhances smooth continuation during next class.	3.17	0.6
3	The use of MS office software for computer lessons enhances students' performance in accounting.	3.25	0.79
4	Programmed instruction for accounting lesson delivery enhances the students' learning retention.	3.29	0.71
5	The introduction of Multi-media projectors for instruction makes for easy understanding of accounting.	3.27	0.62
	Cluster Mean	**3.27**	**0.69**

Table 3: Revealed that the respondents agreed in item 6 that the use of Excel Access software spread sheet enhances students' performance in accounting with a mean of 3.37 and 0.72 standard deviation from level are the which shows that the mean ratings of the respondents are close, which goes to show that they almost all agreed at a high extent that the use of Excel Access software spread sheet enhances students' performance in accounting as a subject. With rating of 3.17, 3.25, 3.29, 3.27 and a grand mean of 3.27, there is a census agreement among the subjects that blending traditional teaching approach with information and communication technology on influences students' performance in accounting. This is confirmed from the cluster standard deviation of 0.69.

Table 4:

What problems hinder the use of ICT in teaching accounting in secondary schools?

S/No	Problems hinder that the use of ICT in teaching accounting in secondary schools.	$\overline{X}$	S
1	None availability of adequate ICT facilities hinder their use during accounting classes.	2.74	0.47
2	Lack of regular supply of electricity to operate ICT facilities often hinder their use in accounting lessons	3.41	0.53
3	The absence of equipment operators in most cases hinder the use ICT for accounting instruction	3.17	0.62
4	Inadequate spaces for large class accommodation result in poor use of the facilities.	2.15	0.43
5	Teachers' ICT skills possession, contribute to effective use of ICT facilities in accounting classrooms.	2.73	0.36
	Cluster Mean	**2.84**	**0.48**

Table 4: Revealed that the subjects agreed in item 11 that none availability of adequate ICT facilities hinder their use during accounting classes with mean rating of 2.74 which is higher than the criterion mean of 2.5 and with a standard deviation of 0.47, they confirm that they agree with little or no difference in extent of agreement. So do they agree in items 12, 13 and 15 with mean scores of 3.41, 3.17, 2.73 and standard deviations of 0.53, 0.62 and 0.36, only in item 14 disagreed that inadequate spaces for large class accommodation result in poor use of the

facilities with a standard deviation of 0.43. However, with a cluster mean of 2.84 and standard deviation of 0.48, it is assumed that they agreed that there exist some problems which hinder the use of ICT in teaching accounting in secondary schools.

Conclusion

This study was prompted by the desire to improve on students' interest in the study of accounting and to improve on students' performance in accounting both at the internal and external examinations levels by modernizing the instructional approach through blending the traditional approach with the Information and Communication Technology (ICT) facilities like the computer. It x-rayed the level of improvement on interest and performance ability of students when taught using computer like in spread sheet, ledgers etc are presented practically on the computer. Whether, the use of Excel Access software spread sheet enhances students' performance in accounting, if the Storage of previous work on computers enhances smooth continuation during next class and more. It was discovered that the use of computer in teaching improves students' learning to a great extent as their interest is captured.

Recommendations

Based on the findings of this study, the following recommendations were made:
1. That given the level of importance of account keeping at all levels of education and given the fact that information storage in computer hardly loses, the principals of all Senior Secondary Schools should ensure the provision of computers for the teaching of accounting in the Senior Secondary Schools.
2. Training and retraining of accounting teachers on the use of computers should be made from time to time to ensure adequate computer skills acquisition is acquired by the accounting teacher.
3. The government should provide all the schools offering accounting as a subject with computers to enable them improve and be in tune with the modern approaches in teaching.

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TRANSFORMING HIGHER EDUCATION THROUGH MASSIVE OPEN ONLINE COURSES

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Abstract

This paper focuses on transforming higher education through massive open online courses (MOOC). Massive open online courses provide an opportunity for people to access free courses offered by top universities in the world and therefore attract great attention and engagement from teachers and students. However, with contrast to large scale enrolment, the completion rate of these courses is really low. One of the reasons for students to quit learning process is problems which they face that could not be solved by discussing them with classmate. This paper also critically reviewed related literatures on MOOCs, lapses were discovered, addressed and solutions and recommendations were proffered.

Keywords: Online Courses, Higher Education, Learning, Teachers Education.

Introduction

Education, being a social institution serving the needs of society, is indispensable for society to survive and thrive. It should be not only comprehensive, sustainable, and superb, but must continuously evolve to meet the challenges of the ever changing and unpredictable globalized world. This evolution must be systemic, consistent, and scalable, therefore it is incumbent on teachers, school administrators and policy makers to innovate the theory and practice of teaching and learning as well as all other aspect of this complex organization to ensure quality, accessible and affordable education for all. For an individual, a nation, and human-kind to survive and progress, innovation and evolution are essential. Innovation in education are of particular importance because education plays a crucial role in creating a sustainable future. Innovation therefore is to be regarded as an instrument of positive change. Education not only needs new ideas and inventions that shatter the performance expectations of today's status quo, to make a meaningful impact, these new solutions must also "scale", that is grow large enough, to serve millions of students and teachers or large portions of specific underserved populations" (Shelton, 2011).

It is on this premises that an educational platform that is aimed at unlimited participation and open access through the internet is advocated. One of such platforms is massive open online course (MOOCs) which emphasizes open access features such as open licensing of content, structure and learning goals to promote the reuse and remaining of resources. Before the digital age, distance learning appeared in the form of correspondence courses. In the 1890s – 1920s and later radio and television broadcast of courses and early forms of e-learning. During the late 1990s changes in online or e-learning and distance education, started increasing with online presence, open learning opportunities, and development of massive open online courses. The main focus of this paper is to x-ray how higher education can be transformed through massive open online courses.

Massive open online courses (MOOCs) was first started in 2008, by George Siemens and Stephen Downs, and were members of the "connectivist and connective theory of knowledge". It was created as a credit course for the university of Manitoba. Connective knowledge had 25 students who had paid fees for the course and around

2200 learners who took the course for free. Massive open online courses really came to stay in 2012, when professors Sebastian Thrun and Peter Norvig of Stanford University offered the online course called "introduction to Artificial Intelligence". This course had approximately 1,600,000 students participating from 190 countries. After the success of introduction to artificial intelligence, Thrun and Nrovig Started Udacity, a business model for online knowledge sharing. There are also a few other massive open online course providers, such as coursera and Edx, Khan Academy, Canvas Netowrk, Standard online, future learn.

Massive open online courses (MOOCs) are a relatively new phenomenon sweeping higher education. By definition, MOOCs take place online. Massive open online course is larger than typical college classes sometimes much larger. Massive open online course (MOOCs) are a form of distance learning. They are open and free for anyone to participate in, and some MOOCs have thousands of students participating from across the globe. Openness also refers to the open-access philosophy of some of these courses (but by no means all) in which materials are made available under a creative common license for reuse and adaptation.

Massive open online courses (MOOCs) evolve from the open educational resources (OER) movement as a way to connect open access digital materials to networks of learners, and may be considered a continuation in the development of distance education (Daniel 2014). The term 'MOOC' was originally articulated by Dave Cormier (university of Prince Edward Island, Canada) to describe a course developed by George Siemens and Stephen Downes on "connectivism and connectivity in knowledge' in 2008. This pioneering MOOC and those that immediately followed were based on the connectivist pedagogical principles of learning socially from others within distributed networks. They were close in structure and built around interaction. Participating web 2.0 culture and an increasing use of and competency with, digital tools had provided an environment for the open model to thrive.

Descriptively, a typical MOOC course of 2013 might take place over 4 to 10 weeks, of which most are given to learning in a week or fortnight to production of a piece of work, sometimes a radio. Students on average estimates dedicate two to five hours a week to the course although a small cohort of highly engaged learners may be much more committed. Materials may be consumed in diminishing volumes throughout the MOOC as many learners' commitment wanes. The resources posted in the MOOC remain accessible after it has closed. Course applicants or a few thousand at most.

Historically, it is an evolution of previous experiments in open education and online learning. Other antecedents include the movements or Open Education Resources (OER), and earlier pioneering experiments in distance learning technology. The heritage matters for three reasons:

    i.   First, the origin may reveal that the MOOC is, or is not, a genuine educational innovation.
    ii.   Secondly, if the innovations emerging from MOOCs are connected to the other recent learning practices, the benefits of MOOC formats will be widely shared.

But, the history of distance learning shows earlier cycles of online innovation and popularity which have not ended happily, distance learning platforms such as dotcom boom saw optimistic commercial ventures so were the likes fathom, All Learn, universitas 21 and others promising provision and quality of education. These have either folded, or stepped back from their original aims: MOOCs may be subject to the same factors and could be like these, a flash in the pan.

Functionally, the basket of products carrying the MOOC label is now quite diverse. The term applies to any course offered free, online and at scale. What marks the MOOC out from conventional online learning is that no

professional academic time (or virtually none) is allocated to guiding or supporting individual learners. Some aspects of some MOOCs are now charge-bearing (such as credit-bearing examinations) and this trend is spreading as MOOCs begin to offer accredited learning. Higher education is a post-secondary education, or third level education which is an optional final stage of learning that occurs after completion of secondary education. This is often delivered at university levels, colleges, seminars, conservatories, and institutes of technology, higher education may also be available through certain college level institutions, including vocational schools, trade schools, and other career colleges that award academic degrees or professional certifications. Tertiary education at non-degree level is sometimes referred to as further education or continuing education as distinction from higher education. Higher education has undergone major changes in the past centuries, moving from a highly exclusive service dedicated only to a truly small target audience consisting of wealthiest people to a mass service granted to anyone willing to pay a relatively high tuition fee. Additionally, to higher education massification, the student body's structure has changed in the recent years as it is no longer filled by 18-21-year-olds and studying solely fulltime with no other commitments (Ramsden, 2008).

Learning in Higher Education is basically teacher centred and teaching method is mainly by lecture method in order to accommodate a large number of students. Teaching and learning in Higher Education has to been responsive in terms curriculum and pedagogy that is, content and method. In today's globally competitive knowledge based economy, updating curricula needs to be an almost permanent undertaking. Clark (2001) suggests that University departments will need to change their curricula every two or three years in order to ensure that the content of their teaching reflects the rapidly advancing frontiers of scientific knowledge. From the standpoint of pedagogy, expanded access and higher participation rates means students population will become increasingly diverse in terms of academic preparation, means, capacities, motivation and interest. At global level, these changes are fueling a shift in pedagogical emphasis from staff teaching to students learning (El-Khawas 2001; Salmi 2001). Evidences suggest the need for greater attention to innovation in both curriculum and pedagogy in higher education because students' academic success seems limited and high rate of dropout, hence the need for a flexible, cheap and student centred learning package which massive open online course fits perfectly.

Teacher education or teacher training refers to the policies, procedures, and provision designed to equip prospective teachers with the knowledge, attitudes behaviors, and skills they required in classroom, school, and wider community. The professionals who engage in this activity are called teacher educators. The process by which teachers are educated is the subject of political discussion in many countries reflecting both the value attached by societies and cultures to the preparation of young people for life, and the fact that education systems consume significant financial resources. However, the degree of political control over teacher education varies where teacher education is entirely in the hands of universities, the state may have no direct control whatever over what and how new teachers are taught, this can lead to anomalies, such as teachers being taught using teaching methods that would be deemed inappropriate if they used the same methods in schools, or teachers being taught by persons with little or no hands – on experience of teaching in real classrooms. In other systems, teacher education may be the subject of detailed prescription, a typical example is where the state may specify the skills that all teachers and the content of teacher education courses. Teacher education is often divided into the following stages: Initial teacher training; Induction; Teacher development or continuing professional development.

In many countries, initial teacher education takes place largely or exclusively in institutions of Higher Education. It may be organized according to two basic models. In the 'consecutive' model, a teacher first obtains a qualification in one or more subjects of an undergraduate bachelor's degree and then studies further period to gain an additional qualification in teaching (master's degree). In the 'concurrent' model which is predominant here, a

student simultaneously studies both one or more academic subjects and the ways of teaching that subject, leading to a combined degree and teaching credential to qualify as a teacher of that subject. Other pathways are also available. In some countries, it is possible for a person to receive training as a teacher by working in a school under the responsibility of an accredited experienced practitioner. Teaching involves the use of a wide body of knowledge about the subject being taught, and another set of knowledge about the most effective ways to teach that subjects to different kinds of learner, it, therefore, requires teachers to undertake a complex sets of tasks every minute. The proportion of teachers who either do not enter the profession after completing initial training, or leave the profession after first teaching post is high (Richard, Ingersoll, Smith & Thomas 2004). Because of the world that teachers are, preparing young people to enter is changing so rapidly and because the teaching skills required are evolving likewise, no initial course of teacher education can be sufficient to prepare a teacher for a career of almost a lifetime. In addition, as the student's body continues to change due to demographic issues there is a continuous pressure on academics to have a mastery of their subjects but also to understand their student, understandably massive open online course becomes handy.

Massive open online courses are widely seen as a major part of a larger disruptive innovation taking place in higher education, this is because of the many services offered under traditional university business models are predicted to become unbundled and sold to students individually or in newly formed bundles. These services include research, curriculum design, content generation (such as textbooks), teaching, assessment and certification (such as granting degrees) and student placement. Obama (2005) has cited recent development, including the online learning innovations at Carnegie Mellon University, Arizona State University and George Institute of Technology, as having potential to reduce the rising costs of higher education. The following are the core benefits of massive open online course (MOOCs).

Improving Access to Higher Education: Massive open online courses may be regarded by many as an important tool to wide access to higher education for millions of people, including those in the developing world and ultimately enhance their quality of life. Massive open online course may be regarded as contributing to the democratization of higher education, not only locally or regionally but globally as well. Massive open online course can help democratize content and make knowledge reachable for everyone. Students are able to access complete courses offered by world-renowned institutions and teachers.

Providing an Affordable Alternative to Formal Education: The costs of tertiary education continue to increase because institutions tend to bundle too many services. With massive open online course, some of these services can be transferred to other suitable players in the public or private sector. Massive open online courses are for large numbers of participants, can be accessed by anyone anywhere as long as they have an internet connection, are open to everyone without entry qualifications and offer a full complete course experience online for free. Sustainable Development Goals: Massive open online course can be seen as a form of open education offered for free through online platforms. The initial philosophy of massive open online course is to open up quality higher education to a wider audience. As such, massive open online courses are an important tool to achieve goal for the 2030 agenda for sustainable development.

There are various challenges faced by massive open online courses which include the following;

i.   Relying on user-generated content can create a chaotic learning environment.
ii.   Digital literacy is necessary to make use of the online materials.

iii. The time and effort required from participants may exceed what students are willing to commit to a free online course.
iv. Once the course is released, content will be reshaped and reinterpreted by the massive student body, making the course trajectory difficult for instructors to control.
v. Participants must be self-regulate and set their own goals.
vi. Language and translation barriers.

The proliferation of massive open online courses (MOOCs) has stirred a fervent debate about global access to higher education, (Ioana 2015). While MOOCs has received praises for expanding educational opportunities in a more and accessible   fashion, others criticize this trend as a threat to current models of Higher education a low level substitute for traditional learning. Here are few effects MOOCs have had on Higher Education;

1. Increased institutional consciousness around the future of digital. Not surprisingly, the most prevalent topic of conversation was that the institutions are increasingly thinking, debating and dreaming about the roles of MOOCs and digital education more broadly in defining future models of higher education. Today those conversations populate strategy documents and inform decision making between students, staff and faculty on a daily basis, (Allison 2014)
2. Elevated appreciation for the profession of teaching. Research occupies a place of privilege at Universities, but MOOCs have helped focus attention on teaching and learning process on our campuses.
3. Team based course design. Creating MOOCs requires people across institution to collaborate in ways not familiar to higher education. Instructional designers, software developers, learning researchers, librarians, videographers team up to create each MOOC.
4. Privileging institutional capacity building over outsourcing.
5. Creation of new space for experimentation.

Conclusion

This paper concludes that massive open online courses are not trying to eradicate normal higher education programs but can ser as a complementary tool in transforming education through a cost effective strategy. In a nutshell the importance of massive open online courses to higher education cannot be over emphasized.

Recommendations

After a critical review of related literatures on the concept of massive open online courses, a high dropout rate was recorded as compared to those who registered and finished. There were also criticisms on MOOCs being a low level substitute to traditional learning, therefore the following recommendations were put forward:

1. MOOCs should be designed towards improving students' engagement and methods applicable to face-to-face teaching environments that advance engagement are recommended.
2. MOOCs are team based, therefore collaboration between faculty, instructional designers, researchers, subject matter experts are highly important in creating quality MOOCs.
3. Research is a focal point in Higher education and occupies a privileged place, MOOCs which are adequate substitute in teaching and learning should be developed in campuses.
4. MOOCs should be developed in affordable and accessible fashion and with the reach of students.

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ANALYSES OF INTERNET ADDICTION LEVELS AMONG UNDERGRADUATES IN SELECTED UNIVERSITIES IN KWARA STATE, NIGERIA.

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Abstract
Internet is the global network of computer that is capable of communicating with each other via common language. Internet allows for virtual communication, virtual learning and much more. undergraduates have abused, over-used and used it in negative way thereby having negative impact in their lives. The objectives of this study were to find out undergraduates internet addiction level based on gender and length of course of study. Questionnaire was used as the major instrument used to gather relevant data. Data were collected from respondents, including 152 males and 139 females making a total of 291. Six research questions were formulated for the study, mean and percentage were used to answer the research questions while t-test was used to test the research hypotheses. The results from the research indicated that undergraduates were moderately addicted to internet, there was no significant difference in addiction level based on gender, also no significant different existed based on length of study of undergraduates. Based on the findings of this study, it was recommended that Non Governmental Organizations (NGOs) and educational institutions should encourage the use of Internet in a productive way and make functioning internet facilities available in universities.

Keywords: Internet, Addiction, Undergraduates, Symptoms.

Introduction

The Internet is a widely used channel for sharing and dissemination of information; it is also a useful tool for research work, social media, gaming, gambling and commerce (Widyantho & Griffiths, 2006). The Internet has grown up to be one of the most admired media for conveying information. These media are now being used excessively by teenagers and young people to communicate with one another. The excessive use of the Internet causes problematic Internet use and negative effects in all areas. This study shows the level of Internet addiction among university students in Kwara state, Nigeria. Obsessive use of Internet can cause disturbance of social life (relationship with family, friends, colleagues and neighbors), health (headache, backbone and eye sight problems, and carpal tunnel syndrome), attitude (moodiness, depression and anxiety) and study (classes, exams, quizzes, homework and results). Internet addiction produces negative consequence on behavior, attitude, state of mind, individual differences and moral conducts of individual. Using the internet appropriately can produce good, positive and healthy results (Muhammad, Misbah & Natash, 2013).

The concept of Internet addiction refers to the extreme use of Internet which in turn causes various problems in students and professional individuals. Internet addiction is described as an impulse control disorder which is very similar to pathological gambling. Excessive use of Internet can affect the student's state of mind, spiritually, academically and virtuously. First introduced by Goldberg (1995) and was brought to limelight in Young's (1996) unprecedented research, the term Internet Addiction Disorder (IAD) is defined as ''the compulsive overuse of the Internet and the irritable or moody behavior when deprived the usage of internet facilities" (Mitchell, 2000, p. 632).

Moreover, Internet addiction can interfere with one's academic performance and daily life routines (Chou & Hsiao, 2000; Scherer, 1997; Yoo et al., 2004). Prior studies have shown that students were vulnerable to Internet addiction and they might use the Internet excessively and ignore their schoolwork (Chou, 2001; Nalwa & Anand,

2003; Tsai &Lin, 2003). In Young's (1998) study, it was found out that the student respondents encountered work or school-related problem because they had spent too much time on the Internet.

Gender is another area that the researchers pay attention to. Though various researches were based on this issue, researchers cannot reach an agreement on which gender represents a high-risk group of having Internet-related addictive behaviors. While some studies have shown that Internet addicts tended to comprises of females (Leung, 2004; Young, 1998), other findings have indicated that males were more liable to be addicted to internet than females (Chou & Hsiao, 2000; Liang, 2003; Scherer, 1997).

In this study, the researchers' target was to provide description of Internet addiction among undergraduates in selected universities in Kwara State, Nigeria. Online behaviors are characterized by Internet use and Internet hours consumed by undergraduates. Studies involving Internet addiction and its relationship to gender show unreliable results, which means gender difference does not influence internet addiction. Griffiths (1998) identified that gender is one of the predicting factors in Internet addiction, that is, males are more likely than females to have higher addiction to the Internet. Moreover, Bastani (2008) reported that females are more prone to addiction than females. However in a study carried out by Young (2012), there is no significant difference between male and female in either the time spent online or number of related problems experienced. Studies indicated that the use of computers and the Internet differs between male and female.

Purpose of the Study

The general purpose of this study was to examine undergraduates' Internet addiction level in selected universities in Ilorin, Kwara State, Nigeria. The study:

1. investigated what undergraduates use Internet for,
2. determined the devices undergraduates use in accessing the Internet,
3. found out how undergraduates access the Internet,
4. analysed the Internet addiction levels of undergraduates,
5. determined the influence of gender on internet addiction level of undergraduates,
6. examined the influence of length of study on internet addiction level of undergraduates.

Research Questions

The following research questions were answered in this study.

1. What do undergraduates use Internet for?
2. What are the devices undergraduates use to access the Internet?
3. How do undergraduates access the Internet?
4. What is the level of Internet addiction of undergraduates?
5. What is the difference in the level of addiction of undergraduates based on gender?
6. What difference in the level of addiction of undergraduates based on the length of study?

Research Hypotheses

Based on research questions, the following null hypotheses were tested in this study:

Ho_1: there is no significant difference in undergraduates' level of internet addiction based on gender.

Ho_2: there is no significant different in undergraduates internet addiction level based on length of study

Review of Related Literature

ICT is an acronym for information and communication technologies. Information communication technology is a tool that consists of electronic devices which are used for the information and communication needs of organizations, institutions, students and individuals. (Nwakundo, Oguejiofor & Nwankwo, 2006). Such electronic devices comprises of computers (both the software and hardware), networking (linking of two or more computers together for the purpose of sharing files and resources), telephone, video, multimedia and Internet facilities. Information and communication technologies (ICTs) refer to technological tools, equipment and resources which are used to communicate, create, share, manage and store information. (Nordin, Hamzah, Yunus & Embi, 2010). We are all in the decade of multimedia and the millennium of the Internet and the World Wide Web WWW (Yunus, Lubis & Chua, 2009)

It should be noted that the advent of the digital and information age has made the development of critical and creative thinking and higher-order thinking skills vital to future success (Ali, 2012). Further, Ali (2012) posited that technology is a promising tool to engage students in critical and creative thinking. Thus, it can be concluded that higher order thinking skills can be developed with the assistance of technology.

The advent of ICT has brought new opportunities into teaching and learning process, but, likewise, it has challenged learners on the need to learn how to use these tools. They now have to learn how to study with computers in their classrooms, how to meet the standards of others competing with accessing the enormous body of information—particularly on the internet, and how to use the hardware and software to enhance the teaching/learning process. The use of ICT is becoming an essential part of education in many parts of the world. Nigeria is not left out as ICT is gradually making a way into the educational system. ICT also helps in producing a creative learning environment. ICT develops students' new understanding in their areas of learning. As ICT encompasses different tools and programmes, it supports more creative solutions to different types of learning needs and demand. (Chai, Koh & Tsai, 2010)

Internet is a global network of computer system that connects millions of people at a time. An Internet is an arrangement of various networks that are interconnected by bridges and/or routers. It uses advanced technologies standards and protocols. Throughout the world, Internet is responsible for hosting and delivering various services. Internet is a heavily used communication tool throughout the world. It accommodates the users to provide access of thousands multiple web sites as well as audio and video communication. (Muhammad, Misbah & Natash, 2013).

The use of Internet for teaching and learning has been coined under a term which is called e-learning. E-learning comprises other related terms like Information and communication technology (ICT) in education, learning technology, multimedia learning, technology-enhanced learning (TEL), computer-based instruction (CBI), computer managed instruction, computer-based training (CBT), computer-assisted instruction or computer-aided instruction (CAI), Internet-based training (IBT), flexible learning, web-based training (WBT), online education, virtual education, virtual learning environments (VLE) (which are also called learning platforms), m-learning, and digital education (Selwyn, N. (2011) .

Yusuf (2006) concluded that the Internet holds great potentials in education as it can improve the education system and make it more productive and efficient. In teaching, the Internet can be used to encourage learners to learn actively and on their own in a self- directed way and in collaboration with others. Second, teaching-learning materials (syllabi, course outline, lecture notes, seminars and others) can be provided for students on-line. Thirdly, it encourages democracy in education, that is, access to education by all. It should be noted, that there are certain restrictions and limitations regarding the use of the Internet in education. Taking the limitations into consideration would ensure that relevant steps are taken to develop their influence on education.

Internet addiction is a term that describes abnormal strong craving of an individual towards the use of Internet and it is also described as compulsive overuse of the Internet which causes irritable or moody behavior

when deprived of it. Internet addiction is described as an impulse control disorder (ICD), which is a class of psychiatric disorders characterized by impulsivity; people with an impulse control disorder can't resist the urge to do something harmful to themselves or others. Some Internet users may develop an emotional attachment to online friends and activities they create on their computer screens. Internet users may enjoy the aspects of the Internet that allow them to meet, socialize and exchange ideas through the use of chat rooms, social networking sites or "virtual communities". Other names for Internet addiction include cyberspace addiction, online addiction, net addiction, Internet addicted disorder, and high Internet dependency (Davis, Flett, & Besser, 2002; Hur, 2006).

Most students waste their time on Internet by visiting useless or irrelevant sites. When there is a situation of depression, loneliness, sensitivity, sickness and personality problems, then one can say that excessive Internet users exist. Shapira (2003) stated that, in order to diagnose the presence of the condition, the individual would be one who exhibits the following three criteria for Internet Addiction Disorder: (1) the excessive use of the Internet beyond the time allotted and an irresistible urge to be preoccupied with the Internet; (2) an impairment, distress or less functioning in social settings due to the preoccupation with the Internet; and (3) the excessive use of the Internet is not associated exclusively with periods of hypomania or mania and cannot be entirely linked with Axis 1 clinical disorders. Axis I clinical disorders refer to major syndromes of a mental, developmental, and learning impairment such as depression, anxiety disorders, bipolar disorder, attention deficit hyperactive disorder, schizophrenia and social phobia (Shapira et al., 2003). Similar to other addictions, those suffering from Internet addiction use the virtual fantasy world to connect real people through the Internet, as a substitution for real-life human connection, which they are unable to achieve normally.

Signs and symptoms of Internet addiction vary from one person suffering from the disorder to another. According to Joanna, Melinda, Lawrence, and Jeanne (2015) there are two categories of internet addiction symptoms, they are; physical and psychological. Physical symptoms include:

1. Carpal tunnel syndrome: carpal tunnel syndrome is a feeling of numbness and slight pain in the wrist and fingers; caused by prolonged typing and clicking of devices used in accessing the internet, ranging from mobile phones to computer laptops.
2. Dry eyes or strained vision
3. Neck aches and back aches
4. Severe headache
5. Sleep disturbances
6. Weight gain or weight loss

Psychological symptoms are: Staying online longer than originally intended; Fantasizing about being online, when the user is offline; Reduced interaction and isolation from family and friends; Turning to the internet for help when emotionally down.

For an individual to be said to be an internet addict, one must test positive to three or more internet addiction symptoms (Shapira 2003).

Types of Internet Addiction
1. Cyber sexual Addiction: individuals who are addicted to cybersexual relationships and online porn activities are a new kind of sex addict. Many porn users are drawn to the stealth nature of the Internet.
2. Cyber relational Addiction: cyber relational addicts are overly involved in instant messaging, online chat rooms and social networking sites. According to Downes (2005), social networks serve as the avenue for joining personal ties which are combined by a set of relations. Daily thoughts can be expressed and discussions can take place about these thoughts and new ideas come up with on social networks.
3. Net Compulsions: obsessive online gambling, gaming and shopping are all forms of net compulsions. According to the center for Net Addiction, the 3 behaviors follow what the center calls the "ACE" model that is they provide Accessibility, Control and Excitement.

Methodology

This research was a descriptive research of the survey method. A researchers-adapted questionnaire was used to collect information from undergraduates on their level of internet addiction in selected universities in Kwara state, Nigeria. The population of this study were undergraduates in Kwara State. Purposive sampling technique was used to select 291 undergraduates on their levels of internet addiction. Israel Model (2013) of sample size was used. A well-structured researchers-adapted questionnaire was used to collect data. The copies of the questionnaire were administered personally by the researchers. The instrument comprised sections A, B, C, D and E. Section A required the respondents' bio-data information including name of institution, faculty, gender and academic levels of students. Section B contained items that focused on individual use of the internet which contained 10 items, section C focused on devices used for accessing the internet which comprised 5 items, section D found out the medium through which undergraduates connected to the internet with 3 items. Section E also contained 21 items which focused on undergraduates' level of Internet addiction.

Data were collected by direct administration. The instrument was administered to respondents and retrieved immediately after the respondents had filled them. Data collected for the study were analysed using mean and percentage to answer the research question one to four while hypotheses five and six were analysed using independent t-test. All hypotheses were tested at 0.05 level of significance.

Data Analysis and Results

The respondents' demographic data are presented in Table 1 and Table 2

Table 1:
Percentage Distribution of Respondents by Institutions

S/N	Name of Institution	frequency	%
1.	Federal University	150	51.50
2.	State University	100	34.40
3.	Private University	41	14.10
	Total	291	100.00

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Table 2:
Percentage Distribution of Respondents by Gender

Institution	Gender		Total
	Male	**Female**	
Federal	57(38.0)	93(62.0)	150
State	63(63.0)	37(37.0)	100
Private	32(78.0)	9 (22.0)	41
Total	152(52.3)	139(47.7)	291

Research Question 1: Undergraduates' use of the Internet

Table 3:
Different Uses of Internet by Undergraduates

S/N	Uses of internet	Frequency	%
1.	Educational purposes	273	93.8
2.	Social network	267	91.8
3.	Blogging	59	20.3
4.	Shopping	96	33.0
5.	Gaming	76	26.1
6.	Gambling	40	13.7
7.	I.M	177	60.8
8.	Mailing	153	52.6
9.	Entertainment	198	68.0
10.	News and Information	240	82.5

The results in table 3 shows that 93.8% of undergraduates surfed Internet for educational purposes, 91.8% for social networking, 20.3% for blogging, 33.0% for shopping, 26.1% for gaming, 13.7% for gambling, 60.8% for instant messaging, 52.6% for mailing services, 68.0% for entertainment purposes and 82.5% for news and information.

Research Question 2: Devices from which Undergraduates Access Internet

Table 4:
Different Devices from which Undergraduates Access the Internet

S/N	Devices	Frequency	%
1.	Mobile phone	272	93.5
2.	Tablet	122	41.9
3.	PAD	42	14.4
4.	Laptop	169	58.1
5.	Desktop	71	24.4

Table 4 shows that 93.5% of respondents used mobile phone to access the internet, 41.9% used tablet, 14.4% used I PAD, 58.1% used laptop while 24.4% used desktop.

Research Question 3: How Undergraduates Access the Internet

Table 5:
Different Ways by which Undergraduates Connect to the Internet

S/N	Channel	Frequency	%
1.	Modem	115	39.5
2.	University hotspot	106	36.4
3.	Mobile network	272	93.5

Table 5 shows how undergraduates accessed the internet, 39.5% accessed through modem, 36.4% accessed through university hotspot and 93.5% accessed through mobile network.

Research Question 4: Internet Addiction level of undergraduates

Table 6:
Addiction Level of Undergraduates

	Internet addiction level of undergraduates	Mean
1	How often do you stay online longer than you intended	3.14
2	How often do you postpone what you initially plan to do just because you stay longer online	2.60
3	How often do you forget your work, hunger, sleep and studies just because you are glued to the internet?	2.29
4	How often do you form new relationship with fellow social network users	2.59
5	How often do others complain to you about the amount of time you spend online	2.20
6	How often do your school work or grades suffer because of the amount of time you spend online	1.79
7	How often do you check your friends update or reply chats on social network before something else that you need to do?	2.64
8	How often do you become secretive or defensive when anyone asks you what you do online	2.27
9	How often do you shop online	1.92
10	How often do you borrow money just to meet your online purchase	1.65
11	How often do find solace on the internet when you are emotionally down	2.40
12	How often do you find yourself anticipating when you will go online again	2.70
13	How often do you fear that life without the internet will be boring and empty	2.96
14	How often do you update your profiles online	2.96
15	How often do you fantasize about being online when you are offline	2.49
16	How often do you bet online	1.52
17	How often do you engage in cybersex	1.41
18	How often do you play online games	1.78
19	How often do you try to cut down the amount of time you spend online and fail	2.26
20	How often do you stay away from the internet	2.45
21	How often do you feel depressed, moody, sad or nervous just because you are offline	2.32

The results in table 6 shows that 32.3% undergraduates always stayed online longer than they intended, 54.3% occasionally stayed online longer than intended, 8.6% rarely stayed online longer than intended while 4.8% never stayed online than intended. Furthermore, 14.1% undergraduates always postponed , 41.6% postponed , 34.7% rarely postponed while 9.6% never postponed what they initially planned to do just because they stayed longer online. A total of 13.4% always forgot work, hunger, sleep and studies just because they were glued to the internet, 28.5% occasionally forgot, 31.6% rarely forgot while 26.5% never forgot their work, hunger, sleep and studies just because they were glued to the internet. A total of 15.5% agreed that they always formed new relationship with fellow social network users, 36.4% occasionally did, 40.2% rarely did and 7.9% never formed relationship with fellow social network users, 12.7% undergraduates agreed that others always complained to them about the time they spent online, 21.3% agreed that others often complained to them about the time they spent online, 38.8% agreed that others rarely complained to them about the time they spent online, 27.1% agreed that others never complained to them about the time they spent online.

Furthermore, 7.6% undergraduates agreed that their school work and grades always suffered, 11.3% agreed that their school work and grades occasionally suffer, 33.7% agreed that their school work and grades rarely suffered, while 47.4% school work and grades never suffered because of the amount of time they spent online. A total of 17.9% undergraduates always checked their friends' update or reply chats on social network, 39.2% occasionally checked, 32.0% rarely checked while 11.0% never checked their friends' update or replied chats on social network before something else that they needed to do. A total of 13.7% always become secretive or defensive, 23.7% occasionally ,38.5% rarely while 24.1% never become secretive or defensive when anyone ask them what they do online. 7.9% undergraduates always shop online, 22.0% occasionally, 24.4% rarely and 45.7% have never shopped online. 5.8% undergraduates always borrow money just to meet their online purchase, 15.1% occasionally borrow money 17.5% rarely borrow money, 61.5% have never borrowed money just to meet their online purchase.

A total of 15.1% undergraduates always find solace on the internet when they are emotionally down, 31.3% occasionally, 32.3% rarely and 21.3% never find solace on the internet when they are emotionally down. A total of 19.9% of undergraduates always find themselves anticipating when they will go online again, 38.5% occasionally ,33.7% rarely and 7.9% never anticipate when they will go online again. A total of 38.8% of undergraduates always fear that life without the internet will be boring and empty, 30.2% occasionally, 19.2% rarely and 11.7% never fear that life without the internet will be boring and empty. A total of 29.2% of undergraduates always update their profiles online, 42.6% occasionally, 22.7% rarely while 5.5% never update their profiles online. A total of 18.2% of undergraduates always fantasize about being online when they are offline, 28.5% occasionally fantasize, 37.1% of undergraduates rarely fantasize while 16.2% never fantasize about being online when they are offline.

More so, 5.8% of undergraduates always bet online, 10.3% occasionally, 14.1% rarely while 6.9% admits that they never bet online. 4.8% of undergraduates admit that they always engage in cybersex, 7.6% occasionally engage in cybersex, 11.3% rarely while 76.3% have never engaged in cybersex. A total of 7.9% always play online games, 14.8% occasionally play, 24.7% rarely play online games and 52.6% have never played online games. 10.3% admitted that they have always tried to cut down the amount of time they spent online and fail, 27.8% have occasionally, 39.9% rarely , 22.0% never tried to cut the amount of time spent online. A total of 8.6% of respondents always stay away from the internet, 39.5% occasionally, 40.2% rarely while 11.7% never stay away from the internet. A total of 16.2% agreed that they always feel depressed, moody, sad or nervous when they stay away from the internet, 25.4% agreed that they occasionally feel depressed, moody, sad or nervous when they stay away from the internet, 32.6% agreed that they rarely feel depressed, while 25.8% agreed that they never feel depressed, moody, sad or nervous when they stay away from the internet.

However, the grand mean score on respondents' level of internet addiction level was found to be 2.30.

The results related to hypotheses 1 and 2 formulated in this study are shown in subsequent tables. All hypotheses were tested at 0.05 level of significance.

Hypotheses One

Ho_1: there is no significant difference in internet addiction level of undergraduates based on gender.

To determine whether there was any significant difference between male and female undergraduates' internet addiction level, data was analyzed using t-test as shown in table 7.

Table 7:
t-test of Significant Difference on Internet Addiction Level of Undergraduates Based on Gender.

Variables	N	X̄	SD	df	t	Sig	Remarks
Male	152	49.64	8.359				accepted
				289	2.723	0.07	
Female	139	46.94	8.560				

From table 7 it can be deduced that there was no significant difference in internet addiction of undergraduates based on gender, $t(289) = 2.723$, $p < 0.05$. That is, the result of t-value of 2.723 resulting in .007 significance was greater than 0.05 alpha value. Thus the hypothesis was not rejected. This implies that there was no significant difference on internet addiction level of undergraduates based on gender.

Hypothesis Two

Ho_2: there is no significant difference in internet addiction level of individual based on length of study.

In order to determine whether there was any significant difference in internet addiction level of undergraduates, t-test was used as shown in table 8.

Table 8:
t-test of Internet Addiction Level of Undergraduates Based on Length of Study

Level	No	X̄	SD	df	t	Sig. (2-tailed)	Remarks
5 years and above	42	48.79	7.47				
				289	.353	.724	Accepted
Below 5 years	249	48.28	8.73				
Total	291						

From table 8, it can be deduced that there was no significant difference in internet addiction level of undergraduates' based on length of study. This is reflected in the result $t(289) = .353$, $p > 0.05$. That is the result of t-value of .353 resulting in .724 significance was greater that 0.05 alpha value. Thus the hypothesis is accepted. This implies that there was no significant difference in internet addiction level of undergraduates based on academic level.

The findings of this study based on the research questions and the hypotheses formulated are summarized as:

1. Undergraduates used internet mostly for educational purposes with the highest mean score of 98.3% and frequency of 273 and least used for gambling with lowest mean score of 13.7% and frequency of 40.

2. As related to different devices undergraduates used to access the internet, mobile phone had the highest frequency of 272 with a mean score of 93.5% and pad was least used with the lowest frequency of 42 with a mean score of 14.4%.
3. Undergraduates accessed the internet mostly through mobile network with the highest frequency of 272 and a mean score of 93.5% and least through university hotspot with the lowest frequency of 106 and a mean of 36.4%
4. However, the grand mean score on undergraduates' internet addiction level was found to be 2.30, which shows that undergraduates were moderately addicted to the internet.
5. There was no significant difference in internet addiction level of undergraduates based on gender.
6. There was no significant difference in internet addiction level of undergraduates based on length of study.

Conclusions

This research examined undergraduates' level of internet addiction in selected Universities in Kwara State, Nigeria. The result obtained from the data gathered and analysed in this study indicated that undergraduates used internet mostly for educational purposes, followed by social network and least used for gambling. The findings of this research also established that undergraduates mostly used mobile phone to access the internet and likewise connect to the internet through a mobile network. No significant difference was established between male and female undergra level of internet addiction. Furthermore, there was no significant different between undergraduates who study courses below 5 years and courses above 5 years. The implication of this study is that if undergraduates are encouraged to study through internet and they are adequately monitored, the addiction level will be at the minimum.

Recommendations

Based on the findings and conclusions of the study, it was recommended that Government and Non Governmental Organisations should organize conferences, seminars, workshops on the benefits of positive use of internet in a moderate and productive way. More so, Governments and educational institutions should monitor, control and regulate the level at which undergraduates use internet and what it is being used for especially the underage (below 18 years of age).

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EFFECTS OF FACEBOOK IN TEACHING SCULPTURE IN COLLEGES OF EDUCATION IN OYO STATE

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Abstract
The study was carried out to determine the effects of facebook in teaching sculpture in colleges of education (COE) in Oyo State. The quasi-experimental research design was adopted in carrying out the study. Random sampling technique of forty-eight (48) students was participated in the study. There was 26 students in experimental from Federal COE (Special) Oyo and 22 for control from Emmanuel Alayande COE Oyo constituted the study. Facebook video package (FVP) is the main instrument for actual treatment for experiment group. The instruments for data collection were Sculpture Achievement Test, Sculpture Skill Test and Sculpture on the Spot Skill Assessment instrument were validated by experts. Both groups were pre and post-test before and after the treatment. Data were analysed using mean and standard deviation for research question one and two while t-test and ANCOVA were used to test the hypotheses 1 to 3 at 0.05 level of significance. The result showed a significant difference between experimental group and control group mean scores of Fine Arts students (FAS) performance in sculpture. But there was no significant difference between the male and female main scores of FAS performance in sculpture. However, there was a significant interaction impact of treatment and gender on the mean scores of FAS performance in sculpture. Based on the result, it was recommended that lecturers in COE should endeavour to adapt and utilize facebook video package for teaching sculpture in colleges of education.
Keywords:

Introduction

Today's learners have had their world defined by Web 2.0 technologies. As digital natives, they are permanently roped to ubiquitous, highly accessible, ever evolving technologies that transform users from passive consumers to producer (creators) of user-generated content exchanged through a host of networked communities. Empowered by technology, the current generation of students yearns for new means for self-expression and information sharing. Educators seek ways to bridge the perceived technological chasm between tutor and tutee. The extent to which this chasm actually exists and the role of social networking technologies as part of a possible solution remain under exploration. Further, the degree to which students expect to see social networking technologies integrated into the learning process remains unclear (Buzzetto-More, 2012). Rapid development of information and communication technologies has brought changes in various pedagogical and technological applications and processes (Mazman & Usluel, 2010). Currently, social networks are being embraced by millions of users most of whom are students with a great number of purposes in mind (Lenhart & Madden, 2007; Selwyn, 2007). Social network tools support educational activities by making interaction, collaboration, active contribution, information and resource sharing, and critical thinking possible (Ajjan & Hartshorne, 2008; Mason, 2006; Selwyn, 2007). Students today demand more autonomy, connectivity, interaction and socio-experiential learning opportunities in their learning contexts (McLoughlin & Lee, 2007).

The number of social networks, where communication is established, is rapidly increasing. As a part of daily life, most teenagers and adults use social networks such as Facebook, Myspace, YouTube, Weblogs, Xanga,

Friendster, Orkut, Bebo and Wiki to take advantage of opening their world to friends and introduce themselves to others. At the same time, such users share their photos and videos, become members of groups and are also provided with many msn and e-mail possibilities (Kayri & Çakır, 2010.) Facebook was started by Mark Zuckerberg while in Harvard University in 2004 for only the students of the university. Later, it spread to other universities and gradually became a public domain (Cassidy, 2006). Facebook is the second largest social network in the world and its number of users in everly increasing (Kayri & Çakır, 2010).

