Blended Learning Implementation Experience in an Undergraduate Course at the Obafemi Awolowo University, Ile Ife, Nigeria

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Abstract

The persistence of the Coronavirus pandemic, necessitating the need for people to maintain social distance is the climax of series of events that has made the adoption of fully online or blended learning a must in all higher institutions around the world, and Nigeria in particular. When about to introduce blended learning, the instructor is at a crossroad as to what tools to use, as well as when, and how to use them. Following the maxim that says that "experience is the best teacher", the focus of this expository paper is to share some of the experiences gathered in the course of using a learning management system as well as a social networking site in the delivery of a large-class undergraduate course in a South-Western Nigerian University. Handwritten records, focus group interviews, and screenshots of activities that took place in the two platforms were used to highlight the experiences on the two learning platforms as well as the challenges encountered. The outcome of the study showed that the Edmodo LMS has many features that make it appropriate for starting blended or fully online programmes in the Nigerian setting. The WhatsApp SNS effectively played a complementary role to the Edmodo LMS. The study recommended that Institutional support for blended learning should include the provision of infrastructure for stable electricity supply and strong internet connectivity; free/subsidized internet access to staff and students, and sponsoring research and development on blended learning.
Keywords: Blended Learning, Virtual learning, Online Pedagogy, Learning Management Systems, Social Networking Sites.

Introduction

In a developing nation like Nigeria, challenges like inadequate admission opportunities, overcrowded classrooms, harsh economic situations which makes the combination of work with study unavoidable for many admitted students, incessant strikes by university labour unions, fuel scarcity and its attendant effect on transportation, ethnic militia insurgency, natural disasters leading to the internal displacement of persons and the December 2019 to 2021 realities of the COVID 19 intermittent lockdown has made it more crucial than ever, to consider alternatives to the conventional face to face teaching. As a way of bridging the widening educational gap, governments through the ministries of education and other stakeholders in education advocated for educational institutions to take to online classes. Terminologies like "remote teaching", "online learning", "e-learning", "virtual learning", "blended learning", "learning Management systems" and "social networking sites, often interchanged with social media" became more prominent in mass media reports on education.

Teachers in both public and private educational institutions at different levels were mandated to teach their subjects to their students via the internet by sending lessons, instructions and assignments through SMS, e-mail, social media, learning management systems, video conferencing applications and other online communication applications. This met with different reactions from teachers at different levels of education. While academics in state and private institutions have been engaging their students through different online applications and strategies, lecturers in public universities under the Academic Staff Union of Universities (ASUU) were slow to embrace the idea, due to the assertion that no public university can change its mode of instructional delivery without senate approval, coupled with the problem of inadequacy of necessary infrastructure, and uncertainty as to who will shoulder the responsibility for the cost of learning devices and data subscription (Lawal, 2020). However, the situation Nigeria, and indeed the whole world currently find themselves in, necessitates the consideration of alternatives to face-to-face teaching. It is interesting to note that even before the series of crises that engulfed the nation, some of the lecturers in these Federal institutions have been engaging in some form of remote teaching at a private level. These come in form of lessons contents sent to students through WhatsApp, lessons on Google classroom, and Edmodo among others. Some of these lecturers also serve as adjunct lecturers at the distance learning centres affiliated to their institutions where fully online or blended learning were the modes of instructional delivery. Therefore, one has reason to believe that the University laws would soon be adjusted to make provisions for remote teaching or blended learning in regular undergraduate programmes and back it up with necessary infrastructural support (source).

The COVID-19 lockdown was gradually lifted or relaxed with schools resuming across the globe. The case was not different in Nigeria. Initially, only students in exit classes of primary and secondary schools were asked to resume to

give them a chance to complete their examinations which were hitherto truncated or delayed by the COVID 19 lockdown. With the consistent decline in the scourge of the virus, the left-out classes were allowed to resume. While private tertiary institutions have all gone back to the class, the public tertiary institutions are not yet making any move due to the lingering industrial strike that commenced some weeks before the COVID-19 lockdown was imposed in Nigeria. Of great concern is the fact that most of the primary and secondary schools collapsed the 13-week third term calendar into just 3 weeks of summary, after which students were asked to write their end of session examination. The outcome of the 2020 National Common Entrance Examination, where only 34.6% of candidates that sat for the examination passed (Daily Trust, 2020), may be counted as one of the resultant negative effects of the shortened session.

