

Covid-19 and Sustainable Architectural Education: Challenges and Perceptions on Online Learning.

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ABSTRACT

Architectural education has had its share in the continuous demand for shift in the learning process to address changes and new requirements sustainably. Recently, the impact of coronavirus (covid-19) pandemic has been unprecedented in all areas of human activities. In the education section pandemic has forced schools to shut down and thus, the suspension of face-to-face learning to remote or online learning in many countries. This action was taken to mitigate the impact of the coronavirus pandemic and its spread. This study sought the opinion of architectural students across the country's 6 geopolitical regions in public universities via an online questionnaire survey on the challenges of online or remote learning. This study would help schools of architecture to strategize to reduce the challenges uncovered and promote the potentials of online learning. The main theoretical findings for the potentials of online learning are; flexible technological innovations in teaching and the development of new online tools. Whilst the challenges include; inadequate electricity supply, internet/data affordability, and 3D analogue or physical model presentation and validated. Furthermore, the primary findings uncover some challenges common to Nigeria, which includes; unbelief, incapacity and family interruptions. The study from its findings suggests insights into the way forward like harnessing the potentials of solar energy to supply clean energy and electricity to schools of architecture in Nigeria amongst others.

Key words: *architectural education, covid-19, online learning, pandemic, sustainable architecture.*

I. Introduction

Towards the end of the year 2019, there was an outbreak of the coronavirus tagged Covid-19 and by the end of March 2020 it became a global pandemic (Ibrahim, et al., 2020). This pandemic forced many countries including Nigeria to shutdown with a total or partial lockdown to curb the spread of the virus. Hence, schools and particularly universities forced to shut down academic activities. The impact of Covid -19 on education deserves investigating into (Adebisi et al., 2020) and the future of architectural education and its stability raises series of questions that must be addressed by research (Salama and Crosbie, 2020).

According to United Nations Educational, Scientific and Cultural Organizations (UNESCO) data, about 1.2 billion students globally stopped having face-to-face learning (Khogali, 2020, UNESCO, 2020). In compliance with the governments and many Ministries of Education world-wide encouraged remote learning via online digital resources (UNESCO, 2020) including Nigeria (Samuel, 2020). Yet, many societies are not able to engage fully with online learning (Goswan, 2020, Ibrahim et al., 2020, UNESCO, 2020), for reasons of; unequal spread of resources, strategies, poverty (Riebel-Auobourg and Viteri, 2020).

In Africa, other reasons include; unequal access to internet, cultural shock, unplanned alternative learning strategies, inaction by government and interactive websites tools (Samuel, 2020). Additionally, in Nigeria the gap between those who can afford and those who are unable to afford and conduct online learning is very wide (Amorighoye, 2020).

Thus, the purpose for this study is to harness the potentials and challenges of online learning in architectural education in order to strategize against the challenges and promote the potentials. The study also sought the opinion of architectural students who are the direct beneficiaries to uncover what their challenges are in order to deduce and make recommendations for future improvements and strategies for the Nigerian architectural education and similar contexts globally.

II. Literature Review

Following the background in the introduction, this section reviews the theoretical underpins on covid-19 and the potentials and challenges posed by the new normal in the architectural education globally.

The present coronavirus pandemic and the preference for online or remote learning has become an area of concern much discussion for architectural education globally. These discussions are centred on the potentials and new challenges in the new way of learning because of the coronavirus pandemic (Ceylan, Şahin, Seçmen, Somer, and Süher, 2020, Goswan, 2020, Ibrahim et al., 2020). Additionally, Schwarz et al. (2020) opined and concluded

that, online learning promotes sustainability in the education sector. Given that all sustainable agendas are best pursue through education (Allu, 2018). More so, earlier researchers have strongly supported the importance of sustainable education in architectural training (Allu, 2018; International Sustainable Campus Network (ISCN), 2018; Salviono et. al., 2017).

The design studio in many countries is the main learning environment for architectural education (Wright and Grover, 2020). This situation has received some criticism for a more interdependent learning environment (Brown, 2020, Mayuk and Cosgun, 2020). This position was supported by Wright and Grover (2020) who argued for a more flexible and sustainable architectural education (Allu and Ebohon, 2018) learning environment to cater for such a time as with the present coronavirus pandemic.

Other studies also emphasized the need for architectural education to interconnect between theory, application and practical training (Piplani, & Brar, 2020a and 2020b) and sustainability (Allu, 2018; Milovanović, et. al., 2020). More so that, many researches have supported the online learning environment as an alternative for the new normal in learning.

However, despite this shift to the online learning, the physical dimension of the studio learning environment continue to remain relevant to the architectural education despite the seemingly success of the online learning (Brown, 2020; Jones, Lotz and Holden, 2020, Salama and Crosbie (2020); Wright and Grover, 2020). In furtherance to this Jones and Holden (2019) and Jones, Lotz and Holden (2020) have concluded that, the online formal learning platforms must be improved to cater for the peculiarity for architectural education. Again, this argument has been supported by the study of Mayuk and Cosgun (2020), whose findings with student workshops revealed that students prefer to learn by doing rather than listening.

