STUDENTS' DISENGAGEMENT AND E-LEARNING: ADAPTIVITY AS KEY CHALLENGE FOR POST-COVID 19 E-LEARNING SYSTEMS IN NIGERIA

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Abstract

Quite recently research interests in e-learning have shifted toward the post-adoption phase. Even though in less technologically advanced countries and among lower levels of learners its adoption has not yet been fully actualized there has still been increased attention to e-learning either as a supplement or as an alternative to conventional learning environment depending on prevailing social and economic circumstances of countries and their educational institutions. In this context, the COVID-19 pandemic and its accompanying circumstances are one major world incident that has caused an unprecedented swift and dynamic turn toward a wider embrace of e-learning even in traditionally unusual educational quarters. In retrospect, as a measure to curb the spread of the virus in Nigeria and elsewhere, a Nationwide lockdown was imposed which kept students at home for six to seven months in the year 2020. Being this long, education stakeholders attempted wide-scale e-learning adoption to mitigate the negative effects of prolonged students' disengagement from learning. This paper posits that no matter the effort, so long as adaptive approaches were not followed, wide-scale e-learning adoption will produce little or no result. Its central argument is that radio and TV-based instructions cannot adequately be adapted to suit the needs and characteristics of learners at lower levels. The paper then followed with a concise discussion on general principles of adaptivity in e-learning. It finally suggested that existing synergy in the country between ICT and education stakeholders be extended to cover teachers and students at O' levels and that e-resources of examination administering bodies such as JAMB, WAEC and NECO be expanded beyond content evaluation. Other suggestions are that E-Systems should be aligned to both principles of pedagogy and andragogy equally and that continuity should be ensured in the development, implementation and evaluation of education E-Systems at all levels.

Key words: Students' disengagement, E-Learning, Covid 19.
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Introduction

With teacher-learner separation as a major feature of online learning environments, there is an increased need for architecture sufficient enough to account for the missing factors usually obtainable in the conventional teacher-learner interactions especially at secondary and primary levels where teachers presence is highly required. Many conceptions ranging from motivation, participation, belonging and social presence were deemed glaringly missing in the early online learning environments resulting in later reconsiderations (Stodel, Thompson & Macdonald, 2006). This led researchers, educational experts and practitioners to focus more on making the online experience rival or surpass its conventional physical counterpart in producing a desired educational outcome. The result was equivalency theory proposed and promoted by Simoson, Schlosser & Hanson (1999) and ever since e-learning took a turn in that direction in its both synchronous and asynchronous modes.

For synchronous e-learning platforms making up for the missing factors is regarded easier because teacher-learner separation exists only about space. That is to say, the teacher/instructor/tutor connects with the learner at the same time from far away

places conferring all real-time affordabilities of questioning, seeking clarifications, active participation, etc. By contrast, in asynchronous interactions since, in addition to space barrier, separation also exists in terms of time there was a high need for learning experiences to be carefully analyzed and systematically designed to produce desired results. In this context, rigorous researches in both synchronous and asynchronous modes arrived at the idea of creating an online learning environment that will adapt learning to learners' needs and characteristics within available learning resources for greater educational achievements. Here was birthed the idea of adaptive learning in online platforms.

Different approaches were adopted to achieve this feat. Consequently, the entire online educational process was rejuvenated from design to development to execution and evaluation: its interfaces evolved from offering mere learner content interaction to a more dynamic form in which learner factors were analyzed and tailored to different yet relevant learning resources such as text, images, video and audio files (Hauger & Kock, 2019). Furthermore, rigorous drive at achieving adaptive learning transformed learners from passive recipients of online content to active participants in online learning (Yunusa & Umar 2019). It also helped to provide learners with a wide spectrum of choices concerning "what", "how" and "why" to learn at particular times, circumstances and settings. In the end effectiveness of e-learning systems came to be defined by their conforming to, not only the earlier behaviourist principles but also to both cognitivist and constructivist paradigms. All these happened because of the rapid pace at which e-learning has been growing in response to global needs.

