

E-LEARNING: ROADMAP TO SUSTAINABLE LEARNING AND EDUCATION IN NIGERIA

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Abstract

This work focuses on the operations to achieve sustainable learning and education in Nigeria. It is anchored on the Integrated Model framework proposed by Picciano. The research adopted a discourse approach based on content analysis. It was found that though there are many roadblocks on the way to sustainable education and learning, the way out is via a mental shift as well as political will by the political class to pursue sustainable education; the legal framework that spell the minimum standard must also be strictly adhered to, if we must make progress towards sustainable learning and education; strong internet access and constant energy is a sine qua non for achieving this also; education has to be liberalized in Nigeria in order to raise the humongous resources needed for its sustainability-Communities, individuals, and organizations should be involved in funding education by setting up trust funds managed by transparent committees to complement government efforts; all stakeholders- schools/institutions managements, teachers and students- must be aware as well as play active roles. We therefore recommend sincerity and accountability in the system, from the education budget to the implementation of the same.

Keyword: E-learning, sustainable learning and education (SLE), Integrated Model, Community financing and bandwidth.

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Introduction

Academic Staff Union of Universities (ASUU) has been on strike over what looks like war of word between the union and the federal government (Qosim, 2022, July 15). The real bones of contention include renegotiation of the 2009 FG/ASUU agreement, revitalization of the university education system, among others. These had led to several negotiations, agreements and industrial actions. The position of the Union is that federal government has not kept their own side of an agreement reached in 2009 which has already lost its relevance by age. Federal Government insisted on a payment platform or system (IPPIS) different from what the ASUU proposed. Though, the striking lecturers have returned back to the classroom following a court ruling, albeit all is not well with the system yet. The situation places serious concern to many stakeholder on the sustainability of the educational system in Nigeria. Producing graduates with the required educational capabilities vital in the 21st century will require dramatic reinvention of the content and process of education, a point underscored by Haapala and Sutherland (2005), Mitchel Resnick (2003) and others with respect to ecological and sustainability thinking and acting by citizens (Hays, 2013 cited in Hay &Reinders, 2020). The fact is that if we do not get it right in this generation, the next generation will be the worst hit. This is so because every generation is offshoot of the preceding generation. The standard set now will greatly influence those that will succeed us. To pursue sustainable education and learning in Nigeria, we must imbibe the biblical injunction “And the things that thou hast heard of me among many witnesses, the same commit thou to faithful men, who shall be able to teach others also” (2 Timothy 2:2). SLE hinges on and produce consciousness: vigilant attentiveness and mindfulness, continual awareness of internal and external conditions and ongoing assessment of the effectiveness of acting in the world, filtered through a lens of ethics, responsibility and sustainability. A sustainable world requires a critical mass of citizens who remain conscious of actions (and inactions) that might jeopardize the greater good. Thus, a sustainable curriculum must equip learners with a commitment to consciousness and the disposition to act upon germane observations. (Hay &Reinders, 2020 cited in Ifegwu&Ishaku, 2020).

With myriads of challenges facing education in Nigeria already, migrating to sustainable education and learning with its attendant humongous requirement look herculean. However this is a task we must face if posterity will look at us favourably. The question becomes, what are the steps we must

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take to realize and actualize this lofty noble dream. The attempt to provide answers to the issue raised will form the fulcrum of this research

Conceptual Explanation

E-learning

E-learning refers to the use of ICT to enhance and support teaching and learning process. E-learning ranges from the way student use e-mail and accessing course work online while following a course on campus to programs offered entirely online. Again e-learning allows for efficient transfer of knowledge anywhere and anytime, regardless of subject matter. It opens up a world of learning unavailable in most corners of the world, while at the same time empowering learners with the information technology awareness and skills crucial to succeed in today global knowledge economy (Oye, Salleh and Ishad, 2011 cited in Ifegwu & Ishaku 2020). E-learning embraces any technologically driving process of giving and acquiring information and knowledge both formally and in an informal settings.