Indications for Blended or Virtual Learning

The question now is: what alternatives exist for bridging the educational divide that was initially created by the lockdown, the Anti-SARS protest, the protracted industrial strike embarked upon by the academic staff union of public universities followed by the new wave of COVID-19 which has led to intermittent lockdown in many counties of the world and may inevitably lead to another lockdown in Nigeria? Secondly, for teachers/lecturers in institutions that have resumed, what becomes of their remote teaching efforts, especially as many have begun to see it as a viable complement to the traditional face to face instruction, now that full-fledged academic activities have resumed in private universities and may resume anytime in public universities? One sure thing is that the sporadic emergency remote teaching efforts that took place during the COVID 19 lockdown has to some extent, demystified online learning for most teachers, the students they teach, and their parents. Hitherto, online learning or any other forms of remote teaching was not regarded as an assignment for the average conventionally trained teacher. However, it has also exposed the gaps that need to be filled if fully online or blended learning is to succeed in facilitating the achievement of stipulated educational objectives. Feedback from students and their parents revealed that the efforts have yielded mixed results (Oyeniran & Oyeniran, 2020; Nasir, 2020; Asoro & Okunade, 2020; & Premium Times, 2020). This is not a surprise, as some institutions do not have adequate infrastructure for remote teaching and some of those that have it, lack teachers, with the necessary training required by a remote teacher (Eze, Chinedu-Eze & Bello, 2018). Besides, neither the preservice teacher training curriculum nor any form of in-service training prepared most of them for online teaching or the emergency remote teaching that they undertook (Tomoh, 2018). Research corroborates this fact by identifying the inadequacy of well-trained personnel as one of the major challenges of e-learning in Nigeria (Tomoh, 2018; Anene, Thomas & Omotoke, 2015; Imam & Odumuh, 2014; Oye, Salleh & Lahad, 2011). Hence Positive results can only be achieved from remote teaching through organized training efforts and experience sharing with other institutions or lecturers already engaging in online teaching. Therefore, in light of the contemporary situation and line with research findings, the value of instructor training and experience sharing in the success of remote teaching cannot be overstressed.

There are indications that instructional delivery will eventually become more blended than exclusively online teaching. By way of definition, blended learning (also known as hybrid learning) is the careful combination of physical place-based, face-to-face instruction with internet-based instruction and interaction (Graham, 2013; Hrastinski, 2019; Smith & Hill, 2019 etc). The Lagos State Ministry of Education has already taken the lead in blended learning, by exposing primary school teachers to different levels of training aimed at building their capacity through technology to improve pupils learning outcomes (Ogundare, 2020).

Actually, for teachers willing to embark on online or remote teaching, blended learning is a good point to begin the journey. As a novice, the instructor wanting to mandatorily or voluntarily venture into blended learning may be at a loss as to where to start. On the other hand, it is normal for the instructor, after obtaining information, to feel overwhelmed when it comes to choosing from the vast range of hardware and software applications that foster day today as well as academic communications. The concern about what to use and how to use it becomes deeper when the fact that a large proportion of today's generation of students is digital natives is put into consideration. No smart lecturer would want to use a technology he knows next to nothing about, as a vehicle for delivering instruction to a population of students who are probably more highly skilled than himself in handling these tools. Another matter of concern is the fact that even in developed countries, there is no uniformity in the way various e-learning initiatives are being used to solve teaching and learning problems, as well as in the emerging results (Hodges et al, 2020). Hence, finding a suitable model for Nigerian higher institutions may not be an easy task for intending blended learning adopters. The thrust of this exposition, therefore, is to share some tips from a blended learning experiment carried out in a large class undergraduate course in a south Western Nigerian University, using a social networking application

and a Learning Management System. This it is hoped, would contribute to existing resources on pedagogical as well as technical support for instructors in blended learning environments.

The objective of the Study

The main purpose of the study is to use a qualitative descriptive approach, to describe an experiment carried out at the Obafemi Awolowo University, Ile-Ife, during the 2017/18 academic session. It described how learning contents were packaged in readiness for blended learning, the reasons for the selection of Edmodo LMS and WhatsApp SNS, how students joined the group on either of the platforms, and the way teaching was conducted on each of the 2 platforms. It also highlighted the challenges encountered while using each of the platforms for blended learning and the prospects of using the two platforms in future blended learning endeavours.

Introduction to Educational Communications and Technology (ETL 202)

Introduction to Educational Communications and Technology (ETL 202) is a compulsory faculty course hosted by the Department of Educational Technology and Library Studies in the Faculty of Education, Obafemi Awolowo University, Ile-Ife, Nigeria. It is packaged for sophomores in the faculty of Education to assist them to understand the role of communications and technology in education and acquire skill in the integration of different learning resources into classroom teaching (Department of Educational Technology, 2012).