A. Prospects and Challenges for Online Learning in Architectural Education.

For every human activity, there are prospects and potentials for improvements, so also challenges to surmount. The prospects and or the potentials of online learning as against face-to-face learning have received the attention of many researchers and these have been enumerated in Table 1.

Table 1 Prospects for Online Learning

S/N	PROSPECTS/POTENTIALS	SOURCES
1	Efficiency: Online learning offers opportunity for better delivery of lessons and instructions beyond what textbooks may offer	Gautam (2020). Schwarz et al. (2020). Dumbauld (2020).
2	Innovations: Online learning engage with software tools such as videos, PDFs, which are being improved continuously to cater for learning and teaching requirements.	Milovanović, et al. (2020),
3	Accessibility/Diversity: Time and geographical location are not barriers and as such schools are able to have students across the globe.	Gautam, (2020). Schwarz et al. (2020)
4	Flexibility: Ability to have sessions even during uncertainty	Schwarz et al. (2020). Milovanović, et al. (2020).
5	Suits different of learning styles: those with different preference – audios and visuals.	Gautam, (2020).
6	Improved Student Attendance: Since online learning is without boundaries it is possible to have full attendance.	Gautam, (2020). Schwarz et al. (2020).
7	Cost Effective: Online learning reduces financial costs and affordability especially where such education is being sponsored.	Schwarz et al. (2020). Milovanović, et al. (2020)
8	Less intimidating and fosters better class participation particularly amongst mental health persons.	Dumbauld (2020).

9	Promotes Sustainability	Schwarz et al. (2020). Milovanović, et al. (2020)
10	Requires new reform and change of curriculum in architecture education.	Kumar (2020). Reimers and Schleicher (2020).
11	Promotes Instructor accessibility and availability.	Dumbauld (2020).
12	Online learning promotes life-long learning and instant results and review of lectures.	Dumbauld (2020).
13	Promotes solar as an alternative source electricity and energy use	Reimers and Schleicher (2020).

Table 2. Challenges of Online Learning

S/N	Challenges	Sources
1	Technology Issues: irregular internet speed and connection.	Goswan, (2020). Samuel (2020). Kumar (2020).
2	Lack of in-person collaborations and peer learning.	Schwarz et al. (2020). Milovanović, et al. (2020)
3	Inability to manage or focus on Screens for long periods and to remain attentive.	Redden (2020).
4	Increased energy use in buildings	Schwarz et al. (2020). Hook et al. (2020).
5	Online courses make it easier for students to procrastinate.	Friedman (2020).
6	Requires the retraining of Teachers to understand the applicability of using digital forms of learning in many cases.	Reimers and Schleicher (2020).
7	Mental Health concerns and loneliness	Schwarz et al. (2020). Milovanović, et al. (2020)
8	Difficulty in accessing special software for specific architectural learning.	Salama and Crosbie (2020).
9	Online courses make students responsible for their learning and time management. This reduces the responsibility and the role of teachers to mentor, guide and encourage their students.	Friedman (2020). Redden (2020).
10	Sense of isolation and loneliness	Milovanović, et al. (2020).
11	Increased concerns for; data security, security compliance, and unethical activities like privacy.	Farrer et al. (2020). Davidson and Kuo (2020).
12	Loss of stability in the state of architectural education across the global regions,	Salama and Crosbie (2020)
13	Prioritizing rethinking model of learning and developing new curricula during pandemic	Reimers and Schleicher (2020). Salama and Crosbie (2020)
14	Concern for bridging the gap for general concept of education with the real needs of sustainable environmental demands.	Milovanović, et al. (2020).
15	The integrity of assessment of students.	Reimers and Schleicher (2020).

Tables 1 and 2 outlined the potentials and challenges of online learning in general and the challenges specific to sustainable architectural education in Nigeria is the focus of this research. However, there is limited information in this subject in Nigeria (Abdulmajeed, et al., 2020). Furthermore, their study identified and group the challenges into three broad factors as; Socioeconomic, Sociocultural, and IT infrastructural as the main factors challenging online learning in Nigeria.

Table 2 has presented these factors in general items, in this study these factors are simplified and broken into specific items to enable the students answer the questions with clear understanding of the factors.

III. Materials and Method

This study adopts a questionnaire survey amongst students of university studying architecture. A mixture of online and hardcopy survey instruments was used in order to reach out to all students who have or have easy access to the internet. A simple “Yes” or “No” options were provided and the “Neutral” option was not used to avoid the giving the students’ respondents making the decision to remain neutral in an exercise that directly affect them. According to Editage Insights (2020), the advantages of using the “Yes or No” options include; easy for tallying and calculating percentages, participants are less resistant to participate, easy to access consistency and awareness of participants and also, it is makes the researchers ask specific questions clearly.