Facebook has quickly become the chosen social network by college students and an integral part of the "behind the scenes" college experience (Selwyn, 2007). The proliferation of social technologies has created a culture in which youths participate more in creating and sharing content, changing the way students communicate, interact, and learn. The adoption rates of Facebook in universities and colleges are remarkable - 85% of college students that have a college network within Facebook have adopted it (Arrington, 2005 &Thompson, 2007). Furthermore, Facebook also has a growing audience in perspective high school and middle school students (Lipsman, 2007; Lenhart & Madden, 2007). Facebook is one of the tools that can contribute significantly to the quality of education are: fostering positive relationships among students and surrounding students' motivation and engagement (West, Lewis & Currie 2009) (Kabilan, Ahmad & Abidin 2010); involving students in achieving the learning tasks and successful transfer of knowledge (Madge et al., 2009); developing a positive attitude towards learning and improving the quality of learning (Pasek & Hargittai, 2009; Kirschner & Karpinski, 2010); developing interpersonal intelligence, as well as critical thought; developing of communications and interactions on the relationship between students and teacher outside the classes (Selwyn, 2009).

Facebook is equipped with bulletin boards, instant messaging, email, and the ability to post videos and pictures. Most notably, anyone can post information and collaborate within the system. Recently, Facebook has opened up development of downloadable applications, which can further supplement the educational functions of Facebook. While many of these technological tools looks like those found in currently employed courseware programs (e.g. blackboard, moodle, etc.), the ability and ease with which an individual (instructor or student) can upload photo and videos makes it fantastic(Petrovi, Petrovi, Jeremi, Milenkovi, & Ćirovi, 2012). Facebook enables teachers to provide constructive educational outcomes in a variety of fields e.g sculpture (Pempek,Yermolayeva, & Calvert,2009); practice a differential pedagogy in the best interests of the students (Hew, 2011); integrate diagnostic formative evaluation in the learning process and to calibrate didactic activities accordingly (Pasek & Hargittai, 2009); achieve a change in strategy, approach, attitude and behaviors by using Facebook (e.g. the transfer of knowledge remains one of the functions of teaching, but it is second to organizing and managing learning situations); establish efficient educational relationship on a social network (Selwyn, 2009); accept the student as an interaction partner; analyse and equate ways of learning and the knowledge achieved by students; develop knowledge and skills in order to perform efficient didactic activities (Hew, 2011).

Facebook is a network that connects students with other students thereby, indirectly creating a learning community – a vital component of student education (Baker, 1999). Facebook provides instructors opportunities and structures by which students can help and support one another by building their courses over the group already established by the students themselves. Facebook also increases both teacher-student and student-student interaction in the form of web-based communication. Facebook helps instructors connect with their students about assignments, upcoming events, useful links, and samples of work when not in the classroom (Muñoz & Towner, 2009). Students can use their Facebook account to contact classmates about questions regarding class assignments or examinations as well as collaborate on assignments and group projects in an online environment. Building on the face-to-face teacher-student relationship, social networks allow students to glimpse instructor profiles containing personal information, interests, background, and "friends," which can enhance student motivation, affective learning, and classroom climate (Mazer, Murphy & Simonds 2007).

Utilizing Facebook effectively in teacher education courses will help facilitate perspective teachers to model what they have learned in their own classrooms. Teacher education students will benefit by the classroom advantages of using Facebook, and also learn professional Facebook etiquette. Previous teacher education research (Coutts, Dawson, Boyer & Ferdig, 2007) and a number of popular 6 press articles provide evidence that some

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perspective and current teachers have much to learn in regards to privacy and professional/personal boundaries on Facebook (Helms, 2008; Shapira, 2008).

Technology provides exciting opportunities for enriching and transmuting visual arts teaching, providing teachers and students with new tools to access, organise and present information and to enrich lessons through multimedia (Bridwell & McCoy 1991; Long, 2001; Garnons-Williams, 2002; Wood, 2004). Sculptures could be carved, chiseled, modeled, cast, or constructed. They can be from many different materials such as wood, stone, clay, metal, sand, ice, and even balloons. A person who creates sculpture is called a sculptor (Lamb & Johnson, 1999). ICT presents exceptional opportunities for enhancing creativity (Brown, 2002) and outspreading visual arts "beyond clay, crayons and paint" (Stankiewicz, 2004). This potential was acknowledged as far back as the 1980s when Crowe (1988) remarked that ICT could assist with exploring design problems, advance artistic decision making and provide new opportunities for learning. Since then the literature has continued to mention the potential for ICT in supporting visual arts teaching (Long, 2001).

Solomon and Opoku-Asare (2011) concluded that girls' education in the Visual Arts is being hampered by differential levels of artistic exposure at the Junior High School level, inadequate information on the nature and demands of the Visual Arts programme, limited number and combination of elective subjects offered by the schools, and ineffective teaching that does not motivate students to excel on the programme. The perception that girls have neither good drawing skills for Picture-Making nor the level of energy required for Sculpture militates against creative development. Nevertheless, building the capacity of Basic School teachers to effectively teach Creative Arts, and Basic Design-and- Technology, would enable more students to benefit fully from the Visual Arts programme.

Increased utilisation of Web-enabled instructional package as an electronic system in the field of education has raised the hope of concerned stakeholders in educational sector as a means of enhancing teaching and learning. Badmus (2012) worked on development and evaluation of a web quest application on educational technology concepts for selected undergraduate students in Nigeria. The findings revealed that experts in educational technology and instructional package designer agreed that the developed Web ETC met up with the standard required. But the researcher did not focused on its implication on College of Education students learning sculpture, which was the focus of the research.

The performance of the Fine Arts students in sculpture in colleges of education, especially Emmanuel Alayande College of Education, Oyo and Federal College of Education (Special) Oyo, Nigeria were very low. It was further observed in the practice of Fine Arts lecturers in the two colleges of education that the use of traditional teaching method remains prevalence in teaching sculpture. Meanwhile, Mbahi (2000) had earlier explained that the prevailing method of teaching sculpture especially the use of traditional method of modeling has remained a monumental problem to students' performance in sculpture. For that reason, students' poor performance in Fine Arts especially Sculpture could be traceable or attributable to the prevailing method adopted by the lecturers. These aroused the interest of the researcher to determine the impact of Facebook in teaching Sculpture in colleges of education in Oyo.

Purpose of the Study

This study investigated the impact of Facebook in teaching Sculpture in colleges of education in Oyo, Specifically, this study was designed to:

1. determine the effects of Facebook on Fine Arts students' performance in Sculpture.
2. investigate the influence of gender on Fine Arts students' performance in Sculpture.
3. ascertain the interaction effects of treatment and gender on Fine Arts students' performance in Sculpture.

Research Questions

1. What is the effects t of facebook on Fine Arts students' performance in Sculpture?
2. What is the effects of gender on Fine Arts students' performance in Sculpture
3. What is the interaction effects t of treatment and gender on Fine Arts students' performance in Sculpture?

Research Hypotheses

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

H_{O1}: There is no significant difference between experimental group and control group mean scores of Fine Arts students' performance in Sculpture.

H_{O2}: There is no significant difference between male and female mean scores of Fine Arts students' performance in Sculpture.

H_{O3}: There is no significant interaction effects of treatment and gender on the mean scores of Fine Arts students' performance in Sculpture.

Methodology

The study adopted a quasi-experimental, pre-test, post-test control group design. Two levels of independent variables (Facebook Video package and manual method of modeling), and two levels of gender (male and female) were investigated in the study. The population for this study was all Fine and Applied Arts students in Colleges of Education in Oyo, while the target population for this study comprised all 200 level Fine and Applied Arts students in Colleges of Education in Oyo. Multi-stage sampling technique was used for selection of sample for the study. The two governments owned Colleges of Education are in Oyo that were running Fine Arts courses were purposively selected for the study. Random sampling technique was used to allocate Federal College of Education (special) Oyo to experimental group and Emmanuel Alayande College of Education, Oyo, Oyo State to control group. The sample for the study was intact class of 200 level at the two Colleges of Education that were used for experimental and control groups.

Table 1:
Sample of the study

Gender	Facebook Video Package	Manual Instruction	Total
Male	20 (41.7%)	11 (22.9%)	31 (64.6%)
Female	6 (12.5%)	11 (22.9%)	17 (35.4%)
Total	26 (54.2%)	22 (45.8%)	48 (100%)

Facebook Video package (FVP) is the main instrument for actual treatment of the subjects in the experimental group. The treatment instrument (FVP) was developed by the researcher and the instructional video designer where the researcher took care of the content and video production of the Sculpture video package and the instructional video designer designed the package. The instruments for data collection were Sculpture Achievement Test (SAT), Sculpture Skill Test (SST) which the researcher designed. And Sculpture "on the Spot" Skill Assessment Instrument (SOSAI) adapted from Jaji (2014), the three instruments were validated by experts. The validated instrument was used to test reliability data, a pilot study was conducted for three weeks of two hours lesson per week on all eleven 200 Level Fine and Applied Arts students from Federal College of Education (Technical) Akoka, Lagos State, Nigeria. The instruments were determined by subjecting them to test re-test method. The pre-test Pearson's Product Moment Correlation (PPMC) statistics was used to analyse the instrument while the remaining two instruments were subjected to Cronbach alpha statistics. The values yielded 0.87, 0.92 and 0.76 respectively, t-test statistical analysis was used to test hypotheses one and two which were derived from research questions one and two. Hypothesis three was derived from research questions three and it was analysed using ANCOVA. All hypotheses were tested at 0.05 significant level.

Results

H_{O1}: There is no significant difference between experimental group and control group mean scores of Fine Arts students' performance in Sculpture.

Fine Arts students who were taught using conventional teaching method had the mean score of 49.50 with standard deviation value of 12.32 while the students that were exposed to Facebook video packaged had the mean score of 55.96 with standard deviation value of 8.63. This result is presented in table 2

Table 2:

Summary of t-test on Fine Arts Students' Performance Exposed to Facebook Video Package

Variable (Posttest scores)	N	Mean	Std	df	t	Sig(p)	Remark
Conventional teaching	22	49.50	12.32	46	2.130	0.000	S
Facebook Video packaged	26	55.96	8.63				

Table 2 shows the difference in the performance of control group and experimental group taught using Facebook video package. The table shows that there is a significant difference between experimental group and control group mean scores of Fine Arts students' performance in Colleges of Education. (df = 46; t = 2.130; p<0.05). Based on this result, hypothesis 1 is rejected.

H_{O2}: There is no significant difference between male and female mean scores of Fine Arts students' performance in Sculpture.

Fine Arts male students taught using Facebook video package had the mean score of 53.87 with standard deviation value of 9.61 while the female students had the mean score of 51.41 with standard deviation value of 13.02. This result is presented in table 3.

Table 3:

Summary of t-test Showing Difference in the Performance of Male and Female Fine Arts Students

Variable (Posttest scores)	N	Mean	Std. D	df	t	Sig(p)	Remark
Male	31	53.87	9.61	46	0.747	0.459	NS
Female	17	51.41	13.02				

Table 3 shows the difference in the performance of male and female Fine Arts students taught using Facebook video package. The table shows that there is no significant difference between the male and female mean scores of Fine Arts students' performance in Colleges of Education. (df = 46; t = 0.747; p>0.05). Based on this result, hypothesis 2 is not rejected.

H_{O3}: There is no significant interaction effects of treatment and gender on the mean scores of Fine Arts students' performance in Sculpture.

Table 4:

Summary of ANCOVA Showing Interaction effects in the Performance of Treatment and Gender of Fine Arts Students.

Dependent Variable: Post-test scores

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Remarks
Corrected Model	4649.179[a]	10	464.918	19.224	.000	
Intercept	9335.927	1	9335.927	386.032	.000	
Pretest	7.191	1	7.191	.297	.589	
Groups	157.799	1	157.799	6.525	.015	

Gender	3.563	1	3.563	.147	.703	
Ability	3417.087	2	1708.544	70.647	.000	
Groups * Gender	.665	1	.665	.027	.869	NS
Groups * Ability	56.965	1	56.965	2.355	.133	
Gender * Ability	59.658	1	59.658	2.467	.125	
Groups * Gender * Ability	6.272	1	6.272	.259	.614	
Error	894.821	37	24.184			
Total	140376.000	48				
Corrected Total	5544.000	47				

R Squared = .839 (Adjusted R Squared = .795)

Table 4 reveals that the calculated F-value is 0.027 with calculated sig. of 0.869 computed at critical level of 0.05. Since the calculated sig. (0.869) is greater than the critical level (0.05), hypothesis 3 is hereby not rejected. This implies that there is no significant interaction effect of treatment and gender on the mean scores of Fine Arts students' performance in Sculpture.

Summary of Findings
1. There was a significant difference between experimental group and control group mean scores of Fine Arts students' performance in Sculpture.
2. There was no significant difference between the male and female mean scores of Fine Arts students' performance in Sculpture.
3. There was no significant interaction effects of treatment and gender on the mean scores of Fine Arts students' performance in Sculpture.

Discussion

The t-test result shows that there was a significant difference between experimental group and control group mean scores of Fine Arts students' performance in Colleges of Education. The finding of Shwu (2005) showed that the use of Web helps many students to improve on their performance because many students use the opportunity to learn at their convenience. The use of the Web produced a significant difference in students' vocabulary acquisition and story reading performance. The result is also in line with Mudiwa (2003) whose findings revealed that students in the experimental group performed significantly better than those in the control group. The researcher submitted that the integration of a Web-enabled enhanced students' performance for the post-test administration. However, there were non-statistically significant differences observed in the retention of the test as a result of the experiment. However, it contradicts the findings of Strickland (2005), Burke, Guffer, Colter and Riehl (2003) and Milson (2001) who submitted that no significant difference was found in the performance of students who were taught using either Web or traditional activities.

The t-test result shows that there was no significant difference between the male and female mean scores of Fine Arts students' performance in Colleges of Education. This result supported the findings of Marwan (2008) which revealed that there was no difference in the performance of male and female students using ICT-Based instructional strategy. These findings on gender, also, agreed with the earlier findings of Badmus (2012) who established no significant difference in the performance of male and female students that were exposed to Web-enabled. Furthermore, the results also agreed with the findings of Abdullahi (1982), Onasanya, Fakomogbon, Sheu and Soetan (2010) who worked on gender performance in ICT usage for teaching and learning and found out that male and female students performed equally well. However, the result contradicts the findings of Mbaeze, Ukwandu and Anudu (2010), Looker and Thiessen (2003), Bimber (2000) and Pritchad (1998) that found out that male students performed significantly better than the female students in Fine Arts.

Conclusions

The study concluded that the use of Web-enabled video package was found to be more effective in enhancing the performance of Fine Arts students at colleges of education than the conventional teaching method. Equal gender performance was also recorded because there was no significant difference between the male and female mean scores of Fine Arts students' performance using Web-enabled video package. The issue of difference in the performance of both the male and female students in Fine Arts did not arise.

Recommendations

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

1. The adoption and utilization of facebook Video Package for teaching Sculpture would bridged the gap between male and female Fine Arts Students performance in Colleges of Education, therefore, lecturers should use web-enabled Video Package for teaching and learning
2. Lecturers in Colleges of Education should endeavour to adapt and utilise facebook video package for teaching Sculpture in Colleges of Education.
3. Lecturers in Colleges of Education should expose their students to ICT based instructional strategies like facebook video package to promote students' autonomy to knowledge acquisition, discovery learning and student- centred instructional approach.
4. Nigeria Certificate in Education (NCE) minimum standards curriculum should be reviewed to incorporate the use of facebook video package.
5. Students should be encouraged to make use of information on internet for instructional purpose such has Web-enabled video packaged.

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SECONDARY SCHOOL STUDENTS' PERCEPTION, ATTITUDE AND READINESS TO ADOPT BLENDED LEARNING IN INSTRUCTION IN OYO METROPOLIS.

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Abstract

Blended learning has been proved to bring improvement in the teaching learning process. However, it has been observed that no any nations, especially developing countries have adopted this technological innovation for instructional purpose. Hence, this study's investigation of the secondary school student's perception, attitude and their readiness to adopt blended learning in instruction. The target population was the senior secondary school students. Three schools were randomly selected from each of the three local government areas in Oyo metropolis. Twenty senior secondary students were randomly selected from each of the school totalling 180 in all. Questionnaires were administered to all the 180 students and the data collected was analysed using frequency counts and means(x). The findings based on the three research questions raised revealed that the student's perception towards the usefulness of blended learning was positive, the attitude was positive and the students were ready to adopt blended learning. It was therefore recommended amongst others that seminars, workshops, in-service trainings and conferences should be organized for teachers for blended learning approach to have a smooth take off.
Keywords: Blended learning, Perception, Attitude, Readiness.

Introduction

Traditionally, Teaching has been viewed as a process of delivering to students what is required without any opportunity for questioning. This means that the teacher has the monopoly of knowledge required to be imparted. However, in the modern sense teaching is an attempt to help someone acquire a change of attitude, knowledge, ideal, skills or appreciation (Adedapo, 2004). Mkpanang (2005) explained that the concept of teaching implies that a set of stimuli is initiated and regulated by an individual who has been professionally trained to do so. Ayodele (2002) opined that what is learnt by students is a function of how it is taught. Successful teaching therefore requires that the students make sense out of what they are taught. There is therefore a growing concensus among education leaders, researchers and educators around the world that teaching and learning must change to help students develop the skills they will need to succeed in the 21st century (Ananiadou & Claro, 2009).

The traditional teaching method as good as it is has its shortcomings. According to Lalima and Dangwal (2017), traditional teaching is failing to meet the individual needs of all the students in the class basically due to improper pupil teacher ratio and it is not adapting itself to meet the challenge of teaching physically challenged students. Moreover, children from deprived groups, from the areas that are geographically isolated and medically unfit students are not able to gain benefit from this formal traditional mode of teaching. Courses are also not regularly revised, books are not updated and teachers are not interested in upgrading their knowledge and professional skills.

Olasedidun (2014) opined that to address the inadequacies of traditional teaching, innovative tools will have to be used in teaching. The use of innovative methods in educational institutions has the potential not only to improve but also to empower people, strengthen governance and galvanize the effort to achieve the human development for the country. The concepts of paperless and penless classroom are thus emerging as an alternative to the old teaching learning method. There is now a democratization of knowledge and the role of the teacher is changing to that of facilitator. Technology and ease with which it can be accessed have changed the way we live and work. Today's students will not only compete with students that sit next to them but also with their peers from across the globe.

The educational system at present is in a transition stage. To meet the challenges of expansion and for catering individual need, it is trying to adopt new technologies and exploring new paths to reach the goal of quality educational opportunities for all, at the same time due to various factors like deficient budgets, lack of facilities, advantages of face to face interaction, it is not completely ready to leave the traditional modes of knowledge transfer (Lalima & Dangwal, 2017). The use of technology to augment teaching and learning is therefore inevitable. The increased access to technology in the classroom has improved the potential for teachers to optimize student learning through a combination of both online learning programme and face-to-face student/teacher interaction. Blended learning is therefore an approach that is gaining increased attention by teachers and administrator to optimize the use of technology in their classrooms.

Dziuban, Hartman and Moskal (2004) defined blended learning as a pedagogical approach that combines the effectiveness and socialization opportunities of the classroom with the technologically enhanced active learning possibilities of the online environment, rather than a ratio of delivery modalities. According to Downes (2008), it is an essentially traditional in-class learning supplemented by online activities and resources. In addition, Stacey and Mackey (2009) defined it as the combination of technology and traditional face to face instruction while Christensen, Horn and Stacker (2003) described it as a formal education programme in which a student learns at least in part through online learning with some element of student control over time, place, path and/or pace and at least in part at a supervised brick-and-mortar location away from home.

Blended learning is not about technology itself; it is about the shift in the instructional model to personalized, student-centered learning to ensure each student's success(Patrick, Kennedy & Powell, 2013). Adopting a blended learning approach offers the appeal of combining different learning elements using the power of ICT while retaining a human touch (Department of Education and Early Childhood Development, 2012)

Blended learning models, developed from early experimentation, place the student at the centre of the learning process, harnessing the power of technology to create more engaging, efficient and success-oriented learning environments. In these models, educators quickly identify gaps in learning and differentiate instruction to ensure that failure is not an option. The common blended-learning programmes include rotation, flex, A la Carte and enriched virtual. The rotation model has four sub-models which are station rotation, lab rotation, flipped classroom and individual rotation (Horn, staker and Christensen, 2014).

The advantages of blended learning as highlighted by Lalima and Dangwal (2014) are listed as:

a) As part of learning is done through ICT, online or offline mode, so teachers and students get more time in the classroom for creative and cooperative exercise.

b) Students gain advantage of online learning and CAI without loosing social interaction element and human touch of traditional teaching

c) It provides more scope for communication.

d) Students become more techno savvy and they gain enhanced digital fluency

e) Students have more strengthened professionalism as they develop qualities like self- motivation, self responsibility and discipline.

f) It updates course content and so gives new life to established courses.

However, the implementation of blended learning is not an easy task. Certain fundamental preparations in all the teaching learning process elements (teacher, student, content and infrastructure) will be required. Some of the basic requirements include well trained teachers; teachers with the scientific attitude; teacher with wider outlook and positive approach toward change; complete facilities like well-furnished computer laboratory, internet connection, provision for video chatting; students having access to internet on their private computer; flexibility in the system; fully aware and agreed parents; and formative evaluation and continuous internal assessment. (Lalima & Dangwal, 2017).

If blended learning will be relevant within an education context, the students' perception of the usefulness, attitude and their readiness to use it must be looked into. Anderson and Dron (2011) explained that the responsibility of a teacher is not just to define, generate or assign context, but it is to help learners build learning paths and make connections with existing and new knowledge resources.

Perception is the process by which organisms intercept and organize sensation to produce a meaningful experience of the world (Falade, 2011). Attitude is an accumulation of information about an object, person, situation or experience… a disposition to act in a positive or negative way toward some object. It is the controller of actual behaviour of an individual, consciously or unconsciously (Littlejohn 2002). Readiness means planning to do something. It is a matter of willingness from the heart. Olumoorin (2008) explained that successful integration of ICT depends not only on awareness and availability but also on the extent to which instructors are willing to use it. Hence the need for this study, perception, attitude and secondary school students readiness to use blended learning in teaching.

Statement of the problem

The integration of new mobile technology and online media is proving highly effective in helping schools meet the expectations of 21st century learners while addressing the challenges of limited resources and the special needs of many students. However, not everyone is happy with the term blended learning. Oliver and Tingweln (2003) in their article "can blended learning be redeemed?" argued that blended learning is ill-defined and muddled as a description of particular forms of teaching with technology.

Moreover, there is a growing worldwide trend in initiatives that are explicit about the availability of learning anywhere, anytime. The underpinning notion is that teachers will need to be up-skilled quickly to cope with the virtual learning opportunities in the classroom. This study therefore, sought to find out secondary school students perception, attitude and readiness to adopt blended learning in instruction.

Purpose of the Study

The purpose of this study was to investigate secondary school students' perception, attitude and readiness to adopt blended learning. Specifically, the study sought to find out:

1. The perception of secondary school students towards the usefulness of blended learning in instruction.
2. The attitude of secondary school students towards adopting blended learning in instruction.
3. The readiness of secondary school students towards adopting blended learning in instruction.

Research Questions

This study attempted to answer the following questions:

1. What is the perception of secondary school students towards the usefulness of blended learning in instruction?
2. What attitude do secondary school students have towards adopting blended learning in instruction?
3. Are secondary school students ready to adopt blended learning in instruction?

Methodology

Descriptive survey design was adopted for the study to find out the perception, attitude and readiness of secondary school students to adopt blended learning approach in instruction. The target population for the study consisted of all senior secondary school students particularly those in Oyo metropolis comprising of Oyo East, Oyo West and Atiba Local government areas of Oyo State. Three schools were randomly selected from each of the Local government area making nine schools in all. Twenty students were then randomly sampled from each of the school totaling 180 in all. The instrument for this study was a questionnaire tagged Student's Perception, Attitude and Readiness towards Blended Learning Questionnaire adapted from the previous study of Olasedidun (2014). Items were selected based on their relevance to perceived usefulness, attitude and readiness to adopt blended approach in instruction. The questionnaire contained two major sections. Section I dealt with the students' biographical information while section II was sub-divided into three to take care of the three research questions. Each of these sub-divisions contained 5 items. The response mode for the items was likert response modes of strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). The instrument was given to educational evaluation and computer experts for validity. The reliability of the instrument was determined section by section based on the three major variables. For perceived usefulness, the chronbach's alpha was 0.87, attitude 0.93 and readiness, 0.89.

The researcher personally administered the copies of the questionnaire to senior secondary school students in all the nine sampled secondary schools with the help of the vice-principals and teachers in each of the school. The questionnaire were given to the students and with the assistance of the teachers, the researcher was able to collect back all the questionnaires in each of the schools. The analysis and interpretation of data obtained through the questionnaire was done using descriptive statistical design. The frequencies were converted to mean (x) to answer the research questions. Section II that contained items to answer the research questions was ranked 4 for Strongly Agree, 3 for Agree, 2 for Disagree and 1 for Strongly Disagree for questionnaire items that were positively worded and vice versa for items that were negative worded.

Results and Discussions

Research Question 1: What is the perception of secondary school students towards the usefulness of blended learning in instruction?

Table 1:

Analysis of students' perception towards the usefulness of blended learning in instruction.

S/N	Perceived usefulness of blended learning	Mean($\bar{x}$)
1.	Blended learning will make me finish the content of each subject early	3.40
2.	The teaching learning process will be easier with the use of blended learning	3.34
3.	Blended learning will reduce stress and tension inherent in classroom teaching	2.98
4.	The use of blended learning will improve my academic performance	3.26
5.	Blended learning will make lesson more interesting	3.29
	Grand mean ($\bar{x}$)	**3.25**

Table 1 reveals that making students complete the content of each subject early was ranked highest having the mean score of 3.40 out of 4. The lowest mean score was 2.98 (approximately 3.00) with the statement that blended learning will reduce stress and tension inherent in classroom teaching. However, the grand total mean score for perceived usefulness was found to be 3.25. Using 2.0 as the average benchmark, it can then be inferred that secondary school students perceived the usefulness of blended learning in instruction positively.

Research question 2: What attitude do secondary school students have towards adopting blended learning in instruction?

Table 2:

Analysis of students' attitude towards adopting blended learning in instruction.

S/N	Attitude towards using blended learning	Mean($\bar{x}$)
1.	Blended learning is not adequate for secondary school	3.06
2.	I will never offer a subject that will force me to use blended learning	3.42
3.	Online environment are not meant for teaching and learning	2.86
4.	Blended learning will make students to become lazy	3.29
5.	Many students will fail if blended learning is adopted in secondary school instruction	3.17
	Grand mean ($\bar{x}$)	**3.16**

Table 2 reveals that students did not agree with the statement that they will never offer a subject that will force them to use blended learning with the highest mean score of 3.42 out of 4. The lowest mean score was 2.86 with the statement that online environment are not meant for teaching and learning. However, the grand mean score for the attitude of students was found to be 3.16. Using 2.0 as the average bench mark, it can be deduced that the students have positive attitude towards adopting blended learning in instruction.

Research Question 3: Are secondary school students ready to adopt blended learning in instruction?

Table 3:

Analysis of students' readiness to adopt blended learning in instruction.

S/N	Readiness to adopt blended learning	Mean(x̄)
1.	I wish I never have anything to do with blended learning	3.52
2.	I will always prefer normal classroom learning	3.40
3.	I can never be convinced to use blended learning	3.47
4.	I will rather drop out from school than to adopt blended learning	3.61
5.	Atrocities that people perform online will never make me adopt blended learning	3.38
	Grand mean (x̄)	3.48

Table 3 reveals that students will never decide to drop out from school because of the adoption of blended learning with the highest mean score of 3.61 out of 4. The lowest mean score of 3.34 with the statement that atrocities that people perform online will never make me adopt blended learning. The grand mean score for the readiness to adopt blended learning was found to be 3.48. With 2.0 as the average bench mark, it can be inferred that secondary school students are ready to adopt blended learning in instruction.

This study found out that:

1. The perception of secondary school students towards the adoption of blended learning in instruction is positive.
2. Secondary school students have positive attitude towards the adoption of blended learning in instruction.
3. Secondary school students are ready to adopt blended learning in instruction.

Conclusion

Through a combination of online learning and more customized face-to-face direct instruction, students will be opportuned to experience student-centered learning, teacher mentoring as well as the opportunity to self-direct their learning. Moreover, blended learning has a very high potential to help teachers better address the needs of the students. However, teachers must be encouraged to be ready to adopt the blended learning approach to be able to achieve the aforementioned benefits.

Recommendations

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

1. The government should be ready to provide equipment that will make online learning possible in all secondary schools.

2. Seminars, conferences and workshops should be organized for the teachers who are to help in the implementation of the blended learning approach.

3. Students should be encouraged to be focused when online and should strictly use the equipment for academic purposes only.

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IMPLEMENTATION OF BLENDED DISTANCE EDUCATION PROGRAMMES IN RIVERS STATE

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Abstract
This study investigated implementation of blended distance education programmes in Rivers State. Two research questions and two hypotheses guided the study. The design for this study was descriptive survey. The population for this study consisted of all the 231 instructors of distance education in Rivers State. Due to the small population of the study, the sample size was all the 231 instructors of distance education which represented 100% of the entire population. The instrument for this study was a 10 item instrument constructed by the researcher and entitled implementation of blended distance education programmes Scale (IBDEPS) in the modified four point Likert type scale. A sample of 10 lecturers not part of the sample but share same characteristics were randomly draw for the reliability test. The data generated from the responses were used to estimate the reliability coefficient of 0.88 using Cronbach Alpha. Research questions were answered using mean scores (x), mean set (xx), standard deviations (SD) whereas the z-test statistics was used to test the hypotheses at 0.05 level of significance while a criterion mean of 2.50 was used. The findings among others are lack of surveillance tool to monitor exams when randomly taken and environmental cultural differences are part of challenges of implementation of distance education in Rivers State.
Keywords: Distance Education, Technology

Introduction

Today the concept of distance education is fairly understood and the potential importance of distance education in the future of education is also generally acknowledged. With advances in multimedia and communication technologies, distance education is being adopted by corporations as well as universities. The idea is not really new. One may recall in 1922, when Thomas Edison invented motion picture and boldly predicted that motion picture would replace textbooks in education, as the starting point of the history of media technologies for learning. Although Edison's prediction has not exactly come to pass, video tapes were used by the US army during World War II for the training of soldiers. Television broadcasting became one of the pioneering technologies for distance education. In the early 1970's, Computer Based Training (CBT) and Computer Aided Instruction (CAI) became important applications of mainframe computers (Basaza, 2006).

The primary ideas behind CAI and CBT led to today's distance education in the early 1990's through the use of multimedia technology and the Internet. Distance learning, distance education, cyber education, remote classroom, and e-Learning are similar concepts. Kogoda (2009) is of the opinion that about five years between the late 1990s and the early 2000s marked the period of dot-com bubble. During this period, the tsunami of investment money chasing after just about any concept attached to the Internet and Web technology and the lack of experiences with early uses of the Internet and Web technology created a sense of euphoria and an imminent revolution in the way people work, live, interact, and communicate in a borderless world where online virtual entities replace offline counterparts and where all online contents are free for all. During this same excited period, many predicted that distance education would make traditional offline schools and universities obsolete, just as many predicted that online newspapers, libraries, bookstores, etc. would make their traditional offline counterparts disappear.

The Internet and Web technology are now providing entirely new or effective additional means for organizations to communicate and conduct transactions with their customers. A sober assessment of the capabilities that advances in communication and multimedia technology can enable, along with an examination of the lessons

learned from distance learning endeavours during the past several years, should similarly make it possible for distance learning to complement traditional in-class learning and make education richer and more valuable to students, both in schools and corporations. In this work, first is the review theoretical operation of distance education, then the current status of distance education with examination of technological and sociological problems that distance education needs to overcome to fully realize its objectives.

Statement of the Problem

The predictions about online replacing offline have not come true and are not likely to come true in the foreseeable future. Many students who took early online courses for academic credit did not get much out of the courses, partly because they tended to cram near the end of a semester, there were no human instructors to seek answers to questions, and the course materials were not adequate. Some cyber universities have sprung up that offered college degrees. However, employers and the society have been slow to accept them as equivalent to the degrees conferred by traditional universities. These are but a few lessons learned from distance education thus far. Despite the bust of dot coms, the use of the Internet and Web technology has been steadily taking root, without the crazy expectations and predictions of the dot-com bubble period, in commerce, governance, entertainment, news media, and communication.

Aim and Objectives of the Study

The aim of the study is to investigate implementation of blended distance education programmes in Rivers State. Specific objectives of the study sought to:

1. find out the bended technological challenges on implementation of distance education in Rivers State.
2. examine the blended sociological challenges on implementation of distance education in Rivers State.

Research Questions

The following research questions guided the study

1. What are the bended technological challenges on implementation of distance education in Rivers State?
2. What are the blended sociological challenges on implementation of distance education in Rivers State?

Research Hypotheses

The following null hypothesis tested at 0.05 level of significance guided the study.

Ho_1: There is no significant difference between the mean scores of male and female instructors on bended technological challenges of implementation on distance education in Rivers State.

Ho_2: There is no significant difference between the mean scores of experience and less experience instructors on blended sociological challenges of implementation on distance education in Rivers State.

Significance of the Study

The results of this study if used will be of benefits to the teachers because they will understand problems facing the implementation and management of distance education in Rivers State. The awareness of blended

technological and blended sociological challenges on implementation of distance education in Nigeria by all educational stakeholders will spur up strategies for effective distance educational management.

Delimitation of the Study

The study was delimited to implementation of blended distance educational programmes in Rivers State. The contents of the study are blended technological and blended sociological challenges on implementation of distance education in Rivers State.

Literature Review

In elaborating on this theory, Simonson (1995) states that it should not be necessary for any group of learners to compensate for different, possibly lesser, instructional learning experiences. Students should have learning experiences that are tailored to the environment and situation in which they find themselves. Thus, those developing distance education systems should strive for equivalency in the learning experiences of all students, regardless of how they are linked to the resources or the instruction they require. There are several key elements to Equivalency Theory; they are the concepts of equivalency, learning experiences, appropriate application, students, and outcomes. The equivalency approach is generally supported by Shale (2008), who argued that distance education is not a distinct field of education. Keegan (1995) supports this idea, stating that: This new approach to distance education based on virtual classrooms requires a substantially different theory upon which to base practice than the traditional view of distance education as it has been practiced in the past. The study of virtual and electronic classrooms is an important and complex field, still in its beginnings, with a unique contribution to make to educational knowledge.

Human Element industrialized Teaching and Learning theory was propounded by David Sewart. Sewart argue that distance education institution/universities are essentially institutions of mass education, and a particular package of materials is served to hundreds of students, and in many cases to thousands of them. Can such a single package perform all the functions of a teacher on the one hand, and cater to the vast variety of the needs and the idiosyncrasies of distance learners on the other? Sewart's answer to both the questions is a clear 'no'. If a package of materials with such qualities is to be produced it will be formidably expensive, as it will have to display all the interactive processes which obtain between the teacher and each individual learner. The implication is that, however sophisticated the design and vast the reach of such materials may be, the learner body will always need additional human support which alone can match the infinite Varity of problems that non-contiguous teaching/learning give rise to. The distance teaching institutions will have to provide this advisory and tutor support through a human energy which alone can guarantee the 'continuity of concern for students learning at a distance learning at a distance'. The pre-planned package of materials is a constant. It needs human versatility to help the distance learners exploit this constant to satisfy an infinite variety of their needs and difficulties.

Traditional and information processing theory was propounded by Seamans in 1990. The traditional and information processing approach is based on the concept of a computer performing formal operations on symbols which was propounded by Seamans in 1990. The key concept is that the teacher can transmit a fixed body of information to students via an external representation. This represents an abstract idea as a concrete image and then presents the image to the learner via a medium. The learner, in turn, perceives, decodes, and stores it. Horton (2014) modifies this approach by adding two additional factors: the student's context (environment, current situation, and other sensory input) and mind (memories, associations, emotions, inference and reasoning, curiosity and interest) to the representation. The learner then develops his own image and uses it to construct new knowledge, in context, based on his own prior knowledge and abilities.

The alternative approach is based on constructivist principles, in which a learner actively constructs an internal representation of knowledge by interacting with the material to be learned. This is the basis for both situated cognition Millbank, (2014) and problem-based learning (Savery & Duffy, 1995). According to this viewpoint, both social and physical interaction enter into both definition of a problem and the construction of its solution. Neither the information to be learned, nor its symbolic description, is specified outside the process of inquiry and the conclusions that emerge from that process. Prawat and Floden (1994) state that, to implement constructivism in a lesson, one must shift ones focus away from the traditional transmission model to one which is much more complex, interactive, and evolving. Though these two theories are totally different in nature, effective designers usually start with empirical knowledge: objects, events, and practices which mirror the everyday environment of their designated learners. Then, with a firm theoretical grounding, they develop a presentation which enables learners to construct appropriate new knowledge by interacting with the instruction.

Distance education systems now involve a high degree of interactivity between teacher and student, even in rural and isolated communities separated by perhaps thousands of miles, distance learning allows students to hear and perhaps see teachers, as well as allowing teachers to react to their students' comments and questions. Moreover, virtual learning communities can be formed, in which students and researchers throughout the world who are part of the same class or study group can contact one another at any time of the day or night to share observations, information, and expertise with one another (VanderVen, 1994; Wolfe, 2015). Distance education technologies are expanding at an extremely rapid rate. Too often, instructional designers and curriculum developers have become captivated of the latest technologies without dealing with the underlying issues of learner characteristics and needs, the influence of media upon the instructional process, equity of access to interactive delivery systems, and the new roles of teacher, site facilitator, and student in the distance learning process.

Armstrong (2006) believes that distance learning is used as a term to describe the student-centeredness of distance education and it deals with the use of print and electric technologies to present individual lessons to learners at a distance. Distance learning makes use of supporting systems or tools. These supporting systems used in distance learning programs can be divided into two types:

➢ Traditional tools: videotape (S-VHS), cable/public television, tele-conferencing, hardcopy textbook.
➢ More advanced or recent tools: CD-ROM titles, Web browser, whiteboard, chat room, Real player, video broadcasting, satellite video conferencing, broadband video conferencing, audio conferencing, student assessment tool, and administration system.

Although, Kogoda (2009) says that hardcopy textbooks are still widely used, even if it is possible to publish their electronic versions on the Internet. Proprietary communication tools are available to support online discussions, either in a limited bandwidth and asynchronous environment (e.g., chat room) or in a broadband real-time communication facility (e.g., video conferencing). A few integrated systems such as WebCT are commercially available that provide functions ranging from administration, courseware creation and management, communication, assessment, and sometimes even course contents.

Charp (2014) says that there are three venues for distance education programs: regular and continuing education programs in traditional universities, distance learning portals, and virtual universities. In a traditional university, most courses taught in the classroom are, at least in principle, feasible for distance learning, except those that require lab experiments and physical presence (e.g., physical education, music and arts). There are a number of virtual universities. These universities also provide help and allow students to take advantage of the flexibility in time and location. Students who are employed on a full-time basis are able to complete higher level education without jeopardizing their jobs. Software systems and student evaluation methods in virtual universities are similar to those used in traditional universities. E-learning portals are another venue for distance learning. E-learning portals help small and medium size companies to offer employee training or customer service on the Internet. Courses on practical subjects, rather than on theoretical subjects, are typically offered by e-learning portals. In some cases, customized course contents can be built to satisfy the needs of individual companies. Often, e-commerce facilities are incorporated into an e-learning portal to provide additional services (e.g., book buying).

Challenges of distance education in Nigeria

In spite of the enthusiasm generated by the new thrust in open and distance education, overall problems that may impede proper implementation are better understood and taken care of. These problems are discussed as follow.

1.   Lack of consistency in programme/policy implementation: It is a known fact that success in any educational policy is contingent on the involvement of all stakeholders and sponsorship of funding agency, that is, the government. A succeeding government truncated the attempt at Open University in the early 80's. Thus, successive governments in Nigeria must not only allow the continuation of open and distance education programme, it must be supported through adequate fund.

2.   Problem of electricity: Since successful distance education cannot be assured without the use of communication and technological tools (e-mail, fax, Internet, television, radio, etc.), then the problem of electricity comes into focus. Several rural areas in Nigeria are yet to have electricity, while the urban arrears experience epileptic power supply. This will create problems for effective integration of most technological media in the delivery of distance education programme. Poverty among Nigerians makes alternative sources of electricity non-visible to most Nigerians.

3.   Poor telecommunication facilities and lacks of access: Just like electricity most Nigerians do not have access to telephone and other telecommunication facilities. Even, telephone lines in the urban centres are not adequate to serve the teeming population. Services for those who have access are in most cases epileptic. These may make the integration of telecommunication in the delivery of distance education difficult. In addition, poor state of telephone has led to increase in dial-up cost for most Nigerians. Even with the recent introduction of GSM in August, 2001, access is still limited and services are yet to be perfect and service charge may make GSM unattractive for distant learners.

4.   Poor Postal System: The postal system in the country is not yet up to international standard, in terms, of safety of goods, quick delivery of correspondences, accessibility to remote areas, and so on. Although of recent improvements have been made in the post services by NIPOST, the level of services, cannot guarantee efficient two-way communication between distant learners and distance education institutions.

5.   Poor economic situations and its effects on middle level manpower:- The poor state of the nation's economy has pauperized most Nigerians. Even an average middle income earner cannot afford basic technological and communication gadgets. Thus, computer related telecommunication facilities might not be useful for most Nigerians, as computer is still a luxury in institutions, offices and homes. This may make the integration of necessary on-line resources (e-mail, newsgroups, world-wide-web, etc.) into distance education in Nigeria difficult.

6.   Poor ICT Penetration: Like most African countries basic ICT infrastructures are inadequate. A study by Nigerian Information Technology Professionals in America in 2002 indicated that given current ICT penetration it may take Nigeria 50 years to catch up with America on the aspect of Pc count per households (Iromanto, 2004). The most significant problem being the cost of PC. These problems if not addressed will impede proper implementation of open and distance education in Nigeria. Therefore, efforts should be intensified to improve electricity, telecommunication and other communication facilities in both urban and rural areas.

Blended Technological challenges on Distance Education

To ensure the successful operation of distance education systems, computer facilities and Network infrastructures must be integrated with appropriate software systems. The current distance learning platforms allow all forms of

discussions. An advanced technology (and methodology) is needed to help the instructors to minimize cheating in exams. Technologies will be a part of the solution to the issues of motivating both the students and instructors. Below are highlight of several important research issues from the technology perspective (Schlosser & Anderson, 2016). These issues require researchers from education and information technology fields to work together. Some of the issues have been partially solved, while several issues related to intelligent technology remain open:

1. Instance hints and intelligent tutoring: While a student is navigating an online course, an intelligent agent may analyze his/her behaviour, and provide useful suggestions in real-time, for example, by guiding him/her through different learning topologies.
2. Summarization and automatic reply: It is time-consuming for an instructor to answer students' e-mails. An auto-reply system should be able to use information retrieval techniques to summarize frequently asked questions, and reply to new questions with answers to past questions.
3. Unbiased examination: It is difficult to ensure proper behaviour of students when administering online examinations without a human monitor. A surveillance tool can randomly take a snapshot of students' screens.
4. Individualized quizzes: Some distance learning systems are able to generate different test questions for different students according to difficulty levels. This type of system should ensure unbiased examinations.
5. Online supervision of chat room discussions: Chat room discussions can be assigned points in student's performance. An intelligent agent can be implemented to grade chat room participations. Misleading or irrelevant conversations can be reported to the instructor.
6. Universal and mobile accessibility: Students and instructors should be able to access distance learning websites from any location with any of a variety of different devices, such as cellular phone. Wireless communication techniques may be incorporated into distance learning systems.
7. Remote lab and simulation: Domain-specific remote labs connected to the Internet need to be developed to support online experiments. If remote labs are not available, online simulation tools (i.e., virtual lab) should be provided (Schlosser & Anderson, 2016).

