Technology Acceptance Level Among Students Olebara Comfort Chinaza

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ABSTRACT

This paper is a part of various linked studies towards unravelling the reasons behind the poor performance of Nigeria in the SDG 4 index. With less than 10 years to the 2030 target for achieving a 17-goal developmental plan for United Nation member states, Nigeria is still at a loss as to actualizing the pivotal Sustainable Development Goal of quality education. Results from a voluntary assessment body, Voluntary National Review (VNR) as well as SDG index reports indicate that the Nigerian education sector has major challenges and not much has been achieved from the time of goal setting till date. The researcher, considered technology as a means for advancing the education quality through making learning more entertaining and engaging. The students were presented with questionnaire to determine their acceptance of visual learning. The result shows, that majority of the students accept visual learning tools, find it interactive and retain knowledge gained from visual learning aids more than traditional learning pattern.

Keywords: SDG 4, Visual Learning, Quality Education, SDG Assessment, Rural Education, terrorism, Digital learning, Virtual Reality

1. INTRODUCTION

Visual Learning and its Role in Knowledge Acquisition and Retention
By definition, visual learning is the act of learning through visualizing the learning objects such as charts, colour coding, concept maps etcetera. In the context of this paper, the researcher uses Visual learning to represent the use of digital hardware and software in learning. Virtual reality, computer simulations, and mobile phones, are some of the visual tools that can be deployed in theeducation sector. According to [1] visual learning constitutes processes of input and interaction, and that taking into account the learners' needs and aspirations as portrayed in visual learning, makes the learners feel involved and genuine towards learning.

Nigeria is a country with a population of about 200 million people with 47.25 percent of the peopleliving in the rural areas of the country [2] . In 2015 United Nations had 173 member states adopt an agenda for sustainable development. 17 goals were identified and tagged Sustainable Development Goals, and the expected year of accomplishment was set to 2030 [3]. Achievementswere to be measured using set indicators with member nations voluntarily presenting themselves for annual evaluation of progress by Voluntary National Review (VNR).

The UN, however, identifies education as being the foundation upon which other goals will thrive. Nigeria, as at the assessment in 2020, has shown little or no progress towards the actualization of the quality education goal which ranks No 4 on the SDG list with the dashboard indicator on her education status showing a that there are major challenges remaining in this sector Sdgindex, 2019).

Actualizing UN Quality Education Targets
Having qualified teachers facilitate learning is pivotal to the success of most goal 4 targets, butthis target may not be attainable as teachers posted to schools in rural areas quickly find a way to change thepostings or quit their jobs outrightly due to alarming rate of kidnapping and related terrorist activities making it almost impossible to achieve quality education targets of UN SDG in Nigeria. Students from these rural areas end up in the universities in town not achieving basic literacy andnumeracy hence great government policies are not implemented or monitored. niversities and other higher institutions are obligated to absorb as many students as possible within her community. The schools' carrying capacity is overstretched. With a poor academic foundation suchas described, poor educational infrastructure, and a poor learning environment, most of the students rarely attend classes, but show up during the exams.
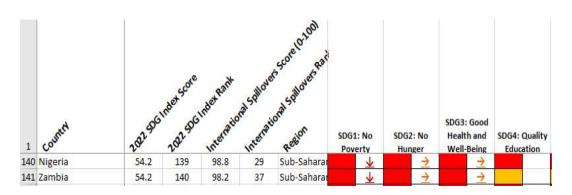
2. LITERATURE REVIEW

The United Nations SDG index uses a set of indicators called targets to provides assess the achievements of member states and present the report on a dashboard that allows each membernation to have a view of how they are performing. The indicators include colour codes that represents various achievement levels and arrows whose direction are used to represent time series of the achievements. Figure 1 below show the dashboard indicators and their meaning:

Legend		
Dashboard :		
	green	Goal Achievement
	yellow	Challenges remain
	orange	Significant challenges
	red	Major challenges
	grey	Insufficient data
Time Series :		
	↑	On track or maintaining achievement
	↗	Moderately Increasing
	→	Stagnating
	↓	Decreasing

Figure 1: Sustainable Development Goals indicators   Source:SDG index(2019)

1	Country	2022 SDG Index Score	2022 SDG Index Rank	International Spillovers Score (0-100)	International Spillovers Rank	Region	SDG1: No Poverty	SDG2: No Hunger	SDG3: Good Health and Well-Being	SDG4: Quality Education
140	Nigeria	54.2	139	98.8	29	Sub-Sahara	↓	→	→	
141	Zambia	54.2	140	98.2	37	Sub-Sahara	↓	→	→	

Figure 2: Nigeria's Quality education Sustainable Development Goals dashboard Source: SDGindexl(2019)

Figure 2 above shows the status of Nigeria on goal 4. the dashboard with a red colour code indicates that there are major challenges that impede on the achieving the quality education goalor even making noticeable progress in that sector. Some measures taken by three developed countries USA, United Kingdom and China, in their education sector, and how these measures have impacted positively in improving the quality of education in these countries.

In seeking to advance the SDG 4, the researcher observed that lack of comprehension of taught courses, was amajor contributor to the students' poor academic performance as well as lack of skill for employability and career pursuit. Majority of the students find it difficult to understand taught topics and those who comprehend may lack the ability to retain the knowledge. This the studentsattributed to lack of conducive learning environment, continued use of traditional system in a place where the students' population has quadrupled and carrying capacity overstretched.