Sustainable Education /Learning

The concept of sustainable education connotes an educational system and learning that is self-sustaining, proactive and has the capability to meet the needs of the society not only in the immediate but on a continuous basis. Therefore sustainable learning is the process of learning, where learning is configured and structured to meet the needs and express its potentials in the present while maintaining the ideal for future generation. From the foregoing sustainable learning will occur when the traditional classroom or face-to-face education is combined with web-based education for practical and quality education that can meet the need of the future while serving the present.

Theoretical Framework

This work is leverages on the Integrated Model proposed by Picciano (2017). The integrated model itself, heavily depended on the work of Anderson's model which assumed that none of the instruction is delivered in traditional, face-to-face mode, and so excluded blended learning models that have some face-to-face component. Anderson (2011) and Picciano (2017) considered a number of theories

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and models but focused on the well-articulated work of Branford, Brown, and Cocking (1999) who posited that effective learning environments are framed within the convergence of four overlapping lenses: community-centeredness, knowledge-centeredness, learner-centeredness, and assessment centeredness. These lenses provided the foundational framework for Anderson's approach to building an online education theory, as he examined in detail the characteristics and facilities that the Internet provides with regards to each of the four lenses. Second, he noted that the Internet had evolved from a text-based environment to one in which all forms of media are supported and readily available. He also accurately commented that the Internet's hyperlink capacity is most compatible with the way human knowledge is stored and accessed

The Integrated Model suggested that blending the objectives, activities, and approaches within multiple modalities might be most effective for, and appeal to, a wide range of students. The model contains six basic pedagogical goals, and approaches for achieving them, to form learning modules. The most important feature of this model is that pedagogy drives the approaches that will work best to support student learning. The modules are also shown as intersecting but this is optional; they may or may not intersect or overlap depending upon the approaches used. For instance, some reflection can be incorporated into collaboration or not, depending upon how the collaborative activity is designed. It might be beneficial to have the collaborative groups reflect specifically on their activities. Similar scenarios are possible for the other modules. Ultimately important is that all the modules used blend together into a coherent whole. The following paragraphs briefly review each of these modules.

Content is one of the primary drivers of instruction and there are many ways in which content can be delivered and presented. While much of what is taught is delivered linguistically (teacher speaks/students listen or teacher writes/students write), this does not have to be the case, either in face-to-face or online environments. Mayer (2009) has done extensive reviews of the research and has concluded that learning is greatly enhanced by visualization. Certain subject areas, such as science, are highly dependent upon the use of visual simulations to demonstrate processes and systems. The humanities, especially art, history, and literature, can be greatly enhanced by rich digital images as well (Branford, Brown, and Cocking, 1999 cited in Picciano, 2017) Course/learning management systems (CMS/LMS) such as Blackboard, Canvas, or Moodle provide basic content delivery mechanisms for blended learning and easily handle the delivery of a variety of media

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including text, video, and audio. Games have also evolved and now play a larger role in instructional content. In providing and presenting content, the Blending with Pedagogical Purpose model suggests that multiple technologies and media be utilized (Bransford, Brown, and Cocking, 1999 cited in Picciano, 2017)

The Blending with Pedagogical Purpose model posits that instruction is not simply about learning content or a skill but also supports students socially and emotionally. As noted, constructivists view teaching and learning as inherently social activities. The physical presence of a teacher or tutor, in addition to providing instruction, is comforting and familiar. While perhaps more traditionally recognized as critical for high school students, social and emotional development must be acknowledged as important to education at all levels. Faculty members who have taught graduate courses know that students, even at this advanced level, frequently need someone with whom to speak, whether to help understand a complex concept or to provide advice about career and professional opportunities. While fully online courses and programs have evolved to the point where faculty members can provide some social and emotional support where possible and appropriate, in blended courses and programs this is more frequently provided in a face-to-face mode.(Bransford, Brown, and Cocking, 1999 cited in Picciano, 2017)

Dialectics or questioning is an important activity that allows faculty members to probe what students know and to help refine their knowledge. The Socratic Method remains one of the major techniques used in instruction, and many successful teachers are proud of their ability to stimulate discussion by asking the “right” questions to help students think critically about a topic or issue. In many cases, these questions serve to refine and narrow a discussion to very specific “points” or aspects of the topic at hand, and are not meant to be open-ended activities. For dialectic and questioning activities, a simple-to-use, threaded electronic discussion board or forum such as Voice Thread is an effective approach. A well-organized discussion board activity generally seeks to present a topic or issue and have students respond to questions and provide their own perspectives, while evaluating and responding to the opinions of others. The simple, direct visual of the “thread” also allows students to see how the entire discussion or lesson has evolved. In sum, for instructors who want to focus attention and dialogue on a specific topic, the main activity for many online courses has been, and continues to be, the electronic discussion board.