Blended Sociological challenges on Distance Education

Some of the sociological issues are difficult, more difficult than technological issues, to solve. The motivation of students is one of the key factors that will determine the success of a distance learning program. In the view of Bredo (2014) mostly, adult working individuals take distance education for professional growth. They all want to get something out of a distance education program. They want to learn something practical today and apply them at work tomorrow. Some of them want to receive diplomas or at least course credits. To such students, acceptance by the employers (industry and government) of the course credits and diplomas is very important. The (presumed) quality of education (and diplomas awarded) depends on assessment of the educational institutes, as well as the quality of instructions. It takes many years and concerted efforts before a traditional university is established, and the same will be the case for cyber universities (Rubanji, 2008).

It may make sense for different cyber universities to differentiate themselves from other cyber universities and traditional universities by carving out their own positions in terms of fields and course curriculum. Evaluation of cyber universities (and distance education programs within traditional universities) must include student performance, instructor performance, course materials and curriculum. It is important then that there be comprehensive and objective evaluation criteria for all these measurable aspects of distance education. Some studies suggest that college education influences and shapes how students speak, think, and behave (Rubanji, 2008). Social behavior will be different in a virtual environment; and education received solely in distance learning may put the students at a disadvantage.

It appears that the best education is the conventional education, augmented by distance learning for a part of the overall curriculum. Kasozi (2006) that for example, students may establish a base of their social networking

and a starting point for studying and learning in college. Most classes they take in college may be the traditional in-class variety, while others may be either purely online or a combination of in-class learning and distance learning. After graduation, they may take from e-learning portals training courses that either their employers encourage them to take, or from cyber universities or continuing education programs in traditional universities courses they consider interesting or necessary for professional growth. There are some additional interesting sociological considerations for distance education.

Review of Empirical Studies

Basaza (2006) carried out work on *realistic teacher education pedagogy* aimed at identifying the trends in financing and implementation of d*istance education in Rivers State.* The design for the study was descriptive design. Five research questions and four hypotheses were raised in the study and the researcher used interview technique to collect data while questionnaire was used as the instrument of data collection from 160 instructors when z-test was used for testing the hypotheses. The findings reveal that capital expenditure is required in financing of d*istance education* in the state.

The relevance of this study to the present work is based on the fact that it shows that an investigation into problems financing of d*istance education* had been carried out and thus provides literature that helped the present researcher identify gaps or need for further study. The gaps in the previous study includes, non-investigation into the technological problems for distance education, sociological problems for distance education, administration/management problems and problems of establishing modalities of distance education in Rivers State .These gaps and more necessitate the present study.

In a study of Savery and Duffy (1995) on problem based learning: An instructional model and its constructivist framework stated that no nation can develop beyond the quality of its education, as a nation's overall advancement is a direct function of the quality of the educational attainment of its citizens. According to them, Quality of education depends on a nation's positive attention to education sub-sector. They stated that Nigeria has laudable constitutional provisions to ensure complete government participation in education. The extent to which this participation in education is done, whether adequate or inadequate, was the problem investigated in his study.

Summary of Review

The majority of distance learners in Nigeria are employed or involved in subsistence farming and fishing. They enroll in distance education in order to obtain a qualification and/or a promotion. They want to update their knowledge and skills. Some enroll in distance education courses with the attitude that distance education is easy because they can learn at their own pace; however, distance learning requires self-discipline and self-management. Unfortunately, some students drop out or do not graduate. Also, some lecturers believe that once you choose to study at a distance, you do not need extra support. Sensitization and exposure to distance education methods will help students and lecturers to alter their attitudes towards distance education in a land that prizes face-to-face interactions and on-campus instruction.

Methodology

The design for this study was descriptive survey. A descriptive survey in the sense that the researcher collected data from a large sample drawn from a given population, which describes certain features of the sample

that are of interest to the researcher. The population for this study consisted of all the 231 instructors of distance learning education in Rivers State. The population was stratified into male and female, experienced and less-experienced instructors of distance learning. Due to the small population of the study, the sample size was all the 231 instructors of distance learning which represented 100% of the entire population. The researcher used of all the 231 instructors of distance education in Rivers State. The instrument for this study was a 10 item instrument constructed by the researcher and entitled implementation of blended distance education programmes Scale (IBDEPS) in the modified four point Likert type scale of strongly agree-4 points, agree-3, disagree-2 and strongly disagree-1 point.

To determine the validity of the instrument, 2 copies of the instrument were given to 2 experts in Technological Education to assess the suitability of the items. The corrections pointed out were integrated. A sample of 10 lecturers not part of the sample but share same characteristics will randomly draw for the reliability test. The data generated from the responses for trial testing were used to estimate the reliability coefficient of 0.88 using Cronbach Alpha. The instrument were administered directly to the respondents by the researcher and with the help of 2 research assistants and the copies of the questionnaire were collected on the spot. The responses from the respondents were coded on 4-1 scale as follows; 4-Strongly Agree, 3-Agree, 2-Disagree, and 1-Strongly Disagree. For answering the research questions mean scores (x), mean set (xx), standard deviations (SD) were used whereas the z-test statistics was used in testing the hypotheses at 0.05 level of significance while a criterion mean of 2.50 was used.

Results and Discussion

Research Question 1: What are the blended technological challenges on implementation of distance education in Rivers State?

Table 1:
Mean, Mean Set and Standard Deviation Scores on the blended technological challenges on implementation of distance education in Rivers State.

S/N	Items	male 174		female 65		Mean set ($\overline{x}\,\overline{x}$)	Remark
		$\overline{x}_1$	SD_1	$\overline{x}_2$	SD_2		
1	Ill-equipped technology affects instructors in minimizing cheating in exams	2.69	1.09	2.54	1.18	2.64	Agreed
2	Lack of information retrieval techniques to summarize questions	2.86	1.09	2.91	1.31	2.81	Agreed
3	Lack of surveillance tool to monitor exams when randomly taken	2.67	1.09	2.91	1.10	2.76	Agreed
4	Lack of online supervision of chat room discussions	2.56	1.08	2.62	1.10	2.58	Agreed
5	Lack of mobile accessibility distance learning websites from any location	2.59	1.18	2.87	1.13	2.69	Agreed
	Aggregate ($\overline{X}_1$)					2.69	

Data in table 1 reveals that all the items (1 -5) have various mean values above the criterion value of 2.50, and were agreed as the blended technological challenges on implementation of distance education in Rivers State with aggregate value of 2.69 which is above the criterion mean value of 2.50. Therefore, instructors agreed on the items as blended technological challenges on implementation of distance education in Rivers State.

Research Question 2: What are the blended sociological challenges on implementation of distance education in Rivers State?

Table 2:
Mean, Mean Set and Standard Deviation, Statistics on the blended sociological challenges on implementation of distance education in Rivers State

S/N	Items	Male 162		Female 77		Mean set $(\bar{x}\,\bar{x})$	Remark
		$\bar{x}_1$	SD_1	$\bar{x}_2$	SD_2		
6	Lack of motivation of students is one of the key factors	2.80	0.97	2.57	1.18	2.72	Agreed
7	Lack of objective evaluation criteria for measuring distance education	2.90	1.06	2.66	1.28	2.82	Agreed
8	Lack of virtual environment for students' disadvantage	2.77	1.09	2.79	1.15	2.78	Agreed
9	Lack of motivation of instructors	2.76	1.08	2.68	1.13	2.74	Agreed
10	Environmental cultural differences	2.71	1.03	2.93	1.11	2.78	Agreed
	Aggregate $(\bar{X}_1)$					2.77	

Data on table 2 shows that all the items (6-10) had mean value above the criterion mean value of 2.50 and were agreed as the blended sociological challenges on implementation of distance education in Rivers State. With an aggregate mean value of 2.77 above the criterion mean value of 2.50, therefore instructors agreed on the items as the blended sociological challenges of implementation of distance education in Rivers State.

Ho_1: There is no significant difference between the mean scores of male and female instructors on blended technological challenges on implementation of distance education in Rivers State.

Table 3:
z-test Calculation of the Difference Between the mean scores of male and female instructors on blended technological challenges on implementation of distance education in Rivers State

Category	N	$\bar{x}$	SD	z-crit	z-cal	df	Remarks
Male	153	2.67	1.10				
Female	82	2.73	1.16	0.37	1.96	229	Accepted

Data on table 3 shows summaries of subjects, means, standard deviation and z-test of difference between the mean ratings of male and female instructors on blended technological challenges on implementation of distance education in Rivers State. The z-test value used in testing the hypothesis stood at 0.37 while the z-critical value

stood at 1.96 using 229 degrees of freedom, at 0.05 level of significance. At 0.05 level of significance and 237 degrees of freedom the calculated z-values of 0.37 is by far less than the z-critical value of 1.96. Hence there is no significant difference between the mean ratings of the respondents following from the above observations.

Ho$_2$: There is no significant difference between the mean scores of experience and less experience instructors on blended sociological challenges on implementation of distance education in Rivers State.

Table 4:
z-test calculation of the difference between the mean scores of experience and less experience instructors on blended sociological challenges on implementation of distance education in Rivers State.

Category	N	$\bar{x}$	SD	z-crit	z-cal	df	Remarks
Experience	162	2.78	1.04				
				0.38	1.96	229	Accepted
Less experience	77	2.72	1.17				

Data on table 4 shows summaries of subjects, means, standard deviation and z-test of difference between the mean scores of experience and less experience instructors on blended sociological challenges on implementation of distance education in Rivers State. The z-test value used in testing the hypothesis stood at 0.38 while the z-critical value stood at 1.96 using 237 degrees of freedom, at 0.05 level of significance. At 0.05 level of significance and 229 degrees of freedom the calculated z-values of 0.38 is by far less than the z-critical value of 1.96. Hence there is no significant difference between the mean ratings of the respondents following from the above observations.

Summary of Findings

The findings of the study were summarized as follows:

1. The blended technological challenges on implementation of distance education in Rivers State are ill equipped technology which affects instructors in minimizing cheating in exams, lack of information retrieval techniques to summarize questions, lack of surveillance tool to monitor exams when randomly taken, lack of online supervision of chat room discussions and lack of mobile accessibility of distance learning websites from any location are part of technological challenges on implementation of distance education in Rivers State.
2. The blended sociological challenges on implementation of distance education in Rivers State are lack of motivation of students is one of the key factors, lack of objective evaluation criteria for measuring distance education, lack of virtual environment for students' disadvantage, lack of motivation of instructors, environmental cultural differences are part of sociological challenges on implementation of distance education in Rivers State.
3. There is no significant difference between the mean scores of male and female instructors on blended technological challenges on implementation of distance education in Rivers State.
4. There is no significant difference between the mean scores of experience and less experience instructors on blended sociological challenges on implementation of distance education in Rivers State.

Discussions

The primary ideas behind Computer Aided Instruction (CAI) is to lead today's distance education through the use of multimedia technology and the Internet. The use of the Internet and Web technology has been steadily taking root with expectations of increasing knowledge. The aim of the study is to investigate challenges on implementation of blended distance education programmes in Rivers State. Two research questions and two null hypothesis tested at 0.05 level of significance guided the study. The study is considered significance because the awareness of blended technological and blended sociological challenges on implementation of distance education in Rivers State by all educational stakeholders will spur up strategies for effective distance educational management. The design for this study was descriptive survey, the population for this study consisted of all the 231 instructors of distance learning education in Rivers State.

The population was stratified into male and female, experienced and less-experienced instructors of distance learning. The sample size was all the 231 instructors of distance learning which represented 100% of the entire population. The instrument for this study was a 10 item instrument constructed by the researcher and entitled implementation of blended distance educational programmes Scale (IBDEPS) in the modified four point Likert type scale of strongly agree-4 points, agree-3, disagree-2 and strongly disagree-1 point. The responses from the respondents were coded on 4-1 scale as follows; 4-Strongly Agree, 3-Agree, 2-Disagree, and 1-Strongly Disagree. For answering the research questions mean scores (x), mean set (xx), standard deviations (SD) were used whereas the z-test statistics were used in testing the hypotheses at 0.05 level of significance while a criterion mean of 2.50 was used.

The findings among others are that ill equipped technology affects instructors in minimizing cheating in exams, lack of information retrieval techniques to summarize questions, lack of surveillance tool to monitor exams when randomly taken, lack of online supervision of chat room discussions and lack of mobile accessibility of distance learning websites from any location are part of technological challenges while sociological challenges are lack of motivation of students is one of the key factors, lack of objective evaluation criteria for measuring distance education, lack of virtual environment for students' disadvantage, lack of motivation of instructors and environmental cultural differences are part of sociological challenges on implementation of distance education in Nigeria.

Conclusion

Distance learning is still in its infancy today in Rivers State and in Nigeria at large. This is due to the limitations of network infrastructures, experiences, manpower, effective policy, and acceptance from the employers. Currently, distance learning is primarily limited to colleges and corporate training. Secondary and elementary schools have not adopted it. Sometimes synchronized distance learning is used between two countries. However, due to time differences and limitations of network infrastructures, international collaborations are rare. Technical and sociological challenges may take a long time to be adequately solved. However, a few practical observations can help make a distance learning program more successful. Courses on practical subjects and subjects of recent interest will increase enrollment.

Recommendations

> ➢ A good distance learning program should also motivate and help the instructors. Generally, the load on an instructor teaching a distance learning course is higher than that for a traditional course. Appropriate rewards should be given to the instructors. Moreover, most instruction designers are not natural-born art designers. Art designers should be brought in to help instruction designers to develop attractive course materials. As new technologies unfold, some interesting trends in distance learning may evolve as well.
>
> ➢ Wireless communication to access encyclopedia and e-books will be available. Mobile students can participate in a lecture, use online references, or read class notes.
>
> ➢ By making use of game technologies in education, it may be possible to attract students and to increase their attention and motivation.

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ACCESS AND UTILIZATION OF MOBILE TECHNOLOGIES IN A BLENDED LEARNING ENVIRONMENT BY EDUCATIONAL TECHNOLOGY STUDENTS OF EKITI STATE UNIVERSITY, ADO-EKITI, NIGERIA

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Abstract

The study investigated accessibility and utilization of mobile technologies in a blended learning environment by 160 educational technology 300level education students of the ekiti state university, Ado-ekiti, Nigeria. The descriptive survey design was adopted. The sample size was obtained by simple randomization. One hundred and sixty students were randomly selected from 180 students in the department of vocational and technical education (VTE). Two research questions and one hypothesis were used to facilitate the study. The questionnaire was analysed using frequencies and percentage. The analysis revealed that lap-tops and internet facilities were utilized often by the students of Ekiti state university while mobile phones, projectors, virtual library and e-mail were rarely used by the students. Based on the findings, it was recommended that the state government should increase funding of tertiary institutions particularly in the area of providing ICT centers, mobile phones, internets to the students for technological advancement of the nation to encourage its effective utilization. It was also recommended that the management of Ekiti state university should encourage new technologies for the students to have access to the internet instead of being confined to the classroom for effective learning environment.
Keywords:

Introduction

Education has exponentially developed to embrace new methods that nobody would ever anticipate before with other comity of developed nations of the world. Learning with mobile technology is an emerging educational prodigy resulting from the integration of electronic learning and mobile technologies. Hashemi, Azizinezhad, Najafi and Nesari (2011) defined mobile learning as the use of technological devices or technologies, which include mobile phones, androids, smart phones, iPad, and so on, to extend the reach of teaching and learning to occur across multiple locations and is also the wireless delivery of learning content to students through handheld mobile technologies anytime and anywhere.

Lippincott, (2010) states that mobile devices include laptops, net books, notebook computers, cell phones, audio players such as MP3 players, cameras, and other items in which mobile technology can be referred to as social technology which provides social learning environment for learners. With the arrival of 3G technologies viable course modules can be developed. Offering these modules, with assignment submission, tutor contact, examination and assessment provision will provide further evidence of the validity of mobile learning as an attractive provider of revenue streams to mobile operators (Plant, 2000). In as much as mobile technology presents a less cost-prohibitive medium for learning, it represents an important avenue by which to reduce the gap between the haves and the have-nots in contemporary society where access to knowledge and information is increasingly important (Van, 2005). Mobile learning has transitioned from a subordinate method of electronic learning into its own educational area and it has become a new field of research globally (Pollara & Broussard, 2011). Moreover, mobile Learning presents an appeal simply because the use of mobile technology in and of itself presents something new and exciting for a great array of learners (Geddes, 2004). In exploring how mobile phone-facilitated mobile learning, it promote *new learning* to improved educational outcomes in educational theory as defined by Dighe, Hakeem, and Shaeffer (2009). Technology has contributed immense to the development of various nations and which is

getting cheaper to increase educational productivity. In order to approach educational problems sensibly, the integration of new technologies should be an essential issue in effective learning.

The utilization for mobile learning covers a spectrum of activities from the use of technology to support learning as part of a blended approached of e-learning that is delivered entirely online. It combines the use of computer, tablets, GPS, mobile phones and as a vehicle for knowledge within the teaching and learning environment. Mobile data technologies are wireless technologies which are built in mobile devices and provide information interchange between mobile devices and other devices or networks and can improve library service delivery as they are not limited by place and time (Onyango, Ongus, Awuor& Nyamboga, 2014). Mobile technologies facilitate distance learning in situations where access to education is difficult or interrupted because of geographical location or due to post-conflict or post-disaster situations. Davidson and Lutman, (2007) stressed that mobile phone ownership in the 15-24 age group of the UK population is stabilizing at around 95% and students to come will be even more experienced in their use. For example, older students in schools that ostensibly ban mobile phones are now regularly being allowed to use the cameras on their 'phones to record special events or experiments in lessons to help them revise. Therefore, the use of mobile technologies in learning could contribute to the effectiveness of instruction and increase availability of education to the thousands of the youths waiting and yarning for global information or knowledge lacking in higher institutions in Nigeria. Bird and Stubbs (2008) opined that with mobile learning there are barriers to establishing and sustaining mobile-learning innovation in a university environment with Issues which were skills gaps, lack of technical support, cost of devices and/or data, ethical and legal issues, quality assurance especially with respect to data ownership. In order to assess whether mobile technologies have indeed supported self-regulated learning, gains in knowledge construction, learner motivation and satisfaction, and collaboration need to be evaluated along with student achievement levels (Lai, Yeng, Chen, & Chan, 2007; Wang, 2003)

Mobile technology offers the ability to engage in learning activities such as communication and content material sharing between students and lecturers, students and subject experts, and among students and their environments. Students might take plenty of pictures using their mobile phone cameras, but rarely do they use the device for meaningful learning experiences. So, even though students recognize mobile devices' value for academic work, they still look to institutions and instructors for opportunities and encouragement to use them that way (Eden & Jacqueline 2014). Students are no longer limited to the classroom's geographical boundaries, for example; they can now record raw observations and analyze data on location. Furthermore, mobile technology platforms let individuals discuss issues with their colleagues or classmates in the field. Lanham,(2007) emphasized that Blended learning has proved to be an effective model in higher education, as it can merge with new innovative technologies. The main function of blended learning is to use the strengths of one learning environment to improve the weaknesses of another learning environment, therefore creating a stronger basis for students. So blended learning is a means of bridging the gaps of traditional classroom learning and contemporary online learning.

McAndrew, and Johnston, (2012) describe that a significant number of those who accessed social media with their smart phones found it of value for learning. Social media blended into traditional educational environments might enhance learning and collaboration despite geographic location. El-Hussein and Cronje (2010) opined that the use of mobile devices for learning can enlarge the scope of tertiary education and allow it to better reach students. Master, (2004) asserted that the reason for the failure of mobile learning to emerge from its project status and take its place in mainstream education and training is well known. It is that mobile learning is not considered by the telecommunications operators to be attractive to academic administration on mobile phones. Master further explained that, If it could be established that mobile learning was to become the established method for universities to communicate urgent information to their student body, a very large revenue stream would be opened up to all students to possess a mobile phone which they can consult constantly and have frequent needs for information from their institutions about timetable changes, assessment deadlines, feedback from tutors and other urgent administrative details. Once this has been achieved the use of mobile learning for academic contact in universities can be added.

The use of these technologies for learning is equally capable of providing a more interactive and effective type of learning to meet individuals' learners needs. Echeverría, Nussbaum, Calderón, Bravo, Infante and Vásquez, (2011) opined that the use of mobile technology can significantly enhance blended learning, but can have a major role in also supporting on-campus teaching. Chóliz, (2010) pointed out that excessive use and dependency on the mobile phone may be considered an addictive disorder in such that students have consistently displayed higher level of attachment to their mobile phones which could serve as distractions to them while studying because of the time channeled to the phones. Smart phones have been used in educational activities to access course content, acquire information related to students' performance, and to encourage discussion and sharing between students and teachers. It is therefore apparent that mobile devices such smart phones can have a significant contribution to educational technology students, since these devices might offer possibilities to enhance teaching and learning in the university environment.

Purpose of the Study

The main purpose of the study was to investigate the access and utilization of mobile technologies in a blended learning environment by educational technology students of Ekiti state university, Ado-Ekiti, Nigeria.

Research Questions

1. To what extent do educational technology students have access to mobile technologies in a blended learning environment?
2. To what extent do educational technology students utilize mobile technologies in a blended learning environment?

Hypothesis

Ho_1: There is no relationship between the accessibility and utilization of mobile technologies for teaching in a blended learning environment

Methodology

The study employed the descriptive survey design. A total of one hundred and sixty 300level VTE students of the Ekiti state university constituted the population for the study. Out of the population, 115 students were selected using simple random sampling technique. The instrument for the data collection was a well structured questionnaire that bordered on access and utilization of mobile technologies tools. The respondents indicated their level of agreement by ticking (√) based on the four point modified likert type scale using the rating scale. The instrument was validated and found reliable through the effort of an expert in the vocational and technical education department in Ekiti state university. The reliability of the instrument was determined with the cronbach alpha method as 0.75. The data collected with the instrument were analyzed using descriptive statistics. The research questions were answered using percentages.

Results

The results of the study are presented in line with the research questions. Thirty copies of questionnaire were distributed among the 300level educational technology students and all were returned and correctly filled.

Research Question 1: To what extent do educational technology students access mobile technologies in a blended learning environment?

Table 1:
Level of VTE students' accessibility to mobile learning tools.

Level of Accessibility	Mean Score	Standard Deviation	Frequency	Percentage %
Not Accessed (5-8.402)			18	11.25
Not Sufficiently Accessed (8.403-14.598)	11.50	3.098	129	80.63
Sufficiently Accessed (14.598-15.00)			13	8.12
Total			**160**	**100**

Table 1 revealed that, out of 160 respondents, 18 representing 11.25% had no access to mobile learning tools. Those who did not have sufficient access to mobile learning tools were 129 representing 80.63% while those who sufficiently accessed mobile learning tools were 13 representing 8.12%. This showed that majority of the respondents do not have sufficient access to mobile learning tools.

Research Question 2: To what extent do educational technology students utilize mobile technologies in a blended learning environment?

Table 2:
Level of VTE students' utilization of mobile learning tools.

Level of Utilization	Mean Score	Standard Deviation	Frequency	Percentage
Not Utilized (5-7.982)			13	8.12
Moderately/ Fairly Utilized (7.983-14.097)	11.04	3.058	137	85.63
Fully Utilized (14.098-15.00)			10	6.25
Total			**160**	**100**

Table 2 revealed that, out of 160 respondents, 13 representing 8.12% had not utilized mobile technologies in a blended learning environment. Those who moderately or fairly utilized mobile technologies were 137 representing 85.63% while those who had full utilization of mobile technologies in a blended learning environment were 10 representing 6.25%. This showed that the level of utilization of mobile technologies in a blended environment was moderate.

Ho$_1$: There is no relationship between the accessibility and utilization of mobile technologies for teaching in a blended learning environment

Table 3:
Pearson's Product Moment Correlation showing Relationship between Accessibility and Utilization of Mobile Technologies.

Variable	N	Mean	SD	r$_{cal}$	Sig.
Accessibility	160	11.50	3.098	0.735*	0.000
Utilization	160	11.04	3.058		

Table 3 revealed that there is positive significant relationship between respondents' accessibility to mobile learning tools and the utilization of mobile technologies in a blended learning environment (r_{cal} = 0.735; p = 0.000 < 0.05). Thus, the null hypothesis is not accepted.

Discussion

This study examines the access and utilization of mobile technologies in a blended learning environment by educational technology students of Ekiti state university. The findings of this study showed that mobile technology tools were not sufficiently accessed to in the university environment by educational technology students for effective learning to take place. McAndrew & Johnston, (2012) disagreed with this finding; they found that a significant number of those who accessed social media with their smart phones found it of value for learning. This study also revealed that only computers, CD-Rom, interactive white boards and virtual library were used often while websites, internet facilities, mobile phones, e-mail, projectors were rarely used. This is supported by Onyango, Ongus, Awuor and Nyamboga (2014) on the utilization for mobile learning to e-learning that is delivered entirely online which combines the use of computer, tablets, GPS, mobile phones and as a vehicle for knowledge within the teaching and learning environment were not fully utilized.

From the hypothesis, the study revealed that, there is significant relationship between respondents' accessibility to mobile learning tools and the utilization of mobile technologies in a blended learning environment. This implies that educational technology students in Ekiti state University do not have sufficient access to mobile technology tools and are not well utilized enough as results of barriers to the use of technology in Nigeria such as limited access to mobile technology equipment, irregular electricity, lack of funds, and lack of computer laboratory. Agreeing with the above findings, Bird and Stubbs (2008) listed the barriers to establishing and sustaining mobile-learning innovation in a university environment with Issues which were skills gaps, lack of technical support, cost of devices and data, ethical and legal issues, quality assurance especially with respect to data ownership. The implication of the findings of this study is that mobile technological tools should be made accessible to students of Ekiti state University for their studies and to expose them to new ideas to improve their ability of getting information faster on the website.

Conclusion

The study was carried out to investigate the accessibility and utilization of mobile technologies in blended learning environment for educational technology students of Ekiti state university. Based on the above analysis, conclusion drawn that students do not have sufficient access to mobile learning tools for registering and study on-line. With these mobile technologies, assignments can be given on-line and access learning materials through their mobile phones instead of being confined to the classroom. The result of the study also showed that the usage of mobile phone in teaching educational technology students is fairly utilized for their studies. Therefore, lecturers should be exposed to the use of mobile phones because of its global focus in order to provide information and improvement in the teaching and learning situation of the learners for the development of our education and the nation.

Recommendation

1. It is the view of the researcher that the accessibility and the usage of mobile phones can be spread among the 300level Educational technology students if the following suggestions are properly utilized.
2. The government should make provisions for ICT infrastructural facilities such as mobile phones, internet within students learning environment for easy access and utilization for the students
3. The university management must be more alive to their responsibilities by ensuring conformity to the university laid down rules and regulations on student's use of mobile phone device during class lectures.

4. The federal and state governments should provide laptops, modems, mobile phones to the students for educational purpose in order to improve student's motivations.
5. Ekiti State University, Ado-Ekiti should provide adequate computers and internet services in all the students' faculty and their departmental libraries for easy accessibility.
6. The management should encourage the lecturers and students to always make proper use of the available mobile learning technologies in the ICT centre to enable them acquire the skills needed.

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COLLEGES OF EDUCATION STUDENTS' PERCEPTION ON E-EXAMINATION AS AN ASSESSMENT TOOL IN OYO STATE

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Abstract

This study investigated the Colleges of Education Students Perception on E-Examination as an Assessment Tool in Oyo State Nigeria. A sample of 1500 respondents who are 200 level students of the colleges of education in the states, were selected using multi stage sampling technique. A structured questionnaire developed and validated by the researchers was used to collect data for the study. Descriptive statistics was used to describe the demographic data as well as research question while test of the hypotheses was done using inferential statistic t-test was used to test hypothesis one and ANOVA was used to test hypothesis two at 0.05 level of significance. The result revealed that college of education students had positive perception on the use of e-examination as tool for assessment and that both gender and course of study are not barriers for colleges of education students' perception on the use of e-examination as an assessment tool. Based on the findings of this study, it was recommended that the college of education management should be ready to adopt the use of e-examination and that Provision should be made for facilities that will bring about effective adoption of e-examination in the college.

Keywords: E-examination, Perception, and Assessment

Introduction

The massive examination leakages, demand for gratification by teachers, bribe-taking by supervisors and invigilators of examinations have become a global phenomenon. This menace has resulted to general fallen standards of education and Nigeria is no exception, particularly among developing nations. Consequent upon this, all Nigerian higher institutions are looking for way out which have resorted to conducting Post-Entrance or Post-JAMB examination/screening because of lack of trust and confidence in the conduct of the entrance examinations. Although, the advent of web applications into the computing technology has brought about a significant revolution in our social life including the traditional system of education and examination.

Many institutions are beginning to re-evaluate their traditional methods and have considered providing pedagogical materials through the Internet. One important area of application of the web technology is in the development of web-based testing and assessment (Iyilade et al, 2005). Web-based testing and assessment systems offer greater flexibility than the traditional approach because test could be offered at different times by students and in different locations (Venon, Diana, and Fleet, 2004). More importantly, questions could be shuffled having the same structure and level but different contents. Basically, the electronic examination system involves the conduct of examinations through the web or the intranet and it reduces the large proportion of workload on examination, training, grading and reviewing. The set of questions often used in the e-examination system are multiple choice objective tests and quizzes that can be formally and easily evaluated online.

With the introduction of e-exams, institutions still grapple with serious issues including the preparedness of the learners coping with more technicalities associated with electronic examinations. Unfortunately, there is shortage of research on students' perception of e-exams in Nigeria. This study therefore seeks to take a critical look at how the adoption of electronic examination would have assisted Nigeria colleges of education especially in Oyo town in the evaluation phase of students' study circle as well as the architecture for electronic examination as

implemented by their university counterparts. It is a fact that learners' attitude towards e-learning activities could be seen as the product of their perceptions of the usefulness of e-learning and the level of technical difficulty envisaged to be encountered while exploring the potentials of e-learning technology. In other words, the negative or positive perception of learners' ease of technology use and the value associated with its use in educational processes have greater influence on their intention to explore the potentials of the technology.

Learners' decision about the use of ICT for learning process is affected by factors such as demographic, areas of specialization, gender, school type, intellectual enhancement, training, enabling environment, and individual's perception (Hochlehnert, Brass, Moeltner, & Juenger, 2011). Ayo, Akinyemi, Adebiyi, & Ekong. (2007) define e-examination as a system that involves the conduct of examinations through the web or the intranet. E-assessment in its broadest sense is the use of information technology for any assessment related activity Ayo et al. (2007) also opined that e-examination reduces the large proportion of workload on examination, training, grading and reviewing, thus bringing the ability for the institution to release examination results in record time. This is because where the lecturer would spend weeks marking scripts manually, the computer would grade the students as soon as they finish their paper.

Adebayo and Abdulhamid, (2008) opined that e-examination was introduced to address series of anomalies being encountered in the manual tests and that, the e-examination would remove all human errors recorded in manual examination and create opportunity for students to access their results immediately. With this, we have removed so many hiccupsin the compilation of answer scripts and movement of examination papers from one part of the country to another. The examination is conducted now through the net and that, it would be difficult for students to carry out any form of examination malpractice. This paper assessed the college of education students' perception on e-examination in Oyo State.

Falade (2011) explained that the word perception is derived from latin words perception or percipio which means receiving, collecting and action of taking possession, apprehension with mind or senses. Perception and perceptual process (2013) identify the step involved in perception process as follow: the environment stimulus, the attendant stimulus, and the image on the retina, transduction, neural processing, perception, recognition and action. That mean the way students perceive e-examination will determine the extent of its use.

Purpose of the study

Generally the study investigated the colleges of education students perception on e-examination. Specifically, the study investigated:

1. The perception of college of education students on e-examination.
2. The gender differences and students perception on e-examination in colleges of education in Oyo state.
3. Differences in the course of study on students e-examination perception in colleges of education in Oyo state.

Research Question

1. What is the college of education students' perception on e-examination in Oyo state?

Hypotheses

Ho_1: There is no significant difference in the perception of COE students in e-examination based on gender.

Ho_2: There is no significant difference in the perception of COE students in e-examination based on course of study.

Methodology

This study is a descriptive research, using survey method. Population, sample and sampling techniques: the target population for this study consisted of all colleges of education students in Oyo state. Purposive sampling technique was used to select all 200level students in the three government owned colleges of education in Oyo state. By the time of the commencement of this research, the three colleges of education in Oyo state have a total population of 6000 students in 200 level. 1500 of 200 level students across the disciplines in the three colleges of education in Oyo state were sampled, representing 25% of the total population of the 200 level students which is deemed by the researchers as being representative of the whole population.

The research instrument was developed to elicit students' response on the use of e-examination. The instrument went through validation by scholars in the field of educational technology, and reliability test before it was administered on the students. The test-re-test reliability method was used. A pilot study was carried out by using 50 students of 200 level students from kwara state college of education Ilorin. The researchers with four research assistants administered the research instrument to the participants to avoid attrition. Out of 1,500 students that were given questionnaire for the study, 1,432 were returned which is 95.5% and were used for the analysis, percentage was used to answer the research question while t-test statistic was used to test hypotheses 1 while ANOVA statistic was used to test hypothesis 2. They were tested at 0.05 alpha level.

Results

The results of data analysis of the study are presented in tables 1 to 5 below.

Table 1:
socio-demographic variables of the respondents.

Variables	Frequency	Percentage (%)
Gender		
Male	617	43.1
Female	815	56.9
total	1432	100
Course of study		
Sciences	320	22.3
Languages	275	19.2
Arts and social sciences	288	20.1
Eccped	267	18.7
Voc. and tech.	282	19.7
Total	1432	100

Research Question 1: What is the college of education students perception in e-examination in Oyo state?

Table 2:
COE students' perception on e-examination

S/N	Perceived use of e-examination	Mean (x)	
1.	The use of examination will be difficult for me	1.10	Rejected
2.	Using examination in the college is frustrating	1.15	Rejected
3.	The use of e-examination will reduce examination Malpractices	3.50	Accepted
4.	Power failure will hinder e-examination	1.40	Rejected
5.	E-examination will reduce examination stress	17	Accepted
6.	The use of e-examination will require additional computer Skill knowing about computer	2.84	Accepted
7.	The use of e-examination will make many students to fail	1.75	Rejected
8.	The use of e-examination impedes cognitive thinking	1.12	Rejected
9.	I think positively about using e-examination	3.20	Accepted
10.	The use of e-examination improves students academic performance	3.22	Accepted

Acceptance level = above 2.00; rejection level = below 2.00.

The responses in table 1 revealed that the decision on the statement that the use of e-examination is difficult was rejected (mean of 1.10). Most of the respondents disagreed with the statement generated under that using e-examination in college is frustrating. The statement was also rejected (mean 1.15). The decision on item that e-examination will reduce examination malpractices was accepted (mean 3.50). The respondents still accepted that e-examination will reduce examination stress with mean score of 3.17. The respondents also accepted the statement that e-examination will require additional computer skills with average mean score of 2.84.

Furthermore, the respondents accepted that unstable power supply will hinder the use of e-examination in colleges with mean score of 2.70. The respondents rejected that e-examination impedes students cognitive thinking with mean score of 1.12. Respondents also accepted that the use of e-examination will improve students' academic performance with mean score of 3.22. Respondents also rejected that e-examination will make students fail with mean score of 1.75 and lastly, the respondents also accepted that they think positively about using e-examination with mean score of 3.20.

Hypothesis One:

Ho1: thus there is no significant difference in the perception of COE students in e-examination based on gender.

Table 2:
t-test of male and female COE students on their perception on e-examination

Gender	No	X	SD	DF	T	sig. (2-tailed)
Male	617	27.57	4.33	1430	.95	.35
Female	81527.52	4.62				
Total	1432					

According to table 2, t (1423) = .95, = .35. That is the result of t-value of .95 resulting in .35 significance value was greater than 0.05 alpha value. This means that the stated null hypothesis was not rejected.

Hypothesis Two

H_{02}:   there is no significant difference in COE students e-examination perception based on course of studies.

In order to establish whether significant difference existed among COE students from different course of studies (Sciences, Arts & social sciences, Eccped, Languages & voc. & tech.)

Table 4:
The ANOVA of COE students e-examination perception based on course of studies.:

	Sum of square	df	mean square	f	sig
Between groups	.195	4	0.68	.547	.750
Within groups	117.318	1427	.206		
Total	117.513	1431			

Table 4 revealed that there was no significant difference among colleges of education students perception based on course of study. F(4,1427) = .547, p = .75. this therefore meant that the null hypothesis was not rejected because the the significant value (.75) was greater than the 0.05 alpha level.

Discussion of Findings

The findings of this study revealed that e-examination is not difficult. Though it may require some materials and skills in its conduct but still useful especially in this 21th century. This corroborates with the findings of Adegbija et al (2009) and the assertion of Attewell (2005), that adopting e-assessment has more radical implication than just changing the mode of assessment. Findings also showed that the respondents accepted that e-examination will reduce examination malpractice, that e-examination will reduce examination stress. This is against the expectations of some that e-examinations will create unnecessary tension on students because of its mode of operand. It is also true because examination leakages and impersonation will drastically reduce because new technologies have made it impossible for students to cheat because each students is served with his own questions which may be different from the student sitting neat to him as found out by Adegbija et al. (2009) it was also showed that the use of e-examination impedes not cognitive thinking of students in as much it requires critical reading to cover all areas thought and even in detail in order to pass their examination. The study also, confirmed that unstable power supply hindered e-examination uses in colleges of education. And lastly, it was revealed that e-examination is not frustrating and that respondents think positively in using e-examination.

The findings indicated that college of education students had positive perception on the use of e-examination which was in agreement with findings of Olubiyi, Ajadi, and Inegbedion (2011) who revealed that the students' perception lies on reduction of examination malpractice, wide coverage of the scheme, academic performance among others. Olubiyi et al (2011) also reported the views of Prof. Olu Jegede as cited in Awosiyan (2010) that students academic performance is likely to improve since the students are likely to be more committed to their studies with view that there might not be opportunity to cheat in examination; also because of fewer distractions in the examination hall they are likely to have more concentration since the students know that questions would cover almost every aspect of the scheme, of there is the tendency for them to study more.

The findings also, revealed that gender is not a basis for COE Students perception on the use of e-examination.

Conclusion

This study examined college of education students' perception on e-examination. It was discovered that e-examination would solve the associated problems with traditional methods. The system has the potential to reduce drastically examination malpractices. E-examination has the advantage of being easy to administer, ability to offer instant results to applicants, devoid of paper work and long time consuming in marking the scripts which in most case are prone to errors and misplacement of some scripts due to the large answer of scripts that has to be marked and accessed.

Recommendations

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

1.   The college of education management should be ready to adopt the use of e-examination

2.   Provision should be made for facilities that will bring about effective adoption of e-examination in the college

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PRIMARY SCHOOL TEACHERS' PERCEPTION ON THE USE OF DIGITAL STORYTELLING BOARD FOR INSTRUCTION IN OYO METROPOLIS.

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Abstract
Teachers are the most important agents for the successful implementation of educational programme. They play vital roles on educational innovations and their application in teaching and learning process to assist learners in the acquisition of concrete and rewarding school experience, primary school teachers are not exception. This study examined the primary school teachers' perception on the use of digital storytelling among the lower basic pupils of Oyo metropolis. A descriptive survey research design was adopted. The population for this study covered all lower basic teachers in Oyo metropolis. Multi stage Sample technique of four legs was used to select sample for this study comprised 150 respondents sampled through a stratified random sampling technique. The instrument was a questionnaire titled "Digital Storytelling Primary School Teachers Perception on It Use (DSPSTPOU)" with a reliability 0f 0.90. The data collected were analysed using mean for the research questions while hypotheses were tested using t-test statistic. The findings of the study showed that primary school teachers' perception on the use of digital storytelling is low. Also, the study revealed that there is no significant different between male and female (t=0.12, p>0.05) and experienced and less experienced primary school teachers' perception on the use of digital storytelling (t=0.27, p>0.05). Based on these findings, it was recommended that primary school teachers should be encouraged to use digital storytelling as medium of interacting with the pupils. Regular workshops, seminars, and in-service training should be organised to improve teachers' efficiency on the usage of digital storytelling.
Keywords: Digital storytelling board, Perception, Lower basic classes.

Introduction

There is a growing consensus among educators and researchers around the world that teaching and learning must change to help students develop the skills they will need to succeed in the 21st century (Ananiadou & Claro, 2009; Partnership for 21st century skills, 2004; Scheuermann & Pedro, 2009). While specific goals for change vary, common themes include developing problem solving and team working skills and using technology to support more powerful learning. Although there are inspiring examples of innovative teaching promoting this kind of learning, research continues to show that in most places, classroom practice lags behind goals (OECD, 2009; Law, Pelgrum & Plomp, 2010). The sources of this gap between the rhetoric of change and the realities of classroom range from lack of access to resources and training to lack of clear expectations in systems that are still organised and incented towards traditional measures of achievement. Most students still experience instruction that is largely lecture-based and extensive national education investments in technology have not yet resulted in widespread transformation of learning opportunities.

Education is a light that shows humankind the right direction to surge. The purpose of education is not just making a student literate but adds rationale thinking, knowledgeability and self sufficiency. When there is willingness to change, there is hope for progress in any field. Creativity can be developed and innovation benefits both students and teachers (Damodharan & Rengarajan, 2009). The innovative ideas, according to Damodharan and Rengarajan (2009) include the multimedia learning process, mind gap, teaching with sense humour, Z to A approach, mnemonics words-words-words approach, role playing and scenario analysis based teaching, among others. According to them, information technology is dramatically altering the way students, faculty, and staff learn and work. Technology has started changing the classroom experience. Information and communication technology

(ICT) has made many innovations in the field of teaching and also made a drastic change from the old paradigm of teaching and learning. The concepts of paperless and penless classroom are emerging as an alternative to the old teaching learning method. There is now a democratization of knowledge and the role of the teacher is changing to that of facilitator.

With ICT, studies have been made easy in a way that it can be carried out in groups or in clusters (Orunmoluyi, 2012). One can study whenever he wants and irrespective of where one may be. With ICT, people can connect online to do desired task. According to Yusuf (1997), computer has been a useful tool in teaching and learning process just as it has been in administrative process. The experience of introduction of ICT in educational settings all over the world and over the decades shows that the educational benefits of ICT cannot be underestimated. Supporting this view, Tinio (2003) opined that the effective integration of ICT into the educational system is a complex, multifaceted process that involves not just technology but curriculum and pedagogy, institutional readiness, teacher competencies and long-term financing, among others. ICT has bridged the gap in time and geographical locations; that which was a typical and natural constraint of the traditional system of imparting knowledge. The influence of ICT has permeated every aspect of human life and endeavour (Olagunju, 2010). The teaching and learning process has been dramatically altered by the convergence of a variety of technological, instructional and pedagogical developments in this century (Marina, 2001; Smith, 2002).

Yusuf (2005) noted that ICT provide opportunities for student teachers, academic and non-academic staff to communicate with one another more effectively during formal and informal teaching and learning. ICT is affecting the way education is delivered and how researches are conducted. Observers have predicted that with ICT, the role of teachers will change from being 'transferers' of a predefined body of knowledge to being 'mentors' and 'managers' of the learning environment (Mcintosh, Oliveras, Sullivan & Whitson, 1996). Various arguments about the benefits of the adoption and use of information and communication technology at elementary institutions have been put up. Many are of the opinion that ICT will enable academics to prepare their students for future challenges in a more effective manner. (Pritchard, 1996).