3. METHODOLOGY

Research Purpose and Design
This paper draws from the result of a study to investigate the acceptance of visual technologies inteaching. It also uses the respondents' self-reports to determine the relationship between the agesof the respondents and their visual learning choice. The results gives insight into planning for an effective teaching geared towards actualizing the targets of SDG 4 and making the learners industry-ready. Using Technology Acceptance Model(TAM) principles which proposes presenting the target group with a sample of the intended technology, the students, in a semester-long experiment were taught various courses visually andallowed to follow tutor's demonstration using Mobile App Integrated Development Environments, while the tutor uses the PC version of the Applications and a projector for demonstration.

Research Area
Undergraduates of Imo State University were identified as participants in this research. Students in 13 departments spanning across 5 faculties were captured in the study. The responses were usedto carry out a pilot study. The pilot study gave insight that is used to propose a solution to a recurring national problem.

Research Instrument and Method
Google form was used for designing the questionnaire with which data was collected. The questionnaire was distributed using the students class platforms. Responses were coded in aspreadsheet and analyzed using SPSS version 20. The questionnaire consisted of 3 sections. Section 1 was used to collect the students' biodata (Age, Gender, study field), Session 2 was usedto collect data on students' interest in visualized learning, while section 3 was used to collect information on students' knowledge and skill acquisition level using visualized learning. Thequestions followed Likert as well as close-ended format.

Sample size
In this study, the questionnaire was sent to over 1000 students in different departments of theuniversity. However, a total of 524 responses were received and 13 departments captured.

Research Question
What is the visual learning acceptance level of students

Data Analysis
Data from participants were coded into numerical data in a spreadsheet. Processing and analysiswere carried out using SPSS (Statistical Packages for Social Sciences) version 20 and reported by means of descriptive statistics and CHI Square tests.

4. RESULT AND DISCUSSION

The output from the data analysis will be discussed in this section. The demographic data is presented in table 1 below. From the demographic information on the respondents, three age categories were captured: respondents between 16-18 years, 19-21 years, and those that are 22 years and above. 16-18 years had a distribution of 10 out of 524 respondents,representing 1.9%. Group 2 captured those between the ages of 19-21, with a distribution of 246 out of 524 respondents, representing 47%. While group 3 captures those that are 22 years and above, with a distribution of 268 out of 524 respondents. Demography on respondents' gender shows that out of the 524 participants, 216(41.2%) were male, while 308(58.8%) were female. With regards to the field of study of the respondents, 45%(236) are in the field of Arts while 55%(288) are in Sciences.

Table 1: Socio-demographics of Respondents

Age	Frequency	Percentage
16-18	10	1.9
19-21	246	47.0
22 and Above	268	51.1
Gender		
Male	216	41.2
Female	308	58.8
Field of Study		
Arts	236	45.0
Science	288	55.0

Visual Learning Acceptance

The respondents were presented with 4 questions with a view to ascertain their acceptance level of visual learning. The scores on these questions were summed to get Total Visual Learning (TVL)and an average (ATVL) obtained by dividing the score by the number of questions in the domain. This was followed by performing descriptive statistics on the average to obtain mean score which served as cut-off for categorization (CatATVL). Table 2 below shows the descriptivestatistic on ATVL.

Table 2: Descriptive for Average Total Visual Learning

	Statistics	Std Error
Mean	3.2	0.036
95% Confidence Interval formean Lower bound	3.1372	
Upper bound	3.2785	
5% Trimmed mean	3.2699	
Median	3.2500	
Variance	0.680	
Std Deviation	0.82484	
Minimum	0.25	
Maximum	4.25	
Range	4.00	
Inter quartile Range	1.00	
Skewness	0.962	0.107
Kurtosis	0.786	0.213

Cut-0ff=3.2

To categorize, select the transform menu->Recode into different variable-> radio button for Range,Lowest through value-> enter the mean cut-off-> on the right-hand side, enter the category for lowvisual learning acceptance which is set to 0 in this case, and add. Also, the radio button for Range,value through highest is selected and the mean entered. The value of 1 is entered for this categoryand added to the transform tool. The result is the Categorization of the average score on visual learning acceptance which groups respondents into two categories: those with low visual learningacceptance and those with high visual learning acceptance. The result of categorization gave the insight presented on table III below:

Table 3: Frequency table for Categorized Average Total Visual Learning Score

Value	Frequency	Percent
0(Low Visual learning acceptance)	197	37.6
1 (High Visual learning acceptance)	327	62.4

From table 3 above, 197(37.6%) respondents had low visual learning acceptance level while 327(62,4%) had high visual learning acceptance level. With this frequency table for Categorized visual learning acceptance, the researcher gained insight into the level of acceptance of visual learning incorporation into the teaching system in rural Nigeria, as a mean of fast-tracking the developmental strides in the sector.

From the descriptive statistic, more respondents accepted the use of visual learning in education system

5. CONCLUSION

The research shows that the acceptance level of visual technology as a means of ensuring comprehension and knowledge retention is widely accepted and that the ages of the students doesnot have significant effect on the learning style they choose. Aisami (2015) found that identifyingstudents learning styles proves effective in planning for teaching programs. Considering the enormous benefits associated visually aiding learning, the researcher proposes the use of visual learning in teaching students in rural areas of Nigeria, as it is becoming almost impossible to postqualified teachers to these areas. To this end, undergraduates cutting across arts and science fieldsof study, were used in a pilot study to test the level of acceptance of visual learning among Nigeriastudents.

Endnote/Copyright Note

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