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Reflection can be incorporated as a powerful pedagogical strategy under the right circumstances. There is an extensive body of scholarship on the “reflective teacher” and the “reflective learner” dating from the early 20th century (Dewey, 1916 cited inNdongfack, 2015; Shon, 1983 inPicciano, 2017). While reflection can be a deeply personal activity, the ability to share one’s reflections with others can be beneficial. Pedagogical activities that require students to reflect on what they learn and to share their reflections with their teachers and fellow students extend and enrich reflection. Blogs(a website that allows users to reflect and share views online and at times allow readers comment) and blogging(building and editing of a blog), whether as group exercises or for individual journalistic activities, have evolved into appropriate tools for student reflection and other aspects of course activities.

Collaborative learning has evolved over decades. In face-to-face classes, group work grew in popularity and became commonplace in many course activities. Many professional programs, such as business administration, education, health science, and social work, rely heavily on collaborative learning as a technique for group problem solving. In the past, the logistics and time needed for effective collaboration in face-to-face classes were sometimes problematic. Now, email, mobile technology, and other forms of electronic communication alleviate some of these logistical issues. Wikis, especially, have grown in popularity and are becoming a staple in group projects and writing assignments. They are seen as important vehicles for creating knowledge and content, as well as for generating peer-review and evaluation (Fredericksen, 2015). Unlike face- to-face group work that typically ended up on the instructor’s desk when delivered in paper form, wikis allow students to generate content that can be shared with others during and beyond the end of a semester. Papers and projects developed through wikis can pass seamlessly from one group to another and from one class to another.

Evaluation of learning, according to Picciano, evaluation is an important component of the model. In the implementation of any project, even in learning, how much a child has prospered in his aims, can only be determined through evaluation. Therefore there is a correlation between evaluation and aims. CMSs/LMSs and other online tools and platforms provide a number of mechanisms to assist in this area. Papers, tests, assignments, and portfolios are among the major methods used for student learning assessment, and are easily done electronically. Essays and term projects pass back and forth

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between teacher and student without the need for paper. Oral classroom presentations are giving way to YouTube videos and podcasts. The portfolio is evolving into an electronic multimedia presentation of images, video, and audio that goes far beyond the three-inch, paper- filled binder. Weekly class discussions on discussion boards or blogs provide the instructor with an electronic record that can be reviewed over and over again to examine how students have participated and progressed over time. They are also most helpful to instructors to assess their own teaching and to review what worked and what did not work in a class. Increasingly, learning analytics are seen as the mechanisms for mining this trove of data to improve learning and teaching. In sum, online technology allows for a more seamless sharing of evaluation and assessment activities, and provides a permanent, accessible record for students and teachers.

The six components of the model described above form an integrated community of learning in which rich interaction, whether online or face-to-face, can be provided and blended across all modules. Furthermore, not every course must incorporate all of the activities and approaches of the model. The pedagogical objectives of a course should drive the activities and, hence, the approaches. For example, not every course needs to require collaborative learning or dialectic questioning. In addition to individual courses, faculty and instructional designers might consider examining an entire academic program to determine which components of the model best fit with overall programmatic goals and objectives. Here, the concept of learning extends beyond the course to the larger academic program where activities might integrate across courses.

The work adopts this model based on the fact that sustainable learning and development (SLE) requires rich interaction, whether online or face-to-face, which can be provided and blended across all modules.

Methodology

The research adopts a discourse approach based on content analysis. The work analyzed Sustainable Learning and Education (SLE) as propounded by Hay and Reinders (2020), contingent on web resources learning as expounded by Erencionova and Proudchenko (2017), then proposed the road map for its actualization in Nigeria.