The survey was limited to six public universities representing the six geopolitical regions of Nigeria. These are North-Central, North- East, North- West, South- East, South- South and South- West. Table 3 presents questions asked, answers given and their percentages without specifying the universities to abide with non-disclosure considerations.

The respondents were also asked to suggest other challenges of online learning as it concern their specific training. The survey was

conducted between 2nd December 2020 and 3rd February 2021. A total of 201 students responded to the questionnaire survey. Aligning with the focus of the study, the literature underpins forms the basis and for the questions asked in the survey instrument.

IV. Results and Discussions

Table 3 Responses to challenges of online learning in Nigeria.

S/ N	Questions	Response	
		Yes	No
1	Do you think there are challenges with online learning that are specific to your course?	201(100%)	0 (0%)
2	Do you prefer online learning to face-to-face learning?	132 (65.6%)	69 (34.3%)
3	Do you think online learning is able to cover all areas of your training?	56 (27.8%)	145 (72.2%)
4	Are you currently engaged in online learning for all of your courses?	18 (8.9%)	183 (91.4%)
5	Is electricity supply adequate for online learning?	21(10.4%)	180 (89.6%)
6	Are you or your university able to provide data/internet regularly?	33 (16.4%)	168 (83.6%)
7	Do you think online learning would create loneliness, mental ill health or pose any health challenge for your well-being?	95(47.2%)	106 (52.8%)
8	Is the environment for you to participate in online learning suitable?	13 (6.4%)	188 (93.6%)

The survey has validated the literature underpins as presented in Table 3 and discussed in the following paragraphs. From the results 100% of the students online learning has its challenges of which 65.6% prefer online to face-to-face learning. However, only 18 respondents representing 8.9% as against 91.4% are currently engaged with online learning in all courses. This means the face-to-face learning is very in use in the Nigerian public universities. The question for a follow-up research would be ascertain that these universities have adequately made provisions for safety protocols against the spread of coronavirus.

In validating the challenges of interruptions for the smooth running of online learning in Nigeria, the results revealed that only about 10% of the respondents are sure of electricity supply. Another 16.4% confirmed that a regular provision of data and internet by universities or the students is certain. Whereas, on the problem mental health and general well-being associated with online learning, the result shows a near divide on the opinion. 47.2% suggest that health challenges are likely and 52.8% do not foresee such challenges.

The remote environment for learning amongst undergraduate students is usually their family home, being that many are between teenage age and young adults. There were only 6.4% who are comfortable with their learning environment. By implications the classroom environment remains the better options amongst the 93.6% the students who find their online learning environment unsuitable. Questions with low score affirmations are indications of areas that need immediate intervention or strategizing to surmount the challenges therein within the Nigerian context of online learning.

The questionnaire survey gave room for the respondents to provide further information on other possible challenges associated with online learning that the survey may not have addressed. The following were uncovered:

- Disbelief by parents on the effectiveness of online learning.
- Preference for recorded audio online learning.
- Frequent interruptions by family members.
- Lack of compatible phones to connect to online learning platforms.
- Inability to afford buying computer.
- Reduces the emotional and community sense of belonging among classmates or peers.
- Environmental and self-distractions (watching TV, visitors, leisure, sports, procrastination).
- Not sure about the capacity of lecturers to teach efficiently using online tools and platform.
- Some technological innovations may be used outside the purposes they are meant for and thereby creating avenues for cyber-crimes and privacy concerns.

These uncovered challenges serve as guides for policies and proactive strategies to improve online learning in schools of architecture in Nigeria and provide insights to other context and researchers.

V. *Conclusion*

In order to advance online architectural education amidst the pandemic era and beyond, a deductive inquiry survey was conducted amongst students of architecture in Nigeria. Based on theoretical underpins, some general potentials and challenges were presented and validated by the survey conducted. The prospects and potentials include; IT online innovations, new skill development for all stakeholders, adaptive studio space, use of solar energy and ability to lean and work in periods of uncertainty, reduction in the spread of coronavirus and other airborne diseases.

Whilst the challenges recorded were; lack of adequate electricity supply, inability to operate some of the online tools, weak government commitment, inability to afford online learning tools, lack of alternatives to presenting 3D analogue models physically and the inability of schools of architecture provide adequate online learning tools.

By implication new skills and hybrid learning seems inevitable for now in Nigeria. This study therefore, recommends that, face-to-face learning and the online learning be complimentary, particularly in the Nigerian context, until these challenges are overcome or reduce. Whilst, the potentials are harnessed to suit the requirements for a sustainable architectural education. An example would be harnessing the potentials of solar energy to supply clean energy and electricity to schools of architecture and other areas of remote learning in Nigeria.

Different methodologies are suggested for similar studies and further studies in other context are encouraged to draw out areas of fine-tuning and commonalities for advancing sustainable architectural education.

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