The Blended Learning Delivery Team

The lecturers that taught ETL 202 through blended learning in the 2017/18 academic session were 5 in number and all the 5 were purposively selected to provide the information needed by this study. They consisted of 4 males and one female and they were within the age range of 32 and 51. They had between 3 and 15 years of teaching experience and their exposure to Information and Communication Technologies was between moderate and expert levels. This was their first experience with delivering a blended course. The first instrument used in the study was observed. Through online and offline interaction among instructors and students and observation of student behaviours, instructors (as participant-observers) were able to obtain useful clues on issues that emerged in the course of blended learning, especially the challenges to its smooth running. To document these observations, each instructor was given a diary from the onset of blended learning at the beginning of the semester, to record their activities and experiences throughout the blended learning period. They were reminded and encouraged to fill these diaries every week. In the end, focus group interviews were conducted with the lecturers to shed more light on some of their diary records and compare and contrast information across the board.

Preparation for Blended Delivery of ETL 202

In readiness for blended learning, it is very important to pay attention to the quality of materials to be packaged as instructional modules. Therefore, learning contents were packaged through the collaborative efforts of all lecturers in the department. Series of meetings were held to fine-tune operations from the beginning to the end. Using the course outline as a guide, materials in different formats like text, images, audio recordings, animations and videos are sourced from lesson notes, websites, digital storage devices, textbooks and other printed materials. Fonts with bold and clear letters were selected for presenting text. All camera shootings were done in broad daylight while ensuring good contrast between the images and the background. Videos recordings of relevant concepts were kept very short to keep files light. The instructors then used their instructional design skills to develop the materials into short instructional modules in form of PowerPoint presentations as well as pdf files. This is to ensure ease of access to all the different devices possessed by individual students. Care was taken to ensure that slides were not overloaded and the total number of slides per Module did not exceed 15. Lessons were presented in chunks and intermittent challenges were built in for students to respond to. Lesson presentations were more interactive sessions than pure lectures. The aim is to make blended learning interesting and attractive to all participants. The packages were then reviewed by all lecturers in the department to check for conformity of content to instructional objectives, conciseness, the language of expression, interactivity, clarity of images and audio, aesthetics, cultural sensitivity and conformity to copyright regulations. All the necessary adjustments pointed out were then made.

Each instructor was mandated to generate a pool of questions from his unit as well as from others' since the course was team-taught. From this pool of questions, five short questions were appended to each module of instruction to test students' knowledge after the completion of each module of work. Some of the longer questions were also developed into the end of unit assignments. Modules comprising a unit were then allotted to a lecturer and slotted into the seventeen-week semester timetable. The final package was uploaded on the computers of individual lecturers who

were expected to their turns to post their assigned modules to students via their learning portals at least a day before the face to face lesson, to prepare them in advance for their lessons.

The Search for an Appropriate Learning Management System

To identify a suitable LMS, a review of literature on online and blended learning was conducted. Particular attention was paid to blended learning in developing nations. Some of them were Rapheal and Ntebe, (2013); Gyamfi & Gyaase, (2015); Ntebe and Rapheal, (2016); Gambari et al. (2017) etc. In addition to the review of literature, the experience gained from previously attended workshops on distance learning also came in handy. Thereafter, the Moodle LMS was selected. Unfortunately, attempts at using Moodle did not succeed due to its highly technical nature when considering the limited LMS skill of the instructors as at the time the study was undertaken. Therefore, the instructors had to consult widely with colleagues in other Nigerian higher educational institutions where some elements of online teaching were taking place. The majority of them confessed to having experienced similar problems in the past and recommended the Edmodo LMS. Further investigations revealed that Edmodo LMS had fewer, easy to use, and highly engaging tools that facilitate lesson presentations, communication, testing, assessment, record-keeping, student motivation, and a host of other educational activities. Even though it was originally designed to take care of K12 education, we found that it was being used by teachers teaching at different levels of education in different parts of the world and it turned out to be just at the right level for our competence and purpose. This made us drop the Moodle LMS and adopt the Edmodo LMS. Each lecturer then created a teacher account, free of charge, following three steps: going to www.edmodo.com. and clicking the "I'm a Teacher" button, filling out the registration form and selecting the "Sign Up" button to complete the sign-up process, and checking the e-mail for confirmation to view the next steps for setting up the Edmodo Account.