There was a debate about whether it is really the use of a particular delivery technology or the design of the instruction that improves learning (Clark, 2001; Kozma, 2001). It has long been established that specialized delivery technologies can provide efficient and timely access to learning materials. However, Clark (1983) as explained by Orunmoluyi (2012) claimed that technologies are merely vehicles that deliver instruction, but do not themselves influence students' achievement. As Clark noted, meta-analysis studies on media research have shown that students gain significant learning benefits when learning from audio-visual or computer media, as opposed to conventional instruction; however, the same studies suggest that the reason for those benefits is not the medium of instruction, but the instructional strategies built into the learning materials.

Kozma (2001) argued that the particular attributes of the computer are needed to bring real-life models and simulations to the learner; thus, the medium does influence learning. However, it is not the computer per se that makes students learn, but the design of the real - life models and simulations, and students' interact with those models and simulation. The computer provides the means through which the instruction is communicated to the learners (Clark, 2001). According to Ifinedo (2005), the impact of ICT in education in Africa is still very low compared with developed world. A good number of researchers have carried out investigations to substantiate why Africa and other developing countries are still backward technologically in this computer age. Digital storytelling combines the art of telling stories with a mixture of digital media, including text, pictures, recorded audio narration, music and video. These multimedia elements are blended together using computer software, to tell a story that usually revolves around a specific theme or topic and often contains a particular point of view (Tolisano, 2015).

The technology has steadily grown in attractiveness and is currently being practiced in a myriad of locations, including schools, libraries, community centers, museums, medical and nursing schools, businesses and more In educational settings, teachers and students from all levels of education are creating digital stories on every topic imaginable, in almost all areas of human learning from art to zoology, and numerous content areas in between. Digital storytelling board has also become a worldwide phenomenon, with practitioners from across the globe

creating digital stories to integrate technology into the classroom, support language learning, facilitate discussion, increase social presence, and more (Yuksel, Robin, and Yildrim (2014). Though digital storytelling has not been popular in Nigeria schools. Teachers can not shy away the reality that DSB plays a decent role in students' academic achievement. Pedagogically, this refers to beliefs about if, when and how technologies fit within teaching and learning, the teaching methods and strategies teacher use to teach. The view had always been there is no concrete method of using technologies.

However, African countries have come to realize that they have to move with the trend of technology globally for the varieties of advantages it offers. Ifinedo (2005) carried out a research to determine the readiness of some African countries which are Botswana, Cote d'Ivoire, Egypt, Ghana, Kenya, Mauritius, Nigeria, South Africa and Tunisia. The result of the research on the readiness of Africa revealed that Africa is right below the ladder in the global networked economy. However, some African countries are making efforts to be technologically alive. Nigeria launching her first communication satellite on July 7, 2011 is a tremendous effort towards the right direction. Therefore there is no doubt that teachers are indispensable stakeholders for successful teaching and learning with technologies and their perception on the use or digital storytelling for instruction is inevitable, if re-defining education through technologies and innovative pedagogies is going to be achieved.

Research Question

1. What is the perception of primary school teachers towards the use of digital story board for instruction?

Research Hypotheses

H_{O1}: There is no significant difference between male and female Primary school teachers' perception on the use of digital storytelling board for instruction.

H_{O2}: There is no significant difference between experienced and less experienced Primary school teachers' perception on the use of digital storytelling board for instruction.

Methodology

The descriptive survey research design was used in the study. This is necessary to be able to explain the variables in the study based on information gathered. The research was conducted in Oyo metropolis. The population was all lower basic teachers in Oyo metropolis. A sample of one hundred and fifty lower basic teachers were sampled using multi stage sampling technique of four legs which include purposive, simple random, stratified and proportionate sampling techniques. Purposive sampling technique was used to select all public primary schools in Oyo metropolis, at stage two simple random technique was used to select five primary schools from each of the four local governments areas in Oyo metropolis, proportionate sampling technique was also used to select 10% of lower basic teachers from each school while stratified sampling technique was used to group the participants along gender and years of teaching experienced lines. A questionnaire titled "Digital Storytelling Primary School Teachers Perception on It Use (DSPSTPOU)" was used for data collection. The questionnaire was divided into two sections. Section A deals with information about demographic data about the respondents while Section B contains items on teachers' perception on digital storytelling and was on a four point Likert scale. To validate the instrument, copies of the questionnaire was given to four Educational technology experts in Federal College of Education (Sp), Oyo to ensure content validity. Its reliability was established using test-retest technique and a reliability index of 0.90 was obtained. Mean score was used to answer the research question while hypotheses were tested using t-test statistic at 0.05 significant level.

Results and Discussions

Research Question 1: What is the perception of primary school teachers towards the use of digital storytelling board for instruction?

Table1:
Analysis of Primary school teachers' perception on the use of digital storytelling board

S/N	e-learning Versatility Level	Mean (x)
1.	Using digital storytelling board for teaching and learning will enhance teachers effectiveness in teaching jog	1.53
2.	The use of DSB will reduce stress and tension associated with teaching and learning in school	1.47
3.	DSB usage in school will reduce student seriousness	1.19
4.	Contribution of DSB has made teaching and learning process easier	1.08
5.	Using DSB will make my lesson more difficult	1.22
6.	The use of DSB in teaching will be too complex hence jeopardize teacher efforts	0.55
7.	I wish I never have anything to do DSB	1.03
8.	I can never be convinced to make use of DSB in teaching	0.49
9.	I will rather leaving teaching in school than in using DSB to teach	1.00
10.	The use DSB will take more of my time and have no impact to increase teaching effeteness'	0.98
	Grand mean	1.06

Table 1 reveals that using digital storytelling board for teaching and learning will enhance teachers effectiveness in teaching jog was ranked highest with mean score of 1.53 out of 4. The lowest mean score was 0.49 with the statement that I can never be convinced to make use of digital storytelling board to teach. However, the grand mean score for primary school teacher's perception on the use of DSB for instruction was found to be 1.06. Using 2.0 as the benchmark, it can then be inferred that primary school teachers' perception on DSB for instruction is low

H_{O1}: There is no significant difference between male and female Primary school teachers' perception on the use of digital storytelling board for instruction.

Table 2:
t-test of male and female Primary school teachers' perception on digital storytelling board.

Gender	No	X	SD	DF	T	Sig.
Male	66	47.09	3.59			
Female	84	47.07	3.63	148	0.033	0.79

Table 2 indicates that the t-value, t(148) = 0.033<p0.05, of male and female mean score of primary school teachers perception on the use of DSB for instruction was not significant. Meaning that there was no significant difference between the male and female primary school teachers perception on DSB for instruction. By implication the stated null hypothesis is accepted. This was as a result of the t-value of 0.033 resulting in .79 significance value which was greater than 0.05 alpha value.

H$_{O2}$: There is no significant difference between experienced and less experienced Primary school teachers' perception on the use of digital storytelling in instruction.

Table 3:
t-test of experienced and less experienced Primary school teachers' perception on digital storytelling board.

Years of teaching experience	N	MEAN	SD	df	t-cal	sig
1-5	28	31.53	6.15	148	-.58	.56
6 & above	122	31.76	5.93			

Table 3 reveals that t (148) = -.58, p = .56. This means that the stated null hypothesis is accepted. This was as a result of the t-value of -.58 resulting in .56 significance value which was greater than 0.05 alpha value. By implication, the stated null hypothesis is established thus: There is no significant difference between experienced and less experienced primary school teachers perception on the use of DSB for instruction.

Discussion of Findings

The perception of primary school teachers on the use of digital storytelling board for instruction was examined using research question 1. The result of the mean score established that primary school teachers had negative perception the use DSB for instruction. This finding corroborated Orunmoluyi (2012) claimed that technologies are merely vehicles that deliver instruction but do not themselves influence the teaching learning process. Kozma (2001) also argued that it is not the computer per se that influences the teaching learning process but the design of the real-life models and simulations which students interact with. However, Kwache (2007) also had it that the coming of technologies had in immense measure challenged the traditional way of teaching and learning.

The influence of gender primary school teachers' perception on the use DSB for instruction was examined by research hypothesis 1. The results of the t-test established no significant difference between male and female primary school teachers' perception on the use DSB for instruction. These findings on gender supported the earlier findings of Olumorin (2008) who could not find any form of gender influence on lecturers' attitude and use of ICT. However, the results contradicted the findings of Chen and Tsai (2005) who reported that males exhibited more favourable attitudes toward web-based learning than females.

The influence of years of teaching experience of primary school teachers' perception on the use DSB for instruction was examined by hypotheses 2. The results of the t-test established no significant difference between experienced and less experienced primary school teachers' perception on the use DSB for instruction. These findings on years of experience alligned with earlier findings of Wang (2012) who reported that continued reluctance on the part of Visual Art teachers to integrate technology was age and experience.

Recommendations

Based on this study we make the following recommendations:

1. Additional research is needed on the use of digital storytelling board for instruction especially in primary schools.
2. Primary school teachers should be giving capacity building opportunity on how to use digital storytelling board for instruction.
3. Governments at all levels should provide needed tools for the use of DSB for instruction

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EFFECTS OF FACEBOOK AND WHATSAPP SUPPORTED INSTRUCTIONAL PLATFORMS ON UNDERGRADUATE STUDENTS' RETENTION IN EDUCATIONAL TECHNOLOGY

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Abstract

This study investigated the effect of facebook and whatsapp supported instructional platforms on undergraduate students' retention in educational technology. A three by three by two (3x3x2) factorial design was adopted using pretest- posttest, randomized, control group approach. Three research questions and three research hypotheses were raised to guide the study. A total of 180 educational technology students selected from three universities out of five universities offering educational technology in Nigeria were randomly assigned to Experimental Group I (exposed to facebook supported instructional platform), Experimental Group II (exposed to whatsapp supported instructional platform) and Control Group (taught through lecture method). Educational Technology Achievement Test (ETAT) was used for data collection. ETAT was validated by experts and a reliability coefficient of 0.734 was obtained using Pearson Product Moment Correlation Coefficient formular. Data gathered were analyzed using Analysis of Variance and T-test analysis and significance was ascertained at 0.05 alpha levels. Findings revealed that significant difference exists in the mean retention scores of the three groups (Fcal =110.885; df = 179; P<0.05). However, no significant different exist in the mean retention scores of male and female students taught educational technology using Whatsapp supported instructional platform (P>0.05 level of significant (P=0.25). This shows that whatsapp supported instructional platform is gender friendly. It was therefore recommended among others that Facebook and whatsapp supported instructional platform should be made as one of the major teaching strategies for Educational technology courses in universities since from the findings of this study they are more effective.

Keywords: Facebook supported instructions, Whatsapp supported instructions, Retention, Educational Technology

Introduction

Educational technology is a systematic and organized process of applying modern technology to improve the quality of education. It is a systematic way of conceptualizing the execution and evaluation of the educational process, the learning and teaching and the application of modern educational teaching techniques (Lazar, 2015). With the application of educational technology, students can independently progress in mastering teaching materials, choose the pace of work, repeat the material that is not sufficiently clear, get results of their performance and track down their progress.

Social media are one of the educational technology tools used in promoting meaningful and qualitative interactions among learners and teachers (Okereke, 2014). Social media are platforms that enable one to connect with friends and family, share photos, videos, music and other personal information with a wider group of people. They are online service platforms that focus on building and reflecting social relations among people who share interest and activities (Effiong & Odey, 2013). They are mainly designed for information, entertainment and educational reasons. For educational purposes, it serves both teachers and learners as educationists believe that social media help teachers in adequately preparing their lessons, designing and implementing lessons with the most efficient and effective teaching methods as well as evaluating the learning outcomes (Olugbemi, 2013).

Retention as one of the learning outcomes is the ability of the learner to learn facts in memory. It is the ability to reproduce what has been learnt when the time arises. Abdul (2014) described it as the ability to remember things. Students' retentive ability is enhanced through the use of appropriate technology like teaching students

through social media platforms. Concepts that are difficult to students could be broken down, making learning more effective, lasting and enjoyable through the use of social media tools. This increases students' retentive life. The engagement of social media in the learning environment will increase students' achievement and retention (Hung & Yuen, 2010).). Dirk, (2018) asserts that the use of social media engages students, motivates their interest in the subject matter and aids student retention of knowledge. There are various empirical studies on the educational implication of social media especially facebook and whatsapp. Akpan and Ezinne (2017) conducted research on "Effectiveness of Whatsapp as a collaborative tool for learning among undergraduate students in university of Uyo" and the study indicated that there is a significant difference in the retention level of students taught with WhatsApp application and those taught using the conventional approach of teaching. Students taught with WhatsApp application had a higher retention mean score than students taught using conventional approach of teaching. Their finding also revealed that there is no significant difference between male and female students who use WhatsApp for learning.

Salechi and Ashiyan (2017) also researched on "Impact of whatsapp on learning and retention of collocation knowledge among Iranian EFL learners" They opined that WhatsApp application as a learning tool enhances students retention during learning. Their gender result also revealed that WhatsApp was an effective way for improving collocation learning regardless of gender and that using WhatsApp for acquisition of collocations is not gender specific. Ariana and Mirabela (2014) worked on the impact of social media on vocabulary learning using facebook as a case study. Finding revealed that there was no significant differences between the two groups (experimental and control groups). There was an improvement in both groups from pre-test to post-test scores. The group using social media for learning did not differ significantly with those who did not use social media for developing vocabulary knowledge.

Gender has been found to affect academic performance and retention. It could be defined as an attribute that differentiates a male and a female in classroom interactions, in the case of the present study, in social media interaction. Gender is an attribute to human sexes. It is a social connotation that has sound psychological background (Nnamani & Oyibe, 2016). Research shows that men are more likely to use social media to connect with people while women use social platforms to seek information (Johnson & George, 2014; Haferkamp, *el tal* 2012). Haq and Chand (2012) carried out a research on pattern of facebook usage and its impact on academic performance of university students: A gender based comparison. The study revealed among other findings that Facebook use; in general, adversely affect the academic performance of male students as compared to female students. Veysel, and Ayse, (2017) researched on the Effect of blended learning on academic achievement carried out in southwest part of Turkey. The finding reveals that there was a significant different between the two study groups in terms of gender. There was also significance difference in the retention test scores of the two groups.

Statement of the Problem

Despite technological advancements in the teaching sector and the educational benefits of social media, university lecturers especially in the developing countries like Nigeria are yet to adopt the use of social media in teaching. University Educational institutions that ignore newer technologies for teaching and learning, such as the social media, may become less relevant in the development of human capital, therefore, undermining national economic growth and development. There is a need to introduce the concept of social media as a new form of educational technology in teaching because of its educational benefits. It cannot replace a conventional teaching methodology in education but rather to support, complement and enhance its effectiveness. This will provide students with greater experience in dealing with the world of work related issues they encounter. Its teaching methodologies will lead to a learning society in which the creative and intellectual abilities of students will allow them to meet the goals of transformation and development.

Aim and Objectives of the study

The aim of this study is to investigate effects of facebook and whatsapp supported instructional platforms on undergraduate students' retention in educational technology. Specifically, the objectives of the study are:

1. To ascertain the retention ability of students taught educational technology concept using Facebook and Whatsapp supported instructional platform and lecture method.
2. To find out the influence of gender on the retentive ability of students taught educational technology concept using Facebook supported instructional platform.
3. To find out the influence of gender on the retentive ability of students taught educational technology concept using Whatsapp supported instructional platform.

Research Questions

1. What are the mean retention scores of students taught educational technology using Facebook and Whatsapp supported instructional platforms and Lecture method?
2. Is there any difference in the mean retention scores of male and female students taught educational technology using Facebook supported instructional platform?
3. Is there any difference in the mean retention scores of male and female students taught educational technology using Whatsapp supported instructional platform?

Research Hypotheses

H_{01}: There are no significant difference in the mean retention scores of students taught educational technology using Facebook and Whatsapp supported instructional platforms and lecture method.

H_{02}: There is no significant difference in the mean retention scores of male and female students taught educational technology using Facebook supported instructional platform.

H_{03}: There is no significant difference in the mean retention scores of male and female students taught educational technology using Whatsapp supported instructional platform.

Significance of the Study

This study would be significant to educational policy makers, educational administrators, curriculum planners, students, teachers, researchers and the whole educational system. This study would offer recommendations to educational policy makers on the educational status of our university students and lecturers towards utilization of social media for teaching and learning. These recommendations would enable them initiate social media policies, programmes and enriching innovations to stimulate the interest of students and lecturers.

Methodology

The research design adopted for this research was a factorial research design. This is a complex experimental design that permits multiple independent variables trying to find their effects on the dependent variables. A three by two (3x2) factorial design was adopted using pretest-posttest, randomized, control group approach. The design represented three levels of treatments (Experimental Group I, Experimental Group II and Control Group) and two levels of gender (male and female). The experimental groups I and II were exposed to Facebook and WhatsApp supported instruction via Facebook and WhatsApp platforms whereas the control group was taught using conventional lecture method. The three groups were taught five units of instruction on distance education courses. The experimental groups were richly supported with video

presentations, illustrations and diagrams. This exercise lasted for 5 weeks at contact period of once a week. At the end of each unit, came a tutor marked assignment which served as self assessment test evaluating the level of performance of students in the experimental groups. The control group was also evaluated towards the end of each lesson. After the main teaching, post-test on achievement was administered to students of both control and experimental groups followed by retention test which came two weeks after the post-test.

The Population of this study comprised all Educational Technology students in all public universities in Nigeria comprising 3,056 students. The sample for the study was 180 second year Educational Technology students. This sample was selected randomly from three out of the five public universities offering Educational Technology in Nigeria. The instruments used to gather data for the study were Educational Technology Achievement Test (ETAT) and Treatment Instruments. The treatment instruments are called Facebook Supported Instruction (FSI) and Whatsapp Supported Instruction (WSI). The facebook Supported Instruction (FSI) and Whatsapp Supported Instruction (WSI) were developed by the researcher in collaboration with an online course developer. These broadly constitute the body of instructions which the students were exposed to. The topics treated were concept of distance education; characteristics, types, merits and demerits of distance education; modes of delivery in distance education; methods of teaching and learning in distance education; and modes of assessments in distance learning. ETAT was made up of fifty (50) multiple choice objectives questions that were validated and its reliability determined as 0.734 using Pearson Product Moment Correlation Coefficient formular.

Result

Ho$_1$: There are no significant differences in the mean retention scores of students taught educational technology using Facebook and Whatsapp supported instructional platforms and lecture method.

Table 1a:
ANOVA comparison of the Retention mean scores of the experimental groups I, II and control group.

Sources variation	Sum of square	df.	Mean	f- cal	Sig.
Between Groups	18730.411	2	9365.206		
Within groups	14949.250	177	84.459	110.885*	.000
Total	33679.661	179			

*: Significant at 0.05

Table 1a shows the ANOVA result of the comparison of retention mean scores of students taught educational technology in Experimental Group I, II and the Control Group. An examination of the Table shows (Fcal =110.885; df = 179; P<0.05). On the basis of this, hypothesis one was rejected. Therefore, there was significant difference in the retention of students taught Educational Technology in Experimental Group I (those taught using Facebook Supported instructional platform), Experimental Group II (those taught using Whatsapp instructional platform) and those in Control Group (through lecture method only). Sidak post-hoc analysis was carried out to locate where significant difference exists as presented in Table 1b.

Table 1b:
Sidak post-hoc analysis of the retention mean scores of students in experimental group I, II and the control group

Treatment	Experimental I	Experimental II	Control
Exp. I (Facebook)	----------	10.247 *	22.410*
Exp. II (Whatsapp)	-10.247*	---------	12.163*
Control (Lecture)	-22.410*	----------	-12.163

*: Significant at p= 0.05 level.

Table 1b shows the Sidak post-hoc analysis of retention mean scores of students in Experimental Group I, Experimental Group II and the Control Group. The table indicates that significant difference exist between the retention mean scores of students in Experimental Group 1 and Experimental Group 11 (mean difference =20.247). It also shows that significant difference exist between Experimental Group 1I and the Control Group (mean difference = 12.163). The implication of the analyses presented in Table 1b is that the use of Facebook Supported instructional platform improves students' retention towards Educational technology better than Whatsapp instruction while the use of Whatsapp instruction method also improves students' retention better than the use of lecture method.

Ho_2: There is no significant difference in the mean retention scores of male and female students taught educational technology using Facebook supported instructional platform.

Table 2:
t-test Comparisons of the Mean Retention Scores of Male and Female Students taught Educational Technology using Facebook supported Instructional Platform

Variables	N	Df	Mean	S.D	t- cal	Sig.
Male	30		79.00	7.679		
		58			2.190*	.033
Female	30		74.87	8.790		

*Significant at 0.05.

Table 2 shows t-test comparisons of the mean retention scores of male and female students taught educational technology using Facebook supported instructional platform. The table indicated that there was significant difference at P<0.05 level of significant (P=0.033). This implies that male students retained the instruction more than female students, and because there was significant difference, hypothesis 2 is rejected.

Ho_3: There is no significant difference in the mean retention scores of male and female students taught educational technology using WhatsApp supported instructional platform.

Table 3:
t-test Comparisons of the Mean Retention Scores of Male and Female Students taught Educational Technology using Whatsapp supported Instructional Platform

Variables	N	Df	Mean	S.D	t-cal	Sig.
Male	30		67.87	9.081		
		58			2.294^{ns}	0.25
Female	30		63.37	5.744		

Not significant at 0.05.

Table 3 shows t-test comparisons of the mean retention scores of male and female students taught educational technology using whatsapp supported instructional platform. The table indicated that there was no significant difference in the mean retention scores of male and female students taught educational technology using whatsapp supported instructional platform(P>0.05 level of significant (P=0.25). An indication that WhatsApp supported instructional Platform is gender friendly. Since there was no significance different hypothesis 3 is retained.

Discussion

Hypothesis 1: There are no significant differences in the mean retention scores of students taught Educational Technology using Facebook and WhatsApp supported instructional platforms and lecture method

The Anova comparison and Sidak post-hoc analysis indicate that significant difference exist between the retention mean scores of students in Experimental Groups and control groups. The implication of the analyses is that the use of Facebook supported instructional platform improves students' retention towards Educational Technology better than WhatsApp instruction while the use of WhatsApp instructional method also improves students' retention ability better than the use of lecture method. This finding concurs with that of Akpan and Ezinne (2017) whose findings revealed that students taught with WhatsApp application had a higher retention mean score than students taught using conventional approach of teaching. Also in alignment with Salechi and Ashiyan (2016) whose finding revealed that the experimental group who used WhatsApp application in learning collocation significantly outperformed the control group in posttest. They opined that WhatsApp application as a learning tool enhances students' retention during learning. This positive significance recorded by these researchers is an indication that social media makes learning more lasting and also support the observation made by Dirk, (2018) that students' retentive ability is enhanced through the use of appropriate technology like teaching students through social media platforms. Dirk, further maintained that the use of social media engages students, motivates their interest in the subject matter and aids their retention of knowledge. Perhaps, this remarkable significant difference in the retention of students could be attributed to the use of appropriate and right technology in teaching as employed by the researcher.

Hypothesis 2: There is no significant difference in the mean retention scores of male and female students taught Educational Technology using Facebook supported instructional platform.

The finding shows that there was significant difference in the mean retention scores of male and female students taught Educational Technology using Facebook supported instructional platform. The male retention mean score differ significantly from the female retention mean score after they were taught using facebook supported instructional platform. The facebook supported instructional platform enhanced the retention ability of male students more than female students. This finding agrees with the findings of Veyse and Ayse (2017) who found significant difference between the experimental and control groups in terms of gender and also significant difference in the retention test scores of the two groups. This contrast the work of Ariana and Mirabela (2014) who reported that students expose to social media for learning did not differ significantly with those who did not use social media for learning vocabulary knowledge. However, it should be noted that Ariana and Mirabela covered just one content unit in their study; this would not have given better gender analysis. The present study covered five units of instructions thus creating better gender comparison.

Hypothesis 3: There is no significant difference in the mean retention scores of male and female students taught Educational Technology using WhatsApp supported instructional platform.

The result shows that there was no significant difference in the mean retention scores of male and female students taught Educational Technology using WhatsApp supported instructional platform. This

finding agrees with the findings of Salechi and Ashiyan (2016) they opined that WhatsApp application as a learning tool enhances students' retention and improves collocation learning regardless of gender. It is also in consonance with the findings of Akpan and Ezinne (2017) whose finding revealed that there is no significant difference between male and female students who use WhatsApp for learning. In other words, both male and female students had same level of retention. It can therefore be said that the use of WhatsApp supported instructional platform improve and enhanced the retention of students.

Conclusion

Findings from the study revealed that Facebook and whatsapp supported instructional method helped in fostering achievement and increasing retentive abilities of students in Educational technology subject course than the lecture method of teaching. It helped students to enhance their various elements of retentive powers thereby yielding a positive attitude towards Educational technology. The findings clearly showed that Facebook and whatsapp are good instructional tools which do not only facilitate learning but also assist in developing the retentive capabilities of learners and at the same time equipping them with those technological driven qualities, which at present, are very vital.

Recommendation

Facebook and whatsapp supported instructional platform should be made as one of the major teaching strategies for Educational technology courses in universities since from the finding of this study they are more effective.

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EFFECT OF THREE MODES OF MOBILE INSTRUCTIONAL PACKAGE ON ACHIEVEMENT AND GENDER OF MATHEMATICS STUDENTS IN COLLEGES OF EDUCATION, IN NORTH-CENTRAL NIGERIA

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Abstract

This study investigated the effect of three modes of mobile instructional package on achievement and gender of mathematics students in colleges of education, in North-Central Nigeria. The study adopted pre-test post-test randomized experimental design. The target population for the study was all the NCE one mathematics students in North-Central Nigeria. Multi-stage sampling was used to sample the schools and students for the study. A random sample of 120 students (75 male and 45 female) were selected from three randomly selected colleges of education, in North-Central Nigeria. The research was guided by three research question and three null hypotheses and tested at 0.05 level of significant. The researchers developed mathematics mobile instructional package MMIP on mathematical concepts on trigonometry, which was used as treatment for experimental groups. A pilot study was carried out to test the research instrument. A reliability coefficient of 0.85 was obtained using the split-half method. Thirty (30) multiple choice item multiple choice questions were administered to both groups before and after the treatment. Mean and standard deviation were used to answer the research questions while analysis of covariance (ANCOVA) was used to test the research hypotheses. The findings of the study revealed that there was no significant difference in the achievements and gender of mathematics student taught using Video Only, Audio+Text and Text Only. The study recommends that lecturers should be encouraged to use Mathematics Mobile Instructional Package (MMIP) for teaching and learning of mathematics.
Keyword: Mathematics Mobile Instructional Package (MMIP), Video only (VO), Audio with Text (A+T), Text only (TO), Achievement.

Introduction

Mathematics can be seen in all facets of life and in day to day occupations such as internet technology, banking, medicine, scientific discoveries and even in our planning of daily activities (Anyanwu, Gambari & Ezenwa, 2014). Mathematics remains core subject in both primary and secondary schools, Federal Republic of Nigeria (FRN, 2009). Credits pass in mathematics and English language at senior secondary school level determined students' success and access to University education in Nigeria. Therefore there is need to integrate mobile instructional package is essential to improve students' performance in mathematics. Mobile learning is convenient in the sense that it is accessible from virtually anywhere, sharing is almost instantaneous among everyone using the same content, which leads to the reception of instant feedback and tips, this highly active process has proven to increase examination scores from the fiftieth to the seventieth percentile, and cut the dropout rate in technical fields by twenty two percent (Saylor, 2012).

Mobile-learning is defined as "learning across multiple contexts, through social and content interactions, using personal electronic devices (Cromton & Burke, 2013). Also a form of distance education, mobile learning focuses on the mobility of the learner, interacting with portable technologies, using mobile tools for creating learning aids and materials becomes an important part of learning (Trentin & Repetto, 2013). Mobile learning also brings strong portability by replacing books and notes with small devices, filled with tailored learning contents and

mobile phone (through text SMS notices) can be used especially for distance education or with students whose courses require them to be highly mobile and in particular to communicate information regarding availability of assignment results, venue changes and cancellations of lecture. It can also be of value to business people, for example, sales representatives who do not wish to waste time away from their busy schedules to attend formal educational training events. Prensky, (2001) suggests in his research titled, "Digital natives, digital immigrants" that "our students today are all 'native speakers' of the digital language of computers, video games and the Internet." University students frequently adopt new instructional technologies in learning and constructing knowledge. They use computers, video games, digital music players, video cams, cell phones, mobiles devices and variety of other devices and tools of the digital age.

The transmission of general information through the use of mobile technologies is more and more frequent at Universities and all higher educational institutions (Trentin & Repetto 2013). This information is related to event registration, dates of exams, messages sent by teachers or among students, and so on. For this reason, mobile learning, also called m-learning, is a new learning device in educational technology. It is a new generation of distance learning focusing on the use of mobile devices, mobile learning is a learning technology that uses variety of learning approaches and methods across multiple contexts and social interactions with personal electronic devices (Crompton & Burke 2013). Kukulska-Hulme, (2007) suggest that mobile devices used in distance learning are more suitable for formal learning and are also suitable for authentic and personalized mobile learning. Mobile learning technologies use a variety of mobile devices, such as Mp3 players, notebooks, mobile phones, iPads, iPods, iPhones, tablets, and so on. These mobile devices provide mobility and interactivity for students and teachers, focuses on how society, universities and institutions can support an increasingly mobile population and gives online instructor more mobility and interactivity to online students. Mobile Technologies bridges pedagogically designed learning context allowing learning to be situated in a real-world context and make students to have higher performance in mathematics (Cochrone, 2010).

Oludipe, (2012) investigated gender difference in Nigerian junior secondary students' academic achievement in basic science. Findings of his study revealed that there was no significant difference in academic achievement of male and female students at the pretest, post-test. Shaibu, Mike, Solomon, & Jarkko (2016) Investigated research on impact of mobile devices for learning in higher education institutions: Nigerian universities case study. The statistical analyses result show that there is no significant difference in the students" use of mobile devices based on gender. Atovigba, (2012) identified gender trends in Nigerian secondary students' achievement in Algebra. It was revealed that the male students performed significantly higher than the female students. Achebe (2005) conducted a study on the effect of videotape instructional package on students' achievement and retention of concepts in food and nutrition in secondary schools in Minna, Niger State. Finding s revealed that there was no gender difference in achievement and retention of students taught with videotape instructional package. Uche and Ugwu (2007) examined the effects of text and audio-taped instruction on students' achievement in secondary school biology in Igbo-Etiti Local Government Area of Enugu State. It was discovered that males did better than females when taught with video-tape while females performed higher than males when exposed to audio-tape. Gambari., Falode and Adegbenro (2014) carried out the study on investigated the effectiveness of computer animation and geometry instructional model on mathematics achievement and retention on junior secondary school students in Minna, Nigeria. However, there was no significant difference reported in the post-test performance scores of male and female students taught geometry using computer animation and instructional model.

Aim and Objectives of the Study

The aim of this research is to investigate the effects of three modes of mobile instructional package on gender of mathematics students in colleges of education, in North-Central Nigeria

. The specific objectives are to:

1. Examine the effects of mathematics Video Only Mobile Instructional Package (VOMMIP) on achievement of male and female mathematics students.
2. Examine the effects of Audio + Text Mathematics Mobile Instructional Package (A+TMMIP on achievement of male and female mathematics students.
3. Examine the effects of Text Only Mathematics Mobile Instructional Package (TOMMIP) on achievement of male and female mathematics students.

Research Questions

The following research questions were raised to guide the study:

1. What is the mean achievement score of male and female students taught mathematics mobile instructional package with Video Only?
2. What is the mean achievement score of male and female students taught mathematics mobile instructional package with Audio + Text?
3. What is the mean achievement score of male and female students taught mathematics mobile instructional package with Text Only?

Research Hypotheses

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

H_{01} There is no significant difference in the mean achievement scores of male and female students taught mathematics using Video Only Mathematics Mobile Instructional Package (TOMMIP).

H_{02} There is no significant difference in the mean achievement scores of male and female students taught mathematics using Audio + Text Mathematics Mobile Instructional Package (A+TMMIP).

H_{03} There is no significant difference in the mean achievement scores of male and female students taught mathematics using Text Only Mathematics Mobile Instructional   Package (TOMMIP).

Methodology

The research adopted the pre-test–post-tests randomize design. The population of the study comprises all NCE mathematics students in North Central Nigeria and target population was NCE one mathematics student. 120 students were randomly selected from three colleges of education in North Central Nigeria for the study. The Instruments for the study is Trigonometry Achievement Test (TRAT) and treatment material is Mathematics Mobile Instructional Package (MMIP). The TRAT comprises of 30 multiple choice objective questions and Mathematics Mobile Instructional Package comprises of Video Only, Audio+Text and Text Only Mathematics Instructional Package. The Trigonometry Achievement Test (TRAT) and Mathematics Mobile Instructional Package (MMIP) was validated by two experts in each in mathematics education in both university and college of education, education technology experts and computer scientist; because research was carried out in colleges of education. All the experimental groups were given pretest before the treatment. Experimental group one was exposed to the use of Video only mathematics mobile instructional package '(VOMMIP)'; experimental group two was exposed to Audio+Text mathematics mobile instructional package '(A+TMMIP)'; while experimental group three was exposed to Text only mathematics mobile instructional package '(TOMMIP). The posttest was administered on the groups after six weeks of treatment. ANCOVA was used for method of data analysis. Conclusion it was established that there was no significant difference in the gender of NCE one mathematics student taught using video only, Audio+Text and Text Only Mathematics Mobile Instructional Package.

Presentation of Results

The results of the analysis of the data for this study are presented below. The analysis and result was done according to the research hypotheses:

Research Questions One: What are the mean achievement scores of male and female students taught mathematics mobile instructional package with Video Only?

Table 1:
The mean and standard deviation of pretest and posttest scores of male and female experimental group Video Only MMIP

Group	N	Pretest		Posttest		Mean Gain
		$\bar{X}$	SD	$\bar{X}$	SD	
Male	25	30.62	7.79	78.50	12.30	47.88
Female	15	27.99	6.01	75.28	15.84	47.29

Table 1 shows the mean and standard deviation of the pretest and posttest scores of male and female experimental group. From the result, it can be seen that mean score of the pretest and posttest score of the male are $\bar{X}$ = 30.62, SD = 7.79 and $\bar{X}$ = 78.50, SD 12.30. The mean gain is 47.88 in favour of the male posttest achievement score. Similarly, the mean and standard deviation of pretest and posttest score of female are $\bar{X}$ = 27.99, SD = 6.01 and $\bar{X}$ = 75.28, SD = 15.84, the mean gain is 47.29 in favour of the female posttest score. Also the result reveals the difference of 0.59 between the posttest mean gains score of male and female in favour of the male.

Research Question Two: What are the mean achievement score of male and female students taught mathematics mobile instructional package with Audio + Text?

Table 2:
The mean and standard deviation of pretest and posttest scores of male and female experimental group Audio with Text MMIP

Group	N	Pretest		Posttest		Mean Gain
		$\bar{X}$	SD	$\bar{X}$	SD	
Male	25	19.73	5.60	67.19	13.11	47.46
Female	15	25.77	5.11	69.75	11.68	43.98

Table 2 shows the mean and standard deviation of the pretest and posttest scores of male and female experimental group. From the result, it can be seen that mean score of the pretest and posttest score of the male are $\bar{X}$ =19.73, SD = 5.60 and $\bar{X}$ = 67.19, SD 13.11. The mean gain is 47.46 in favour of the male posttest achievement score. Similarly, the mean and standard deviation of pretest and posttest score of female are $\bar{X}$ = 25.77, SD = 5.11 and $\bar{X}$ = 69.75, SD = 11.68, the mean gain is 43.98 in favour of the female posttest score. Also the result reveals the difference of 3.48 between the posttest mean gains score of male and female in favour of the male.

Research Question Three: What are the mean achievement score of male and female students taught mathematics mobile instructional package with Text Only?

Table 3: The mean and standard deviation of pretest and posttest scores of male and female experimental group Text Only MMIP

Group	N	Pretest		Posttest		Mean Gain
		$\bar{X}$	SD	$\bar{X}$	SD	
Male	25	26.68	6.47	59.06	8.89	32.38
Female	15	26.88	5.83	60.66	7.58	33.78

Table 3 shows the mean and standard deviation of the pretest and posttest scores of male and female experimental group. From the result, it can be seen that mean score of the pretest and posttest score of the male are $\bar{X}$ =26.68, SD = 6.47and $\bar{X}$ = 59.06, SD 8.89. The mean gain is 32.38 in favour of the male posttest achievement score. Similarly, the mean and standard deviation of pretest and posttest score of female are $\bar{X}$ = 26.88, SD = 5.83 and $\bar{X}$ = 60.66, SD = 7.58, the mean gain is 33.78 in favour of the female posttest score. Also the result reveals the difference of 1.4 between the posttest mean gains score of male and female in favour of the female.

H_{01}: There is no significant difference in the mean achievement scores of male and female students taught mathematics using Video Only Mathematics Mobile Instructional Package (VOMMIP).

Table 4:
ANCOVA Analysis of Achievement of Male and Female Students Scores Taught Mathematics Using Video Only Mathematics Mobile Instructional package (VOMMIP)

Sources	Sum of Squares	Df.	Mean Square	F	Sig.
Corrected Model	257.541	2	128.770	.682	.512
Intercept	10116.556	1	10116.556	53.552	.000
Covariate	160.418	1	160.418	.849	.363
Treatment	55.283	1	55.283	.293	.592
Error	6989.709	37	188.911		
Total	246240.298	40			
Corrected Total	7247.250	39			

*: Significant at 0.05

Table 4 shows the result of the hypothesis four. The hypothesis was tested using the pretest mean scores of male and female students taught using Video Only Mathematics Mobile Instructional Package as covariate for the analysis of Covariance. The F value of .293 was not significant at 0.05 alpha level that is F (1, 40) = .293, p > 0.05. The result shows that there was no significant difference in the achievement of male and female students taught mathematics using Video Only Mathematics Mobile Instructional package. On this basis, the hypothesis one is not

rejected. This shows that there is no statistical difference in the achievements of male and female students taught with Video Only Mathematics Mobile Instructional package (VOMMIP).

H_{02} : There is no significant difference in the mean achievement score of male and female students taught mathematics using Audio+Text Mathematics Instructional Package (A+TMMIP).

Table 5:
ANCOVA Analysis of Achievement of Male and Female Students Taught Mathematics Using (Audio + Text)

Sources	Sum of Squares	Df.	Mean Square	F	Sig.
Corrected Model	898.225	2	449.113	3.196	.052
Intercept	4870.931	1	4870.931	34.664	.000
Covariate	837.034	1	837.034	5.957	.020
Treatment	51.200	1	51.200	.364	.550
Error	5199.254	37	140.520		
Total	191903.003	40			
Corrected Total	6097.479	39			

*: Significant at 0.05

Table 5 shows the result of the hypothesis seven. The hypothesis was tested using the pre-test mean scores of male and female students taught mathematics using Video Only Mathematics Mobile Instructional Package (MMIP) as covariate for the analysis of Covariance. The F value of .364 was not significant at 0.05 alpha level that is F (1, 40) = .364, p > 0.05. The result shows that there was no significant difference in the mean achievement score of male and female students taught mathematics using Audio + Text Mathematics Mobile Instructional Package. On this basis, hypothesis two is accepted. This shows that there is no statistical difference in the achievement of male and female students taught mathematics using Audio + Text Mathematics Mobile Instructional Package.

H₀₃: There is no significant difference in the mean achievement scores of male and female students taught mathematics using Text Only Mathematics Mobile Instructional Package (TOMMIP).

Table 6:

ANCOVA Analysis of Achievements Male and Female Students Scores Taught Mathematics Using Text Only

Sources	Sum of Squares	Df.	Mean Square	F	Sig.
Corrected Model	92.880	2	46.440	.652	.527
Intercept	8432.310	1	8432.310	118.363	.000
Covariate	68.879	1	68.876	.967	.332
Treatment	25.281	1	25.281	.355	.555
Error	2635.918	37	71.241		
Total	145116.934	40			
Corrected Total	2728.798	39			

*: Significant at 0.05

Table 6 shows the result of the hypothesis two. The hypothesis was tested using the pretest mean scores of gender as covariate for the analysis of Covariance. The F value of .355 was not significant at 0.05 alpha level i.e. $F(1, 40) = .355$, $p > 0.05$. The result shows that there was no significant difference in the achievement of male and female students taught mathematics using Text Only Mathematics Mobile Instructional Package (TOMMIP). On this basis, hypothesis three is therefore accepted. This shows that there is no statistical difference in the achievement of male and female students taught with Text Only Mathematics Mobile Instructional Package (TOMMIP).

Discussion of Results

Hypothesis One: the result of data analyzed with regards to hypothesis one reveals that there is no significant difference in the achievement of male and female students taught mathematics using Video Only Mathematics Instructional Package (VOMMIP). Both male and female performed equally. This is in agreement with the findings of (Shaibu, Mike, Solomon, & Jarkko 2016) that investigated research on impact of mobile devices for learning in higher education institutions: Nigerian universities case study. The statistical analyses result show that there is no significant difference in the students" use of mobile devices based on gender and also in agreement with the research of (Oludipe, 2012) who investigated gender difference in Nigerian junior secondary students' academic achievement in Basic Science. Findings of his study revealed that there was no significant difference in academic achievement of male and female students at the pretest, post-test.

Hypothesis Two: the result of data analyzed with regards to hypothesis two revealed that there is no significant difference in the achievements of male and female students taught mathematics using Audio+Text Mathematics Mobile Instructional Package (A+TMMIP). Both gender performed equally. This is in agreement with the research of (Gambari., Falode & Adegbenro, 2014) who carried out the study on investigated the effectiveness of computer animation and geometry instructional model on mathematics achievement and retention on junior secondary school students in Minna, Nigeria. The findings however revealed that there was no significant difference reported in the post-test performance scores of male and female students taught geometry using computer animation and instructional model. Also in contrary to the findings of (Atovigba, 2012), that find out gender trends in Nigerian

secondary students' achievement in algebra. The finding revealed that male students performed significantly higher than the female students.

Hypothesis Three: the result of data analyzed with regards to hypothesis three revealed that there is a significant difference in the achievements of male and female students taught Text Only Mathematics Instructional Package (TOMMIP). Both male and female performed equally. This is contrary to research of (Ugwu, 2007) who examined the effects of text and audio-taped instruction on students' achievement in secondary school biology in Igbo-Etiti Local Government Area of Enugu State. It was discovered that males did better than females when taught with video-tape while females performed higher than males when exposed to audio-tape.

Conclusion

1. The use of Video Only, Audio + Text and Text only Mathematics Mobile Instructional Package (VOMMIP) was effective for teaching mathematics students.
2. Video Only, Audio + Text and Text only Mathematics Mobile Instructional Package can improve students' achievement irrespective of gender.

Recommendation

1. Mathematics Mobile Instructional Package (MMIP) should be encouraged in schools for teaching mathematics.
2. Teachers should be trained on the use of Mathematics Mobile Instructional Package (MMIP) presentation that can bring better results in teaching and learning of Mathematics.