Because of the above reason quite recently research interests in e-learning have shifted toward the post-adoption phase.. Even though in less technologically advanced countries and among lower levels of learners its adoption has not yet been fully actualized there has been increased attention to E-learning either as a supplement or as an alternative to conventional learning environment depending on prevailing social and economic circumstances of countries and their educational institutions. In this regard, COVID 19 pandemic and its accompanying circumstances have caused an unprecedented swift and dynamic turn toward a wider embrace of E-learning even in traditionally unusual educational quarters.

COVID 19 and Students' Disengagement: Social and Academic Consequences

It has been long since the whole world was confronted with the pandemic and its devastating consequences. Notwithstanding the pandemic being fundamentally a health-related matter it cast a significant impact on all other sectors. Arguably, education is among the worst hit as the pandemic enforced total school closures all over the world including Nigeria (Henry & Agbadi 2020). According to the UNESCO report titled COVID 19: impact on education, about 143 countries imposed nationwide school closures apart from countries that imposed localized closures which are not necessarily nationwide. The report further added that t*hese closures affected about 1.9 billion learners globally*. In a similar vein, another report by the World Bank lamented how the same school closures on account COVID 19 pandemic affected 99% of university students the world over (World Bank Group, 2020). These and other similar reports depict how far and wide the pandemic at hand have brought the entire education system of the world to a momentary halt.

In line with the global trend here in Nigeria also directives were issued by the Federal Ministry of Education for the total closure of all schools, colleges and universities as a measure to curb the spread of the pandemic. Accordingly across Nigeria, school children have been forced away from their classrooms as a result of corona-virus prevention measures (The Nation, 2020). This can be translated to 100% of Nigerian students being forced to stay at home during the heydays of the pandemic. No doubt these measures came as part of global strategy in the fight against the spread of the highly contagious virus and Nigeria was a party to the same. And, at a point, the measure has yielded results. But it has not been long before serious considerations started to be made to review the decision especially in what has to do with school closures. Thus shortly after, many countries woke up to the realization that this trend, if allowed to continue for a long time, can breed social and economic inconvenience of tremendous proportions.

The implications of schools total shutdown are realized to be far-reaching and devastating on teaching and learning as well as on innovation and productivity in addition to income (in)stability of families and societies. On the global stage it was observed that "societies are confronted with a massive challenge of youth disengagement and {were in the long run}deprived of the graduate professionals needed to keep countries on track for social cohesion and (economic) growth (World Bank Group, 2020). Furthermore, prolonged disengagement can result in many negative academic as well as social consequences. According to Hancock and Zubrick (2015) "learning disengagement is strongly connected to low academic achievement". Similarly, Diehl (2019) found that "students' disengagement is highly likely to result in appalling dropout rates". On the contrary, students (continued) engagement is empirically linked to increased learning, retention and academic success (Krause &Armitage 2016). Overall, even in the purely learning domain disengagement is found to have negative behavioural, emotional and cognitive consequences. In Nigeria, total school closures on account of COVID-19 lasted nearly eight months between mid Match to mid-October 2020 when partial resumption was announced by the federal government and some states (Vanguard, 2020). This shows that high potentiality exists for the above negative effects.

COVID 19 and e-learning interventions in Nigeria: between design and implementation

Earlier enough upon this realization, efforts were made across the globe to adopt e-learning as a means to keep education going despite the lockdown (World Economic Forum, WEF, 2020). The WEF further contends that even though e-learning adoption has reached reasonable limits quite recently in terms of language apps, virtual tutoring, video conferencing tools, online learning software, etc, COVID 19 experience has caused a significant surge in its adoption". This demonstrates the potential negative consequences of students cut across all levels of education if the adoption was not maintained and taken further. As such many e-learning interventions arose to address the problem at all levels. However, in this paper, there is a clear bias to e-learning implementation in secondary education for obvious reasons. First, even though studies on the subject abound, only a few of them focus on the one directed at secondary schools. According to Smith, Clark and Blomeyer (2005) "practitioners believe that though online education is effective in reaching and serving a wide range of students, little empirical research has been performed to determine its effectiveness

in elementary and secondary settings". As such at both research and practice levels e-learning has erroneously been seen more like the business of adult (post-secondary school) learners in children's stead.