Having created accounts on the Edmodo LMS, the coordinating lecturer created the ETL 202 group and then invited students to join. A group join code is needed by anyone wishing to join an Edmodo group. The group code is automatically generated by Edmodo upon the creation of a new group. Just like most typical LMS, the Edmodo LMS had several interesting tools that facilitate lesson presentations, testing, assessment, and record-keeping, voting, student motivation and a host of other educational activities. It has a timetabling tool and a library for storing and accessing educational resources for future use by the creator or other interested users. It has good testing tools like quiz, polls, and assignment tools. The quiz and polling tool are self-grading; therefore, they reduce the burden of assessment on the instructor. It keeps a record of individual students' level and quality of participation and allows teachers to award badges of outstanding performance in different aspects to deserving students. It has a worldwide community of co-teachers who are ever ready to assist in solving problems, collaborate for professional development and share relevant resources that can facilitate teaching and learning. It is strictly for educational purpose, hence, distractions in form of advertisements never show up.

To create another learning platform for the second experimental group, the WhatsApp Social Networking Site was selected due to the findings from a preliminary study conducted by the research team which showed that virtually all students with a smartphone had and used the application regularly. The WhatsApp application does not require payment of subscription fees. It has instant and easy connectivity and works even with lower bandwidth. It is easy to join groups, as usernames or pins were not required for access. It is cheap to use nationally and no additional costs are required for international use. It is popularly in use among most students with internet-enabled phones. It supports sharing of information in single media like text messages, images, voice notes, and multimedia formats like videos, cartoons, animations, gifs. WhatsApp has both the Android and PC versions, which made it easy for instructors to package instructional contents and send them directly to users without the need for inter-device transfer of files with some of its attendant problems. The application makes it possible to create as many groups as possible to facilitate interaction among instructors and students with a common interest. Dissemination of information in form of text, audio, graphics, video and other multimedia formats is achieved through tools like text input, emojis, and voice notes. Hence, availability and relative ease of use of each of the applications were mainly responsible for their selection as the 2 platforms for blended learning.

Implementing Blended Learning in ETL 202

From an intact class of 455 students that enrolled in a compulsory undergraduate course titled Introduction to Educational Communications and Technology (ETL 202), 120 of the students that indicated an interest in participating in blended learning were randomly selected to serve as samples for the study. They were randomly assigned to 2 experimental groups (comprising 60 students each) based on a learning platform or application. The first group was named the Edmodo group. They were to participate in blended learning using the Edmodo learning management

system (LMS). The second group was named the WhatsApp group and they participated in blended learning through a social networking site (SNS) known as WhatsApp. After randomly assigning students into one of the two experimental groups, they were informed about their new group through a short welcome note posted to their e-mail. For students assigned to the Edmodo group, the instruction on how to formally join the group was sent to them in form of a single PowerPoint slide converted to a picture, much like a postcard. A notification is sent to the instructor, notifying him about each student's request to join the group. The student automatically becomes a member of the group immediately after his request is approved by the teacher.

After creating the ETL 202 on WhatsApp, the group join link was generated. At the initial stage, students were given the group join link so that they could join the group on their own. However, this opportunity was abused by some of them who used fictitious names or nicknames that made them unidentifiable. Thereafter, the instructors took over the process by adding participants to the group based on the personal details submitted by them and verified in the course record.

The coordinating lecturer posted a welcome message closely accompanied by a set of rules to guide the conduct of blended learning on both learning platforms. Participants were then encouraged to introduce themselves, say "Hi" to other members of the group, and express their expectations about blended learning.

On the Edmodo platform, instructors posted lessons module by module via the Edmodo learning application. Students responded by acknowledging receipt, asking questions and chipping in their contributions. Instructors got instantly notified about students' posts, submissions and activities via email alerts. Challenges in form of quizzes, assignments and poll topics are then posted to the group page while assigning durations of time for attempting them. A short five-item test was posted to the group page to mark the end of each module of the lesson. The Edmodo application makes it very easy to draft test items mostly in form of multiple-choice or true or false quizzes. The quizzes were automatically graded immediately they were turned in, and students were able to see their scores instantly. Assignments were also given using the assignment tool to draft the tasks and assign submission deadlines after which attempts to submit are rejected. The assignments are viewed on-screen, while review tools, typed comments, the text highlight colour and the underline tools were used to highlight any shortcomings. The polling tool was used to quickly assess students' opinion/positions on tricky or debatable submissions. It was also used to resolve issues like choice and timing of some learning experiences, especially extra classroom ones. As polling progressed from the first voter to the last, results were vividly expressed in histograms and percentiles which made them easily interpretable at a glance.

