COMPUTER EDUCATION: A VITAL TOOL TO AID VOCATIONAL AND TECHNICAL EDUCATION IN SUSTAINABLE DEVELOPMENT IN NIGERIA

BY

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Abstract

The rapid technological changes have offered opportunities and challenges, yet the learning environment, capacity of the teachers and quality of education have not kept to this pace. The observed shortfalls above necessitated this study on Computer Education: A Vital Tool to aid Vocational and Technical Education in Sustainable Development in Nigeria. Two research questions were answered. The Related literatures were reviewed. The study adopted descriptive survey research design and structured questionnaire was the instruments for the data collection. A total population of 16 respondents being the year one students of Computer and Robotics Education, University of Nigeria, Nsukka. A questionnaire containing 21 items tilted Computer Education: Tool to aid Vocational and Technical Education in Sustainable Development Questionnaire (CETVTESDQ) was used to obtain information from respondents. The instrument was face-validated by two lecturers from the Department of Computer and Robotics Education, University of Nigeria, Nsukka. The instrument was trial tested to establish the internal consistency of the items. Twenty copies of the questionnaire were administered to the year two students. The reliability of the instrument was conducted using Cronbach alpha reliability method and it yielded overall co-efficient of 0.76, 86, 74, and 72 for the different clusters respectively. The research questions were analysed using mean and standard deviation. The response options of Strongly Agree (SA), Agree (A), Slightly Agree (SA), Not Agreed (NA) were used. Based on the findings of the study, conclusions were drawn. It was recommended among others that the Expansion of education and training facilities with a view to fostering and improving knowledge and skills relating to sustainable development. This paper will try to explore the various ways in which Computer Education can be useful as a vital tool to build sustainable developmental goals '4';

Key words: Computer Education, Vocational and Technical Education, Sustainable Development Goals.

Introduction

Education may be conceptualized as all efforts, conscious and direct, incidental and indirect, made by a given society to accomplish certain objectives that are considered desirable in terms of individual's own need as well as the need of the society where that education is based (Okoro,2010). There is awareness that education can play a significant role in confronting the challenges of the 21st century (Madsen, 2013). Goodier (2017) states that the major objective of education in societal and economic development is acknowledged in the right to primary education forming part of the many international reports on human rights. Stating the importance of education, Okebukola (2013) enumerates the contributory role for educational sustainability in strengthening the economy of a nation which includes: developing skills and knowledge for growing the economy and spawning new industries; promoting creativity; stimulating research for innovative discoveries; alleviating poverty; enhancing gender equality; and improving health. Education, predominantly all-inclusive and quality education is the focus of SDG 4.

Education is perceived also as the first step of the sustainable development and a very significant step in improving a generation of people to appreciate importance of sustainability (Zenelaj,

2013). The well-being of mankind and guarantee of its survival in all elements and forces of nature cannot be achieved without Computer education.

Computer may be defined as a machine that can solve problems by accepting data performing certain operations and presenting the results of those operations under the direction of detailed step-by-step instructions. Such a set of sequenced instructions, which cause a computer to perform particular operation, is called a program (Nagpal, 2015). Computer Education is the study of the operating principles of computers, computer programming language and algorithms for solving theoretical as well as practical problems. It also involves the development and use of devices for processing information. (Nagpal, 2015).

Computer Education is tasked with training of teachers that will teach computer studies in schools and professions in Vocational and technical education, computer hardware maintenance, information technology, networking, Robotics, software and application. This was due to the national need to produce professionals that would impact computing and educational robotics skills on citizens of Nigeria for improved economic and social relevance. Computer education should be tailored toward the promotion of economic growth and people advancement. The fact is that education today can no longer effectively function without information and communication Technology (ICT) and the heart of the (ICT) is the computer and its applications. The teachers that will impact technological professional, computing and robotics skills must be produced for Nigeria to meet the Sustainable Development Goals (SDGs). (Department of Computer and Robotics Education Students' Handbook, 2019). The essence of pursing development is to improve human life; which this study will be explore Computer education and be limited to SDG Goal 4.