The philosophical basis for this preference was the difference between pedagogy and andragogy. It was therefore generally assumed that "lower learners (secondary school downward) may demonstrate a lower degree of autonomy needed for independent study and show less focus and less intrinsic motivation to persist in their studies if they are online" (Ibid). However, this has been counter argued that once such differences have been addressed by providing age- (both mental and biological) appropriate developmental activities, e-learning can equally work for the lower learners. A clear example of this is that even without such emergencies occasioned by the likes COVID 19 many online secondary schools exist such as the famous virtual high school in the US. Another reason for focusing on the O' level is that concerning developing countries like Nigeria, e-learning implementation in tertiary institutions has gone far off. The National Open University of Nigeria has since the mid-2000s successfully taken off, in addition to many universities which have fully developed e-learning institutes. Therefore the secondary schools which have been left far behind stand to benefit the most from the current efforts if they are to succeed. To buttress these potential educational institutions such as WAEC and JAMB present comprehensive e-learning environments for lower-level students even though theirs is restricted to being purely examination administration bodies.

In like fashion, as pointed out above here in Nigeria also plans for wide-scale e-learning adoption were unleashed by the Federal Ministry of Education (FME) and other education stakeholders. Precisely by mid-April 2020 nearly a month into COVID 19 lockdown the Federal Ministry of Education, FME announced plans for the students in the country to continue receiving lectures online from home (The Cable, 2020). Notably, the official pronouncement alluded to two specifications: first, it identified National Television (NTA) and Federal Radio (FRCN) as chosen e-channels. Secondly, it identified the tertiary institutions' students as recipients. It also added that it has long been planning to embark on such e-learning efforts even before the pandemic. As for other stakeholders apart from FME their disclosed programs of e-learning to arrest the situation came in like manner. For example, the "National Information Technology Development Agency (NITDA) has established many technology hubs all over the country and simultaneously announced strong online learning platforms for the citizens". However close observation of the platform suggests that the NITDA's e-learning may be regarded as "too technical" and "too professional" and it is addressed mainly to mainstream ICT experts and trainees.

The above are examples of direct government interventions. However apart from that the country's current drive, e-learning also received significant contributions from various stakeholders and interests including private organizations, non-governmental organizations etc. While some of these are restricted to certain categories of learners others are not. Joshi (2020) reported that UNICEF in collaboration with HITCH company partnered with the federal ministry of education to specially design educational and vocational online/offline video platforms customized for Nigerian curriculum right from primary 1 till SS3. Similarly, private interests as part of the corporate social responsibility have launched many programs to ensure e-learning integrations into the country's education system.

COVID 19 E-learning interventions and curriculum coverage

The negative impact of prolonged students' disengagement occasioned by the COVID 19 lockdown was what precipitated the countrywide e-learning intervention by the FME. Though the plans were announced in April 2020, little or no success was recorded throughout the period spanning the lockdown. Nothing signifies this than the circumstances of schools' resumption following this abrupt leave extending six to seven months.

Consequently, despite all those efforts, the actualization of wide-scale e-learning did not hitherto happen in a significant way. As such by the time the Federal and State governments announced plans to reopen schools in mid-October 2020 (premium times, 2020) no significant progress has been made concerning curriculum coverage and academic calendar progress. Hence the schools opening directives by the FG and states created a debate whether to hastily conclude the second term and third term (for O'levels) or to start a new session afresh by using the parts of the curriculum already covered to assess and promote students to the next classes (The Nation, 2020). Apparently, the vast majority of states opted for the latter (Vanguard, Oct., 8) this means that the third term for secondary schools downward has been cancelled for most of the country. Some states ministries of education categorically stated that first and second term continuous assessment will be used for second and third term assessments (The Nation, 09, 2020).