Records and results of participation in quizzes, assignments, polls etc are recorded in the Edmodo grade book. This made it possible to view students' performance and progress towards learning objectives, as well their comparative performance in the group. The Application has a provision for the award of badges to deserving students. While readymade badges are available for sharing on the Edmodo application, teachers have the opportunity to generate customized ones that address specific needs. In ETL 202 of 2018/19 session, we instructors created the "End of Unit Champion" and "Peacemaker" badges to acknowledge the student with the best performance after unit and the most orderly/courteous in group interaction respectively.

On the WhatsApp platform, instructors posted notes and files containing modules of instructional contents to students and required them to acknowledge receipt. Typing of messages and feedback was made easier with WhatsApp Web using the Baidu Web Browser on individual Instructor's laptops. Learning was then facilitated by engaging students in discussions, questioning them, correcting wrong answers and reinforcing correct answers, encouraging them to ask questions and chip in their contributions. When given tests and assignments, individual students were required to send their responses through the WPS Office or Xender App, to minimize plagiarism and other forms of malpractice. After the submission deadline, assignments were manually graded and the results communicated to individual students on their pages. The end of the Unit test was handled the same way. However, a review of the test and assignment items were done jointly by lecturers and students on the group page. The opportunity was usually used to draw students' attention to very important aspects of the content that are crucial to their progress. Questions were entertained and sometimes, debates emerged on the right answer to some tricky questions. Additional resources were then made available or recommended by the lecturer. Outstanding performances were accorded due recognition, and strugglers were encouraged to keep trying harder.

At the end of the experiment, the diary entries were reviewed and excerpts from individual diaries revealed quite a several challenges. Each instructor was then interviewed to shed more light on some of the challenges that disturbed them most. Documentation of some online activities in form of screenshots also provided additional information about

notable challenges. These challenges were grouped according to the topic into 9 categories namely: power and network challenges; learning platform related challenges; students' online engagement; disciplinary issues; ICT proficiency issues; proficiency in online pedagogy; running cost; institutional support; time management, and; health issues.

Challenges Faced in the Use of Learning Management System at Obafemi Awolowo University, Ile-Ife.

Unstable power supply and the poor network was of major concern to participants as it almost frustrated all their efforts. An outage of power supply often interrupted online discussions between instructors and students. The unstable network also constituted a nuisance as instructors had to continuously switch between different networks while their students' shuttle from one location to another with their devices in search of stronger internet connectivity. Due to these problems, students will often complain about non-receipt of some course content or the inability to successfully download those already received. With this situation, instructors are often forced to load and reload content, and by so doing, slowing down the pace of work in progress.

The Edmodo Application is not compatible with some android phones. There were several complaints from students which warranted assisting them with the reinstallation of the application on their devices several times, though not still without problems in some cases. By the time the application begins to run efficiently, the group access code would have been locked, requiring a new one. The Edmodo app. requires strong internet connectivity to display and function, even the lecturers sometimes have problems uploading content or accessing students' posts. A higher rate of drop out or incomplete participation was experienced in the Edmodo group where only 38 of the 60 original participants participated to the end. Throughout the blended learning exercise, email notifications of students' activities kept pouring into lecturers' mailboxes. A noted disadvantage of these overwhelming alerts is that they soon became a routine that attracted little attention.

The limited capacity that the WhatsApp application has for evaluation makes it less effective for student testing than the Edmodo LMS. The tendency for distraction from unsolicited posts in different formats is higher in this platform since it was designed more for general communication rather than instruction.

The online conduct of some of the participants was not very encouraging, especially as regards participation rate. It was not easy to gain their attention when needed. Some of them registered to participate but hardly came online throughout the online learning sessions. Some others will come online without registering their presence by greeting or responding to salutations. They did not actively participate in online discussions. Their assignment turn-in rate was poor and they will only cast their vote or lend their voice to a discussion when their interest was at stake, for instance, when lecturers ask whether or not they want the next content to be posted. For this group of students, it is obvious that their interest lies only in using blended learning as an opportunity to collect "ready-made notes" and nothing else. It is not uncommon to find such students suddenly disappearing or missing from the group. Some others played active roles at the beginning but became less available towards the end. Though the initial plan was to deliver blended learning asynchronously, irregular participation sometimes compelled the lecturers to assign a definite period for online activities to ensure massive active participation. While this proved advantageous to some students, others saw it as a breach of agreement, sometimes registering their dissatisfaction in writing or through the regular polls.

Focus group interviews with online instructors revealed that the students' excuses for their irregular participation ranged from an inability to keep devices' batteries charged due to irregular power supply, lack of money for data subscription, busy schedule, to damage to/loss of smartphones or other learning devices. The poor participation rate was also caused by such problems as inequality in students' access to ICT hardware, incompatibility of students' hardware device with custom applications, and inequality in students' proficiency with handling mobile ICT hardware and software. Most students have never had to use their devices for formal learning purposes. Besides, the time spent on training them to use the LMS was quite short.