To further help teachers achieve the SDGs, there is need to help them become flexible and develop professional autonomy to exercise judgment in adopting ideas that suit their personal style and also to be accountable for improving their practice (McKeown, 2013). According to (I.E.E Davies, Nwakwo, Olofinnade and Michaels, 2019), SDGs started on the 1st of January, 2016 as the global call to action to end poverty in all of its forms, protect the planet and ensure peace and prosperity for all people by year 2030. The 17 SDGs include; no poverty, zero hunger, good health and well-being, encourage lifelong learning opportunities for all and quality education, gender equality, and women and girls empowerment, clean water and sanitation, access to affordable and clean energy, economic growth and decent work, industry, innovation and infrastructure, reduced inequality within and among nations, sustainable cities and communities, responsible production and consumption pattern, climate action, life below water, life on land, promotion of peace and justice strong institution for all and partnership to achieve goals as well as Nigeria. (Casier, 2015).

Nigeria, like many other countries of the world in September, 2015 signed the sustainable development goals treaty and vowed to work towards the actualization of the SDGs at the United Nations (UN) Sustainable Development summit in New York (I E E Davies *et al* 2019).

The UN report revealed that the percentage of people living in extreme poverty decreased by more than fifty percent worldwide, falling from 1.9 billion people in 1990 to 836 million people in 2015; improved enrolment rate in primary schools and the decline in the number of out-of-school primary school children worldwide from 100 million in 2000 to 57 million in 2015 (Oleribe, & Taylor 2016). The study by (Mustapha, Tukur, Ajayi, 2018) stated that there is poverty reduction rate of 41 percent, implying that about 403.2 million people were below the poverty line in 2015 in sub-Saharan area. This same report showed also that Nigeria poverty rate was 71.5% and above the region's poverty rate with an approximate of 120 million people living below poverty line. The poverty rate is on the increase every year because the ICT skills and knowledge that computer education ought to offer during teaching and learning is of very low esteem in Nigerian.

The World Bank, 2015; as cited by (Mustapha et'al 2018) reported that poverty alleviation can be achieved through huge investment in social infrastructure and education and it requires the knowledge, skills, values and attitudes which can only come through education. Stating the importance of education, Okebukola (2013) sequences the contributory role for educational sustainability in strengthening the economy of a nation which includes: developing skills and knowledge for growing the economy and spawning new industries; promoting creativity; stimulating research for innovative discoveries; alleviating poverty; enhancing gender equality; and improving health. Education, predominantly the all-inclusive and quality education is the focus of SDG 4.

Sustainable Development Goal 4 - Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. There are also education elements in the targets of several of the other 17 Sustainable Development Goals. Sustainable Development Goal 4 has 10 targets encompassing many different aspects of education. There are seven targets which have expected three outcomes which are means of achieving these targets. These are the 7 Targets for expected outcomes: (1.) Universal primary and secondary education, (2.) Early childhood development and universal pre-primary education, (3.) Equal access to technical/vocational and higher education, (4.) Relevant skills for decent work (5.) Gender equality and inclusion, (6.) Universal youth literacy, (7.) Education for sustainable development and global citizenship. The 3 means of implementation are;

a. Effective learning environments,
b. Scholarships,
c. Teachers and educators.

Unfortunately, UNESCO (2014:5) found that around 250 million children are not learning basic skills, even though half of them have spent at least four years in school. Affirming this deficiency in teachers, Rose and Alcott (2015) said teachers are unable to perform numeracy and literacy tasks for which they are meant to be preparing their students. To fill this gap, Rose and Alcott (2015) called for appropriate training incorporating practical classroom experience, which will enable teachers support children to learn the basic skills and to progress at the right pace**.** It thus implies that if teachers in government schools often lack the proficiency to do their work, government cannot deliver

inclusive, equitable quality education, if it does not improve on the capacity of teachers in all the levels of the education system with the current technological growth.

Rapid technological changes are presenting several opportunities and challenges, but the learning environment, a lot of capacity teachers and the education quality have not kept with this pace. The case of Nigeria is not an exception inside the rural areas as well. Hence, there is need for technological development in Nigeria Education system to boost and achieve Sustainable Development goal '4' using vocational and technical education with the aid of technological tools on computer education: as Vital Tool to aid Vocational and Technical Education in Sustainable Development in Nigeria.

Purpose of the study

Major purpose is to check how Computer education can be used to achieve SDG Goal 4, Specifically, the study seeks to:

1. To find out how Computer education system can help Nigeria to achieve Sustainable Development Goals-'4'.
2. To find out the demands made on Computer education for the achievement of the Sustainable Development Goals-'4'.

Research questions

1. How can Computer education system help Nigeria to achieve Sustainable Development Goals-'4'?
2. What are the demands made on Computer education for achievement of the Sustainable Development Goals-'4'?

Methodology

A total population of 16 respondents were used as population; being the current registered year one students of Computer and Robotics Education, University of Nigeria, Nsukka.