It is hard to ascertain the actual e-learning adoption in these circumstances. It is however obvious that the adoption has not been successful. The existence of the above-cited debate presents clear evidence of not registering significant progress on account of the e-learning program earlier announced by both government and education stakeholders. This included even the private schools which were deemed more equipped to actualize e-learning than government schools. Hence the central point of the debate became whether private schools have the right to charge third term school fees from parents of not, even though they were apparently starting a new session afresh literally skipping the second term (Premium times 4thAug., 2020).

The above development is very bad for the secondary and basic education system in particular because it obviously neglects a considerable amount of curriculum content extending to nearly seven months without any clear arrangement to recover them. Had the e-learning program been successful there would have been no need to make this great curriculum loss. The implication is that only a few students may be lucky to recover the missed content by ways of didactic learning or other means and those few private schools that were able to use e-learning during the pandemic. In fact, the true actualization of e-learning suggests that both the uncompleted second and third term curriculum content and administration of their respective examinations can be fully conducted while the COVID 19 lockdown was still on. Thus courtesy of e-learning it is not necessary that curriculum coverage will have to suffer to erect an academic calendar. What is to be noted is that even private schools that purportedly taught the missed curriculum content during the lockdown did not show any evidence that they conducted examinations for that respective content. Hence the success of the e-learning adoption even if it happened during this period was very minimal.

Adaptivity and COVID 19 e-learning interventions in Nigeria

As pointed out above COVID-19 pandemic in Nigeria and in elsewhere has necessitated swift resort to E-learning (Adeoye & Adanikin, 2020). The introduction and sustenance of wide-scale e-learning in education systems require a befitting operating environment in terms of basic and ICT infrastructure as well as strong architecture and resources (Brusilovsky & Peylo, 2004). As noted earlier the initial interventions announced by the federal ministry of education categorically emphasized radio and television as its preferred channel of e-instruction (Premium times 20th April, 2020). It is important to note that both the channels are very limited in delivering effective instruction and meeting the state-of-the-art e-learning (Mesfin, Ghinea, Grønli & Hwang 2018).

The first one, which is radio is inherently limited in that it only appeals to the learners' sense of hearing among all other senses. This singularity in appeal limits its functionality in conveying complex educational content. Televised Instruction like radio is basically one-way communication (Weber, 1984). As such teaching may not be effective given that teacher cannot grasp students positive and negative reactions toward the lesson. Ordinarily, a teacher's simple glare is sufficient to give clues of attention and inattention, understanding and non-understanding to the teacher, an advantage both radio and TV instruction cannot guarantee. In brief, both the channels cannot be adaptive. Added to these limitations is the inadequacy of basic infrastructure such as electricity, technical difficulties and socio-economic inequalities, all of which can hinder proper e-instructions through these channels.

Another channel considered is the internet. This may be a more pragmatic option given the current realities. ICT is increasingly becoming a major contributor to annual GDP in Nigeria but there is still a wide gap to cover for its full integration into learning Zubairu, Oyefolahan, Babakano, Etuk, Mohammed (2020). Also, the digital penetration currently stands between 42% and 45% and the average internet speed is 15mpbs far below the world average of 35mbps as per (NCC, 2020). In addition, handheld android enabled cell phones are ubiquitous. The indication here is that though e-learning via the internet is a very probable option in Nigeria and is taking place in many areas, a wide-scale e-instruction that can cover the whole country will require higher levels of e-readiness more than our present ICT reality can afford. Interestingly in just unveiled national digital plan, the federal ministry of communication and digital economy intends a massive increase in the country's ICT indices.