Students' misdemeanour was also rampant online right from the inception of blended learning. These occurred in form of plagiarism, teasing, mocking and nicknaming colleagues who attempted to ask or answer some questions, unnecessary arguments, use of unconventional languages like slangs and abbreviations, superfluous use of emojis, and use of the platform for inappropriate purposes like advertisements, campaigns, and gossips. Class control was quite tasking. It was discovered that many students joined the WhatsApp group, using names or nicknames that made them unidentifiable. To prevent a reoccurrence, other students were added by the group admin (a lecturer), using their officially recognized names, rather than supplying them with the group join link. The blended learning team called a meeting to review the existing rules and regulations and append strict penalties to online misconduct. Much improvement was noticed after the new rules were posted the few erring students were sanctioned.

Lecturers that constituted the blended learning team had their fair share of individual challenges. There was a difference in individual instructors' proficiency in online pedagogy. This is because no special training was organized to prepare them for the job. Packaging original content and avoiding copyright violations made us go the extra mile to generate local and unique contents. Being creative with content packaging and keeping online offerings interactive was also a challenge. Building and maintaining a strong social presence was extra tasking in the face of irregular online traffic. Some students only became active online at odd hours of the night, while expecting prompt responses to their enquiries. Designing students' feedback mechanisms required some extra skills. The cost incurred by individual lecturers in the course of administering blended learning was significant. Money was spent on fuel for running power generating plants, in addition to the university internet services which is billed monthly, lecturers still made monthly data bundle subscriptions which many times had to be replenished before month-end. The wear and tear and sometimes damages incurred in the cost of carrying mobile devices up and down also required parting with some money to effect repairs or replace damaged parts. The aforementioned challenges coupled with lack of institutional support, uncooperative attitude and scepticism about the overall effectiveness of blended learning among some colleagues sometimes dampened the morale of the blended learning team.

Administering blended learning requires keeping one's devise handy most of the time and sometimes working late into the night, running on batteries. This sometimes led to physical, mental and visual strain as noted by some lecturers. Helping students to solve some of the technical problems especially at the initial stage of blended learning was quite tasking for lecturers when combined with online and onsite assignments.

The Prospects of Edmodo and WhatsApp in Future Blended Learning Endeavours

Despite the highlighted problems, the two applications have the potentials to use as a vehicle for blended learning. Edmodo is a subscription-free, easy to use and robust application that greatly facilitates learning. Meanwhile, inadequate funding is always top on the list of problems believed to be militating against educational development in Nigeria. Therefore, the prospect of adoption of Edmodo is very high as it is not only free but very user friendly, with readily available facilitators/coaches. Research has established the fact that lack of proficiency in the use of ICT tools is one of the factors responsible for lecturers' reluctance to adopt e-learning/blended as a mode of instruction. During the blended learning experiment, lecturers received valuable technical assistance from some fellow teachers assigned to them by Vibhu Mittal; the CEO of Edmodo. In addition to this, the blended learning team benefitted a lot from interacting with other members of the Edmodo community through discussions and exchange of ideas, critique of course resources posted by members to the Edmodo website and participation in Edmodo's periodic webinars.

The cheapness, functionality, popularity and ease of use of the WhatsApp application makes it an ideal communication tool at the inception of blended learning. The application connects easily through cellular, mobile data, mobile hotspot, wifi, and other connection options. It does not require strong internet connectivity; hence it will make a good supplement to any learning management system deployed by higher institutions for blended learning. It is very popular among the general populace, regardless of age, gender, cultural and socio-economic divide. Just like in the Edmodo Application, students can be divided into smaller, more manageable groups to ensure effective communication. It can be used to explain step by step details of procedures in form of text, images, audio, video etc. Most of the problems encountered on the Edmodo App were solved through WhatsApp conversation between students and instructors. In the WhatsApp experimental group, learners' responses were more spontaneous and a higher participation/completion rate of 87% (52 out of 60) was recorded.

The prospects of adoption of both Edmodo and WhatsApp application is very high. The WhatsApp Application is relatively popular and easy to use. Therefore, the problem of students not being able to install or use it should be very minimal, if they ever come up. It is a common practice to see people using the WhatsApp App. to train interested learners of a particular skill in non-formal settings, for free or for a fee. Furthermore, in a place like Nigeria, where the rate of mobile device loss or damage is quite high, these two cloud-based Applications, will allow users to work seamlessly on different devices without the need for external storage devices and their associated problems. Once registered, the applications allow users to continue their work from wherever they stopped on any other devices owned or usable by them.