Discussion

By dictionary definition, sustainability refers to a means of configuring civilization and human activities so that society, its member and its economics are able to meet their need and express their greatest potential in the present, while preserving bio-diversity and natural ecosystem, planning and acting for the ability to maintain this ideal for future generation. Therefore sustainable learning is the process of learning, where learning is configured and structured to meet the needs and express its potentials in the present while maintaining the ideal for future generation. From the foregoing sustainable learning will occur when the traditional classroom or face-to-face education is combined with web-based education for practical and quality education that can meet the need of the future while serving the present.

“Sustainable education system” is a term that has also appeared in the literature, but has not yet been well defined. Sustainable Learning and Education (SLE) is just beginning to coalesce as a concept and strategy. Very little has been published in scholarly sources on “sustainable teaching and learning” or “sustainable learning and teaching” (Hay &Reinders, 2020). Hay and Reinders however provide an insight on the objective of sustainable learning and education (SLE), which is self-sufficiency and consciousness. Thus, a curriculum for sustainability should strive for self-sufficiency and require few external resources to sustain and govern itself. The self-sufficiency is embedded in the concept of *autopoiesis*, a term which conveyed the notion of principles and aspirations designed to make education to be self-sustaining and emergent, reliant on little to no outside financial support for equipment, operation or growth. (Peschl&Fundneider 2017; Hay &Reinders, 2020).Consciousness, according to Hay and Reinders (2020) produce in the system the practice of vigilant attentiveness and mindfulness, continual awareness of internal and external conditions and ongoing assessment of the effectiveness of acting in the world, filtered through a lens of ethics, responsibility and sustainability. In essence the concept of sustainable education connotes an educational system and learning that is self-sustaining, proactive and has the capability to meet the needs of the society not only in the immediate but on a continuous basis. Oye, Salleh and Ishad (2011) aver that “the ability to obtain, assimilate, and apply the right knowledge effectively will become a key skill in the next century. Learning is the key to achieving our full potential. In fact, our survival in the 21st century as individual, organizations, and nations will depend upon our capacity to

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learn and the application of what we have learned to our daily lives”. Learning for sustainability focuses on equipping learners with the skills to take positive action to address a range of sustainability issues. It aims to go beyond individual behaviour change and seeks to implement systemic change within the community, institutions, government and industry (Tilbury& Cooke, 2005 in Ballantyne& packer 2006). However Hay and Reinders (2020) opined that “SLE is not necessarily education for sustainability, but rather sustainable learning, a new and different idea. The intention behind SLE is to create and proliferate sustainable curricula and methods of learning and teaching. These are designed to instil in people the skills and dispositions to thrive in complicated, challenging and ever-changing circumstances, and contribute to making the world a better place”. The authors emphasize the importance of systems and ecological thinking and the essential role of self-sufficiency as both a means and an end of sustainable learning and education.

Technology is gradually dominating the present world in all facets and ramifications. Since this is the trend, it is the view and belief of this researchers that a sustainable learning and education, however you view it, cannot be possible without leveraging on the opportunities and capabilities provided by the web resources. Meanwhile the world is already digitalize with more promise of more sophisticated advancement, learning and education must follow the trend, if it must be sustainable. This bring us to the concept of web technology in education.

The rapid development of computer and Web technologies will definitely result in the use of these technologies in all kinds of educational activities and will create information and educational space. The introduction and use of teaching capabilities of the Internet, Web technologies (Web services, educational Web resources, and network), software (Microsoft Word, Microsoft Internet Explorer, Microsoft Power Point, Windows Movie Maker, on-line resource Prezi) in the educational process of higher education are priority to develop the information and educational space. (Erenchionova&Proudchenko 2017).

The SLE, as initiated by Hay and Reinders(2020) sets out to build capabilities in resilience, responsiveness and change-readiness. More than that, it is committed to building the skills and orientations necessary to “learn forward” to anticipate challenges and opportunities that might arise, to proactively learn, develop and prepare by choice and design rather than being held hostage to change and environmental turbulence; and, moreover, to lead learning and innovation in such