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EFFECTIVENESS OF BLENDED LEARNING STRATEGY ON UNDERGRADUATE BUSINESS EDUCATION STUDENTS' ACHIEVEMENT SCORES IN RIVERS STATE UNIVERSITY

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Abstract
The study aimed to investigate the effectiveness of Blended Learning strategy on the achievement scores of undergraduate Business Education students in Rivers State University. Three research questions and three hypotheses were formulated to guide the study. The design of the study was quasi-experimental with non-randomized pretest post-test control design. 365 1st year students in the Department of Business Education of the Rivers State University formed the population and sample of the study. The instrument that was used for the study is a self-developed titled "Blended learning students' Achievement Test (BLeSAT)". The reliability coefficient of 0.73 was determined using Kuder Richardson (K-R$_{21}$). Data obtained were analyzed using mean for research questions, and Z-test and ANOVA used to test the hypotheses at 0.05 level of significance. Results showed that the that there is no significant difference in the mean achievement scores of male and female students taught Elements of Business Management with Blended Learning strategy. Although, there was no statistical difference in the post-test mean scores of students of Accounting, Management, Marketing and Office and Information Management options and there was a significant statistical difference in the posttest mean scores of students of the three groups based on level of online interaction. Based on the findings, it was recommended among others that Business education lecturers should adopt blended learning strategy to encourage students' active participation in their learning and to create room for frequent interactive environment between the teacher and students.
Keyword: Blended Learning Strategy; Gender; Level of Interaction; Achievement Scores; Business Education.

Introduction

Blended learning has being in existence long before the advent of computers and social networks; teacher created blended learning experiences using simple technologies like paper and pencil. The idea of blending different learning experiences is as old as teaching, but the materials of the blend are new. It began as soon as humans started engaging in the art of teaching (Kpolovie, 2010; Williams as cited in Vaugham, 2015). What really brought the term into a glare of publicity in the recent time is the growing expansion of technological discoveries (web based educational technologies powered by web 2.0) in the field information and communication technology. The infusion of some of these Web-based technologies into the learning and teaching process enhance content creation, interaction and collaboration. These emerging technologies (social networking sites; Facebook, micro blogging; Twitter, multi-users virtual environments; Secondlife and Moodle, widget; wikis, flash website builder; Wix, synchronous video interactive conferencing; wiziQ, Discussion Board, Webcasting, E-portfolio, Online quizzes and surveys, In-class quizzes and polling, LAMS etc.) have created ample of opportunities for learners to interact with one another, teachers, and content (Kayii & Dambo, 2018; Vaugham, 2015). However, the term blended learning according to Krause (2007) is the principal means of referring the use of Information and Communication Technologies (ICTs) to improve learning and teaching activities.

Definitions abound in literature show that there is no generally acceptable definition, because the term means different to different people. However, the most appealing is that given by Krause; "effective integration of different modes of delivery, models of teaching and styles of learning as a result of adopting a strategic and systematic approach to use technology combined with the best features of face to face interaction". From the above definition, blended learning is strategic in the effective integration of ICTs in designing course content to enhance

teaching and learning between teachers and the students; in such a collaborative and interactive manner that would not normally be available or effective in their usual environment, whether it is primarily face-to-face or online. The act of blending is primarily for achieving better student experiences and outcomes through effective teaching, more efficient ways of managing course content and feedback among business education students.

Business education as one of the major aspects of vocational and technical education which aimed at the development of specific skills required for economic and social changes, to achieve this required adequate utilization of human and material resources in order to promote saleable skills acquisition and employment generation. This could only be achieved through blended learning strategy; a well prescribed method of teaching and learning that uses more of guided discovery method to promote learning and development of practical skills (Ubulom, Kayii & Dambo, 2016; FRN, 2009).

Gender is the masculinity and feminity attributes that describes human beings. These preponderance attributes biologically distinguished the societal roles, responsibilities, attitudes and values between males and female (Gambari, Shittu, Ogunlade & Osunlade, 2017). Before now, this observed societal attributes was established for transmitting values of humility, low ambition and systematic underestimation of the females in cognitive achievement, societal attainment and capacity to work in some public establishments (Ebong, 2006). But with recent realization caused by technological innovation, gender equality campaigns and the need of the economy, the imbalances have grossly reduce especially when it comes to the study of Business Education.

According Kayii and Dambo (2018) achievement is a measuring scale that tells the degree of performance to which a student has accomplished specific task at the end of the instructional engagement. While, Ukwuji and Kpolovie (as cited in Akpan & Aminikpo, 2017) described achievement as "a psychological test which measures learners' cognitive and intellectual traits". From the above expressions, achievement scores are often used in an educational system to determine the level of instruction for which a student is prepared. High achievement scores usually indicate a mastery of grade-level material, and the readiness for advanced instruction. Low achievement scores can indicate the need for remediation or repeating a course grade (Vaugham, 2015).

Achievement score is an indicator or cut off point from an analyzed test scores used by teachers and institutions for making academic decision concerning the performance of students at the end or before of an instructional engagement. Practically, measuring level of achievement in all academic disciplines and award of classes of degree or certificate is based on earned cumulative grade point average (CGPA); the sum of all earned Grade Points divided by the total units attempted of courses.

Statement of the Problem

Blended learning as an emerging concept has been extensively research by scholars in examining its effect on students' academic achievement. Though, blended learning has extensively researched, little has been published on its nexus with academic achievement locally when compared with developed countries. In developed countries, the use of technology has advanced more robust learning system in the area of social learning, mobile learning, interactive and collaborative learning, cloud computing etc., all geared toward enhancing creative learning. Unfortunately, it seems adopting this technologies in institution is rather taking steps back and quantum and strategic leap forward is urgently needed. However. Literature on blended learning revealed a divisive views among researchers. Some studies revealed that conventional strategies enhanced students' performance; because too much technology make blended learning programs appears too flashy, and students may not take seriously (Umoh & Akpan, 2014). Also, Adidoye (2015) reported that learners preconceived traditional classroom to more effective and accessible, because they believed they are familiar with learning environment. While, others found that blended learning enhanced students' performance. (Al-Qahtani & Higgins, 2013; Vernadakis; Giannousi Derri, Michalopoulos & Kioumourtzoglou, 2011). For this reason, to bridge the perceived gap in literature. The present

study examine the effectiveness of Blended Learning strategy on the achievement of first year Business Education students in Elements of Business Management.

Purpose of the Study

The study aimed to investigate the effectiveness of Blended Learning strategy on the achievement scores of undergraduate Business Education students. Specifically, the study sought to:

1. Determine the difference in the mean achievement scores of male and female students taught Elements of Business Management with Blended Learning strategy.
2. Determine the difference in the achievement of students of Accounting, Management, Marketing and Office and Information Management taught Elements of Business Management with Blended learning strategy.
3. Determine the difference in the achievement of students of low, medium and high level of interaction with online materials, taught Elements of Business Management with Blended Learning strategy.

Research Question

The following research questions guided the study.

1. What is the difference in the mean achievement scores of male and female students taught Elements of Business Management with Blended Learning strategy?
2. What is the difference in the achievement of students of Accounting, Management, Marketing and Office and Information Management taught Elements of Business Management with Blended learning strategy?
3. What is the difference in the achievement of students of low, medium and high level of interaction with online materials, taught Elements of Business Management with Blended Learning strategy?

Hypotheses

The null hypotheses formulated to guide the study were tested at 0.05 level of significance

$H_{O1:}$ There is no significant difference in the mean achievement scores of male and female students taught Elements of Business Management with Blended Learning strategy

$H_{O2:}$ There is no significant difference in the achievement of students of Accounting, Management, Marketing and Office and Information Management taught Elements of Business Management with Blended learning strategy.

$H_{O3:}$ There is no significant difference in the achievement of students of low, medium and high level of interaction with online materials, taught Elements of Business Management with Blended Learning strategy.

Literature Review

Here, the theoretical and empirical literature relevance to this study is briefly reviewed to expose the knowledge gap that the study stands to fill.

Social learning theory (Bandura, 1977) integrated behavioural and cognitive theories of learning in order to provide a comprehensive model that could account for the wide range of learning experiences that occur in the learning environment. The social learning posits that learning is a cognitive process that takes place in a social context and can occur purely through observation or direct instruction, even in the absence of direct reinforcement. Imitative learning or social learning theory presupposes that it is dangerous for learners to rely sole on the effect of their own actions in order for them to have a change in behaviour (Awotua-Efebo, 2001; Achuonye & Ajoku, 2003). Thus, most human learning occurs not because of a person's own actions but by observing others. Based on this observation, ideas are formed on how to behave when faced with similar situation.

The constructivist theory propounded by Jerome Bruner sees learning as an active process in which learners construct new ideas or concepts based on their current and past knowledge. The effectiveness of Constructivism is that it prepares students for problem solving in complex environment (Ahmad & Schreurs, 2012).

In Constructivism theory; students are more of an active independent learner in building and creating knowledge based on their personal experiences and interpretations. The underlying assumptions of the theories that learner selects and translates information, constructs hypotheses and makes decisions depending on his\her cognitive disposition. This provides meaningful organization of learning experiences that allow the information to go beyond information given.

Al-Zoubi and Bani- Doumi (2012) examined the impact of blended learning and motivation on the achievement of fourth graders learning Mathematics using a sample of (71) male and female students grouped into 4 classes. The 4 classes formed the experimental group comprised of 38 students and the control group comprised of 33 students. The reliability index of 0.63 for the achievement test and 0.59 for the motivation were obtained. Mean with standard deviation were used to answer the research questions while t-test and ANCOVA were used for data analysis. It was found that no significant difference exist between males and females in the achievement exam. Also, significant differences recorded between the two groups when blended learning was introduced.

Gambari et al (2017) investigated the effectiveness of blended learning and e-learning modes of instruction on the performance of male and female undergraduate students in kwara state, Nigeria. Using purposive sampling technique to draw 85 undergraduate students from three universities in kwara state. Quasi- experimental that employs pretest, posttest, control group design was adopted for the study. Analysis of covariance was used for data analysis, and a coefficient of 0.71 was obtained using kuder-richardson (K_{-20}). It was found that there is no significant difference in the performance of male and female undergraduates taught with blended learning.

In a related study, Mclaughlin, Gharkholonarehe, khanova, Deyo and Rodgers (2015) studied the impact on the blended learning on students' performance in cardiovascular pharmacotherapy course using a sample of 250 students drawn from the population of students in Chapel Hill, North Carolina. Data were obtained from the participants using Blended Learning Assessment Performance Test. Using Pearson product statistic, a coefficient of 0.63 was obtained. Test of significance with a Z-test indicated that there was a significant difference between the performance of male and female students. While, Mclaughlin et al. (2015) and Gambari et al used of tertiary institutions, the present study also used students with a larger sample size.

Yaghmour (2016) investigated the effectiveness of blended education strategy in the achievement of the third grade students in mathematics. Using a sample of 97, distributed into four classes; male, female, experimental and control groups. The researcher experimentally used a self-developed cognitive instrument to obtain data from the respondents. After, analysis of data using ANCOVA, the result showed that the is no significant difference

between the mean performance of members of the study groups on achievement test for third grade students in mathematics due to bilateral interaction between blended learning and gender.

Methodology

The study adopted a quasi-experimental design. Quasi-experimental study according to Nwankwo (2013) and Maduabum, (2007) is a "study in which some threats to the validity cannot be properly controlled because of unavoidable situation associated with the study when human beings are used for experimental study" the present study on "Effectiveness of Blended Learning approach on academic achievement of undergraduate Business Education Students in Rivers State" made used of 1st year students of Business Education. The study adopted a non-randomized pretest post-test control group design. Two non-randomized groups pretest post-test control group design are structured as follows:

E $\qquad$ 0_1 $\qquad$ x $\qquad$ 0_2

....

C $\qquad$ 0_2 $\qquad$ - $\qquad$ 0_2
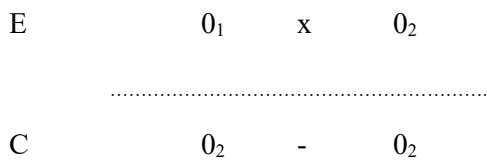
All the duly registered 365 1st year students for the 2017/2018 which constitute the total population of the study were used to constitute the sample of the study. For the fact the total population represents the sample of the study, there is no sampling techniques applied for the selection of sample size.

The instrument that was used for the study is the Blended Learning Students' Achievement Test (BLeSAT) which was used to assess the achievement of students. BLeSAT is a cognitive tool which is a researcher-developed multiple-choice objective test, it was constructed based on topics outlined in the course titled "Elements of Business Management". In writing BLeSAT, pool of items (questions) were generated based on the specification of content areas to ensure that the course outline is adequately covered. The topics were written out according to the number of weeks of teaching each topic, divided by the total number of questions. To establish the face and content validity of the instrument, BLeSAT was given to two content specialists and a Psychometrician with the table of specification to judge if the items on the instrument adequately covers and measures the specified course outline. The testees were requested to write a computer-based test made up of 36 questions. BLeSAT consists of a stem, a key and 2 distracters in a response options lettered A to C.

The validity of the instrument was ascertained by three experts including the researcher's supervisor from Rivers State University. The experts analyzed the items on the instrument and recommended 36 questions, which represents 51% of the penultimate questions generated. The experts were requested to improve on this specified area:

a. Suitability of the instrument for the level
b. Clarity of words and expression
c. Ambiguity of items
d. Relevance of items to course outline/content
e. Proper keying.

To determine the difficulty level and discrimination power of the items. 27% of those took the trial test was used for item analysis.

The reliability of the instrument (Blended learning students' Performance Test) was determined using Kadar Richardson's $K-R_{21}$ estimates for its measure of internal consistency. Purposive sampling technique was used

to draw a sample size of 25 for reliability test and to obtain its internal consistency coefficient. The reliability coefficient of the instrument was determined and found to be 0.73. The coefficient value is high enough to guarantee the use of the instrument for the study. For the fact that the researcher employed test-retest method for instrument, certain weaknesses were envisaged. In order to control memory effect or testing effect which is one of the weakness, a long interval of three weeks was allowed between the first and the second administration of the test. Furthermore, before the second administration, the items of the tests were shuffle to disguise its former pattern in order to overcome memory effect and certain response set.

Participants of the study made up of 252 males and 113 females were all 1st year's students who registered and learned Elements of Business Management in the department of Business Education. Both male and female learners participated in the study. Students with functional email account and internet enable smart phone/device were assigned to experimental (Blended Learning) group while students without functional email account and internet enable smart phone were assigned were assigned to the control (Classroom Learning) groups. A pretest was administered to the blended Learning group (n=171) before treatment, students were assigned and grouped based on their achievement levels (low, medium or average and high academic achievements). The experimental group received both face-to-face as well as online interactions. While, the control group (Classroom Learning) (n=194) was taught based on the traditional teaching methods (lecture method) of outlined topics in the course outline, in which materials, instructions, and feedback were also through traditional classroom methods. The test and its criteria for placement were used to appropriately place students in relevant proficiency levels. In addition to the placement test, textbook and Power Point presentation were photocopied and given to students during classroom lectures.

Blended learning students' Achievement Test and the virtual platform (www.businesseducationust.ipage.com), which is a valid, reliable test and a highly effective instrument and platform in grouping participants, was used to assign the participants into three groups (low, medium or average and high) based on their level of online interaction. In addition, the blog (www.businesseducationust.ipage.com) was designed in a way that all activities (frequency of Visit, File view, File link downloaded, MsgRead, MsgPost) of subscribers or users were recorded. It is imperative to point out that the content of the blog was in correspondence with that of the materials to the control group. Participants in the experimental group had to check materials and receive feedback on their customized page.

After placing participants in the experimental and control groups, the course lecturer ensured strict compliance with the classes scheduled for the groups. Several measures were put in place to secure and ensure compliance with the schedule. For the control group, the course was taught based on traditional classroom teaching methods, and materials, instructions, and feedback were presented in classroom. In order to collect data, the control group received a test which was taken as the pretest and their last piece as the posttest. All students in the experimental group received the treatment with the same number of sessions. Data obtained from the testees were subjected to statistical analysis using mean for the research questions, while z-test analysis and ANOVA used to test the hypotheses

Presentation of Results

Research Question 1: What is the difference in the mean achievement scores of male and female students taught Elements of Business Management with Blended Learning strategy?

Table 1:
Mean difference in mean performance of male and female students

Groups	N	M	S.D.
Male	252	73.83	16.41
Female	113	74.36	16.45
Difference		0.53	

Table 1 shows the achievement mean score for male and female were 73.83 and 74.36 respectively. Similarly, the standard deviation were 16.41 for the male and 16.45 for the female. As a result of the observed difference is 0.53 in the achievement, hypothesis1 was tested at 0.05 level of significance to determine if the observed was significant.

Research Question 2: What is the difference in the achievement of students of Accounting, Management, marketing and Office and information Management taught elements of Business management with Blended learning approach?

Table 2:
Mean score (Post Test) of students of all options.

Options	Mean Scores
Accounting	75.04
Management	74.15
Marketing	71.40
OIM	76.22

Table 2 shows post-test mean scores of students from Accounting, Management, Marketing and Office and Information Management options taught with blended learning approach. As shown, these options respectively had mean scores of 75.04, 74.15, 71.40 and 76.22. Although, these scores are all above 70, there exists some slight difference among them. Whether these difference is statistically significant would be determined by the analysis of variance (see Table 5).

Research Question 3: What is the difference in the achievement of students of low, medium and high level of interaction with online materials, taught elements of business management with blended learning?

Table 3:
Mean score of students with low, medium and high online interaction.

Level of Interaction	Mean Score
Low Level	35.00
Medium Level	59.32
High Level	84.27

Table 3 shows post-test mean scores of students who had low, medium and high levels of online interaction with the course. As shown, means scores were 35.00, 59.32 and 84.27 respectively for students with low, medium and high levels of online interaction with the course. Further, this results shows that students who had high level of interaction had the highest mean score followed by students who had medium level of interaction. The students who had low level of interaction had mean score below average. This shows that level of interaction with the online course influences achievement in the course.

Hypothesis 1: There is no significant difference in the mean achievement scores of male and female students taught Elements of Business Management with Blended Learning Blended Learning strategy

Table 4:

Z-test on difference in mean performance of male and female students

Groups	N	M	S.D.	Df	Z-cal	Z-crit	Decision
Male	252	73.83	16.41				
				363	-0.28	1.96	Accepted
Female	113	74.36	16.45				

From table 5, since the Zcal (-0.28) is less than the Zcrit (1.96) at df of 363 and 0.05 level of significance, the null hypothesis accepted. This implies that both male and female business education students do not differ in their mean achievement scores.

Hypothesis 2: There is no significant difference in the achievement of students of Accounting, Management, marketing and Office and information Management taught elements of Business management with Blended learning approach.

Table 5:

ANOVA for difference in achievement based on students' options.

Source of Variation	Sum of Squares	df	Mean Square	F_{cal}	F_{crit}	P_{value}	Decision
Between	342.29	3	114.1	0.49	2.66	0.6910	Accepted
Within	39040.01	167	233.77				
Total	39382.29	170					

Table 5. Shows the result of the ANOVA for test of difference in the posttest mean scores of students of different options (Accounting, Management, marketing and Office and information Management). As shown in the table, F_{cal} (3,167) = 0.49, P > .05, F_{crit} (3,167) = 2.66. With these results, the hypothesis is accepted. This implies that there was no statistical difference in the posttest mean scores of students of the four groups.

Hypothesis 3: There is no significant difference in the achievement of students of low, medium and high level of online interaction with materials, taught elements of business management with blended learning.

Table 6:

ANOVA for difference in achievement based on level of online interaction.

Source of Variation	Sum of Squares	df	Mean Square	F_{cal}	F_{crit}	P_{value}	Decision
Between	28135.59	2	14067.8	210.16	3.05	0.000	Rejected
Within	11246.7	168	66.94				
Total	39382.29	170					

Table 6. Shows the result of the ANOVA for test of difference in the posttest mean scores of students based on level of online interaction with course, Element of Business Management. As shown in the table, $Fcal$ (2,168) = 210.16, $P < .05$, $Fcrit$ (2,168) = 3.05. With these results, the hypothesis is rejected. This implies that there was a significant statistical difference in the posttest mean scores of students of the three groups. Based on this, there was need to ascertain where the difference was coming from among the three groups. This was achieved by Scheffe's post hoc test as shown in Table 7 below.

Table 7:

Scheffe's post hoc test level of interaction and achievement.

Comparison	F_{cal}	F_{crit}	P_{value}	Decision
Low level and medium level	8.58	3.05	0.0003	Significant
Low level and high level	35.57	3.05	0.0000	Significant
Medium level and high level	187.03	3.05	0.0000	Significant

Table 7, shows that statistical significant difference in students' academic achievement in Element of Business Management existed among all the groups. This result buttresses the result of research question 4 shown in Table 4 with means scores of 35.00, 59.32 and 84.27 respectively for students with low, medium and high levels of online interaction.

Discussion of Findings

From the result of hypothesis1, the statistical analysis shows that there is no significant difference in the mean achievement scores of male and female students taught Elements of Business Management with Blended Learning Blended Learning strategy. This result means that the use of blended strategy greatly enhance the performance of students taught Elements of Business Management. The finding of the present study is in agreement with those of Gambari et al (2017) and Mclaughlin et al (2015) who found out that there is no significant difference in the achievement of male and female students exposed to blended learning.

From the result of hypothesis it shows that there is no significant difference in the achievement of students of Accounting, Management, marketing and Office and information Management taught elements of Business management with Blended learning strategy. This implies that there was no statistical difference in the posttest

mean scores of students of the four group. This present is in support of Al-Zoubi and Bani- Doumi (2012) who found that no significant difference were recorded between the groups when exposed to blended learning approach.

Result from hypothesis 3, shows that there is a statistical significant difference in the academic achievement of students of low, medium and high level of online interaction with materials, taught elements of business management with blended learning. This finding disagreed with that of Yaghmour (2016) who found that no statistical difference between third grade students due to bilateral interaction with blended learning and gender.

Conclusion

One of the goals of tertiary education is to provide accessible and quality learning opportunities formal and informal education in response to the needs and interests of all Nigerians through technologically-based professional courses either as a whole, components for the exposure to relevant future working environment (FRN, 2014). To achieve this, the infusion of emerging technologies into teaching and to form supportive new learning environment and strategies in the instructional process. The federal and state government remain supportive in the provision of necessary facilities and infrastructure for the promotion of teaching and learning. Therefore, this study concludes that new emerging technologies and modes of instructional delivery are not adequately embrace for effective teaching and learning of Business Education courses in Rivers State Universities.

Recommendations

On the basis of the findings and conclusion emanated from this study, the following recommendations are made:

1. Since the course content represents the total experiences to which the Business Education must be exposed to be self-reliance, the universities should adopt best practices and provide working document to implement the new academic guidelines to make sure that technology is integrated into a variety of subject areas.
2. Lecturers who are not ICT compliance should be given the opportunity for upgrading through capacity building workshop on the use of interactive platform.
3. Business education lecturers should adopt blended learning strategy to encourage students' active participation and frequent interactive sessions between the teachers and students.

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CHALLENGES-FACED AND THE COPING STRATEGIES- USED IN THE USE OF ONLINE-TOOLS FOR LEARNING AMONG UNDERGRADUATES OF NATIONAL-OPEN-UNIVERSITY IN SOUTH-WEST, NIGERIA

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Abstract
Online learning tools refer to any program, app, or technology that can be accessed via an Internet connection and enhance a teacher's ability to present information and a student's ability to access that information. To be successful in a distance education environment, distance education students must use online learning tools in their day to day learning activities. This study assessed the challenges and coping strategies used on the use of online tools for learning among undergraduates of National Open University in South-west, Nigeria. The study was a descriptive research design of the survey method. The study focused on NOUN undergraduates in South-west, Nigeria. A total of 294 NOUN undergraduates were sampled in two (2) centres which comprised of Lagos and Ibadan NOUN study centres. A researcher-designed questionnaire with reliability of 0.84 was employed for the study. Mean and standard deviation values were used to answer the research questions raised in the study, while t-test was used to test the only hypothesis at 0.0.5 level of significance. Findings of this study revealed that NOUN undergraduates were faced with challenges in the use of online tools for learning with mean of 2.52 using a benchmark of 2.5. The study concluded that NOUN undergraduates were faced with challenges in the use of online tools, but unfortunately, they were not adopting the identified coping strategies to tackle those challenges. This implies that there would be limited advancement in the learning activities of undergraduates.

Keywords: Coping Strategies, Online Learning tools, Distance Learning, National Open University Nigeria (NOUN)

Introduction

Certainly, 21st century distance education is distinguished from older forms of distance education by the flexibility and adaptability in their design (Garrison, 2000). While industrial era distance education deployed standard, normal and formal procedures for design and delivery (Burge & Polec, 2008), the boundary between course development and course delivery is progressively blurred and former course development roles are being deconstructed and reinvented in online education (Abrioux, 2006). The role of teachers in the design of an effective pedagogical learning environments, receives renewed emphasis. Calvert (2005) stated that course designs in distance learning are increasingly resource-based, and in some cases, online discussion-based, with course contents that are fluid and dynamic, as they are created through synchronous and asynchronous online collaborative activities.

Pedagogical changes in distance education emphasize the fact that online technologies are not neutral: they are like a 'Trojan horse' that teachers let into their practice without realizing that it will necessitate them to rethink

not just how they use particular hardware or software, but all of what they do (Price & Oliver, 2007). Furthermore, pedagogical change is complex and challenging for both the individual teachers and distance learning institution as a whole. As Abrioux (2006) has illustrated, the enhancement of old models of distance education by taking advantage of the e-learning environment is just as challenging as the adoption of online learning by conventional institutions, because the institutional infrastructures and learning support functions that formerly complemented the individual academic's capability and helped to create a comprehensive high quality learning environment for distance learners. This might likewise restrain innovative practice by distance educators.

Kirkwood (2009) observed that despite the massive investment in infrastructure by governments and different institutions, there are disappointing levels of uptake, of engagement, and limited development of learning communities in both campus-based blended learning and distance learning contexts. The mix of factors accounting for non-transformational use of technologies differs according to context (Kirkwood, 2009). Nevertheless, one true factor in most if not all contexts is educational institution readiness for the complex and challenging practice of using technology for effective learning. Online learning design requires the integration of diverse knowledge systems, which is not a simple or straightforward process.

Siemens (2007) referred to the leading role of teachers in distance learning, which requires knowledge in the subject matter in order to be able to select, annotate, and showcase resources to enable the learners who explore them to engage with the subject matter and develop an understanding of the key concepts of the discipline. On the same note, Siemens (2007) opined that teacher should acknowledge the autonomy of learners, so that instead of dispensing knowledge, he creates spaces in which knowledge can be produced, explored, and connected and learners' freedom to explore is boundless. Basically, the way technology impacts teaching practice is the shift from a teacher-focused knowledge transmission approach to a learner-focused knowledge generation approach (Armellini & Jones, 2008).

This shift however does not occur automatically. As Burge and Polec (2008) have noted, some educators, coming from transmission models of teaching face-to-face in conventional higher education realise after some online trials that there is the need to introduce some new teaching models, but others may see online tools as a new vehicle for transmitting pre-digested information. Additionally, while a shift from transmission models of teaching to constructivist learning models might be anticipated from teachers' use of interactive features of online software, many distance learners have to struggle their way into the new model. Among established distance education institutions, there is a need for a reviewed and reconceptualised organizational structures and procedures in order to manage and support innovations, and to address issues such as service standards for students and staff, and quality assurance (Abrioux, 2006).

The main benefits of ODL are associated to its accessibility, flexibility, affordability and life based educational opportunities. It enables an expansion of tertiary enrollments at less cost per student than under the conventional residential campus system (Pityana, 2004). Greater flexibility enables ODL courses to adapt to specific student needs or work requirements, thereby enabling greater relevance. ODL also allows the growing demand for lifelong learning more certainly than residential programmes. Furthermore, ODL can efficiently reach learners that have been deprived of access to higher education, for example, women that are unable to attend a conventional educational programmes because of household responsibilities or cultural constraints, economically marginalized groups, and the imprisoned (Rumble, 2000). Despite the increasing growth of ODL and its benefits, students who enroll with ODL have been revealed to face many challenges related to individual, institutional and instructional (Mushi, 2001; Cosmas & Mbwette, 2009; Mbukusa, 2009).

Gorard and Selwyn (2005) identified three distinct categories of challenges facing ODL students: Situational, institutional and dispositional. The researcher further stated some situational challenges which include job and home responsibilities that reduce time for study. Institutional associated challenges are poor logistics system or an absence of suitable guide (Kruger & Casey, 2000). Dispositional challenges are associated to learners' individual attitudes and feelings. Berge, Muilenburg and Haneghan (2002) classified challenges to distance learners

as situational, epistemological, philosophical, psychological, pedagogical, technical, social, and cultural related challenges. Zirnkle (2001) identified specific challenges facing distance learners as programme costs, lack of equipment and infrastructure, instructional concerns and poor technical assistance. Other challenges documented by the researcher are inadequate feedback and poor teacher contact, alienation and isolation, and poor student support services.

The Asian Development Report (2011) indicated that some of the challenges faced were unreliable connectivity, low band width, cost of connections and appliances and lack of skills to use these tools. All these put a limitation on this strategy. The report states that some of these concerns can be mitigated through improving systematic instruction design, rigorous evaluation of student learning and use of trained instructors in the delivery of ICT based instruction. Garland (2007) identified some situational challenges for students to be persistence in distance learning; these are poor learning environment and lack of time. For example, students felt that the course took more time than expected because they did not judge the loads of work, home and school.

Okebukola (2009) noted that poor internet connectivity, irregular supply of electricity and sluggishness of some staff and students in acquiring information technology skills are huge challenges to be addressed. Okebukola (2009) listed some challenges of ODL delivery as erratic power supply, poor reading culture among the youths, teaching of practical subjects not feasible, inadequate trained tendencies to run the system and perception of the public of inferior status of ODL certificates. Ukpo (2005) indicated that teachers who enrolled in the ODL face challenges related to failure of trainees to receive training materials on time, students' engagement in other economic activities to supplement their family incomes, and poor learner support services especially where study centres are under-equipped and overstretched.

Piskurich (2004) observed that students often experience frustration with distance delivered courses because they do not possess the skills needed to be successful. In fact, students' feelings of segregation can be compounded if they are under-equipped to deal with the challenges of studying at a distance. Some students do not possess the needed self-directed skill set, precisely: self-discipline, time management, the ability to develop a plan for completing work, the ability to work alone, learning independence, and so on (Dunlap & Grabinger, 2003). Clearly, there is an anticipation in distance education programs that learners take on a high level of responsibility and creativity for their own learning experience (McLoughlin & Marshall, 2000).

Coping in an online learning environment is seen as collective efforts of government, education sector and its funding authorities, teachers, as well as the students. Okorafor and Icu (2012) made some recommendations for a successful NOUN programme; it was indicated that computer literacy classes should be made available for students as a mandatory entry level phase of higher education; proper funding by the government to develop capacities of NOUN in e-learning; NOUN students' portal should contain the necessary online tools and should give access to a wide range of information and resources needed for students' learning. Furthermore, Adejimi (2008) stated that government policies should be enticing to encourage teachers and students in their transition to online learning. Students of NOUN are required to possess the abilities to become involved with course materials, manage course materials, and process course materials (Balanko, 2002)

Research Questions

1. What are the challenges faced by NOUN undergraduates in the use of online tools for learning?
2. What are the coping strategies used by NOUN undergraduates to tackle the challenges faced in the use of online tools for learning?
3. Does academic level have an influence on undergraduates' use of online tools for learning in NOUN?

Research Hypotheses

H_{O1}:   There is no significant difference between undergraduates' use of online tools for learning in NOUN based on academic level.

Methodology

The study adopted a descriptive research design of the survey type. This is because survey is usually used to cover large populaion. The population for this study comprised all undergraduates of National Open University in South-west Nigeria. The target population for this study was all NOUN undergraduates in the two (2) centres: Lagos and Oyo states study centres. The study centres were purposively selected for their active open and distance education programmes. More so, they were the most patronised among other study centres in South-west Nigeria; thereby giving more sample population. . Random sampling technique was also adopted for the selection of the respondents. A total of 294 undergraduates were sampled in Lagos and Ibadan NOUN study centres and the breakdown shows that Lagos study centre has 50, 200, Ibadan NOUN study centres has 18, 000. Hence, based on the estimated population of 68, 200 undergraduate for the study, research advisors model (2006) was used to select 382 undergraduates at 95% confidence level. 281 undergraduates were selected from Lagos study centre; while 101 undergraduates were selected from Ibadan study centre. This further allowed the researcher have a manageable sample size for the study is presented in Table 1:

Table 1:
Sampling Frame of Undergraduates in NOUN Lagos and Ibadan Study Centres Using Research Advisors Model (2006).

NOUN study centres	Estimated Population	Research Advisors (Sample Size)
Lagos study centre	50, 200	281
Ibadan study centre	18, 000	101
Total	68, 200	382

Source: Researcher's field survey (2017)

The research instrument that was used for this study was a researcher-designed questionnaire on assessment of the use of online tools for learning among undergraduates of National Open University in South-west Nigeria. The questionnaire was structured in a clear and simple language to enable student provide relevant answers to the questions based on their personal views. The questionnaire items were constructed to specifically reflect the research questions for the study.

The questionnaire was divided into three sections A, B and C. Section A contained demographic information such as name of NOUN centre, level and gender; while section B obtained responses from undergraduates on challenges faced by NOUN undergraduates in the use of online tools for learning with response mode of Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD)".. Section C consisted of The coping strategies used by NOUN with response mode of undergraduates to tackle the challenges faced in the use of online tools for learning, in which "Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD)" was used as the response mode

The researcher-designed questionnaire was validated by four lecturers in the Departments of Educational Technology and corrections recommended were effected before the reliability of the research instrument was determined through a pilot study conducted in NOUN, llorin study centre. A total of twenty (20) undergraduates that were not part of the main study were randomly selected for the pilot study. This is to enable the researcher determine the degree of consistency of the research instrument when used for the main study. Cronbach Alpha was used to analyse and test the reliability coefficient at 0.05 level of significance. The reliability value on accessible online tools was given as 0.71, the reliability value on use of online tools was given as 0.85. The instrument was

thereafter randomly administered 382 respondents by the researchers. Mean and standard deviation values were used to analyze and answer research questions, while *t*-test was used to test the hypotheses at 0.0.5 level of significance

Results and Discussion

A total of 382 copies of questionnaire were distributed to undergraduates at the two NOUN study centres in South-west, Nigeria. However, 294 were returned as valid and thus amounting to about 77% response rate

Table 2:
Respondents' Percentage Distribution Based on Study Centre

NOUN Study Centre	Frequency	Percentage	Cumulative Percentage
Lagos Study Centre	207	70.4	70.4
Ibadan Study Centre	87	29.6	100
Total	294	100.0	

Table 2 reveal that, two hundred and seven (207) respondents which is 70.4% were from Lagos study centre, Lagos state, while eighty-seven (87) respondents which represents 29.6% were from Ibadan study centre, Oyo state. The data collected, therefore reveals that Lagos study centre has the highest number of respondents.

Research Question One: What are the challenges faced by NOUN undergraduates in the use of online tools for learning?

In order to determine the challenges faced by NOUN undergraduates in the use of online tools for learning, data were collected from the respondents based on items that expressed their challenges faced in the use of online tools for learning. Mean was used to analyse data collected, while the grand mean was used to determine the overall challenges faced by NOUN undergraduates in the use of online tools for learning based on a benchmark of 2.5 mean score. The results are as shown on Table 3.

Table 3:
Respondents' Challenges Faced in the Use of Online Tools for Learning

S/N	Challenges Faced in the Use of Online Tools for Learning	Mean	Std. Deviation
1	I do not feel comfortable to use online tools for learning because of my low level of ICT proficiency	2.57	1.117
2	I find it hard to access online tools due to epileptic power supply	2.12	.876
3	I do not want to make use of online tools for learning because of network failure	2.44	.917
4	There are inadequate online tools for learning	2.47	.983
5	Online tools are costly and unaffordable	2.43	.935
6	There are no stable internet facilities to use online tools for learning	2.38	1.014
7	Information on online tools are not relevant to my course of study	2.91	1.016
8	Online tools reduce productivity due to too much dependency on Internet	2.51	1.031
9	The use of online tools requires high computer competencies, this makes it burdensome to me	2.68	.968
10	Using online tools for learning is time consuming and boring	2.68	1.065

Grand Mean		2.52

Table 3 revealed that NOUN undergraduates were faced with challenges in the use of online tools for learning, as item 1 with a mean score of 2.57 revealed that respondents did not feel comfortable to use online tools for learning because of their low level of ICT proficiency. Item 2 with a mean score of 2.12 disagreed that respondents found it hard to access online tools due to epileptic power supply. With a mean score of 2.44 slightly below the benchmark score, item 3 disagreed that respondents want to make use of online tools for learning because of network failure. Items 4 and 5 with mean scores of 2.47 and 2.43 respectively, both disagreed that there are inadequate online tools for learning and that online tools are costly and unaffordable. Item 6 with a mean score of 2.38, revealed respondents' disagreement that there were no stable internet facilities to use online tools for learning.

On the other hand, affirmative responses were recorded on items 7, 8, 9 and 10 which revealed that information on online tools were not relevant to respondents' course of study, online tools reduce productivity due to too much dependency on Internet, the use of online tools requires high computer competencies, this makes it burdensome to the respondents and using online tools for learning is time consuming and boring, with mean scores of 2.91, 2.51, 2.68 and 2.68 respectively. Hence, using a benchmark of 2.5, it can be concluded that NOUN undergraduates were faced with challenges in the use of online tools for learning.

Research Question Two: What are the coping strategies used by NOUN undergraduates to tackle the challenges faced in the use of online tools for learning?

To answer research question 4, data were collected from NOUN undergraduates based on their coping strategies adopted to tackle the challenges faced in the use of online tools for learning. Mean and Standard Deviation were used to analyse data collected, while the grand mean score was used to determine the overall coping strategy of NOUN undergraduates based on the benchmark of 2.5 mean score. Results of the analysis are shown on table 4 and interpreted as thus.

Table 4:

Respondents' Coping Strategies Adopted to Tackle the Challenges Faced in the Use of Online Tools for Learning

S/N	Coping Strategies in the Use of Online Tools for Learning	Mean	Std. Deviation
1	I use external hard drive to store all downloaded courseware for easy retrieval.	1.66	.813
2	I introduce self-control to avoid internet vices when using online tools for learning.	1.73	.944
3	I am good at setting goals and deadlines for myself. So I do not quit just because things get difficult.	1.77	.768
4	I access all required online tools for my courses.	1.87	.790
5	I interact with my lecturers and colleagues when I encounter difficulty in using online tools for learning.	1.97	.904
6	I always stay at the centre to access stable internet during exam period and activities that require intensive network.	2.05	.934
7	I find an affordable internet service provider for my learning with online tools.	1.99	.894
8	I source for an alternative power supply in case of power outage.	1.98	.947
9	I seek technical support and training from professionals and experts on using online tools for learning.	2.03	.923
10	I reserve my internet subscription for my online studying only.	2.42	1.092
	Grand Mean	1.95	

Table 4 showed mean scores of NOUN undergraduates' coping strategies used to tackle the challenges faced in the use of online tools for learning. Using a benchmark of 2.5 of 4-point Likert scale, responses of NOUN undergraduates in South-west, Nigeria did not reflect a positive reaction to the coping strategies on the items. Item 1 with a mean score of 1.66 showed that large number of NOUN undergraduates did not use external hard drive to store all downloaded courseware for easy retrieval. Item 2 and 3 revealed that most of the NOUN undergraduates did not introduce self-control to avoid internet vices when using online tools for learning and they are not good at setting goals and deadlines for themselves so as not to quit just because things get difficult with a mean score of 1.73 and 1.77 respectively.

It is also revealed on item 4, 5, 6, and 7 with mean scores of 1.87, 1.97, 2.05, and 1.99 respectively, that only a few NOUN undergraduates accessed all required online tools for their courses, interacted with lecturers and colleagues when they encounter difficulty in using online tools for learning, always stayed at the centre to access stable internet during exam period and activities that require intensive network, and found an affordable internet service provider for their learning with online tools.

It is revealed on items 8, 9, and 10 that a few of NOUN undergraduates did not source for an alternative power supply in case of power outage, did not seek technical support and training from professionals and experts on using online tools for learning and most respondents reserved their internet subscription for online studying only, with mean scores of 1.98, 2.03, and 2.42 respectively. All items on table 8 revealed mean scores below the benchmark score. Thus, it can be concluded that only few NOUN undergraduates were using the itemized coping strategies to tackle the challenges faced in the use of online tools for learning.

Ho$_1$: There is no significant difference between undergraduates' use of online tools for learning in NOUN based on academic level.

To test if there was no significant difference between new (100 and 200 Levels) and stale (300 Level and above) undergraduates' use of online tools for learning, the null hypothesis was tested using t-test, and a 2-tailed significant was used to determine the significance of the hypothesis at 0.05 level of significance. Table 11 below presents the results of the analysis with subsequent interpretation.

Table 5:
t-test Analysis on New (100 and 200 Levels) and Stale (300 Level and Above) Undergraduates' Use of Online Tools for Learning.

Gender	N	Mean	SD	Df	T	Sig(2-tailed)	Remark
New	169	2.14	.38				
				292	1.28	.20	Accepted
Stale	125	2.08	.49				
Total	294						

According to Table 5, df (292) t=1.28, p > 0.05. That is, the result of t-value of 1.28 resulting in .20 significance value was greater than 0.05 alpha value. This means that the stated null hypothesis was accepted. This implies that the hypothesis which states that there is no significant difference between undergraduates' use of online tools for learning in NOUN based on academic level is accepted.

Discussion of Findings

This study assessed the use of online tools for learning among undergraduates of National Open University in South-west, Nigeria. Undergraduates' access of online tools was examined in research question 1. It was revealed that undergraduates were faced with challenges which discouraged them from using online tools for learning. This is in agreement with a research by Okebukola (2009)[72], where the researcher noted some challenges faced by students as poor internet connectivity and irregular electricity supply. The researcher also noticed students to be sluggish in acquiring technological skills. The implication is that the charge to develop a positive approach towards the use of online tools for learning is a collective effort of both the students and stakeholders in education.

Undergraduates coping strategies to tackle the challenges faced in the use of online tools for learning was investigated in research question 4. It was revealed that undergraduates were not adopting the identified coping strategies to tackle the challenges faced in the use of online tools for learning. This was what made Yaqub and Suleiman (2008) to recommend technological infrastructures, internet connectivity and stable electricity for study centres to achieve a meaningful distance education programmes. Consequentially, with the numerous advantages accrued through the use of online tools for learning, it is believed that students stand to gain endlessly once they can cope amidst challenges in the use of online tools for learning.

Findings of this study on the influence of academic level in the use of online tools for learning by undergraduates revealed that both new and stale undergraduates did not use online tools for learning. By implication, this means that academic level has no influence in the use of online tools for learning. Therefore, orientations and trainings in the use of online tools for learning should be accorded to undergraduates across all academic levels.

Conclusion

This study assessed the challenges faced by undergraduates in the use of online tools for learning and coping strategies to tackle the challenges of online tools for learning among undergraduates of National Open University in South-west, Nigeria. The result obtained from the data gathered and analyzed indicated that despite the huge challenges faced by undergraduates in the use of online tools for learning, undergraduates were not adopting the identified coping strategies to tackle the challenges. The findings also showed that there was no significant difference between male and female undergraduates in the use of online tools for learning. Also, there was no significant difference on the use of online tools for learning based on undergraduates' academic level.