Laptops and mobile phones were used interchangeably by the lecturers in the course of blended learning. Laptops were used when settled in the office or home, while mobile devices were used outside the two locations or when in motion. Many of us found it more convenient to use our laptops, as typing was faster, editing was easier, storage capacities were higher, and visuals were bolder and more visible, reducing strain on the eye.

A survey conducted at the end of the study showed that despite some of the hitches experienced, students expressed overall satisfaction with blended learning and felt privileged to have a chance to participate (Oyeniran, 2018). Most of them were positively disposed to taking more courses through the blended format if the opportunity presents itself.

Conclusions

In conclusion, if blended learning can work in a course without any institutional policy backing it up, then it should produce better learning outcomes when necessary institutional support in form of policy and infrastructural facilities are put in place. Undergraduates in large classes will be favourably disposed to blended learning if ICT infrastructure-related problems are promptly tackled. The technical and pedagogical skills possessed by different teachers can be harnessed for result-oriented blended learning when teamwork is encouraged. In line with the adage that says that "two heads are better than one, the contribution of individual lecturers complemented those of others and it is through this that many emerging problems were promptly solved.

Recommendations

Virtual learning, full or blended, despite its associated troubles, should not be seen as an unnecessary burden by any 21st-century teacher, as the happenings around the world have made it more than ever before, to become the way to go. The challenges highlighted thus, are not to scare off the intending users of blended learning. Rather, it is meant to assist them to prepare their plans in the best possible ways by forestalling possible pitfalls. Prospective blended learning users should seek knowledge from as many authentic sources as possible so that they can begin the journey with fewer hitches and more confidence. They may obtain knowledge by reviewing well-researched papers on blended learning and attending relevant seminars, workshops and conferences. In addition, they may venture out to understudy institutions or units that are already recording successes in their blended programmes, and consult experienced colleagues or experts within and outside their university environment.

Institutional support for blended learning should include but not be limited to the provision of infrastructure for stable electricity supply and strong internet connectivity, but giving free internet access to staff blending their courses and to students taking blended courses and sponsoring research and development on blended learning. Many LMS originated from the efforts of software Engineers working closely with university academic staff. Hence, higher educational institutions should work with readily accessible LMS at the inception of virtual or blended learning, while aiming at building their own customized university Learning Management System. Meanwhile, necessary support for the success of blended or fully online learning should not be seen as the exclusive responsibility of government or university administrations. Academic staff need to support one another by learning together and sharing resources and experiences as it obtains in the Community of Inquiry Model (CoI). By so doing, they will have the opportunity to extend the frontiers of their knowledge and at the same time showcase their potentials while making their expertise accessible by academic communities in other parts of the world.

Interaction is very crucial to the success of any distance education programme. To ensure that student-instructor, student-instructional material, student-technology and student-student communication is sustained, popular social networking tools like WhatsApp should be used to supplement any learning management system adopted by institutions, to mitigate the effect of connectivity issues on the smooth flow of learning. Anxiety is already being exhibited by parents and students over the possible introduction of virtual learning in higher educational institutions, not only because of the financial implications but the uncertainty as to its workability. More studies on blended learning are needed to add to the existing pool of knowledge, iron out the not-so-smooth areas, and quell the fears of those doubting its workability in our higher educational institutions.

References

Agency Report (2020, May 21). Lockdown: Parents, pupils examine the effectiveness of online learning. *Premium Times.* https://www.premiumtimesng.com/coronavirus/393902-lockdown-parents-pupils-examine-effectiveness-of-e-learning.html

Anene, J.N., Imam, H. and Odumuh, T. (2014). Problems and prospects of e-learning in Nigerian universities. *International Journal of Technology and Inclusive Education (IJTIE)*, 3(2), 320-327. 10.20533/ijtie.2047.0533.2014.0041

Caner, M. (2012). The definition of blended learning in higher education. In Panagiotes, S. (2012) Blended learning environments for adults: Evaluations and frameworks. 19-34.

Oyeniran, F. M., Aina, S. A., Oteyola, T. A., Oyeniran, O., and Alarape, A. A.

https://www.researchgate.net/publication/288443155_The_Definition_of_blended_learning_in_Higher_Education DOI:10.4018/978-1-4666-0939-6-ch002

Department of Educational Technology, Obafemi Awolowo University, Ile-Ife (2012) Handbook. Ile-Ife: Obafemi Awolowo University Press Ltd.