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circumstances (Dochy and Segers 2018 according to Hay &Reinders, 2020) .Exploring and applying the theory, principles and ideals of sustainability in learning and education, the proposed SLE programme undertakes to influence participants' thinking and behaviour with respect to learning that is continually and consciously self-initiating and self-directing; both autonomous and collaborative; and responsive, adaptive and anticipative of emerging challenges and opportunities(Hay &Reinders, 2020). Erenchionova&Proudchenko (2017) believed also that (technology) internet based education will allow organizing the learning process so that students would work actively, with interest and enthusiasm not only in the classroom, but also would study on their own, could see the results of their work and were able to evaluate them. The combination of traditional teaching methods and multimedia, including computer and using Web resources can help to solve this problem. Computer use in the classroom allows one to make the learning process more mobile, strictly differentiated, individual and interactive. From the foregoing, it became more and more evident that sustainable learning and education will have to be contingent upon the trajectory of web resource learning. Sunil (2017) contributing on the benefit of e-learning, point out a striking link of e-learning and sustainability. He opined that “As e-Learning is a paperless way of learning, it protects the environment to a lot of extent. As per a study done on eLearning courses, it has been found that distance-based learning programs consumed around 90% less power and generated 85% less amount of CO2 emissions as compared to traditional campus-based educational courses. With eLearning, there is no need to cut trees for obtaining paper. Thus, e-Learning is a highly eco-friendly way of learning” with the level of advancement technologically, traditional education that is confined to face-to face learning is fast becoming obsolete. Education has shifted from the traditional form of education towards new methods of teaching and learning through the explosion of Information and Communication Technologies (ICT). The continuous advances in information technology have enabled the realization of a more distributed structure of knowledge transfer through the development of e- learning. (Anene& Imam, 2014). Consequently a sustainable learning and education module must incorporate online learning.

According toHrastinski (2009) “Learning as participation in the social world is at the core of Lave and Wenger’s (1991) theory of learning, a theory that is further elaborated on in Wenger (1998). Social learning theories stress that learning occurs in interaction with others and that learning is an

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aspect of all human activities (Säljö, 2000 cited Hrastinski, 2009) and underline that learning and participation are not separate activities that can be turned on and off (Wenger 1998 in Hrastinski, 2009). Thus, students are not students just while they are in the classroom. It is widely acknowledged that students learn and support each other both inside and outside the classroom (Brown & Duguid 1996; Rovai, Wighting & Lucking 2004 cited in Hrastinski, 2009). Web resources are an invaluable base to create the information and subject environment, education and self-education for students, meet their personal and professional interests and needs (Erenchionova & Proudchenko, 2017) In fact, most learning in higher education occurs outside the classroom (Ramsden, 1992 in Hrastinski, 2009). Social learning theories view learning as inseparable from the day-to-day practices that people carry out in their studies and work (Hislop 2006 in Hrastinski, 2009). Anene & Imam (2014) in support of technologically based learning aver that technology enhanced learning, includes distance and online instruction, which are recognized as a viable tool necessary for preparing citizens to participate in the technologically driven global environment. The concepts computer-aided teaching and computer-aided learning have given birth to computer-aided instruction, which represents a combination of both teaching and learning. Erenchionova & Proudchenko (2017) contributing on the benefits of technology-based learning, opined that "this method of teaching is also attractive to lecturers. It helps to better assess the skills and knowledge of students, encourages the search for new, innovative forms and methods of teaching, gives props for creativity as the Internet grows explosively". The component, process and purpose of SLE is for innovative, creative learning that is self-sustaining and that which produces consciousness on the system, student and stakeholders. Hrastinski (2009) however, suggested that "if we want to enhance online learning, we need to enhance online learner participation...this perspective on online learning differs fundamentally from that of recent research that use simplistic measures of online participation, such as counting the number of messages learners write. Instead, when conceptualizing the concept, he argued that online learner participation be view as a complex process of taking part and maintaining relations with others; supported by physical and psychological tools; not synonymous with talking or writing, and may involve collaboration with peers but essentially it may involve all kinds of relations"