Recommendations

On the basis of the findings, the following recommendations were made:

1. Adequate funding should be provided to make online tools accessible at an affordable rate in terms of electricity, internet facilities among others.
2. Students should on their own seek for means of coping with the challenges that might arise when using online tools for learning, by seeking technical support and training when necessary

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BLENDING A WIKI CLASSROOM INTO A FACE TO FACE CLASSROOM: IMPACT ON STUDENTS' ACADEMIC PERFORMANCE

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Abstract

The study investigated the impact of blending wiki classroom with face to face (F2F) classroom on students' academic performance in the Faculty of Education University of Port Harcourt. A 2-group pre-test post-test quasi experimental design was adopted. Two objectives, two research questions and two hypotheses guided the study. The population comprised one hundred level undergraduate students from eight departments in the Faculty. Simple random sampling technique was used to select two departments, and all 160 students from the two departments were used. These were intact classes. A performance test titled instructional technology performance test (ITPT) was designed by the researchers. The reliability of the instructional technology performance test was tested using kuder richerson 21 and a reliability co-efficient of 0.80 was obtained. Mean and standard deviation were used to answer the research questions while independent sample t-test was used to analyze the null hypotheses at 0.05 level of significance. Findings revealed that blending a wiki classroom into a F2F classroom enhanced the academic performance of undergraduate students. Based on the findings, it was recommended that the wiki should be blended into a F2F classroom.

Keywords: Wiki Classroom, Academic Performance, Blended Learning, Face to Face (F2F) Classroom

Introduction

The world exists in a globe where information can easily be accessed through connectible devices, no longer a travel information documented world. Different kind and type of resources, information and communication can be done on line via hands held devices and all of its kind. This has also finds its root in the educational industries, where e-learning has become a means for certification. That notwithstanding, the skills and creative nature of a teacher still have a measure role to play in the education and assimilation of learners, this is also as a result of the different peculiarities of learners. To meet up with this ever evolving needs and globalization of the educational industries and meet the demand of the present century, blended learning became an easy accessible means were by the teachers' creativity and physical presence can be felt and influence learners with such assimilation quality.

Hence, blended has been defined by many authorities. According to the Victoria education, blended learning refers to the planned implementation of a learning model that integrates student-centered, traditional in-class learning with other flexible learning methodologies using mobile and web-based online (especially collaborative) approaches in order to realize strategic advantages for the education system. Thus this implies that blended learning is a means of simplifying the traditional process of instructional delivery, creating room for flexible options and empowering students to become knowledge constructors based on the vast resources and information they accessed in the cause of the teaching and learning exercise using the blended learning strategies.

Blended learning could be dated far back to the 1840's when Sir Isaac Pitman launches the first distance education course. His course centered on shorthand. Pitman sent shorthand texts to his students via mailed postcards and they were required to send them back to be graded and corrected. Then up to the 1970's this stage in the blended

learning timeline, companies began using video networks to train their employees. beginning in 1998 with the first generation of web-based instruction. Computers were no longer just for organizations and the wealthy few, but for the masses. Then companies made PCs readily available for every employee. and computers started to offer greater interactivity. Traced to 2000 Until Today Blended Learning Integration became very popular and effective. Blended learning has a proven track record of bringing traditional classrooms into the tech-friendly 21st century.

Connectivism views learning as the process of creating connections and enlarging networks completely. This theory was developed by George Siemens in 2005 and expounded by Stephen Downes in 2007. It is commonly Referred to as the learning theory of the digital age. It is the learning theory that focuses on technology's effort on how people operate, communicate, and learn. Connectivist believes that learning is not solely based on content, but connection. Anderson (2005) reported that connectivism encourages high level of students' online social presence. This implies that connectivisim supports the integration of technological tools in teaching and learning activities. Blended learning scenario however supports and encourages the use of technological tools in blending a face to face learning scenario not disrupting but improving and enhancing teaching and learning activities. However, the academic performance, interest, and retention of students could be enhanced when students connect to collaborate on academic activities, this seems to expand their knowledge, adjust their views and enlarge their source of knowledge.

Face to face classroom is seen as a form of instructional delivery done solely via the classroom, where all activities that is concerned with teaching and learning starts and ends in the four walls of the classroom. In this kind of scenario, the teacher is restricted to the resources he/she can present or use in the classroom. While blended learning augment face-to-face lessons with other technologies, such as cell phones, personal digital assistants, classroom response systems, and electronic whiteboards. Students use the LMS to discuss, blog, write quizzes, wiki classroom, gosaopbox, top heart technologies, etc. And submit work related to them in-class activities. (Nwanekezi-Phil 2018). This implies that the blended learning scenario do not intend abolishing the face to face classroom but enhancing it to bring about improved performance

Some blended learning teachers complement computer access by allowing students to bring in their own personal computing devices. Students connect to the school's wireless system or to a switch with cables and move sinuously between online and face-to-face lessons. The LMS is used on a regular basis and differentiation of instruction is high. f2f classroom can be blended either by adopting its various models or simply by adopting some forms of online classrooms. in this article, the wiki classroom was adopted as a blending tool for the f2f classroom.Blended learning facilitatesF2Fclassroombecause it enhances student success by encouraging students t o control their learning through working at their own pace, using personally relevant assignments.   Helps   in improving academic performance, many scholars have proven via their findings that a blended classroom has a way of enhancing academic performance (scores) of learners. A study carried out by Paula, Linsey and Alan (2011) reported a high-performance score of student taught using blended learning strategy compared to their counterparts who were restricted to just the face to face classroom. It was also reported by Paul and Bazelais (2018) that introducing blended learning strategy into a face to face classroom enhanced and improve students' academic performance. This implies that with the aid of blended learning, student's performance can be said to be enhanced.

The term WIKI is derived from Hawaiian phrase wiki-wiki which means quick. It is seen as a collaborative website whose content can be edited by visitors to the site, allowing users to easily create and edit web pages collaboratively. (Parker & Chao 2007). It can also be seen as a collection of interlinked webpages, a hypertext system for storing and modifying information and a data base where each page is easily editable by any user. This implies that wiki is an interactive website that supports high level of collaboration and promotes learning. The use of wiki has been explored by various researchers as a teaching tool in schools, colleges and universities, a major appeal of wiki is that collaborative contents can be created, changed and tracked easily. Users are able to swiftly start expanding any page or site for discussions, posting assignments and various collaborative projects. This technology makes it easy to work on a collaborative document, track work in progress, and view how well an individual in a group has contributed. Branford, Brown and Cocking, (2000) explained that meaningful learning

engages students in tackling the topic to be learnt in such a way that they create meaningful and understandable knowledge structures on the basis of a goal for learning. Looking on their ideas, it is feasible for one to present an outline of learning with a focus on wiki use in learning.

Paula, Linsay and Alan (2011) investigated the effect of blended learning on students' performance in an undergraduate occupational therapy curriculum. A retrospective two cohort design was used to review the students access to virtual learning environment and their performance on the summative assessments of the two concurrent academic cohorts. Their findings revealed a significant difference and positive improvement in the academic performance of students taught using the blended learning approach. From their findings, it can be deduced that blended learning has the ability to enhance students' performance. However, another study by Paul and Bazelais (2018) investigated the impact of blended learning which combines F2F classroom instruction with online mediated learning instruction. The results revealed that the blended learning approach leads to more conceptual change, acquisition of more skills and higher performance. Their findings further revealed that blending a classroom enhances students creativity.

A study by Turki (2014) identified the impact of teaching science using blended learning strategy in the development of performance skill among students. The study focused on the students in the ninth grade in Dubai Educational zone in the first semester of the year 2013/2014. Multiple choice study before and after applying the educational program. Along with these tests, a questionnaire was prepared in order to measure student's attitudes. analysis of covariance (ANCOVA) along with analysis of variance (ANOVA). The study showed high level of performance on performance test as a whole after applying blended learning strategy.

A study by Zhigang, Ming, Tsai, Jinyuan and Chris (2014) was to investigate whether the blended learning model adopted by a undergraduate nursing programs (UNP) could yield a better academic performance as compared with the traditional classroom learning. Students enrolled in two undergraduate nursing courses in fall 2008 and spring 2009 semesters were taken as a convenient sample. Students' academic performances were compared before and after the two undergraduate nursing courses adopted blended learning. The statistic results showed that there was no significant difference in terms of academic performance before and after the courses adopted blended learning.

Statement of the Problem

Over the years, it has been observed that academic activities in most Nigerian campuses of higher learning gets disrupted due to incensement strikes by academic and non-academic unions, students protest and cult activities. This disruption sometimes leads to a crash program when students resume school, which in turn affects the assimilation of learners and subsequently their academic performance. By blending wiki classroom into the traditional face to face classroom, it is believed that such disruptions would be greatly minimized since students can still have their lectures in their online wiki classroom improving their academic performance

Aims and Objectives

1. To determine the effect of wiki supported learning on the academic performance of under graduate students.
2. To access the difference between the academic performance of male and female under graduate students taught using wiki.

Research Questions

1. What is the effect of wiki supported learning on the academic performance of under graduate student?
2. What is the difference in the academic performance of male and female students taught using wiki?

Hypotheses

Ho$_1$: There is no significant difference in the academic performance scores of undergraduate students taught with wiki and those taught without.

Ho$_2$: There is no significant difference in the academic performance scores of male and female under graduate students taught using wiki as a support learning tool.

Methodology

Two pre-test post-test quasi experimental design was adopted for the study. Two departments namely: Curriculum studies and educational technology and educational foundation were randomly sampled out of the eight departments in the faculty of education in University of Port Harcourt. A performance test was administered to the students the test was used to determine the academic performance of under graduate students in instructional technology. The performance test covers the course content during the experiment.

The instrument was validated by subject matter experts and experts in measurement and evaluation. The reliability of the instrument was tested using Kuder Richardson 21 and a reliability co-efficient of 0.80 was obtained, performance test was also administered to both groups to determine their performance before the actual experiment. At the end of the experiment, performance test was administered to the students the test was used to determine the academic performance of under graduate students in instructional technology. Mean and standard deviation were used to answer the research questions while independent sample t-test was used to analyze the null hypotheses at 0.05 level of significance.

The wiki was implemented as a supportive learning tool in a first-year instructional technology course Edu 101.1 at the University of Port Harcourt. The course is a required component in the Faculty of Education University of Port Harcourt which cuts across all departments in the faculty and had enrolments of 1859 students across the semester of three months. The course itself aims to provide students with a basic introduction to the use of technology in instruction. Topics used for the period of this study included systems approach to instruction and improvisation in instruction. The course is taught through a weekly 2-hour lecture.

At the beginning of the class, a brief introduction of the course was done, detailed explanation of the wiki classroom and how it will be used in the course was made, students were asked to submit their e-mail address, they were given a demo on what the invitation mail would look like in their inbox and how to get to the wiki classroom. There were further instructed to use their matriculation number as their user name for a proper means of identification. Before the end of the second week, the students were already present in the wiki classroom. Students were further grouped in the platform and assigned task after the conclusion of a given lesson.

Results and Discussion

Research Question 1: What is the effect of wiki support learning on the academic performance of under graduate student?

Table 1:
Mean and standard deviation analysis showing the effect of wiki as support learning tool on the academic performance scores of undergraduate students.

Groups	N	Mean	Std. Dev
Experimental Group	80	27.4	3.9
Control Group	80	15.4	2.6

Table 1 explains the answer to research question one. The performance test was used to answer the question. Table 1 displays the mean scores and standard deviation of the experimental and control group. It reveals that the mean score of the experimental group 27.42 is higher than the mean score of the control group 15.41.

Research question 2: What is the difference between the academic performance of male and female under graduate students taught using wiki?

Table 2
Mean and standard deviation analysis showing the academic performance of male and female under graduate students taught using wiki.

Sex	N	Mean	Std. Dev
Male	36	26.4	2.5
Female	44	28.4	2.1

The table above displays the answer to research question 2. It reveals that the performance test was used to provide answers to the research question. In its findings, it displays the mean and standard deviation scores of the male and female students who participated in the experimental group. It revealed a mean score of 26.40 and 28.42 respectively for both the male and female students.

Hypothesis 1: There is no significant difference in the academic performance scores of undergraduate students taught with wiki and those taught without.

Table 3:
t-test analysis scores of Respondents

Group	Control	Experimental
Number	80	80
Mean	14.4	27.5
SD	3.9	2.6
T- Stat	26.05	
Df	138	
p-value	0.0001	

Table 3 showed the summary of t-test on the performance scores of students taught using wiki technology and those taught without wiki. The mean scores of the control group pre-test and post-test were 14.4 and a standard deviation of 3.6 and 15.4 and a standard deviation of 3.9 respectively and the mean scores for the experimental group pre-test and post-test were 13.9 and a standard deviation of 5.6 and 27.4 and a standard deviation of 2.6 respectively

Table 3 showed the summary of t-test on the performance scores of students taught using wiki technology and those taught without wiki. The mean scores of the control group pre-test and post-test were 14.4 and a standard deviation of 3.6 and 15.4 and a standard deviation of 3.9 respectively and the mean scores for the experimental group pre-test and post-test were 13.9 and a standard deviation of 5.6 and 27.4 and a standard deviation of 2.6 respectively. The T-test shows a significant difference (t-stat = 26.05, df = 138, p-value <0.0001) in the average assessment scores of the control and experimental groups. Hence the Null hypothesis "There is no significant difference in the academic performance scores of undergraduate students taught with wiki and those taught without" is not accepted.

Hypothesis 2: There is no significant difference in the academic performance scores of male and female under graduate students taught using wiki as a support learning tool.

Table 4:
t-test analysis Scores of Male and Female Respondents

Group	Male	Female
Number	36	44
Mean	26.4	28.4
SD	2.5	2.1
t- Stat	-3.78	
Df	139	
p-value	1.9960	

Table 4 showed the comparison assessment scores of male and female respondents. The mean scores of the male and female respondents were 26.4 with a standard deviation of 2.5 and 28.4 with a standard deviation of 2.1 respectively

The scores from the instructional technology Performance test (ITAT) were used to answer this research question. The result from table 1 shows that the experimental group which was taught with wiki technology has a mean score of 27.4 and a standard deviation of 2.6 while the control group which was taught without wiki technology has a mean of 15.4 and a standard deviation of 3.9. The table therefore reveals that the mean score 27.4 of the experimental group (group taught with wiki technology) is higher than the mean score of 15.4 of the control group (those taught without wiki technology) showing that the experimental group had higher performance scores than the control group. This shows that wiki technology has positive effect on the performance of students in instructional technology.

The scores from the instructional technology Performance test (ITAT) were used to answer this research question. The result from table 2 shows that the male students which were taught with wiki technology has a mean score of 26.4 and a standard deviation of 2.5 while the female students which were taught with wiki technology has a mean of 28.4 and a standard deviation of 2.1. The table therefore reveals that the mean score 28.4 of the female students is higher than the mean score of 26.4 of the male students showing that the female students had higher performance scores than the male students. This shows that wiki technology has positive effect on female students' performance in instructional technology.

Table 4 showed the comparison assessment scores of male and female respondents. The mean scores of the male and female respondents were 26.4 with a standard deviation of 2.5 and 28.4 with a standard deviation of 2.1 respectively. The t-test showed no significant difference (t-stat = -3.78, df = 139, p-value = 1.9960) in the average scores of the male and female students taught using wiki as a support learning tool. Hence, the hypothesis "There is no significant difference in the academic performance scores of male and female under graduate students taught using wiki as a support learning tool" is accepted.

The result showed that the average assessment scores of students in the control group were 15.4 and a standard deviation of 3.9. The average scores of the experimental group were 27.4 and a standard deviation of 2.6. T-test showed that there is a significant difference in the average assessment scores of the control and experimental groups. The null hypothesis "There is no significant difference in the academic performance scores of undergraduate students taught with wiki and those taught without" is not accepted. This corresponds with the findings of Camacho et al (2016) which reported that the use of wiki technologies to support teaching and learning process recorded a very high academic performance. However, this finding is not in conformity with the findings of Zhigang, Ming, Tsai, Jinyuan and Chris (2014) which statistic results showed that there was no significant difference in terms of academic performance before and after the courses adopted blended learning.

The analysis showed that there was no significant difference in the assessment scores between male and female student that were taught using wiki. Hence the null hypothesis "There is no significant difference in the academic performance scores of male and female under graduate students taught using wiki as a support learning tool" was accepted. This is in contrast with the findings of Hazari et el (2009) which reported significant differences in assessment scores between male and females that were taught using wiki. The difference observed may be attributed to the relatively higher amount of time that male students spent on the internet compared to females in certain demographics (Eachus & Casidy 2006). However, there is no indication of any variance in the amount of time spent on the internet in this study.

Conclusion

The findings of the study showed that the use of wiki technology as a support learning tool enhanced the academic performance (scores). Gender differences were not significant in the academic performance of the students' that were where taught blending face to face classroom using wiki classroom.

Recommendations

Based on the study findings and conclusion, the study recommends that a study on the viability of wiki in the university environment should be carried out among undergraduates. Likewise, Wiki classroom should often be used as a blended learning tool for undergraduate lessons. Finally, an enlightenment campaign on the relevance of wiki as a blended learning tool should be conducted to create awareness among tutors and students.

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MOBILE TECHNOLOGY IN BLENDED LEARNING AMONG UNIVERSITY STUDENT'S IN CALABAR METROPOLIS, CROSS RIVER STATE, NIGERIA.

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Abstract

This study investigated student's perception on the use of mobile technology in blended learning among University students in Calabar Metropolis, Cross River State. Three hypotheses were stated to guide the study. The study adopted survey design and the population comprised of all second year students in the two institutions in Calabar metropolis. Purposive and simple random techniques were used to draw three hundred (300) respondents from the institutions. The instrument for data collection was Student's perception on the use of mobile technology in blended learning questionnaire (SPUMTBLQ) which was validated. The reliability coefficient index of the instrument was 0.86, data were analysed using ANOVA and Independent t-test. Findings reveals that student's perception level of mobile technology learning is positive and high, gender has no significant influence on mobile technology in blended learning and Student's institutional affiliation has no significant difference on blended learning. It is suggested that the use of mobile technology in blended learning should be encouraged at the University irrespective of the institutional affiliation for effective learning.

Keywords: Student Perception, Use of Mobile Technology and Blended Learning.

Introduction

Technology has been considered as a potential tool which is part of human life in the 21st century. The current trend in teaching and learning in higher education is to incorporate technology into instruction. The drive behind this growing trend is the idea that incoming students are constantly exposed to and interacting with various forms of technology in their personal academic and career live, to such an extent that traditional technology methods might be ineffective (Kennedy, Judd, Churchward, Grey, & Krause 2008). The term mobile technology as used in this paper entails use of electronic devices like; laptops, mobile phones, iPad, wireless communication tools (data), social network etc. However, the use of mobile technology in the school system especially at tertiary level is very paramount, especially for research and academic purpose.

The explosion in the use of mobile technologies has become the need of everyone and part of our lives in the 21st century. It's wide usage over the years have introduced a variety of new tools that are user friendly, which support education and development in wireless communication network like data card, data bundle, Bluetooth, Wi-Fi etc. irrespective of their location and time. Cobcroft, Tower, Smith and Axel (2006) claim that over the years, the use of mobile technologies within the education context allow students the opportunity to be self-dependent in their study, innovative, constructing knowledge and collaborating with peers and learning communities within and beyond the classroom situation. Similar studies confirm that, use of mobile technology have significant influence on student learning. McDonald (2009) in a study conducted at the University of Canterbury, New Zealand, on the Geophysical Fluid Dynamics students on the use of Facebook in the classroom reported that, Facebook gave student the opportunity to receives positive comments from peers. Madden, Lenhart, Duggan, Cortesi and Gasser, (2013) found that teens and technology study from 2013 shows that internet usage has risen consistently over the years up to 95%. Similarly the study shows that advanced mobile devices such as smartphone have become very popular among teens, compared to just 23% in 2011. This fact is supported by Kennedy, Judd, Churchward, Gray and

Krause, (2008) who stated that students grew speaking the language of technology due to their constant exposure to and interaction with technology. That means, lecturers must find ways to adopt technology methods that are compatible with such student including incorporating technology into instruction (Prensky, 2001).

Cochane (2009) holds that social network have the potential of supporting communication in a learning environment, he added that as students engage in the use of mobile technology in classroom, they are often encouraged to adopt student-centred learning approach. Blended learning entails the use of technology and web-based resources to deal with the physical interaction between teachers and students. The lecturers and students that involve themselves in blended learning courses explored the use of mobile technology to access the online materials such as the learners' guide, lecture notes, group work/assignment posted in the course in order to communicate same via internet and social media such as WhatsApp. The lecturer discuss problems posted by the students on the page/platform of which the students will then discussed among themselves and share further information on Facebook, which will eventually make other students who are members of the community have access through their mobile devices. Hence, the process adopted gives the students the opportunity to learn at their own pace and time irrespective of their gender and environment they find themselves. According to Beetham and Shap (20113), effective and well-designed blended learning approach enhances the level of students' engagement in the course which will equally improve academic achievement of student. Use of blended learning and mobile support has been considered as a potent solution to solving students' problem of accessing online learning materials in most institution of higher education.

Mobile learning is a branch of e-learning which utilizes the flexibility of mobile technology to offer student additional learning opportunity (Vinu, Sherimon, & Krishnan 2011), it's often used within the higher education sector and within the blended learning approach. Dahlstrom, Walker, and Dziubian (2013) maintain that it involved the integration of computer devices into the learning experiences. The use of mobile technology for learning over the years have gained much ground in the educational system most especially at the higher educational level where students make adequate use of it for assignment and their research work. On the other hand, mobile learning approach has been shown to support a number of theories of learning like behaviourist, constructivist, collaboration etc. (Kearney, Schuck, Burden, & Aubusson 2012).

Student perception of mobile technology involves how students regard the use of mobile technology used in the classroom. The effectiveness of use of mobile technology in blended learning today such as digital services and new devices, are becoming the soul of society in day to day activities such that; how students perceived it will determined their level of interest and achievement in their related. Many students make use of the technology in hope to improve their learning strategies. Some of the student employ a diverse range of technology such as presentation tools, social networking, digital media which have potential to increase student attention and participation as well as increase their performance in school. Meanwhile, it appears a number of students in the universities fail to embrace the use of technology in the classroom due to their inability to afford their own technology facilities in the class.

Numerous studies have examined the impacts of incorporating technology into instruction because of the needs to fine affective teaching methods for incoming students. The general notion is that incorporating technology into instruction will have positive impact (Jamil & Shah 2011). Some of the studies supported the notion that blended learning with technology has a positive influence of the student. For example, a survey conducted in one department at Texas A&M University shows that using social media tools had some advantages in helping to increase quality and efficiency of communication between students and instructor. The study also found social media as an approach made easier to access class information, collaborate on group projects, and build stronger social connection between classmates. In addition, some UK universities have deployed use of mobile technology to medical students to increase their learning opportunities (Apple Inc., 2013).

For the time being, a number of universities are known with the use of notebooks, textbooks, and only a few Nigerian higher institutions have adopted the use of technology to increase their learning opportunities. In most

cases, it appears most of the students with smart phones do not focus of their course activities when they are not adequately engaged with related activities; they rather channel their activities on social media. Students may perceive the use of mobile technology on the basis of what they use their mobile phone for or the environment where they find themselves. The main objective of this study is to examine the students' perception of mobile technology on blended learning in higher institution. The specific objectives are to: examine the influence of gender on students' perception of mobile technology on blended learning in higher institution; examine the influence of school affiliation in students' perception of mobile technology on their blended learning.

Research Hypothesis

H_{01}: There is no significant influence of students' perceptions of mobile technology on blended learning in Universities

H_{02}: There is no significant gender difference in the students' perception of mobile technology on their blended learning

H_{03}: There is no significant influence of school affiliation in students' perception of mobile technology on their blended learning

Methodology

Two Universities provided the setting of this study, the study adopted survey research design type. The population of the study comprised 3029 second year students made up of 1506 from University of Calabar and 1523 from Cross River State University of Technology. Using purposive sampling technique, three faculties (Education, Social Science and Faculty of Science), were selected. This is because most students from these faculties make use of mobile technology and share the same characteristics of teaching learning condition (sharing of information on watt Sapp & Facebook), and they all offers general course at their level. Simple random sampling procedures was used to select 300 students that were used as sample of the study. Break down of this sample size indicated 50 students were drawn from each faculty. Making 10% of the entire population from the three faculties' in the two Universities. During the sampling, care was taken to ensure that there is equal representation of selection of male and female students across the faculties.

Instrument used for data collection 'title' student perception of Mobil technology and blended learning (SPMTBL) was constructed by the researchers. The instrument contained 2 sections A&B. section A has three demographic variables (University affiliation, faculty and gender of student), while section B has 20 items that measures student perception in mobile technology and blended learning, presented beside four respond format; strongly agree (SA), Agree (A), Disagree (D), strongly Disagree (SD). The validity of the instrument was established by three (3) experts in educational evaluation and other two (2) specialist in item construction in faculty of education. The survey instrument were pilot tested with a group of students from another higher institution (n=25).The internal consistency of the surveyed instrument was determined using Cronbach Alpha which yielded a coefficient index of 0.86.

Data was analysed using descriptive statistics, Analysis of variance (ANOVA) and Independent t-test. Statistical significance was assumed where $p < 0.05$. Selected students from both schools responded to the questionnaires. Before the actual data collection, the students were informed that there will be facilitation one of their course online, where materials and assignment will be done using their phones and computers/laptops while some/other activities required of the course will be done in the classroom. Also, the students were asked to complete an optional questionnaire about their perception and use of mobile technology on blended learning in their different departments and both students with smart phones and non-access to mobile technology were given the questionnaire to be completed and used for the study. Students were assured that their responses would remain anonymous and

dealt with confidentially. A total of 300 questionnaires were distributed to the students and all the questionnaires (300) were returned and used for data analysis.

Result and Discussions

H_{01}: There is no significant influence of student's perceptions of mobile technology on blended learning in Universities

Table 1:
Student's Perception of Mobile Technology on Blended Learning

	Mean	N	Std. Deviation
HIGH	19.3894	113	5.3493
LOW	17.6578	187	4.8483
Total	18.3100	300	5.1037

N = number of respondents from the 2 sampled universities in the states.

Table 2:
ANOVA

Sources of variance	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	211.206	1	211.206		
				8.307	.004
Within Groups	7576.964	298	25.426		
Total	7788.170	299			

Sig. at 0.05 level; df= 1,298, F=8.307.

From table 1, shows students' perception of mobile technology on blended learning in universities. The result showed that mean of students with high perception is higher ($\bar{x}$ = 19.3894; SD = 5.3493) than that of the low perception students ($\bar{x}$ = 17.6578; SD = 4.8483). The mean difference between the two groups was 1.732 (19.3894–17.6578). Also, table 2 ANCOVA result shows there is a significant influence of students' perception of mobile technology on blended learning (t = 8.307, df =1, 298, p< 0.05).

H_{02}: There is no significant gender difference in the student perception of mobile technology on their blended learning

Table 3:
Independent Samples t-test of Male and Female students' perception of mobile technology on blended learning in Universities

Gender	N	Mean	SD	Std.E	Mean Diff.	t	df	Sig.
Male	149	18.3020	5.1801	.424				
					.016	.027	298	.237 (NS)

Female	151	18.3179	5.0443	.411

N = number of respondents from the 2 sampled universities in the states.

Table 3 shows student's gender difference on their perception of mobile technology on blended learning in universities. The result indicated a comparatively statistically slight mean score of ($\bar{x}$ =18.3179; SD = 5.0443) for female students while the male students has a mean score of ($\bar{x}$ =18.3020; SD = 5.1801). The mean ($\bar{x}$) difference between the two groups was .016 (18.3179 – 18.3020). Further, result of the independent t-test showed that the difference between the two groups was not significant (t = .027, df = 298, p> 0.05 level of significance, Hence, the null hypothesis is upheld. This means that there was no significant gender difference in the student's perceptions of mobile technology use on blended learning in the universities. This further explains that gender influence mobile use on blended learning in the Universities.

H_{03}: There is no significant influence of school affiliation in students' perception of mobile technology on their blended learning

Table 4:
Influence of School Affiliation in Students' Perception of Mobile Technology on their Blended Learning

University Affiliation

	N	Mean	Std. Deviation	Std. Error
CRUTECH	141	18.766	5.8366	.4915
UNICAL	159	17.906	4.3309	.3435
Total	300	18.310	5.1037	.2947

ANOVA
Blended Learning

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	55.308	1	55.308	2.131	.145
Within Groups	7732.862	298	25.949		
Total	7788.170	299			

Sig. at 0.05 level; df= 1,298, F=2.131.

From table 4, shows school affiliation of student mobile technology perception on their blended learning in universities. The result of the analysis showed that mean score ($\bar{x}$ = 18.766; SD = 5.837) of CRUTECH is higher than the mean score ($\bar{x}$ = 17.906; SD = 4.331) of UNICAL. The mean difference between the two groups was 0.86 (18.766 – 17.906). However, this result indicated that there is no significant difference between the two groups (F =2.131, df =1, 298, p> 0.05). This implies there is no significant influence of university affiliation of student mobile technology perceptions on blended learning. Hence, student mobile technology perception on blended learning does not based on universities affiliation.

Discussion

The study sought to establish student's perception of mobile technology on blended learning in universities. Result of the study indicated that student perception of mobile technology in blended learning in universities is significantly high. The findings is not surprising because it suggests that student's perceived use of mobile technology necessitated effective learning in higher institutions.

Findings from H_{02} shows that a non-significant gender difference existed in the student. Perception of the mobile technology use on blended learning in the universities. This finding contradicts the confirmation of Olu (2012), which reveals that boys were more likely to use higher mobile technology than the girls. This could be as result of the fact that male and female students are always exposed to the same learning process, environment and expenses they are likely to have same perception of mobile technology on blended learning. The implication of the findings is that where female students' perception of mobile technology is high, the male counterparts would likely follow suits and vice versa.

Result of hypothesis three reveals that there is no significant influence of school affiliation of mobile technology and blended learning in the universities. Which means, in most cases, school affiliation has nothing to do with student's perception of mobile technology. this result support the views of Cobcroft, Tower, Smith and Axel (2006) who claim that over the years, the use of mobile technologies within the education context allow students the opportunity to be self-dependent in their study, innovative, constructing knowledge and collaborating with peers and learning communities within and beyond the classroom situate irrespective of the kind of university. It implies that students can perceive use of mobile technology in any of the institutions they belong. On the other hand, when mobile technology becomes paramount, it increases the level of student's perception

Conclusion

Mobile technology is increasingly being used to support blended learning beyond computer centres. It has been considered as a solution to the problem of shortage of computers in most universities. Based on the finding of this study, we can infer that, there is a significant influence of perception of student's mobile technology; also non- significant gender difference existed in student's perception of mobile technology on blended learning. There is no significant influence in perception of institution affiliation on the use of mobile technology on blended learning. However, the use of mobile technology on blended learning to improve students' achievement in school is not a function of gender or school affiliation. It is therefore recommendation that the use of mobile technology in blended learning should be encouraged at the Universities level.

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INVOLVING STAKEHOLDERS IN BLENDED LEARNING: OPPORTUNITY TO SCALE NEW PRACTICES IN HIGHER EDUCATION

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Abstract

The objectives of blended learning at a global stage and Nigeria in particular are yet to be achieved due to perceived attack one way or the other. Indeed, such attack has put educators on their toes to search for probable solutions to classroom and online training format called blended learning which is recently described as the best way to train learners. Some of the opportunities to gain can be how learning blend would reduce costs and provide them with greater flexibility, while retaining the effectiveness achieved by convincing the learners of the usefulness of blending learning methodologies. It is expedient to consider the work environment and learning preferences of the target audiences when designing a learning approach. Use of Learning Management System (LMS) may be very useful in this circumstances as a tool to implement blended learning strategy. In other words, it was all asynchronously (accessed any time) without the real-time guidance of a teacher but the gap between methods used seems deficient without interaction between the two parties, that is, the teacher and learners. However, synchronously (as the teacher is teaching) may be solution to the problem through online management systems. Therefore, this study strikes balance between the problems at hand through some related research on ground. Recommendations made include adequate re-training of teachers in LMS-driven initiatives in education sector and sound policy environment which encourages educators and learner in LMS.

Keywords: Blended learning, asynchronously, synchronously, opportunity, attack, higher education, Nigeria

Introduction

Lots of scholar wrote about blended learning in recent years. As the term implies, it is a blend of two or more learning methods. According to Wikipedia, it is a learning technique where a learner learns at least in part through delivery of content and instruction via digital and online media with some element of control over time, place, path, or pace. Blended learning brings the classroom and technology together to offer a better way of learning. At the same time, blended learning refers to the use of technology to complement classroom sessions and strengthen the teaching/learning process through practice and the application of concepts learned in the classroom. It is worthy of note that computer-mediated instruction is added to, or combined with, more personal face-to-face instruction. This allows learners to have more control over the learning situation, choosing the time and/or place (for example, home versus school); their path (what they learn); and their pace (the rate at which they absorb content) unlike a conventional classroom session which is conducted by an instructor using traditional instruments such as chalk and board.

The major advantage of blended instruction is to overcome the shortcomings of online instruction and utilize various instructional sequencing and delivery strategies to enhance learner satisfaction while also achieving increased learning outcomes. (Doo; Michael & Virginia, 2005). Blended learning, sometimes known as hybrid learning, is a teaching and learning model that has a face-to-face class combined with an online component. Blended learning can be complex in setting from easy-to-use to easy-to-prepare in free online filing systems to more sophisticated online or blended learning platforms that offer many exciting features. These more sophisticated

platforms require teacher and student time to learn to use them, and teacher time to find, select, upload, and store lessons or other learning resources (David & Carmine, 2014)

Blended learning can statistically be a situation where 30-79% describes blends online and face to-face delivery. Where a substantial proportion of the content of the course is delivered online and typically has some face-to-face meetings. There are lots of benefits that are embedded in the blended learning. Blended learning may be more effective for mature learners who are into higher education than only face-to-face learning or only online learning. In the analysis of Glenda (2014) data from the Texas Educating Adults Management System (TEAMS) show that adult learners who engage in blended learning outperform learners who only attend a traditional classroom, and learners who receive more than 50% of their contact hours at a distance. With blended learning in place, learning delivery is very quick and efficient in an online platform and an instructor delivers the learning materials and imparts teaching base on instructional content. Course materials can be accessed via online by merely using an electronic device connected to the Internet. These materials can equally be updated at will. Blended learning can be combination of online instruction and face-to-face learning where students in remote locations can have face-to-face interactions with their facilitator through web conferences (digital classrooms).

Blended learning can be described as a comprehensive and complex situation that require proper planning before implementation. It is all about introducing correct personalizing learning model that can match student, schools and societal needs. It is not all about having knowledge of using computer or acquiring it, but competencies in applying it to blend. There are two important categories of blended learning, it can be rotation or flex model. Despite the fact that blended learning has grown in acceptability there are notable attacks within the region. Such as growing shortage of teachers' couple with cost and time savings, possible replacing of human resources with digital media, relying heavily on technology to deliver online learning experiences, reliability of digital tools and online assets, and frequent updating for meaningful impact. Technical difficulty experienced by technician can be a serious barrier in achieving desired result. Most importantly, this study shed light on opportunities and attack on the above learning practices in higher education. Adult are the target audience to be considered because they are mature in mind to handle blended learning.

Without any gainsaying in this learning situation this question calls for answer. Leaders can either be a facilitator, instructors or teachers who are to lead learners through the materials. There a lots of complex topics that need expertise approach like the stakeholders mentioned above. They are to offer immediate in-depth explanations or opinion to immediate response to questions as they ask. Self-paced training, on the other hand, is more of an individual pursuit and gives the learner control over when to move ahead in the material (Michael & Heather, 2014). Capacity competence of the leaders or stakeholders must be developed throughout the education system before blended learning can be practised successfully. The aspects of stakeholder's development are:

1. Facilitators: They are the key factors in the teaching learning process, it is important to develop them in the use of Information Communication and Technology. This will include professional development in blended learning skills and application, how to integrate blended into the curriculum, instructional design, educational theories supporting blended learning etc. These can be done through the training, workshops and in-service facilitator training programmes. If blended learning must be successful, then, plans must include cost of maintaining and keeping the equipment in usable state, sustainability in terms of technologies, political, social and economic dimensions of the blended learning integration. In case of technological sustainability, it has to do with choosing technology that can serve for a long time. While political sustainability deals with policy environment and management of the change process involved in integration. Social sustainability involves all the stakeholders (facilitators, students, parents, who use or are interested in the use of the technology must be considered.

2. Education Administrators: leaders determine the success of blended learning. Undermining attitude of the administrators will affect the blended learning process. In other word, administrators must be versatile in the use of blended, having broad understanding of administrative, curricular, technical, finance and social dimension of blended learning in education.

3. Trained Technical Support: To sustain the blended learning programme requires technical support. These persons requires competence in ICT installation, operation, maintenance and networking security. They can be hired or employed as a members of staff. Sometime there can be technical breakdown lead to loss of money and time.

4. Content Developers: These are specialist in content development which include instructional designers, scriptwriters, audio and video production specialists, programmers, multimedia, course authors and web developers. Involvement of these stakeholders are very important in planning the curriculum in blended learning.

A learning Management System is a soft-ware based platform that facilitates the management, delivery, and measurement of educational organization e-learning programs. LMS is a very useful tool to implement blended learning strategy because it can help to schedule the instructor-led training (ILT), conduct pre-classroom learning activities, facilitate learner collaboration, evaluate learners online, generate reports to analyze the learning.

Gain and Opportunities of using Blended learning

1. Flexibility: Blended learning provides room for maximum change in content presentation where complex topic can be interactively conducted in the classroom, while other ones can be set aside for online. Certainly, convenience about time and how it can be favourably done in online are factors to be considered so that learners can participate as expected.

2. Effectiveness: Garrison and Kanuka (2004) concludes that blended learning has the proven potential to enhance both the effectiveness and efficiency of meaningful learning experiences. With a well-planned blended learning strategy, instruction can be effectively and quickly deliver to a larger audience.

3. Efficiency: With digital assets such as videos and recordings and eBooks, the potential for re-use is huge. One can easily help more people get up-to-speed after the initial rounds of training have passed.

4. Cost-effectiveness: Most of the stakeholders like strategies that can save the organization money and blended learning is one of them. Including more online options in teaching and learning program saves on travel and missed work. When users are hosting live events online, one can eliminate employee and instructor travel costs. When the venue is the user's own desk, that's clearly a savings over large rooms.

5. Personalization: Any training that is not well implemented can create an isolating, cookie-cutter, impersonal learning experience. But the good news is that a well-crafted blended solution can provide a seamless transition from classroom to computer or vice-versa. You can design ways of continuing discussion themes and personalizing content to a person's specific job or interests.

6. Extended reach: Creating a blended learning strategy reduces classroom teaching time. By digitizing the expertise of talented instructors or subject-matter experts, one can reach more people with high-quality content at a fraction of the cost. That frees up knowledgeable instructors to offer more classes, or create more training content, or work on other things.

7. Coverage of all learning styles: It's always important to take learning styles into account when designing training for adults. Effective blended learning is a "best of all worlds" solution that can help one cater to all learning styles through a variety of mediums and techniques.

Horton (2000) proposes new practices such as online components that combine face-to-face and online elements for a certain course and familiarize students with face-to-face sessions, online courses defined by students in class and supported by the teachers for in-class presentations. Alotaibi (2013) opines that utilization of technology in physical classrooms offer extra resources for the students and this is expected to enhance learners' confidence and competence as well as improve the quality of learning.

Within this framework, it is an expected outcome that strategies and technologies employed in the blended learning environment positively contributed to students' critical thinking dispositions and levels (Thorne, 2003). Critical thinking is an opportunity derivable from the learning environment. Critical thinking is an individuals' ability to think openly, independently and rationally. Indeed, individuals cannot improve their critical thinking

levels on their own. Now, it is largely a responsibility of stakeholders to help individual acquire opportunity (critical thinking) (Lothridge, 2013).

Bonk and Graham (2006) analyzed students' opinions about blended learning environment and their findings proved that students have general positive opinions about blended learning environment. The result of the study also proved that high interaction between students and instructor exist in this type of environment. This study is in line with the Garrison and Kanuka (2004) which indicated high demand for face-to-face interaction in online learning. Yushau (2006) conducted a research study on the effects of blended-learning on Mathematics and Computer attitudes in Pre-calculus algebra and found that subjects have positive attitude towards Mathematics and Computer. Young (2008) also found significant effect of blended learning on students, outcomes but this study revealed no significance effect of blended learning on students' attitude towards science.

In another development, Garrison, and Kanuka (2004) studied the effects of traditional, blended and e-learning on students' achievement in higher education and explored positive effect of three methods in terms of students' achievement favouring the blended-learning method. The result revealed that no significant difference was found between the e-learning and traditional learning groups in terms of students' achievement. Wicks (2015) studied the effect of a blended e-learning environment on students' achievement and attitude towards using e-learning in teaching and learning at the university level and found insignificant difference between the instructional treatments in gain scores of the achievement test. However, the results in the attitudes scale showed in favour of blended e-learning method. Blended learning model contributed more to the students' biology achievement that traditional teaching methods did and students' attitudes towards the internet (Young, 2008). Alotaibi (2013) taught the experimental group by using blended learning, while the control group and the control group in higher education. Blended-learning environments affect positively on students' achievement.

In all researches carried out in this area showed that various studies have been conducted on blended learning, and the results of these studies showed that the new practice was positively effective in general classrooms. Thus, the objective of the study is to determine the opportunity embedded in blended learning in higher education. As laudable as this subject matter there are still some challenges that are facing the smooth running of the blended learning. Economic dimension involves the cost of acquiring and maintaining the acquired technology. Inability of a facilitators to flow with the purpose of the use of ICT in blended learning is an attack. However, facilitator should be developed more on the using ICT tools in blended learning and less on teaching tools.

Conclusion

Blended learning tools when innovatively applied in higher education are very strategic in achieving the opportunity to scale new practice in achieving the goals of higher education which include reaching every individual with educational information so as to change negative learning attitudes and practices and wellbeing of individuals and stakeholders. Blended learning provides opportunities for many who are constrained by time and distance to acquire training and be certified in higher education through distance learning. Internet web sites and apps have been successfully applied in making higher education easily accessible to all and sundry.

Recommendation

Based on the study, the following recommendation are made;

1. Training should be conducted for all the stakeholders on the skills required for blended learning for effective integration in the higher institution.
2. Application should be created and made available for students in their mobile device as well as android instead of laptops.

3. There should be effective communication training skills and independent learning skills for the facilitators and students so as to be able to face any challenges post by practices and strategy.
4. Tertiary institutions should provide free wifi for students to be used for academic purposes.
5. The authority of higher institution should restructure their instructional delivery technology to take into consideration individuals and group needs of the students in order to make into the programme less cumbersome.
6. Learners should be assigned training on an individual basis or according to their learning skills or styles.
7. Adequate re-training of teachers in LMS-driven initiatives in education sector and sound policy environment which encourages educators and learner in LMS.

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BLENDED LEARNING: AN INNOVATIVE APPROACH FOR THE INTEGRATION OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) WITH INSTRUCTION IN TEACHER EDUCATION

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Abstract
Blended learning, an innovative approach for the integration of information and communication technology (ICT) with instruction in teacher education, critically examined the meanings of blended learning as well as instrumental innovative approach, integration and information and communication technology (ICT). Rigorous efforts, right attitudes, highly motivated teachers and students are all needed for successful implementation of blended learning in teacher education. Also discussed and thoroughly explained are instruction, teacher education, as well as integration of ICT with instruction in teacher education through instrumental innovative approach in blended learning. It was therefore recommended that all educational authorities in the country as well as managements of educational institutes need to be dedicated in carrying out their duties towards teacher education by putting all hands on deck in implementing blended learning with ICT in order to enhance teacher professionalism in diverse areas of specialty. Also recommended is the provision of fund (finance) and efforts to be put in for various projects to meet education needs for all, to be re-directed in all levels of learning in institutions for blended learning to solve many problems simultaneously.