Basic principles and guidelines for adaptivity in e-learning systems

Below is the summary of basic principles and guidelines for adaptivity in E-learning systems adapted from Leka, Kika & Greca 2016)

Flexibility in topics and learning sessions
Special attention to the learner and his or her activity
Aligning the structure and content to learner characteristics, quality of his or her personality and formation of his or her skills
Specificity in task accomplishment (moving to next or returning to the previous base on task completion)

Informatization of educational resources (content organization according to learning theories and models)
Provision of conditions for individualization of the learning experience (taking into account the learner's profile)
System monitoring of learners learning trajectory
Presentation of learning material in portions (based on clearly defined learning objectives)
Gradual progression based on skills accumulation (logical interconnectedness of subsystems without hindrance to independent navigation)
Co-operativeness in methodological and technical aspects

E-learning adaptivity parameters

In brief below are the major parameters to consider when designing an adaptive e-learning environment (adapted from Billios 2019)

Students' knowledge: here logical flow is maintained according to the students level of knowledge. Unnecessary hyperlinks should be avoided unless in cases where students are matured and advanced. The learning environment can be designed in versions so that choices are made by students as per their biological and mental age
Learning styles: using this parameter E environment is designed in ways different students process information be it sensory or intuitive, auditory or visual, inductive or deductive, reflective or active, etc.

Cognitive abilities: this way, types of memories and speed of information processing will be considered while designing the learning material from simple to complex
Motivation: arousal and sustenance of learners, interest by stimulation of emotion. Gamification is a good example here

Adaptive E-learning models

Domain model. in this model learning objects are organized using metadata to describe, sequence, store and manipulate them
Student model. Otherwise called user model, this is directed toward ability and knowledge of learner/user and helps customization
Adaptation model. This comprises the above two. It uses the history of users interaction with the system to recommend future activities
Adaptive navigation. This model lays more emphasis on learning paths and curriculum sequencing
Adaptive content model. The emphasis here is on the richness and robustness of the content
Adaptive presentation model. This concerns itself more with the viewable layout including zooming, scaling etc.

The above summarizes the main ideas underlying the building of an adaptive e-learning system (adapted from Bilous 2019 and Leka, Kika & Greca 2016). There are a lot of existing e-learning systems in our educational system. All that is needed to do is to integrate these features, elements and models to achieve adaptivity. Overall the approach to e-learning in the education system should be proactive aligning with the learners' needs and prevailing socio-economic realities. It must not regard e-channels

as mere tools of convenience to be utilized only in times of emergencies. Granted, emergencies can stimulate educational reforms such as the COVID 19 did in making the education system attempt wide-scale E-learning adoption. But its full actualization requires careful preparation in design and implementation over time beyond the period of emergency. According to Clerk and Blomeyer (2005) "online learning started as a way to expand curriculum and education access (but) it soon emerged as a veritable tool for education reform"

Conclusion

Designing and implementing adaptive e-learning is imperative to education systems considering the prevailing circumstances. COVID 19 presented a unique challenge to education by keeping students at home for months causing serious curricular disruptions and prolonged students disengagement. In Nigeria and elsewhere the alternative of e-learning resorted to redress the damage may not have been successful due to the urgent nature in which it was summoned and the procedure of its implementation. This paper highlighted grave consequences of student disengagement and the salient aspects of befitting e-approach to address it under the term adaptive e-learning. For maximum achievement of adaptive e-learning systems in both post-secondary and secondary schooling, below are some suggestions:

Suggestions

There is a need to have synergy among education and ICT stakeholders in the country particularly the NITDA, Universities, colleges, schools and examination administering bodies such as JAMB, WAEC and NECO. This should be done at both design, implementation (installation and running), evaluation and upgrade of the education e-systems

Serious considerations need to be made in aligning education e-systems to principles of both pedagogy and andragogy unlike before when more emphasis was given to pedagogy

Teachers, teacher educators and administrators need to be engaged in all stages of integration of e-systems into education

Funding gaps should be filled through outsourcing of relevant e-resources both free and paid ones

Mass scale e-learning implementation experiment should continue beyond the period of COVID 19. Only continuity will ensure progressive development in areas of implementation and evaluation of E systems

E-resources of examination administering bodies such as JAMB, WAEC and NECO should be expanded beyond content evaluation

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