The Road Map

Since technology has become sine qua non in the present world in all facets and ramifications, sustainable learning and education, can only be possible through leveraging on the opportunities and capabilities provided by the internet. We will like to begin the discussion on the road map for sustainable learning and education in Nigeria by first checking the road blocks to sustainable education and learning, then we look at how to dismantle them. the challenges of SLE in Nigeria includes but not limited to: mass unawareness, low literacy level, lack of or insufficient fund in the education sector, high cost of equipment and materials, non-availability of internet access occasioned by recurrent cost of bandwidth, political and social factors, among others. (Resnick, 2002; Folorunso, Ogunseye and Sharma 2006; Sharma, Ekundayo, and Ng 2009; Oyeet *al* 2011). The review of Oyeet *al* (2011) on United Kingdom, France, Australia and Korea on e-learning (sustainable education).The survey shows that these countries were able to surmount these challenges through the following means:

- i. they have the vision and program action plans for e-learning.*
- ii. They have the government policies, programs and financial support by substantial public funding.*
- iii. They have earmarked action program for each year and committees are formed and funded to pursue the expected goals.*
- iv. They have invested on the Internet, ICT infrastructure and power (Electricity). They rank high among the world Internet users while Nigeria is less than 2 % [Zook, 2004, in Oye et al 2011]*
- v. They embark on research because they believe that research is a fundamental part of E- learning strategy. In addition they embark on training and awareness as an essential component of an e-learning strategy.*

Going forward, the above steps is the first strategy towards actualizing sustainability in the education system. Ifegwu and Ishaku (2020) suggested that “as a major stakeholder, government should provide the legal framework, policies and structures that will carry sustainable learning and education by all stakeholder, Private or public” Since SLE is committed to building the skills and orientations necessary to “learn forward” to anticipate challenges and opportunities that might arise, to proactively

learn, develop and prepare by choice and design rather than being held hostage to change and environmental turbulence; and, moreover, to lead learning and innovation in such circumstances, a new curriculum that will dramatically reinvent the content and process of education is sine qua non. In addition Oyeet *al* (2011) suggested some action plans: the Federal Government should improve on educational funding as UNESCO recommended 26% of the annual budget, improve and maintain steady supply of electricity in the country. Furthermore all education level (not just the University) management should embark on awareness and training of staff on the use of ICTs, with motivations attached. The Internet is a major driver of ICT in education and bandwidth is a major issue in the deployment of e-learning. Therefore government should make Internet connectivity a priority for higher education to be able to leverage on the promises and opportunities ICTs present.

Beyond the awareness strategy, a new dimension for recruitment of teachers /lectures as the case may be must come on board. According to Okere and Ifegwu, (2020) “the skills required to work in a virtual environment differ somewhat from that of a worker in a more traditional environment”. The skills set that will be required by human resource professionals, proprietor and government agencies in the case of public schools in the recruitment, assessment, and selection of effective virtual staff must include teachers/lecturers/ non-tutorial/administrative staff that are internet compliant and are proficient with technical tools and electronic etiquette: E-mail, collaborative software systems, Internet, Intranet, desktop videoconferencing systems, non-desktop videoconferencing systems and teleconferencing. Certainly, approval of any school or education institute is done by government agencies, the legal framework that spell the minimum standard must be strictly adhere to, if we must make progress towards sustainable learning and education. Education has to be liberalized in Nigeria in order to raise the humongous resources needed for sustainability. What that means is that government should deregulate the tuition fees collectible by each school, however they must set a range. Communities, individuals, organization should be involved in funding education by setting up trust funds managed by transparent committees to complement government efforts.

Conclusion

SLE as a concept may not lend itself to a precise definition but it has a goal and a target which is to build capabilities in resilience, responsiveness and change-readiness in the education system (Hay

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&Reinders, 2020). It embraces innovative and creative learning. It is achievable only if all stakeholders should have mind shift from mediocrity toward a sustainable learning and education.

Recommendations

Sustainable learning and education is possible when there is sincerity and accountability in the system. Beginning from the education budget to the implementation of the same. Management of institutions on their own must buy into the vision of sustainable learning and education since they are the major drivers. The parents should step up in their contributions towards sustainable education and shun any nefarious activities capable of lowering the standard of education. Teachers/ lecturers or administrator should become more conscious in the discharge of their duty bearing in mind that the generation they are producing determine the outcome of the next generation. The students should note that graduate that cannot be self –sustaining after graduating is a misfit, therefore must avoid short-cut rather embrace diligence, self enhancement and development. All hands must be on the deck.

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