Keywords: Blended learning, ICT, instruction, teacher education.

Introduction

Learning, as well as teaching, is not static but dynamic. The Nigerian educational system is gradually moving towards a global stage with the help of innovative techniques introduced in education. In order to meet the challenges of expansion of knowledge and provision on learners' needs in a teaching-learning environment, new technologies come into play in buttressing the needs of learners and even the teachers. Innovative techniques in teacher education include microteaching, team teaching, teaching machine, distance learning, electronic learning (e-learning), mobile learning (m-learning), and blended learning, among others. In recent past, conventional mode of instruction has been in vogue in teacher education. This mode of instruction makes the teacher to be more domineering in the classroom. Today, ICT facilities are now in vogue to complement the conventional mode of instruction thereby integrating each other in teacher education through blended learning as an instrumental innovative approach.

The term 'blended learning' has been given different meanings by erudite educational technologists. According to Lalima and Dangwal (2017), blended learning is the concept that includes framing teaching-learning process that incorporates both face-to-face teaching and teaching supported by ICT. It also incorporates direct instruction, indirect instruction, collaborative teaching, individualized computer assisted learning. Blended learning is an instructional methodology that leverages technology to provide a more personalized approach to learning, giving students control over the time, place, path and pace of their learning (Brooke, 2017). It can also be viewed as the type of learning that is facilitated by the effective combination of different modes of delivery, models of

teaching and styles of learning, and founded on transparent communication amongst all parties involved with a course (Henize and Procter, 2004). Garrison and Vanghan (2008) construed the definition of blended learning thus;

Blended learning is the thoughtful fusion of face-to-face and online learning experiences. The basic principle is that face-to-face oral communication and online written communication are optimally integrated such that the strengths of each are blended into a unique learning experience congruent with the context and intended educational purpose…Blended learning is not an addition that just builds another expensive layer. .Most importantly, blended learning is viewed here as a fundamental redesign that transforms the structure of, and approach to teaching and learning (p.4).

Continuing, they added that,

"The key assumptions of a blended design are: thoughtful integration of face-to-face and online learning, fundamentally rethinking the course design to optimize students' engagements; and restructuring and replacing traditional class contact horns (p.4)."

Furthermore, Dzuiban, Moskal and Hartman (2005) posit blended learning to be courses that replace a portion of face-to-face instruction with web components that allow for using web resources flexibly to reduce on-campus time, yet also to allow face-to-face interaction. Blended learning can also be seen as the integration of on-campus learning experiences with net-based learning experiences (Kanuka & Rourke, 2013). From the deductions made, one can simply construe blended learning as a form of learning which combines online digital media with traditional classroom methods thereby requiring the physical presence of both teacher and students with some elements of student control over time, pace and path through technology-mediated instruction, web-enhanced instruction, mixed-mode instruction and hybrid learning; using the required subject-content and delivery methods. Having known what blended learning is, what then can be viewed as characteristic features of blended learning?

The following, among others, are the main characteristic features of blended learning:

1. Freedom of selection of two modes of learning by the students: - Traditional mode of classroom teaching or ICT supported teaching-learning can be selected by students in blended learning; as a result of large dependence on the content – nature and the targeted – objectives. Sometimes, the appropriate mode for topics to be dealt with are decided and selected by the teachers or course designers.
2. Versatility with both modes among teachers: - In as much as teaching and learning are dynamic, it also means that teachers as well as the students are dynamic. According to Lalima and Dangwal (2017), teachers are very dynamic, techno-savvy and fully trained to work efficiently in both the formats – traditional classroom format and ICT supported format. Teachers will be well equipped in using traditional methods and other modern technologies.
3. Face-to-face interaction and virtual space interaction: - Due to face-to-face interaction, students have the ample opportunity, as well as time to interact with their fellow students pursuing the same course. The face-to-face interaction is usually done in college-campuses and also in virtual space. As a result of very high population, students tend to be diverse in terms of widened knowledge and developed feeling of understanding, harmony and love with the students of other countries and culture.
4. Use of new technology out of experience: - In this 21st century, ICT forms the bedrock of innovative improvement to knowledge. "The illiterate is not only the one who cannot read and write, but a person who is not well versed with modern technologies is also illiterate" (Lalima & Dangwal, 2017:132). As a result of improvement, blended learning help to make the experience of students to be rich through ICT. Suffice it to say that every profession in recent time, demands every person to be an expert in ICT. Capability of students to exploit available technologies to the fullest of their benefits, are gained when they are fully involved in blended learning.
5. Trainings gained in different life skills: Those skills needed to lead a happy peaceful life are known as life skills. Life skills include empathy, decision making capability, love, patience, communication, self-

management, critical thinking. Students practice the skills mentioned above through blended learning. Through the teacher and classmates, students get acquainted with few skills like love, empathy, and patience in classroom. Through online services and experiences, students get acquainted with skills like communication, self-management, decision making and critical thinking.

6. Target of all-round development of personality: Students should get full opportunity for all round development of the personality through blended learning. Through blended learning which is hardly achievable in traditional mode or ICT approach if followed in isolation, personality- aspects like cognitive, physical and emotions are developed. Cognitive domain development takes place in traditional classroom teaching where the memory and understanding levels are developed, and at the same time, the teacher's behaviour, playground experiences and social group with classmates develop affective and physical domains. Online experiences also help in reflective level of learning thereby developing higher faculties of mind and social networking sites, and other social interactions. Supporting the above view, Lalima and Dangwal (2017) construed that internet helps in right type of value development.

7. Possible physical development within schools: According to Lalima and Dangwal (2017), the online learning and ICT-support teaching-learning process, is often targeted with the blame that it ignores physical development of the students. The blended learning overcomes this limitation. As it includes school experience also, so students get time for playing, physical work, and yoga inside the college-campus.

8. Wide exposure and new perspectives of the course content: Students get wide exposure due to variety of experience in teaching-learning situation through blended learning. Their content-knowledge becomes enriched as they get to see various new dimensions of the content and gain practical useful knowledge.

9. Human touch possession: As a result of physical presence of teacher through traditional approach, students perceive and possess human touch which is of necessity for balanced students' emotional quotients and very necessarily, up to secondary level.

10. Provision of multi-cultural and multi-dimensional approach to teaching-learning process: Blended learning approach gives students the opportunity to communicate and share their views and feelings with their fellow students all over the world, thus, making teaching-learning process multi-cultural; and variety of experiences bring with it multi-dimensional factor as the case may be.

11. Child-centered education through teaching-learning process: Provision of maximum gain to students is designed through blended learning thereby making the goal of child-centered education to be reached.

12. Divergent roles of teachers: In blended learning, the teacher plays different roles. In the traditional setting (traditional mode of teaching and learning), the teacher acts as a motivator, as a resource person, an organizer and a developer. When the teacher develops content to be provided through ICT, the teacher therefore acts as a guardian. The teacher also gets freedom from the monotonous traditional roles and he/she can try his/her hands in divergent areas that are good for his/her professional growth.

13. Knowledge construction: Through blended learning, knowledge is constructed, thereby following the theory of constructivism as propounded by …Instead of students to depend on others for knowledge of design in teaching-learning strategies, they construct their own knowledge. Having identified and explained in details the characteristic features of blended learning, what then are the pre-requisites of blended learning?

Prerequisites of blended learning

There are fundamental preparations that are very certain in all elements of teaching-learning process such as teacher, student, content-designing and infrastructure. Blended learning implementation in teacher education involves rigorous processes. Suffice it to say that, it is not an easy task. According to Lalima and Dangwal (2017), the basic requirements for implementing a successful blended learning are as follows:-

1. Well trained teachers: In blended learning, teachers are important pillars. Teachers should be well acquainted with the concept of blended learning and fully trained and skilled to blend both types of approaches – traditional and technological. Teachers should be well trained so as to develop content in digital form so that it can be available to students online. They should be versatile with internet browsing

and internet terminology. They should be aware of the websites that can be useful for the students while learning online. Utilization of blogs, You-tube facilities, software like Skype, goggle talk and others for video conferencing and social networking sites should be what the teachers are supposed to know how to operate for educational purposes in teacher education.

2. Teachers with scientific attitude: Possession of scientific attitude is very important for teachers so as to have good observation skill, as well as problem-solving skill by being optimistic. Scientific attitude will help the teachers to deal positively with failures which she will get while working on this innovative concept; and will help to analyze the conditions objectively. This right type of scientific temper will automatically filter from teachers to students in teacher education.

3. Teachers with wider outlook and positive approach towards change: Teachers need to have a wider outlook; and as well, be flexible for the success of blended learning process as an innovative idea. They should be ready to accept the changes that have positive approach to innovation. They should also be dynamic by accepting the positive innovative change in teacher education.

4. Complete facilities for video-chatting: Well - furnished computer laboratories, internet connections as well as provision for video-chatting are all compulsory factors of blended learning. Blended learning largely depends on infrastructure. In other words, schools should not only have good classrooms but should also, have well – furnished computer laboratories with sufficient number of computers to cater for all the students of one class and the internet facilities, a Wi-Fi campus, if possible, in teacher education.

5. Access to internet through private computers: In as much as schools have fully ICT friendly campuses, students should have basic hardware support to learn online and offline at their various and private residences. This requires a positive attitude and good investment schemes in teacher education from the government.

6. Flexibility in the system: The teacher education system should be flexible in terms of flexible time table, and examinations. This is very crucial for implementing blended learning.

7. Fully aware and agreed parents: The parents and guardians should be made to be aware of this innovative approach to teaching so that they will be ready for it and support their wards for the blended learning. They should also be made to accept that, this deviation from traditional teaching to technological teaching is beneficial for their children in teacher education.

8. Formative evaluation and continuous internal assessments: The school authorities and higher educational bodies should be ready to completely implement continuous internal assessment and other tools of formative evaluation as summative evaluation is not supported in blended learning. The provision should be made for online examination for making the system more flexible.

Having discussed the prerequisites of blended learning, what then are the advantages and disadvantages of blended learning?

Advantages of Blended Learning

The following, among others, are the advantages of blended learning:

1. Teachers and students get more time in the classroom for creative and cooperative exercise; since learning is done through ICT, online or offline mode.

2. Elements of social interaction and human touch of traditional teaching are gained by students when they are involved in online learning and Computer-Assisted Instruction (CAI).

3. Mere following traditional approach, communication is limited. Suffice it to say that communication cycle is made complete in blended learning. In other words, blended learning provides more scope for communication and interaction.

4. Students become more techno-savvy and as well, more enhanced in digital fluency (Lalima & Dangwal, 2017).

5. Some qualities like discipline, self-confidence, self-motivation and self-responsibility, are all developed in students as they have more strengthened professionalism.

6. Blended learning updates course-content, as well as gives new life to established courses.
7. It allows for personalized education, replacing the model where a teacher stands in front of the classroom and everyone is expected to stay at the same pace (Gasper, Green, McNeil, Phillips, Preston & Woo, 2008).
8. It also allows students to work at their own pace, making sure they fully understand new concepts before moving on (Gasper, et al., 2008).

Disadvantages of Blended Learning

On the other hand, blended learning poses some drawbacks as follows:

1. Information technology (IT) literacy can serve as a significant barrier for students attempting to get access to the course materials, making the availability of high – quality technical support paramount (Jacob, 2011).
2. Other aspects of blended learning that can be challenging are group work because of difficulties with management in an online setting.
3. Providing effective feedback is more time-consuming (and can be more expensive) when electronic media are used, in comparison with traditional (paper-based) assessments (Jacob, 2011).
4. Using e-learning platforms can be more time-consuming than traditional methods and can also come with new costs as e-learning platforms and service providers may change user fees to educators (Gasper, et al., 2008).
5. Another critical issue is access to network infrastructure. Although the digital divide is narrowing as the internet becomes more pervasive, many students do not have pervasive and ubiquitous access to the internet – even in their classrooms. Any attempt to incorporate blended learning strategies into an organization pedagogical strategy needs to account for this.
6. From the explanations given below, it is believed that anything that has an advantage must have a disadvantage. Blended learning, as an innovative technique, is immersed in computer-assisted instruction (CAI), where information communication and technology are seen as the mitochondria (or power house) of the whole system. What then is information communication and technology (ICT)?

The term 'information and communication technology' has been defined in various ways by different educational technologists, erudite scholars and academicians. According to Obanya (2002), ICT is a broad term that has to do with the harnessing of process, the methods and the product of electronic and communication related technologies (and other related resources in today's knowledge driven society), for enhancing the productivity, the spread and efficiency of a set of determined goals. ICT can also be viewed as the combination of networks, hardware and software as well as the means of communication, collaboration and engagement that enable the processing, management and exchange of data, information and knowledge (Ike , 2015). Supporting the above view, Iwu (2015) opined that ICT can be seen as a way to describe exciting and innovative ways to provide lifelong learners with global access to information, learning and support. Talawar (2011) construed ICT to be a diverse set of technological tools and resources used to communicate, and to create, disseminate, store and manage information. Put differently, Okoro and Ali-Okoro (2016) opined ICT as a term used in the combination of information dissemination, application of electronic devices like radio, television, hardware and software etc for enhancing skills, competencies and knowledge in the society and the world at large. From the above deductions, one can simply deduce that ICT is the type of technology which conglomerates the employed electronic devices for the upgrading and enhancing of already acquired skills, attitude, attributes and knowledge of the users in order to encourage efficiency, accurate development of the user (learner) vis – a – vis communication dissemination ethics, manipulation of devices and transmission of information for the enrichment of decision-making, communication development, knowledge, attributes, skills and problem-solving capability of the learner (user). ICT devices can also be used while delivering instruction in teaching-learning environment.

Instruction as a term, has been given various meanings by erudite scholars. Instruction consists of leading the learner through a sequence of statements and restatements of problem or body of knowledge that can increase

the learner's ability to grasp, transform and transfer what he is learning (Bruner in Imogie, 1988). The process whereby the environment of an individual is deliberately managed to enable him learn to emit or engage specified behaviours under specific conditions or as responses to specified situations can also be termed 'instruction '(Ike, Iwu & Anulobi, 2017). According to Okwo (1995), instruction involves two major activities in teaching-learning process, namely; teacher activities and learner activities. The teacher activities are those activities that dictate the learner activities such as design, development, implementation as well as evaluation, while the learner activities are those activities that involve reading, observing, writing, speaking, interpreting, thinking, memorizing, differentiating, discussing, among others. From the above discussions, one can simply deduce 'instruction' to be a systematic process of combining teacher-activities as well as learner-activities in a classroom situation through the creation of an enabling teaching-learning environment where the students carry out, interpret, implement, speak, memorize, differentiate, write and discuss what they were unable to do with the professional assistance and guidance of the teacher. Instruction has elements as opined by Ike et al (2017) which include general knowledge, previous knowledge, objectives, resources, presentation and evaluation.

Teacher education is the type of education given to would-be teacher through formal and systematic process for future task. Teacher education is the form of education which is properly planned and systematically tailored and applied for the cultivation of those who teach or will teach, particularly, but not exclusively, in primary and post primary levels of education (Okafor, 1988). Onyemerekeya (2002) described teacher education as an academic curricular configuration designed solely for the preparation of teachers, school administrators and supervisors, and school guidance counsellors. Izuagba and Obiefuna (2008) defined teacher education as the type of education which includes all programmes specifically designed to help teachers already in the service to continuously update their knowledge, skills and attitude in order to meet up with continuing changes in methods, course contents and resources used in teaching. Teacher education is also the process by which prospective teachers are given the opportunity to develop cognitive perspective, affective disposition and psychomotor competencies that will imbue them with confidence, and capacity to teach and carry out other teaching related activities effectively and efficiently (Ipaye, 1996). Teacher education can also be regarded as the professional education of teachers to equip them with the right attitudes, skills and knowledge which will make them to embark on their responsibilities efficiently and effectively, focusing on the needs and aspirations of the society at any time (Osuji, 2009).

Mkpa (2015) described teacher education as procedures designed to equip teachers at the pre-service and in-service level with the knowledge, attitudes, skills and competencies they need to perform their professional duties successfully as teachers wherever they may find themselves. Furthermore, Okoro (2015) construed teacher education to be seen as those experiences one undergoes that are planned and channelled towards acquisitions of competencies for effective teaching. Here also, the learners are well equipped with the qualities, capabilities and capacities for effective impartation of knowledge. From the above deductions therefore, teacher education can be described as an educational programme that is designed and prepared formally and systematically to involve the process of equipping teachers (pre-service and in-service) with the necessary professional tips, skills, attitudes, educational reforms/changes/innovation and knowledge needed for upgrading them to carry out their professional duties and responsibilities in the teaching-learning environment.

The following, among others, shows a list of institutions that train teachers in teacher education as opined by National Policy on Education (2014):

1. Colleges of Education
2. Faculties of Education,
3. Institutes of Education,
4. National Teachers' Institute
5. Schools of education in the Polytechnics,
6. National Institute for Nigerian Languages (NINLAN),
7. National Mathematical Centre (NMC).

These institutions are given the charge to create programmes that will equip the teachers to become more effective in the classroom.

Teacher education can be categorized into two, namely; pre-service teacher education and In-service teacher education. Pre-service teacher education is the type of teacher education that is responsible for the fundamental background grooming of aspiring teachers for the acquisition of substantive foundation of curricula content and pedagogy as well as professional values expected of teachers in whose hands the future of the children and the nation are entrusted. Eyisi (2002) supported the above definition opining that pre-service training is the training teachers receive prior to their teaching service and the programme is specifically planned for would-be teachers (teachers who are not already in the field). The objectives of pre-service teacher training include – the provision of course instruction and learning which are directed towards the provision of well qualified and suitable teachers for our educational system; raising the standard of teaching; shaping and modifying the attitude of young student-teachers for teaching profession; organizing seminars, workshops, conferences, study groups and other similar related activities for the purpose of promoting effective teaching and learning; identifying themselves with the difficulties associated with teaching profession; and providing/offering solutions to their problems through research.

In-service training, though related to pre-service training, is the training acquired after the completion of the pre-service training. The essence of in-service training is to enhance the professional development of teachers (Eyisi, 2002). It can also be referred to as on-the-job training programme because it includes all professional development activities or programmes which the teacher undergoes after initial certification and recruitment. In-service training is of different types, namely; seminars, workshops, net-working, building teams and cascade groups (aimed at making the teachers to be aware of developments in their areas of specialty and pedagogy). Dankwa in Izuagba and Obiefuna (2008) identified the objectives of in-service training as follows – elimination of weaknesses and deficiencies in the teaching-learning habits of teachers with its consequential effects on pupils; reinforcing academic and professional capabilities of teachers by supplementing pre-service training; introduction and entrenchment of new but useful method, concepts and practices through the formulation and development of syllabuses sponsored or initiated by teachers, subject associations and other education personnel; making the teacher more effective and productive in the classroom by making him confident through the initiation of programmes aimed at up-grading the teachers' professional qualifications; inculcating in the teacher a committal to meaningful and purposeful changes and innovation through the development of professional skills and the formation of professional attitudes; availing the teacher to be up-to-date, adaptable and flexible by making him aware of contemporary educational trends, practices and national educational policies.

There are basic specific steps teachers can take to integrate ICT with instruction in teacher education through blended learning as an innovative approach. These steps of integrating ICT with instruction in teacher education, among others, include:

a. The ability of students to understand the technology they will be using: Students are trained by the teacher-educators in teacher education institutions on the use of ICT facilities during instruction through blended learning. Teacher educators, through blended learning as an innovative approach, train technology – savvy students to meet up with the challenges and trends in the technology-filled world. Through this, teachers use ICT facilities (computer, laptop, internet services) with instruction to monitor and provide the students with instant personalized feedback each day. As a result of this, the teachers and/or teacher-educators serve as facilitators as they manage the projects of the students, establish a learning goal; move the students and the classroom environment forward through blended learning. In order to achieve this step, the teacher sets time frames, establishes goals, and ensures that students have access to the dashboard, so that they can track their own progress through blended learning. The integration of ICT with instruction, helps to keep every student on track, but it is pertinent to note that technology cannot replace a skilled and knowledgeable teacher.

b. Creation of a data-driven culture: Data is very essential in a technology-driven environment. Creation of a data-driven culture entails the participation of teacher-educators to keep data

clean and well organized thereby supporting a belief that good data are an integral part of teaching and learning. Succinctly put, orderly information can be created from disorderly settings. In order to promote the integration of ICT with instruction through blended learning, teachers need to ensure that they have all the information they need to personalize student-learning thereby using data to group students by need, give meaningful praise and recognition and hold students accountable. Teachers also need to use data to involve parents and guardians in their children's education.

      c.   Formulation and setting of high expectations: Through blended learning in teacher education experts like DeWeerd and Kuhns (2010) agree that communicating the content of the blended learning programme, its process, and the clear - high expectations formulated and set for students are essential for success in courses offered. The formulation and setting of high expectations for the integration of ICT with instruction through blended learning in teacher education entails the following: establishment of academic and behavioural roles, rules and responsibilities for all students; articulation of how long; definition of the conditions under which students will receive whole-groups, small-group and one-on-one instruction; establishment of standards for acceptable and unacceptable work; definition of behaviours that will and will not be tolerated; and articulation of the support that is available under what conditions students can obtain it. Through the formulation and setting of high expectations, students are easily and usually motivated as well as have the freedom to work as they learn and get engaged in the blended learning programme.

      d.   Planning offline activities carefully: In a blended learning environment, teachers take on more complex roles, working with real-time data, assessments, software and content from a myriad of sources to ensure that their students get the richest education possible. In planning and structuring offline activities carefully, teachers support greatly the development of students as e-investigators, e-writers, and e-collaborators. Face-to-face instruction is made interactive by engaging students in learning both on- and offline activities thereby encouraging teachers to give good advice, focusing on content, brainstorming and enhancing community. When offline activities are planned carefully in teacher education institutions through blended learning as an innovative approach by thoughtful teacher – educators, both formal and informal face-to-face activities that comprise a set of coherent and interrelated features become or form the cornerstone of a blended learning classroom. Put differently, activities involved here include whole-group and small-group instruction, organized, coaching and mentoring, role play and simulation that engage students in critical thinking, debate, problem solving, writing, analysis and reflection.

      e.   Promotion of deeper learning and checking understanding: When students are fully involved in the understanding and principles behind specific facts and concepts, deep thinking and transferable knowledge emerge. Through social interactions among people, knowledge is constructed. In a blended learning environment, the true understanding of the concepts comes from the teachers through deep thinking. Succinctly put, technology, through ICT, is part and parcel of teaching students the facts and concepts. In teacher education, teacher educators are seen as the information carriers who turn information into knowledge thereby building deep thinking strategies and positive attitudes towards learning that have been shown in order to enhance deeper learning. Development of students' learning habits comes from the teachers who support complex learning for their students through their own deep understanding of their subject matter; knowledge of students' common ideas and misconceptions related to the subject matter; knowledge of the thinking of individual students; sensitivity to cultural, ethnic and gender differences; knowledge of how children learn; and flexible, adaptable teaching strategies to engage learners. Teachers will be able to help students verbalize their thought processes, correct misconceptions, and resolve problem-solving deficits (resulting in students who have deep knowledge of a subject, topic or concept) when these skills are used in a blended learning classroom through the integration of ICT with instruction in teacher education.

      f.   Imparting metacognitive and self-regulation skills to students: In a blended learning environment, the cornerstone of success is the ability of the students to take ownership of their learning. This also requires the teacher to help students to understand, not simply the course content, but also the learning strategies needed to succeed. When blended learning is introduced to students through the

integration of ICT with instruction, metacognitive skills are often the first they must learn, as they are essential to deep learning. Here, the teacher becomes a guide, mentor, coach and support in these situations, helping students to learn about learning, and, as a result, take ownership of their success. Put differently, the most important aspect of metacognitive learning is the ability of the students to question, monitor and explain their own learning. Metacognitive and self-regulation skills are mainly taught by the teacher educators who perform the major role of teaching the students to understand their own learning and evaluate their own confusion through blended learning by integrating ICT with instruction in teacher education.

g.   Improve active participation of students: Engagement of students in the classroom brings about academic persistence and positive success. Blended learning classroom is specifically designed to encourage active participation of students through the use of vibrant technological (ICT) facilities, self-directed lessons and providing students with ownership of their education. Capturing the attention of students and priming curiosity at the start of the course; establishing a teaching presence both on- and offline; engaging students in challenging authentic, real-world tasks; monitoring and identifying disengaged students and having personal contact with students improve active participation of students and as well, enhance learning outcomes through blended learning. These tasks are further achieved by integrating ICT with instruction in teacher education.

h.   Monitor Data: In recent times, teachers, teacher-educators, researchers, erudite scholars and academicians use data in gathering information. Data are a crucial component of blended learning experience. Students are monitored as they work, allowing teachers to see in real time; where every student is and how they (the students) perform through blended learning environment; are all done through monitoring of data. Through monitoring of data in teacher education, the teacher finds out when the students are behind schedule in covering a course outline or scheme of work. Monitoring data helps learning on a number of levels through blended learning thereby helping teachers know exactly where and how they are needed, helping students to meet and overcome academic challenges and keeping students accountable for their own learning. Monitoring data addresses academic achievement as well as acting as benchmarks for engagement. Students are also taught to access and examine their own data, set and update their own learning goals throughout the year. Data, in blended learning, are used to drive instruction, group students, and monitor assignments in teacher education when integrating ICT with instruction.

i.   Provision of positive feedback to students as well as celebrating success: The mind-sets of students are critically influenced by teachers in teacher education through blended learning by providing positive feedback to students and celebrating success. Teachers, through the integration of ICT with instruction, should emphasize that learning and effort hold more value than a perfect performance, emphasizing that the amount of progress students make individually is more important than how they compare with others; should provide targeted feedback for students to correct behavior that might impede success; and praise students for elements that are within their control. Such efforts should include challenge-seeking, persistence and good strategies rather than their personal traits or abilities. Through blended learning, positive feedback as well as positive academic achievement cannot be far behind when students participate actively or engage in classroom activities, as well as in teaching-learning environment.

j.   Encouragement of Online discussion: Through blended learning, with the integration of ICT and instruction in teacher education, online discussion encourages the students and their peers. This gives them ample opportunities to reflect on the contributions and opinions made by their classmates while creating their own ideas, as well as reflecting on their own writing before posting it. This creates certain mindfulness and a culture of reflection in online courses. Encouraging online discussions among students in teacher education through the integration of ICT with instruction in blended learning environment, facilitates learning by analyzing students' data. This is done through assessing students'-work trends, successes and challenges; checking each student by e-mail and/or phone to ensure that the data reflects learning; responding to student and parent e-mails with questions and concerns about content and technology. Further activities include differentiating instructions for individual students who require special assistance. Students in any blended learning environment are diverse and have unique needs. Through blended learning environment, students understand their experiences through their classmates'

contributions. In teacher education, online discussions allow students to continue to learn; experience and pass information on to fellow students.

Conclusion

Integrating classroom activities with online experiences shows a natural trend of academic development in the world globally. There are so many different cultural practices as well as individual differences among students in their course of learning through face-to-face and online practices of teaching and learning. This paper therefore examined blended learning as an innovative approach to the integration of ICT with instruction in teacher education. Meaning, characteristic features and pre-requisite of blended learning; instrumental innovative approach to blended learning; advantages and disadvantages of blended learning; concept of Information and Communication Technology (ICT), instruction and teacher education as well as integration of ICT with instruction in teacher education through blended learning as an innovative approach were all discussed extensively and thoroughly.

Recommendations

Based on the above discussions, the following recommendations, among others, are made:

1. Students should be provided with regular opportunities for both public and private online interactions with instructors and peers in teacher education.
2. As ICT is being integrated with instruction in teacher education through blended learning, experimentation, divergent thinking, multiple perspectives, complex understanding and reflection in online discussions through provocative and open-ended questions should be encouraged by teachers to be practiced by students.
3. School administrators, as well as authorities, in-charge of education in the country should try as much as possible to provide the necessary ICT facilities to schools so that students can have the ample opportunity to learn online so as to enhance positive and quality production of academicians in the country with high level of technological competencies.
4. Teacher training programmes, both in-service and pre-service, have to be re-orientated to prepare teachers for blended learning approach.
5. There should be provision of sufficient fund (finance) and efforts to be put in for various projects to provide education for all, and to re-direct all levels of learning in institutions for blended learning to solve many problems simultaneously. Both finance and efforts should be fully utilized.
6. All educational authorities in the country as well as managements of educational institutes need to be dedicated in carrying out their duties towards teacher education by putting all hands on deck in implementing blended learning with ICT in order to enhance teacher professionalism in diverse areas of specialty.

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OFFLINE APPS FOR TEACHING AND LEARNING IN A BLENDED LEARNING ENVIRONMENT

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Abstract
In recent times, research has been conducted in relation to blended learning; this innovative learning environment is faced with various challenges; one of such challenges is the lack/poor Internet connection. Some results of the studies conducted revealed that Internet connection is one of the challenges confronting the use of blended learning for teaching and learning. Whereas, some offline applications and tools could be used in case of lack or low Internet connection. In this paper, therefore, the authors will provide a list of offline applications and tools that have been found useful in a blended learning environment. Specifically, the paper will examine the concept of learning application and offline applications; challenges to blended learning vis-à-vis Internet connection; and identify some offline applications, and tools teachers and students can use in a blended learning environment. In conclusion, the authors will make recommendations on how to blend technology into teaching-learning process in a situation where there is lack or poor Internet connection.

Keywords: Offline application; Teaching and learning; Blended learning environment.

Introduction

In recent times, there have been efforts at all levels of education across the globe to blend technology with the face-to-face method of teaching in a classroom dominated by technology. The introduction of technology to teaching and learning has provided interactivity, personalisation and engagement which are lacking in the face-to-face learning environment (Reshetilo, 2018). The advent of technology, especially the Internet has made integration of online learning into face-to-face learning available, thereby facilitating learning outside the four walls of the classroom. The integration of online learning with face to face learning led to the term blended learning, this term was surfaced in 2000 in Google scholar (Gyamfi & Gyaase, 2015). Blended learning in a simple term is the combination of the traditional face-to-face learning environment and online learning environment.

Despite the benefits of blended learning when compared with either face-to-face or online learning, educators are all aware of the challenge of lack or poor Internet in a blended learning environment. For instance, the result of the studies conducted on blended learning among College of Education (COE) lecturers revealed that 60% of the sampled respondents indicated lack of Internet connectivity would affect blended platform (Olusanjo, Buraimoh & Omidina, 2018). In another study conducted by Obielodan, Amosa and Ala (2018), lecturers in COE indicated their willingness to integrate blended learning despite poor Internet coverage. Integrating blended learning despite poor Internet connection can only be achieved when lecturers are aware and make use of offline applications.

One of the best things about blended learning is that teachers and students can work anywhere, that is, within and outside the four walls of classroom. This can only be possible when there is reliable Internet connection

to access online contents. In the case of low Internet connection, students are likely to be frustrated when it takes too long for the app to load (Melamed, 2018).

But in a situation where there is Internet service failure, teachers and students will need offline tools and application to work. Given this, in this paper, the authors provide a list of offline tools and applications that can be used in a blended learning environment. In this paper, the terms limited access to Internet facilities; lack or poor Internet; slow Internet speed; lack of Internet access and unreliable Internet connection or connectivity will be used interchangeably.

Barriers to Blended learning

Like any other learning environment, blended learning is identified to face some problems. For instance, students' lack of Internet access away from school, teachers' lack of confidence in using digital tools and a murky research base for blended learning have been identified by Education week (2015). Also, in the views of Gyamfi and Gyaase (2015), the barriers to blended learning include slow Internet connectivity which may affect access to online learning materials, the high cost of Internet access outside the school, technology ownership type and use.

Although there are myriad barriers to blended learning, but the most common barrier is the lack or poor Internet connectivity, this assertion can further be seen in the works of researchers like Mtebe and Raphael (2013), Olelewe (2014), Protsive, Rosales-Klintz, Bwanga, Zwarenstein and Atkins (2016). In a blended learning environment, teaching and learning do not only exist in the classroom but also outside the classroom. This feature of blended learning may not be readily accomplished in a developing county like Nigeria as a result of students' lack of Internet access within and outside the school. Since blended learning is the combination of online and face-to-face approaches, accessing online resources within the classroom environment may pose difficult where there is lack or poor Internet connection. In a situation where Internet connection is available, some courses contents, which contained animation and video clips, may not play well due to slow Internet speeds (Mtebe & Raphael, 2013). In the views of the authors, the need to deploy offline apps and tools to address the problem of Internet connectivity is necessary.

What are Learning Apps and Offline Apps?

App, the short form of software application, is a computer software program to run on devices such as tablets, phones and watches. Apps that can be used on different devices such as Smartphone, tablet and laptop are very useful for blended learning. Since blended learning involves both online and offline contents, for effective integration of the blended learning, students and teachers should not be limited to learning content when only they are online (Velasques, 2015). Learning app will be taken in this paper to include software applications which run on mobile devices such as a Smartphone/tablet or watch (mobile apps) and desktop computers (desktop applications) used in teaching and learning processes.

Learning apps are effective learning tools, which are mostly designed primarily by educators and curriculum developers. Learning apps can operate both online and offline. Online learning apps require wifi or Internet connection to run the application. Mostly, online learning apps require no download or software installed to use them on devices (Small and Medium Business Corner (SMBC), 2017).

The major advantage of online learning apps in blended learning environment is that, online learning apps can provide updated information to teachers and students as it connects to the back-end servers to get the real-time data (SMBC, 2017). The disadvantage of online apps is that they need Internet connection always. Even in a situation where internet connection is available, the issue of low Internet connectivity when there are a higher number of users using the network connectivity is another drawback. That is, the higher the network users, the poorer will be the performance of online learning apps (SMBC, 2017). Since strong and reliable Internet connection is one of the barriers to blended learning in most of the developing nations, the need to adopt apps that don't necessarily need Internet all the times are required in a blended learning environment.

Offline apps unlike the online apps run in the absence of Internet connection on devices. In this paper, Melamed (2018) definition of offline apps as the mobile apps that work offline as well as online will be used. Offline apps are the apps that work even when Internet connection gets disconnected and resumes when the connection is restored. Different terms have been used to describe offline apps, this include "Offline-first" (Melamed, 2018) and "native apps" (SMBC, 2017). Worthy to note about offline learning apps is that, this type of app requires Internet to download learning contents during initialization and they later connect with the back-end to synchronize the update.

In a blended learning environment, the most common reasons why offline is required according to Melamed (2018) are that no roaming cost will be incurred when travelling; no monthly data usage on maps, quick loading time; and save battery life which usually gets more used when travelling. Also, offline apps are required in blended learning environment due to their capability of working when the connection is low, slow, flickering or not working; these capabilities are the best advantages of offline apps (Shah, 2018). Another reason why offline apps are needed in a blended learning environment is that, with offline apps, teachers and students will have good access to user-created content that does not change frequently and therefore, doesn't require constant updates.

Since most apps work best when they have good Internet or Wi-Fi connection, offline apps can work with or without an Internet connection. In a situation where the content is available on the server, offline apps move content off the server onto the phone. With this, the offline apps go to the server when it needs rather than every time. One of the advantages of blended learning is having access to learning materials outside the physical classroom environment. However, in a situation where a student is on a plane or remote area, he/she should be able to have access to learning contents even without Internet connection. In this case, students and teachers need apps that will work well both in online and offline situations. With offline apps, teachers will be able to add learning content and grade assignment, likewise, students will be able to read learning contents and do the assignment when they are offline. These capabilities will make teaching and learning continue even when Internet connections are not available.

Offline Apps for Blended Learning

In using offline apps for blended learning, the user needs to go online to download and save the content to the phone. Some of the apps that can be used both online and offline in a blended learning environment which have been tested by the authors include Pocket; this app can be used on a laptop, iPad and iPhone, that is, it is a cross-platform app that can be used to save online content for later use. To use Pocket, the user simply presses the pocket web extension, and the contents will be made available on all the devices that have the pocket app. With the Pocket app, learning content on other apps can easily be saved for later use irrespective of where the student is.

Evernote is another great cloud-syncing note-taking app that has been found useful in a blended learning environment. With Evernote, teachers and students can perform activities like writing, recording voice notes, saving images and documents which can be referred to in case of slow Internet connection. Other added advantages of Evernote for teaching and learning in a blended learning environment are an annotation, chatting and group sharing of learning materials. With Evernote, teachers and students can also access and edit notes when offline.

Making the list of offline apps for teaching in a blended learning environment is the Canary Learning. Canary Learning is an important offline app which can be used in a blended learning environment. This app can be used to grade and check assignment when the teacher is offline; this feature makes Canary Learning one of the most useful grading tools that could be used in a blended learning environment. The major advantage of this app is that it can be used for grading without a network connection and synchronizes work when network coverage is available. The ipad version of Canary Learning support full offline functionality. It is cross platform cloud syncing app, with Canary Learning teacher can edit lesson, make schedule or school assignment on laptop to student to all students' devices, which can be accessible by students when they are online. With this app, teacher does not need to manually synchronize their work, press a button, or remember to save to their computer or a cloud drive (Gupta, 2017).

iBook is another offline app that can be used in a blended learning environment in case of lack or low Internet connection both within and outside the school environment. iBook is an iOS app, which is good for storing PDF document for offline reading. iBook has features that can be selected by the user to personalise. For instance, teachers and students can choose from the various attractive fonts and for easy-to-read page colour, add bookmarks and notes, and highlight familiar passages, find a work, character, or phrase anywhere in the selected book with built-in search; and turn on auto-night theme to make reading more comfortable to the eye.

Another offline app that can be used in a blended learning environment is the KA-Lite. KA LITE is open source software that runs on the local server. This app is an offline version of khan Academy, which offers high quality learning accessible to the offline users. With KA LITE, teachers and students can watch Khan Academy videos and do exercises as well as track student's progress without Internet connectivity (Gupta, 2017).There are over 7,000 videos and 20,000 interactive exercise covering subjects like math, science, history and economics in about ten different languages on KALITE. This offline app can be used for individual learning at home, school and on the road. Other features of KALITE include self-paced learning, individual feedback and data syncing. Offline apps such as Book Creator can be used by kids to create their stories and publish books. Also, there are offline apps that can be used to teach specific subject and concepts. For instance, Number Pieces and Foldify can be used to teach math manipulative skills and geometric figures where there is inconsistent Internet access (Burns, 2016).

Conclusion

In this paper, the authors have provided offline apps that can be used to maximise the benefits of blended learning in the face of lack of Internet connection, which is one of the greatest challenges facing effective blending of technology in a face-to-face classroom environment. Since blended learning requires Internet connection to access online contents both by the teachers and students, the lack or poor Internet connection has been a hitch in this regard. In order to overcome the challenge of low or lack of Internet connection, the authors provided the list of offline apps that can be used in a blended learning environment.

With offline apps, teaching and learning will not be disrupted as teachers will be able to send assignment and grade students even when they are offline. Likewise, students in a blended learning environment will be able to have access to course contents both within and outside the classroom without Internet connection. Also, offline apps enable teachers and students to have access to learning materials and perform other activities when Internet connection is lost, at the same time synchronize work across devices when Internet is restored. It is worthy of note that although Internet will be required to download the app and to get online content into the users' devices.

Recommendations

Our discussion on offline apps for teaching in a blended learning environment have a number of important lessons and implications for students, teacher, teacher educators and institutions willing to adopt and blend classroom teaching and learning with technology in the face of the challenge of lack or low Internet connection. In view of the evident roles of offline apps in the blended learning environment, the authors recommend that teachers and teacher educators need workshop on how to develop learning apps which can be used offline in the situation of lack or low Internet connection. Institutions of learning should make improvement on ICT infrastructure and capacity building for lecturers and teachers to adopt blended learning with offline apps. Again, we recommend that learning apps should be "offline first" apps, and institutions willing to adopt blended learning should make use of Open Education Resource that can be used to forestall the problem of credential.

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ONTOLOGY AS A VISUALIZATION TOOL FOR EFFECTIVE LEARNING IN NIGERIA

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Abstract

The use of visualization tools for learning is regaining its popularity of the years. This is because researches have shown that visualization is more powerful that words. Visualization is any technique use for creating images, diagrams, or animations to communicate a message or teach. This research employed Ontology as a visualization tool for learning in Nigeria. Although there are various visualization researches in recent years, but further research is needed to improve the effectiveness, efficiency of the visualization approaches used for learning. Protégée ontology editor will be is used for evaluating the approach in this research. The result has shown that Ontology is an effective tool for effective learning through visualization.

Keywords: Ontology, Visualization, Protegee. OntoGraf

Introduction

Researches have shown that traditional ways of exchanging knowledge using text among people are probably not sufficient any more. Using mainly text and numbers has proven to be less understood than using knowledge visualization. Knowledge Visualization is a field of knowledge management whose main goal is to transfer and create new knowledge through using visualizations such as graph, image, and video among others. These visualizations do not necessarily have to run on computers - some visualization methods were used a long time before the invention of information technology such as using painting and images [1]. Today there are various software tools built to support the transfer of knowledge using visualization process. In this paper, ontology is used to represent knowledge in graphical representation using protégée ontology editor for teaching and learning in Nigeria.

Ontology can simply be seen as the study of entities that exist in the real world, and the things they have in common. Objects of domain and identified and their relationship. For example ontology of University domain will contain various object that are found in the University and these objects are related to each other such as faculties, departments, unit among others. In ontology, these objects in the University will be related via relationship. For example computer science, is a department in Faculty of science. Therefore, Ontology facilitates standards for integrating and sharing data in a conceptual schema. Objects, entities or concepts are identified and annotated with the relationships that exist between them [2]. Ontology enables representation of knowledge in graphical representation that enables visualizing knowledge in a domain. There are different tools that enable visualization of ontology of domain. In this paper, Protégée ontology editor was used to presents Nigerian Geographical entities in a graphical representation. Using the graphical representation, Teacher can teach students using visualization. In this work, Student can easily visualize and learn about different Nigerian Geographical entities such as the popular state and capital we learn in school.

The rest of this paper is organized as follows. Section 2 contains Literature Review. Section 3 contains Ontology for Teaching and Learning Model. Section 4 contains Implementation 5. Finally, section contains Conclusion and Future Work.

Literature Review

Over the years, interactive visualization tools have proven to be an effective means for engaging students in the learning process. Visualization tool enables both teacher and student in an active learning approach to construct a map for the knowledge, concepts, and skills that a learner possesses and those that he/she acquires during each course [3]. There are several knowledge visualization tools presented by various researches for aiding teaching and learning such as in [3][4][5][6]. In this work, Ontology is presented as a tool for aiding teaching and learning in Nigerian schools.