Dziuban, C., Graham, C. R., Moskal P. D. et al (2018). Blended learning: The new normal and emerging technologies. *International Journal of Educational Technology in Higher Education*, 15(3), 1-16. https://doi.org/10.1186/s41239-017-00875

Editorial (2020, November 24). Averting abysmal failure in NCEE. *Daily Trust.* https://dailytrust.com/averting-abysmal-failure-in-ncee

Effiong, L., Emmanuel, H. A., Shuaibu, F., Adama, D.S., Bello, U. A., Adebayo, I, and Bashir, M. (2020, April 30). Nigeria: Students from poor homes lag in e-learning. *Daily Trust* https://allafrica.com/stories/202004300210.html

Gambari, A. I., Ahmed, T., Ogunlade, O. O. and Osunlade, O. R. (2017). Effectiveness of blended learning and e-learning modes of instruction on the performance of undergraduates in Kwara state, Nigeria. *Malaysian Online Journal of Educational Sciences (MOJES),* (5)1, 25-36. https://eric.ed.gov/?id=EJ1125071

Graham, C. R. (2013). Emerging practice and research in blended learning in Moore, M. G. (Ed.) *Handbook of Distance Education* (3rd Ed.). New York: Routledge. https://www.researchgate.net/publication/258477665_emerging_practice_research_in_blended_learning

Gyamfi, S. and Gyaase, P. O. (2015). Students' perception of the blended learning environment: A case study of the University of Education, Winneba, Kumasi campus, Ghana. *International Journal of Education and Development Using Information and Communication Technology.* 11(1), 80-100. http://ijedict.dec.uwi.edu/viewarticle.php?id=1933

Hodges, C., Moore, S., Lockee, B., Trust, T. and Bond, A. (2020, March 27). The difference between emergency remote teaching and online learning https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning

Hrastinski, S. (2019). What do we mean by blended learning? Tech Trends, 63(5) 564–569. https://www.researchgate.net/publication/330935647_what_do_we_mean_by_blended_learning DOI:10.1007/s11528-019-00375-5

Lawal, I. (2020, June 16). ASUU faults proposed virtual learning in the nation's tertiary institutions. *The Guardian Newspaper.* https://guardian.ng/news/asuu-faults-proposed-virtual-learning-in-the-nations-tertiary-institutions-2/

Mtebe, J. and Raphael, C. (2016). Instructor support services: An inevitable critical success factor in blended learning in higher education in Tanzania. *International Journal of Education and Development using ICT,* 12(2), 123-138. http://ijedict.dec.uwi.edu/viewarticle.php?id=2099

Nasir, A. (2020, July 1). Home-based learning in the wake of COVID-19. *Unicef.org* https://www.unicef.org/Nigeria/stories/home-based-learning-wake-covid-19

Ogundare, F. (2020, September 23). Boosting teaching, learning in Lagos state through technology. *This Day Online Newspaper.* https://www.thisdaylive.com/index.php/2020/09/23/boosting-teaching-learning-in-lagos-schools-through-technology/

Oyeniran, F. M. (2018). Influence of learners' characteristics on learning outcomes in a large-class blended learning environment at the Obafemi Awolowo University, Ile – Ife. Unpublished PhD thesis submitted to the Department of Educational Technology, Obafemi Awolowo University, Ile-Ife.

Oyeniran, S. and Oyeniran, F. M. (2020). A descriptive analysis of educational services in Nigeria during COVID-19 lockdown. *International Studies in Educational Administration*, 48(2), 21-27. https://doi.org/10.19044/esj/2020.v16n16p63

Oyeniran, F. M., Aina, S. A., Oteyola, T. A., Oyeniran, O., and Alarape, A. A.

Raphael, C. and Mtebe, J. (2013). Students' experiences and challenges of blended learning at the University of Dar es Salaam, Tanzania. *International Journal of Education and Development using Information and Communication Technology (IJEDICT),* (9)3, 124 – 136. http://ijedict.dec.uwi.edu/viewarticle.php?id=1735

Smith, K. and Hill, J. (2019). Defining the nature of blended learning through its depiction in current research. *Higher Education Research and Development,* 38(2), 1-15. https://doi.org/10.1186/s41239-018-0106-1

Thomas O. A., and Omotoke, O. O. (2015). Challenges of e-learning technologies in Nigerian University Education. *Journal of Educational and Social Research*, (5)1, 1-7. https://doi.105901/jes.2015.v5n1p301

Tomoh, B. (2018, March 31). Challenges of e-Learning in Nigeria. *Life Learners Academy Blog*. https://lifelearners.ng/2018/03/31/challenges-of-e-learning-in-nigeria/