Ontology can be seen as objects that may exist in a particular domain and the relationships that may exist between those objects. These objects and relationship represents the knowledge in a domain represented in a graphical representation. Figure 2.1 presents an example of Company domain knowledge represented in graphical ontology form.
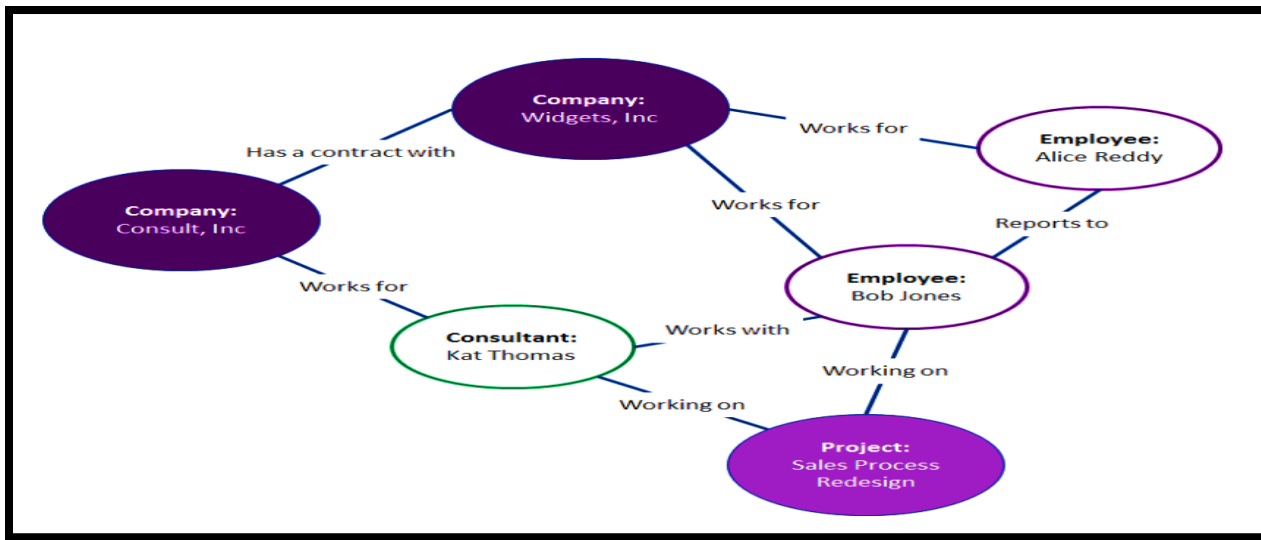

Figure 2.1: Example of Company Domain Ontology Representation

Figure 2.1 shows the graphical representation of ontology representation of a particular company. The ontology enables visualization of various details of the company such, who are the consultants of the company, those companies that have contract with the main company among others. The graphical representation makes it easier to visualize knowledge instead of going through the traditional text representation. In this work, ontology for Nigerian Geography domain is modelled into graphical representation to aid teaching and learning in Nigeria.

There are various tools that enable visualization of ontology in a graphical representation as presented in work of [7]. This work used protégée ontology editor to represents various Nigerian Geographical entities in a graphical representation. The next section will provide comprehensive details of how ontology is used as a tool for teaching and learning.

Ontology for Teaching and Learning Model

In this section, a step by step procedure on how Ontology was used to aid teaching and learning in Nigeria. For experiment, Nigerian Geography Ontology was used to presents various Nigerian geography entities in a graphical representation. Existing Nigerian Geography ontology was used. The Nigerian Geography ontology was then stored in Protégée ontology editor. OntoGraf is then used to visualize the ontology. Protégée provides

capabilities visualizing stored ontology where teacher will use by navigating the graph to show student various geographical entities in Nigeria such as states and their capitals. Figure 4.1 presents graphical representation of the Nigerian Geography Ontology store in the protégée knowledgebase.
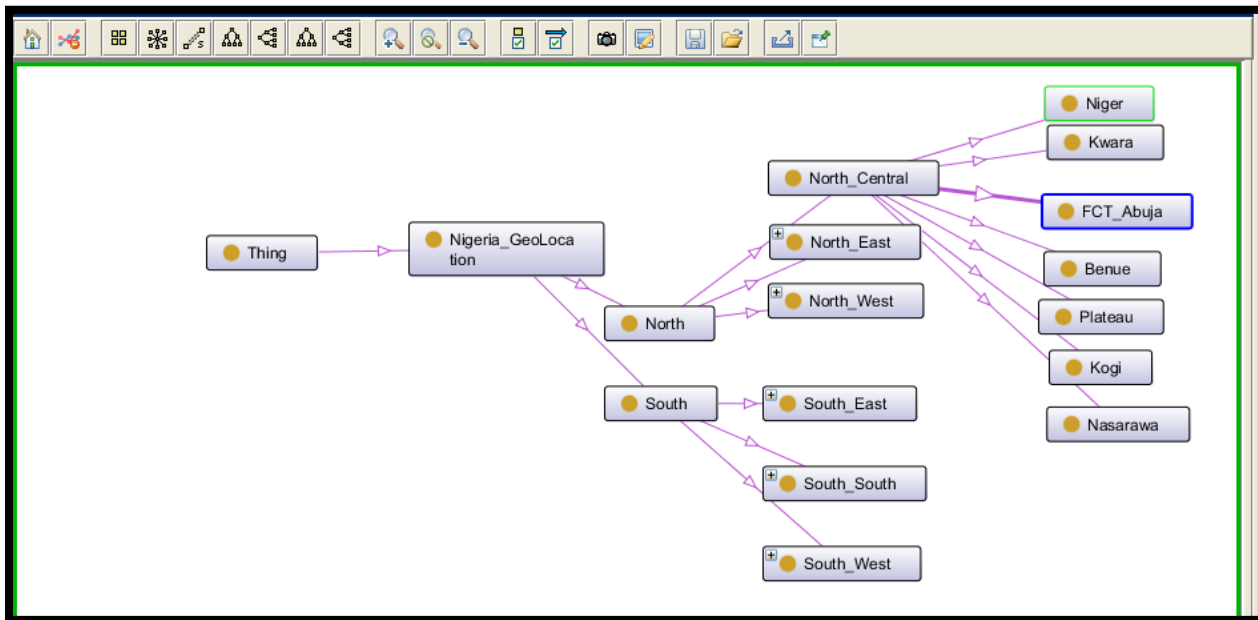

Figure 3.1: Visualization view of the Nigeria Geography Ontology Using OntoGraf

Figure 3.1 presents Nigerian geography ontology presented in a geographical representation using OntoGraf. OntoGraf is a component in protégée that visualize the stored ontology in protégée. As seen in figure 1, "Thing" is the root of the ontology which is the default root in protégée. The Nigeira_geoLocation is the main concept which has sub-concepts under it. Sub_concepts are child nodes of the main concepts. In this Ontology Nigeira_geoLocation has sub_concepts as North and South which is specifying that Nigeria is divided into two regions mainly the North and South. Furthermore, both North and South has sub_concepts as geographical regions that are found in Nigeria. In the North there are three geographical regions; North_West, North_East,North_Central while the South also has three geographical regions mainly; South_South, South_Wesrt,South_East.

These Ontology capabilities will enable teacher to teach students using Ontology editor by navigating through the graph to teach student things like, what are the Geographical locations in Nigeria, the various states we have in Nigeria and their capitals, we   ather futures of the regions in Nigeria , crops that could be found where and when among others. This will makes visualization of knowledge in a domain instead of using traditional text representation

Conclusion

This research has presented a work on the use ontology for teaching and learning in Nigeria. In this work Nigerian Geography ontology is modeled into protégée ontology editor to visualize the ontology in a graphical representation. Teacher can use this graphically represented ontology to teach   student by navigating the over graph instead of traditional text base approach. The visualization approaches prove to be more effective than the traditional text based teaching. In our future work, picture will be added to the graph to give additional visualization capability.

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LEARNING OVER THE WEB USING INDIGENOUS LANGUAGE

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Abstract

In recent years, learning on the Web has taking a different dimension where people access the Web data using indigenous language. This has motivated several researches on Cross Language Retrieval where user can retrieve document using local language and retrieve document is then translated to local language. Today, there are many cross language retrieval systems such as Chinese to English, India to English among others. Most advance countries like china and India people use Cross Language retrieval tools to read English documents such as Journals articles, books and news papers. However, in Nigeria the work is still at its infant stage. This paper presents Hausa-English Cross Language retrieval systems which enables people learn on the Web using Hausa language. This application will go a long mile in improving learning on the Web in Nigeria

Keyword: Cross Language Retrieval, Information Retrieval, Web Documents

Introduction

The Web has become a major source of learning materials for both Teachers and Student. Various institution of learning from primary schools to University has adapted the use of Web and internet for teaching and learning. However with the exponential growth of data on the Web, various documents on the Web are presented in different language. Therefore accessing every data on the Web will require one to have knowledge of how to read and write different languages which complex and time consuming. This has motivated researcher to intensify research in the area of Cross Language Retrieval. Cross Language Retrieval is an application that enables once to use his indigenous language to retrieve documents of different language on the Web. Today, searching and learning on the Web is no longer only based on English language but different language can be used [1]. For example, one may want to retrieve documents written in French or Chinese by using query written in English.

The concept of cross language retrieval will enable teachers and students access data on the Web using indigenous language such as Hausa, Igbo and Yoruba. Teacher can get documents on the Web being translated to his/her language for better understanding. There are various Cross language retrieval Systems that were developed especially Chiness-English, Hindi to English and Arabic-English among others. However, despite the fact that there are millions of speakers of Hausa language all over the World, In fact research has shown that Hausa language is ranked with Swahili as one of the two most important languages in sub-Saharan Africa [2]. This research proposed an application that enables teachers and student access data on the Web using Hausa language.

The paper is organized as follows: Section 1 contains Introduction, section 2 contains Literature Review, section 3 contains Hausa- English Cross Translation Approach, section 4 Conclusions and Future Work and Section 5 the Reference.

Cross Language Information Retrieval has been used over the years to enable processing and retrieval of documents on the Web from one language to another. Cross Language Information Retrieval (CLIR) is very much required; especially when the user only knows how to read or write using native language. There are various applications that enable the use of one language query to retrieve document on the Web using another language. For example typing French query on English based search engine like Google to retrieve corresponding English written document. Retrieving Web documents using indigenous language has increased the level of access of Web data across the globe. The increase in heterogeneous data on the Web, have motivated researchers to intensify effort on the area of cross language retrieval. In recent, several researches have been reported on using indigenous

language to access data on the Web. Researches on using Chinese query to retrieve English documents were reported in the works of [3][4][5]. Works in [6][7][8]presented Arabic- English cross language retrieval approach where Arabic language is used to retrieve English written documents. Malay to English translation systems are found in the works of [9][10] .With the development of these systems, Teachers and Students doesn't necessarily need to know how to speak or write English before they are able to access Web documents. However, despite the fact that there are many African native who don't read or write English, the works on Cross Language retrieval in the region is still at its infant stage. For Example there are millions of speakers of Hausa language all over the World, In fact research has shown that Hausa language is ranked with Swahili as one of the two most important languages in sub-Saharan Africa [2], but not much work has been done on Hausa-English Cross Language Retrieval.

In this paper a Hausa to English Web document retrieval system is presented. These systems will enables for teaching and learning using Hausa. In the next section an approach of using Hausa to retrieve English document for teaching and learning is presented.

Hausa- English Cross Translation Approach

This section presents a step by step procedure of how the proposed systems that enable learning on the Web using Hausa language. Figure 1 presents the graphical representation of the Frame work for Hausa to English document retrieval
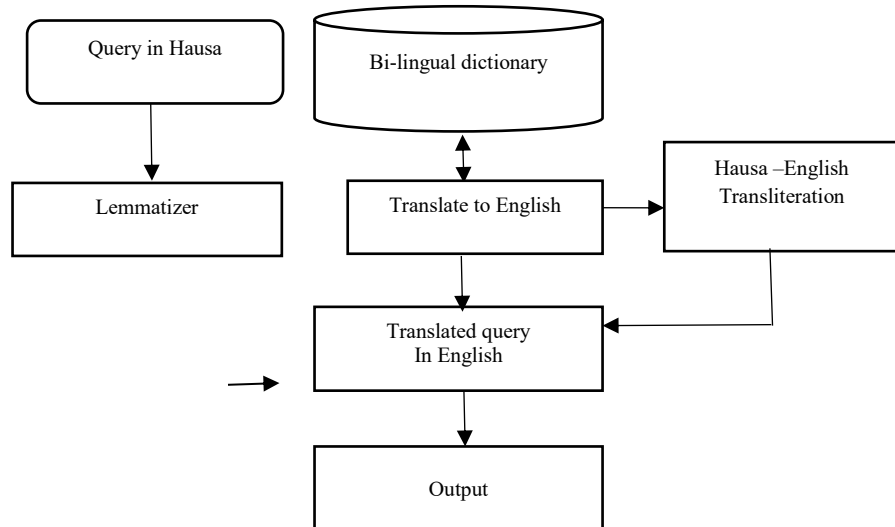
Figure 1 Hausa-English Hausa- English Cross Translation

Figure 1 show the graphical representation of the frame work of the Hausa – English translation approach. The approach has three modules mainly: Lemmatization module, Hausa-English transliteration module, disambiguation module. In the remaining part of this section, a more detail explanation of the modules is given.

Lemmatization Modules

The first step of the approach is lemmatization. Lemmatization is refers to removing inflectional endings of a word to return the words to dictionary form of a word, which is known as the lemma [11][12]. This module converts the Hausa words to their Hausa root words for example the term *fadawa* after passing through lemmatization will be *fada*.

Hausa-English Transliteration Module

After lemmatization, the next module is transliteration module. Many words of English origin like names of people, places, organizations, and abbreviation are likely to be used as part of the Hausa query. Such words are usually not found in the Hausa to English bi-lingual dictionaries. We use a simple rule based approach which utilizes the corpus to identify the closest possible transliterations for a given Hausa word. We create a lookup dictionary which gives the Hausa letter transliteration for each English letter.

Table 3.1:
Example Lookup Dictionary for Transliteration

Au, aw	Alh.	Mal.	ɗiya	ɗ
Eh, na'am	Alhaji	Malam	daughter	d
Yes		Malama		
To, taw	Haj.	**Ƙ**	faɗi	faɗa
Okay	Hajiya	**K**	wide, tell, fall	fight
Ƙarya	Atiku/Abu	ɓ	**Ƙwallo**	ɓarna
False	Noun		**Ball**	
		b		Damage

Since English is not a phonetic language, multiple transliterations are possible for each Hausa letter. In our current work, we only use a single transliteration of some Hausa letters. The English transliteration is produced by scanning a Hausa word from left to right replacing each letter with its corresponding entry from the lookup table. Example: If a query contains terms like "*Alh.Atiku yayi ɓarna*" the transliteration will "*Alhaji Atiku has cause damage*".

Translation Disambiguation Module

Given the various translation choices for the query, the Translation Disambiguation module, out of the various possible combinations, selects the most probable translation of the input query Q_H. The context within a query, although small, provides important clues for choosing the right translations of a given query word. For Example for a query "*Sha gari*" the translation of "*Sha*" {drink} and "*gari*" {flour, town}. Here, based on the context, we can see that the choice of translation for the first word is flour since the combination {drink, flour} is more likely to co-occur in the corpus than {drink, town}. As explained earlier, out of all possible combinations of translations, the most probable translation of query is the combination which has the maximum number of co-occurrences in the corpus.

The approach in the paper enables both teachers and students retrieve English documents on the Web using Hausa language.

Conclusion

In this paper a Hausa to English Document Retrieval system is presented. With this approach, the problem of those Hausa speaking native Teachers or students who could not understand English is solved when trying to retrieve English written document on the Web. Once they can read on write using Hausa they will be able to retrieve English document using Hausa query. This will certainly motivate Hausa native Teachers and student on the access of

various heterogeneous data on the Web. In future the work will extend to other language such as Yoruba, Igbo, and Fulfulde among others.

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BLENDED LEARNING: USES AND ROLE PLAY OF MOBILE TECHNOLOGY TO THE BENEFITS OF BLENDED LEARNING

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Abstract

This paper present opportunities provided by the use of mobile technology for blended learning which is the comparison between face-to-face learning and online learning. Blended learning is not a new concept, it exists in many different forms and is successful in most classroom practices. The widely used definition indicates that blended learning merges face-to-face classroom teaching with online learning activities. With the new educational paradigms shift, here the learner is seen as an active agent. These makes the learner the information seeker. This paper focus on blended learning with the use of mobile technology to co-exist with traditional learning. The specific objectives of the paper is to understand the concept of blended learning, to understand the role mobile technology play in blended learning and to explore the significance of mobile technology in blended learning.

Keywords: Blended Learning, Role-Play, Mobile technology

Introduction

Blended learning which is the integrations of online learning and traditional face-to-face learning is rooted in the ideal that learning is not just a one-time event but a continuous process. Focusing on the incidence where online component becomes a natural extension of traditional classroom learning. Blended learning maximizing the benefits of traditional and online learning method. Blended learning accommodates these two learning styles and preferences. Thorne, (2003) "creating blended learning is about enabling people to see alternatives so that they get different results". Thus blended learning provides options by providing a better match between how a learner wants to learn and the learning program that is offered. Driscoll, (2002) "the importance of the blended learning arises from the failure of poorly online learning to meet the training needs of organizations".

Blended learning combines both online and offline classroom based teaching. When combining online learning with classroom pedagogy it may be hard for the learner to be motivated to learn online on their own without supervision. The learner may not be disciplined enough to compete the part of courses that are online either because they are not tech oriented or they find the technical interface to be difficult. But with the role of mobile technology these challenges can be dealt with.

Collis and Moonen, (2001) defines blended learning as "a hybrid to traditional face-to-face learning and online learning so that instructions occurs both in the classroom and online and where the online component becomes a natural extensions of traditional classroom learning. Blended learning is thus a flexible approach to course design that supports the blending of different times and places for learning, offering some of the convenience of fully online courses without the complete loss of face-to-face contact". Valiathan, (2002) said blended learning is "a solution that combines several different delivery methods such as collaboration software, web-based course EPSS, and knowledge management practices. Blended learning is also used to describe learning that mixes various event-based activities, including face-to-face classrooms like e-learning and self-placed learning".

Garrison, (2004) sees blended learning "courses combine online and classroom learning activities and uses resources in an optimal way in order to improve student learning outcomes and to address important institutional issues". Traham, (2006) says that "blended learning can be defined as the organic integration of thoughtfully selected the complementary face-to-face and online approaches and technology. Blended learning to my understanding is simply the use of technology to augment face-to-face teaching a technology enhanced learning. As technology are changing so is the student themselves are changing too, as the student activities are shaped by the technological environment.

Benefits that blended learning offers in comparison with other forms of learning.

1. Crossing global boundaries: the traditional face to face learning is a single delivery mode which limits the reach of a learning program. The face-to-face learning limits access to only those that are present in the class at that particular time whereas online learning is available to a remote audience and has ability to play back records of the teaching to the reach of those that could not attend at a particular time.
2. Reduce educational cost and time: different delivery mode of learning has the potential to balance and reduce educational cost and time. A full time online course with self-paced, media rich and web based training content maybe too expensive for a learner. But with blended learning a combination of both face-to-face learning and online learning with simpler self-paced materials and recorded live e-learning events, text, assignments and power point presentations require low skill to produce and saves cost and time. Singh and Reed, (2001) said "blended learning focuses on optimizing achievement of learning objectives by applying the "right" learning technology to match the "right" person at the "right" time".
3. Sense of community: Rovai and Jordan, (2004) argued, "the rational was that a combination of face-to-face and online learning environment provides a greater range of opportunities for students to interact with each other and with their professor. These interactions should result in increased socialization, a stronger construction of knowledge through discourse, thus providing stronger feelings that educational goals were being satisfied by community membership". More still Hennik, (2003) said "the immediate feedback, and the many opportunities for personal communication, enables learners to develop presentation and other social skills.

Other forms of benefits include;

➢ Helps in the development of independent learning skills
➢ Allows access to those with distance barriers, jobs, family
➢ Offers flexible timing and convenience
➢ Improvement of classroom utilization
➢ Meets learner's expectations for utilizing technology
➢ Offers a learner centered pedagogy

Mobile Technology

Mobile Technology enhance learning in terms engagement, enjoyment and convenience. Blended learning which is partly online learning and face-to-face learning utilizes the flexibility of mobile device to offers its learners additional learning opportunities. As technology evolves, mobile technology provides more opportunity for learners' resources not be limited to the computer but extended to the use of mobile device that provide flexibility to learning. Mobile technology is said to be any device with internet capability that is accessible from anywhere the user is. Current devices include, smartphones, tablets, laptops. Godwin-Jones, (2011) the freedom of time and location is related to the concept of anytime, anywhere access that agrees the two main characteristics of mobile technology which are mobility and reachability. Abrantes and Gouvele, (2010) many of these mobile technology provide access to learning resources, allowing extensive communication and collaboration that are changing

instruction and learning environment. Zhao, Waldman, Perreault and Truell, (2009) mobile technology has become more versatile user friendly and cost effective. Thus, mobile technology can provide pedagogically designed learning contexts, facilitate learner-generated content both individual and collaborative while providing personalized and global social connection.

Sheng, Slau and Nah, (2010) mobile technology in blended learning is effective learning process. Enables active learning by allowing students to learn anytime, anywhere facilitates cooperation and teamwork by providing functions such as virtual collaboration. Also improve learning by facilitating teamwork and group project and provide knowledge or information from real world.

The Role of Mobile Technology for Improvement of Blended Learning

Those comes in two different form by mobile tech improving access to education while maintaining the quality of the education delivered and also mobile technology improving the learning outcomes by facilitating alternative learning processes and instructional methods (Cochvane, 2010). Personalized learning: mobile technology enables personalized learning by allowing the learner to learn at their own pace, time and place. The more access for resources a learner gets the better it is for the learner to construct their own knowledge. Mobile technology can be exciting and fun to the 21st century learner that is bored by the traditional learning approach. Mobile technology facilitates designs for personalized learning that encourage diversity in the learning process (Sheng, Sian & Nah, 2010)

Collaborative learning: mobile technology helps the learner to communicate with other peers and also to interact the instructor during the instruction and after the instruction i.e. synchronize and synchronized learning. Assignment could be done by group of learners without them seeing face-to-face. They could be in their different locations and still interact with each other and get the assignment done. Mobile technology in collaborative learning creates an environment where knowledge is shared among learners to achieve a common academic goal. (Brindley, Walti & Blaschke, 2009).

Communication: many instructors now use mobile technology in learning because apart from anywhere, anytime response it also facilitates faster response speed between the instructor and the learner. The incomplete or ineffective communication is a barrier to effective learning (Hart, 2012). Instructors quick and timely response and prompt feedback to assignment assure students and promote active learning (Heyman, 2010). Good response between student and instructor and among student themselves result in the improvement of learning processes. Mobile technology provides effective communication between student and instructor. Communication bridge collaboration between students and their instructor and this collaboration is a necessity to a good learning process. Mobile technology allows the learner to open up and interact with each other thereby increasing their chances of learning better through collaboration.

Situated learning: mobile technology allows students to be actively involved in learning because with the mobile technology student can get real-world experience by just a click of a button. Learning does not have to be imaginary anymore. Learners with mobile technology can watch or see pictures first hand of what they are being taught and this creates fun and activeness during the learning even after the learning has taken place. Learners tend to remember what they experience more than what they are just told about in the classroom and mobile technology provides that experience the learners needs for easy remembrance of what is being taught by the instructor.

Mobile and Accessibility: mobile technology removes time and space constraints in accessing learning material. Mobile technology is all about mobility. The ability to learn anytime, anywhere at the learners own pace. Mobility enhances learners who work and school at the same time, take advantage of the mobile technology to catch up with school work, assignment at their own time and place. Mobile and accessibility is all about learning with mobile technology at the learners own convenience. Learning is no longer a static process but learning can still run on the go, anywhere, any place, at any time. Even when travelling, learning occurs with the help of mobile

technology. Students who work and can meet up with classroom teaching can catch up with lectures, assignment using mobile technology anytime and place.

Conclusion

Blended learning is universal, crossing global boundaries and bringing learner with different cultures and time zones together even without physical presences. Mobile technology on the other hand enables any time, any place communication meaning leaners can learn on the go, while travelling on the train or airplane with mobile technology. Mobile technology provides instant or immediate feedback to the learner thereby improving motivation from the part of the learner to remain engaged. Mobile technology has the power to change the instruction and learning method in education. Many educational opportunities are made possible because of the distinct characteristic of mobile technology and it positive impact on instruction and learning process.

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INFLUENCE OF SCHOOL TYPE ON AVAILABILITY, ADEQUACY, AND ICT UTILIZATION FOR CHEMISTRY TEACHING IN ANAMBRA STATE

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Abstract

Introduction

Information and communication technologies (ICT) are electronic gadgets used for storing and retrieving information. In this current age, development to some extent is determined by the ability to establish a mutual interaction between technological innovation and human worth, and this has been made possible through the rapid improvement of ICT in this 21st century which in turn has affected the demands of modern societies ICT also have a significant impact on all other areas of human activity including education. The field of education has been affected by ICT, which have undoubtedly affected teaching, learning, and research (Yusuf, 2005). ICTs can be used to quicken, fortify, sharpen, and propel students to help lift creativity off the pages of books, as well as help in bringing about change in teacher-student interactions in and outside the classroom and thus help accommodate a more student centered learning.

A lot of developments have been seen in most of the leading countries of the world, and this is as a result of proper integration of ICT into their educational system. Considering the nature of 21st century learners that are surrounded by modern technologies like mobile phone, computers, tablets; etc, many nations saw the need to harness all the important aspect of these tools to the best interest of the learner. This brought about inculcating ICT into the learning environment and the result has justified the inclusion. Nigeria being the leading nation in Africa needs not to be left behind in such development and thus there is need to align our education system with the best global practice to attain such feat. Little wonder Anita, Jairo, Odhiambo and Ayugi (2013) explained that education is critical to industrial and technological development, with the history of developed nations bearing records of this, developing nations aspiring to realize the same status have to put a premium on education.

Considering the surge of ICT in most great countries educational system and the impact they have created in the countries development, it is then of most importance to ascertain the nature of such ICTs and its integration in Nigeria secondary schools as they aspire to become one of the developed nations. A lot of research has been carried out on the state of ICT tools in Nigeria; (Njelita and Emendu 2015) stated that the nature of ICT tools in Nigerian secondary schools is nothing to write home about especially in Anambra state, where finding revealed that the tools needed for effective teaching cannot be found in most schools. Abdul-Salaam (2010) in his finding revealed that most secondary schools do not have the needed ICT tools for effective teaching and the little available is not enough for the ever increasing population in schools. This lack of ICT tools has become a major problem in almost all the secondary schools, though (Omenugha 2016) stated that the government of Anambra state has done enough in making sure that these tools are provided to the secondary schools in the state. Due to the ever increasing number of secondary school students and after the recent provision of ICT tools to most public schools, there is a need to ascertain the adequacy of government provision across different public schools and the effort of private schools.

On the adequacy level of ICT tools, Research works have shown that most secondary schools have either insufficient or no ICT tools to cater for the ever increasing population of students in the schools and where they are available, they are by implication a matter of out-of-bounds to the students (Chattel, 2002; Cheng, 2003; Chiemeke, 2004). Also it was revealed that the few available ICT tools in secondary schools are not adequate and thus makes it hard for teachers to integrate the use of such tools in the teaching process (Njelita and Emendu 2015). If the dream

of teaching with ICT is to be attained in Nigeria, then the issue of adequacy of these tools in schools needs to be identified and addressed and such will reflect on the way in which the millennial classroom will be set.

No matter the availability and adequacy level of ICT tools in schools without a proper classroom setting to reflect such tools, it is still of no use since the tools will not be readily available for both teachers and students and thus affect the way in which they will be used. The setting of a classroom determines the activities that will go on in such class and also determine the type of teaching and learning which will take place. Educators maintain that ICT-enriched classrooms or ICT-based learning environments can help change the role of teachers from a deliverer of knowledge to one of an orchestrator or facilitator of learning. In other words, effective ICT-based learning environments may be able to change the current traditional direct instructional model to one that emphasizes more active student learning and intensive interaction among students. If ICT is properly introduced, it can change everything in the classroom. ICT can change the nature of student-teacher interactions because it enhances the ways through which information can be obtained, manipulated and displayed. ICT-based learning environments can help replace the learning of facts with exploration, and direct instructional approaches with intensive interaction among students. Not minding all these importance, it is still surprising that most classrooms still lack a proper setting that will reflect these tools and this remains the reason why teacher centered learning is still mostly used in schools, and thus will likely lead to low ICT utilization.

Due to the current level of ICT awareness in the world, a lot of researches have been carried out on the availability and adequacy of such tools in schools (Njelita and Emendu 2015, Okoli and Osuafor 2008, Alike and Ofojebe 2012) but all lay major emphasis on public and private strata as it seems to be the most common to identify, while other strata which can be found in both public and private sectors has been neglected not minding that these other strata has a great influence on the distribution of these tools. Therefore, the researcher saw the need to put into consideration these strata of schools and to identify the availability, adequacy, classroom settings and utilization according to the different owners of schools.

Statement of the Problem

Globally, the integration of information and communication technology to the process of teaching and learning is a trend that has come to stay. Currently, Nigeria is yet to fully align with this global trend and this can be seen in the poor performance of students in schools which is as a result of teaching the ICT natives without ICT. Considering the nature of the 21st century learner who is considered a native of ICT, the use of information technology in teaching chemistry in secondary schools should be at the fore front in Nigeria. However, it appears these tools are not readily available or adequate in most schools and also the classroom setting does not accommodate the 21st century teaching and this differs depending on the ownership of such schools. While much research has been done in addressing the strata of schools like public and private, almost all of them tend to neglect other strata. Therefore this work seeks to investigate the influence of school type on availability, adequacy, and ICT utilization for chemistry teaching in Anambra state

Research Questions

The following research questions guided the study

1. According to the ownership of the schools, what is the state of Availability of ICT tools for chemistry teaching
2. Adequacy of ICT tools for chemistry teaching
3. Utilization of ICT tools for chemistry teaching
4. Classroom settings for the ICT tools

Significance of the study

Findings from this study would contribute to the effort made by educators in Nigeria to improve the teaching and learning of chemistry. The study would help to get the government and private sectors aware of the level of ICT tools available for science teaching and the need to support its utilization in the secondary school chemistry teaching. It would also help the school owners see the need to construct classrooms that can accommodate ICT tools.

Methodology

The study adopted a descriptive survey design. The population covers all the chemistry teachers in Anambra state and the sample consists of 200 chemistry teachers in senior secondary schools in Anambra state. All the secondary schools in Anambra state were stratified into private and public schools. Public stratum was further stratified into substrata as follows: Public (Top Urban, Urban, and Rural) and Private (International, Individual, Institutional and Staff schools). Simple random sampling was used to select 100 schools from the public substrata as follows: Top Urban (33 schools), Urban (34 schools) and Rural (33 schools). In the private strata, due to the number of top international and staff schools in the state, total enumeration was used in picking the schools which are (15 and 6 respectively). Simple random sampling was adopted in selecting the remaining schools for individual owned sub stratum (40 schools) and staff school substratum (39 schools), all totaling 200 chemistry teachers, since only the teacher teaching the subject is selected in a school.

The four instruments used for the collection of data are Inventory questionnaire for ICT tools availability and adequacy (IQICTAA) with 15 items, the items were arranged in two point scale of (available and unavailable, adequate and inadequate). Classroom ICT settings questionnaire (CICTSQ) with 9 items was arranged in three point scale which are strongly agree (4), agree (3), disagree (2), and strongly disagree (1) and Lastly, teachers ICT tools utilization questionnaire (TICTUQ) which has 11 items and was arranged in three point scale of always (3), rarely (2) and never (1). The questionnaires were developed by the researcher after an extensive review of literature.

The draft of the questionnaire was sent to two experts in the field of ICT and education for their face and content validity. The questionnaire was modified in the light of the feedback from these experts. A pilot study was conducted on 20 chemistry teachers that are not part of the main work to establish its internal consistency and reliability. The data obtained was analyzed using Cronbach alpha. The two hundred secondary schools involved in this study were visited by the researcher with the help of two research assistants where the principal with head of chemistry department were met. The researcher seeks permission from the principal and after the permission has been obtained, the questionnaire was administered to the chemistry teacher. The questionnaire was collected back immediately in order to avoid delay and falsification of responses. The data that was collected for this study was analyzed using descriptive statistics of mean

Results

What are the chemistry teachers rating of the ICT tools in schools?

Table 1:
Availability of ICT tools for the teaching of chemistry in secondary schools

NO	STATEMENT	Availability			
	The school has the following set of technologies	Available	unavailable	MEAN	S.D
1	Computer desktop	132 53.2%	44 17.7%	1.7500	.43425
2	Computer laptop	121 48.8%	46 18.5%	1.7264	.44808
3	Online study tools like dynamic periodic table	53 21.4%	10 4.0%	1.8413	.36836
4	Online media eg youtube	58 23.4%	34 17.7	1.6304	.48533
5	Multimedia projector	91 36.7%	56 22.6%	1.6190	.48728
6	Internet access	114 46.0%	33 13.3%	1.7755	.41867
7	Television	123 49.6%	35 14.1%	1.7785	.41659
8	Satellite dish	68 27.4%	39 15.7%	1.6355	.48355
9	DVD player	103 41.5%	29 11.7%	1.7803	.41562
10	Basic computer soft ware such as spread sheet, power point, modeling tools	68 27.4%	60 24.2%	1.5313	.50098
11	Interactive video	19 7.7%	25 10.1%	1.4318	.50106
12	Social media like facebook page, whatsapp	88 35.5%	18 7.3%	1.8302	.37725
13	Standby generator	137 55.2%	30 12.1%	1.8204	.38504
14	Video games	18 7.3%	17 6.9%	1.5143	.50709
15	Smart interactive white boards	55 22.2%	57 23.0%	1.4911	.50217
	TOTAL			25.156	
	GRAND MEAN			1.677	

Table 1 above reveals the teachers rating on availability of ICT tools in the teaching of chemistry in schools. The table showed that with the grand mean of 1.677 that ICT tools are available in schools for the teaching and learning of chemistry.

Research question 1: Are ICT tools available for chemistry teaching in schools according to school ownership

Table 2:
Mean score of availability of ict tools in schools according to school ownership

Variable	Ownership	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Availability	top urban	25.061	.550	23.976	26.145
	Urban	25.714	.534	24.661	26.767
	Rural	22.000	.558	20.899	23.101
	International	29.200	.816	27.591	30.809
	Staff school	21.167	1.290	18.623	23.710
	Individual	20.350	.499	19.365	21.335
	Mission	24.128	.506	23.131	25.126

From table 2 above which reveals the level of availability of ICT tools for the different types of schools, it was shown that all the schools, having got the mean score of more than 15 have the available ICT tools needed for the teaching and learning of chemistry.

Research Question 2: Are the available ICT tools adequate for chemistry teaching according to school ownership?

Table 3
Mean score adequacy of ict tools in schools according to ownership

Variable	Ownership	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Adequacy	top urban	16.030	1.065	13.930	18.131
	Urban	18.514	1.034	16.475	20.554
	Rural	12.969	1.082	10.836	15.102
	International	27.667	1.580	24.551	30.782
	Staff school	5.333	2.498	.407	10.260
	Individual	8.975	.967	7.067	10.883
	Mission	16.179	.980	14.247	18.112

Table 3 shows the adequacy level of the available ICT tools in the different schools. The table reveals that the international schools with mean score of ($\bar{x}$ =27.667), urban with mean score of ($\bar{x}$ =18.514), top urban with mean score of ($\bar{x}$ =16.030) and mission schools with mean score of ($\bar{x}$ =16.179) all have a mean score greater than 15 which is the average mean score and thus have adequate ICT tools for chemistry teaching while rural ($\bar{x}$ =12.969), individual owned schools ($\bar{x}$ =8.975) and staff schools ($\bar{x}$ =5.333) do not have adequate ICT tools for chemistry teaching since they have mean scores that are less than 15

Table 4
Adequacy of available ICT tools for the teaching of chemistry in secondary schools

NO	STATEMENT	Adequacy		MEAN	S.D
		Adequate	Inadequate		
	The school has the following set of technologies				
1	Computer desktop	168 67.7%	32 12.9%	1.8400	0.36753
2	Computer laptop	167 67.3%	30 12.1%	1.8477	0.36021
3	Online study tools like dynamic periodic table	62 25.0%	138 55.6%	1.3100	0.46365
4	Online media eg youtube	90 36.3%	110 44.4%	1.4500	0.49874
5	Multimedia projector	148 59.7%	50 20.2%	1.7475	0.43556
6	Internet access	152 61.3%	46 18.5%	1.7677	0.42338
7	Television	160 64.5%	39 15.7	1.8040	0.39795
8	Satellite dish	110 44.4%	89 35.9%	1.5528	0.49846
9	DVD player	135 54.4%	62 25.0%	1.6853	0.46559
10	Basic computer soft ware such as spread sheet, power point, modeling tools	130 52.4%	65 26.2%	1.6667	0.47262
11	Interactive video	33 13.3%	165 66.5%	1.1667	0.37362
12	Social media like facebook page, whatsapp	112 45.2%	87 35.1%	1.5628	0.49729
13	Standby generator	175 70.6%	25 10.1%	1.8750	0.33155
14	Video games	27 10.9%	172 69.4%	1.1357	0.34331
15	Smart interactive white boards	107 43.1%	89 35.9%	1.5459	0.49916
	TOTAL			23.9578	
	GRAND MEAN			1.597	

In table.4 above which explains the adequacy level of the available ICT tools in schools, it revealed that those available ICT tools in schools are adequate and this can be seen from the grand mean which is 1.597.

Research Question 3: Are the ICT tools utilized in the process of chemistry teaching according to school ownership?

Table 5
Mean score of the utilization of ict tools according to school ownership

Variable	Ownership	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Utilization	top urban	20.939	.663	19.632	22.247
	Urban	25.029	.644	23.759	26.298
	Rural	18.969	.673	17.641	20.296
	International	26.067	.983	24.128	28.006
	Staff school	16.667	1.554	13.601	19.732
	Individual	17.775	.602	16.588	18.962
	Mission	21.077	.610	19.874	22.279

In table 5 above which explains the extent of utilization of the available ICT tools by teachers in the process of teaching and learning of chemistry, it shows that teaches in the international schools utilize more ICT tools followed by the top urban teachers and mission school teachers. While the staff and rural school teachers utilize less ICT tools compared with the rest.

Table 6:
Teachers ICT tools utilization in chemistry teaching in secondary schools

NO	Statement	Always	Rarely	Never	MEAN	S.D
1	My students and I use computer laboratory for chemistry teaching when the need arises	65 26.2%	70 28.2%	65 26.2%	2.000	.80825
2	I give my students online base assignment for both during and after school hours	62 25.0%	111 44.8%	27 10.9	2.1750	.64534
3	I use projector for video transmissions during chemistry classes when necessary	49 19.8%	80 32.3%	71 28.6%	1.8900	.76867
4	I do consult the internet often while preparing for lessons	138 55.6%	50 20.2%	12 4.8%	2.6300	.59571
5	I do use Microsoft excel to teach basic calculations	25 10.1%	63 25.4%	112 45.2%	1.5650	.70588
6	I use education software such as simulation	18 7.3%	78 31.5%	103 41.5%	1.5729	.65402
7	I use various social media with my students for flip learning	16 6.5%	77 31.0%	106 42.7%	1.5477	.64077
8	We use modeling tools for most of chemistry teaching	23 9.3%	65 26.2	109 44.0%	1.56	.701
9	I plan computer related activities in my classroom that will improve my students chemistry skills like use of video game	16 6.5%	68 27.4%	116 46.8%	1.5000	.64192
10	I access the internet quite frequently for new chemistry discovery	134 54.0%	54 21.8%	12 4.8%	2.6100	.59975
11	I actively participate in online collaboration opportunities	53 21.4%	89 35.9%	58 23.4%	1.9750	.74643
	TOTAL				21.0256	
	GRAND MEAN				1.911	

Table 6 above shows teachers' utilization of ICT tools in teaching chemistry; it reveals that teachers do not make use of ICT tools in the teaching of chemistry since the grand mean of 1.911 is less than 2 which is the average for 3 likert scale.

Research Question 4: What is the state of classroom settings for ICT tools according to ownership?

Table 7:

Mean score of classroom settings according to the school ownership

Variable	Ownership	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Classroom settings	top urban	22.303	.700	20.922	23.684
	Urban	24.143	.680	22.802	25.484
	Rural	18.688	.711	17.285	20.090
	International	27.667	1.039	25.618	29.715
	staff school	21.833	1.642	18.595	25.072
	Individual	19.700	.636	18.446	20.954
	Mission	22.282	.644	21.012	23.552

Table 7 above showed us the setting of the chemistry classroom in different schools to allow the integration of ICT into the process of teaching and learning Chemistry. From the table the classroom setting of the international schools is the most suitable for the Integration of ICT into the process of teaching and learning chemistry, followed by urban and top urban, while the rural and individual owned schools stand as the least suitable for ICT integration.

Discussion

This study revealed that most ICT tools are available in the different types of secondary schools in the study state. All the schools performed well above average in this aspect except the individual owned schools which still hover within average. This finding contradicts the work of Njelita and Emendu (2015) on availability and usage of ICT resource for chemistry curriculum delivery in schools which stated that most of the ICT tools are not available in secondary schools in Anambra state. It also contradicts the work of Okoli and Osuafor (2008), Alike and Ofojebe (2012). The reason for this contradiction in findings may be attributed to the intervention of the state government by providing most ICT tools to most public and privately owned schools in the state. The schools with little or no ICT tools can also attain this height through governments' intervention.

The finding revels that ICT tools are not adequate in some of the schools. Rural, staff and individual owned schools are way below average while the top urban and the mission schools linger within the average. This could be linked to the general belief of most school management that ICT tools are meant for official (administrative) use in schools and not for the general use of all the students, while lots of private school owners run the school for business and not for the quality of the education thereby failing to provide the necessary tools needed for a sound education. This finding is in line with the work of Njelita and Emendu (2015) on availability and usage of ICT resource for chemistry curriculum delivery in schools which revealed that the few available ICT tools in most schools are not adequate and others are not being put into use.

The result of the findings further showed that most school types utilize ICT tools in their teaching and learning of chemistry, though only international and urban schools show a clear sign of ICT utilization. This contradicts the work of Ochu (2016) on Assessment of the availability and usability of information and Communication Technology (ICT) Resources in classroom delivery by Secondary School Chemistry Teachers which revealed that ICT resources were not often used by chemistry teachers in curriculum delivery. Rural schools

show a poor sign of ICT utilization and this may be attributed to insecurity in those part of the state which compel most of these schools to hide the available tools in a far away or more secure town thereby making it inaccessible to both students and teachers.

Lastly, the findings reveal that the international schools still have good classroom settings that encourage the use of ICT tools in teaching while most of the other categories of schools like rural and individual are still far behind in achieving this although top urban, urban and mission schools are showing signs of improvement on their classroom settings. This is in line with the work of Gillian (2001) on the impact of ICT on schools: classroom design and curriculum delivery. He revealed in his research that having discovered that a classroom equipped with ICT will help in delivering teaching that is more student centered, many classrooms have started to incorporate easy access to computers to facilitate discussion and problem solving. The poor classroom setting that encourages ICT use may not be far from lack of adequacy of these tools in those school types.

Conclusion

This study investigated the influence of school type on availability, adequacy, and ICT utilization for chemistry teaching in Anambra state. This study showed that there is an improvement in the availability and adequacy of ICT tools in schools when compared to other related researches. In this study also, it was shown that the utilization of ICT tools differs according to the type of schools and that there is also a relationship between the settings of a classroom and utilization of ICT tools.

Recommendations

Based on the findings of this study, the following recommendations were made

1. Teachers should utilize more of ICT tools in their teaching of chemistry in secondary schools since it help to engage students more in the learning and as such help to produce a better result
2. Teachers should stop seeing themselves as the custodian of knowledge because only then will they be able to involve students more in the learning process
3. ICT enriched classrooms should be provided for teachers so that they can be able to perform to their maximum potential
4. Further research should be advanced to other part of the country and also other variables that hinders teachers' utilization of ICT tools in teaching should be identified and overcome

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