A purposeful sampling technique was used to choose the year one students because they are the beginners in computer education and need to inculcate in them how to use computer technological tools would build vocational and technical education in order to achieve sustainable development goals '4'.

A descriptive survey was used for this study. A descriptive survey is suitable for this study because it is based on the views and opinions of the respondents in the area of study. A questionnaire containing 21 items tilted Computer Education: Tool to aid Vocational and Technical Education in Sustainable Development Questionnaire (CETVTESDQ) was used to obtain information from respondents. The mean and standard deviation with cut off mark of 3 points for opinion acceptance or Decision rule.

Results and Discussion of Findings

Table 1: Mean Ratings and Standard Deviations of Respondents on How can Computer education system help Nigeria to achieve Sustainable Development Goals-‘4’in the Department of Computer and Robotics Education in the University of Nigeria, Nsukka.

Item	developing skills	developing knowledge	developing spawning	promoting creativity;	stimulating research	alleviating poverty	enhancing gender	improving health	improving Education	improving predominantly	Decision
Mean	3.50	3.31	3.44	3.00	3.19	3.13	3.50	3.56	3.69	3.42	Strongly Agreed
	16	16	16	16	16	16	16	16	16	16	
Std. Deviation	.730	.479	.727	.816	.750	.806	.730	.629	.602	.702	

$\overline{x}$ = Mean, SD = Standard Deviation, Dec. = Decision

Results in Table 1 show the mean ratings and standard deviation of respondents on the How can Computer education system help Nigeria to achieve Sustainable Development Goals-‘4’in the Department o**f** Computer and Robotics Education in the University of Nigeria, Nsukka. Results show that Items 1 – 10 had mean ratings up to 3.00 set as criterion for ‘How can Computer education system help Nigeria to achieve Sustainable Development Goals-‘4’in the Department o**f** Computer and Robotics Education in the University of Nigeria, Nsukka. alleviating poverty ($\overline{x}$ =3.13), improving health ($\overline{x}$ =3.50), improving Education ($\overline{x}$ =3.56), and improving predominantly all-inclusive and quality education which is the focus of SDG 4,($\overline{x}$ =3.69).

There was no significance difference between the mean ratings of male and female respondents on the How can Computer education system help Nigeria to achieve Sustainable Development Goals-‘4’ except the option of developing knowledge with standard deviation of .479 by the year one students of the University of Nigeria, Nsukka. This agrees with the assertion that Education is perceived also as the first step of the sustainable development and a very significant step in improving a generation of people to appreciate importance of sustainability (Zenelaj, 2013). Meanwhile, the World Bank, 2015; as cited by (Mustapha et’al 2018) reported that poverty alleviation can be achieved through huge investment in social infrastructure and education. Computer education system enhanced agricultural education through change in their applications with its computerized programme and technologies in various ways. Some of them are; Computers play a role in the production and efficient use of crop varieties, seeds, fertilizers, pesticides, soil amendments, water, and other farm machines. Also, reducing food loss and wastage of agricultural products. (Nagpal, 2015).

Table 2:

Mean Ratings and Standard Deviations of Respondents on the demands made on Computer education for achievement of the Sustainable Development Goals-'4'in the Department of Computer and Robotics Education in the University of Nigeria, Nsukka.

Item	File creation	Online communication	Internet usage	File management	ICT skills	Literacy	ICT skills for inquiry;	Investigating	Creating	Communicating	Organising	Digital Citizenship	Decision
Mean	3.38	3.25	3.50	3.25	3.38		3.25	3.38	3.38	3.38	3.25	3.50	Strongly Agreed
N	16	16	16	16	16		16	16	16	16	16	16	
Std. Deviation	.806	.856	.730	.447	.619		.683	.619	.856	.764	.847	.782	

$\bar{x}$ = Mean, SD = Standard Deviation, Dec. = Decision

Results in Table 2 show the mean ratings and standard deviation of respondents on the demands made on Computer education for achievement of the Sustainable Development Goals '4'in the Department o**f** Computer and Robotics Education in the University of Nigeria, Nsukka. Results show that Items 1 – 11 had mean ratings up to 3.00 set as criterion for the demands made on Computer education for achievement of the Sustainable Development Goals'4'in the Department o**f** Computer and Robotics Education in the University of Nigeria, Nsukka., these include; File creation ($\bar{x}$ =3.38), Online communication ($\bar{x}$ =3.25), Internet usage ($\bar{x}$ =3.50), File management ($\bar{x}$ =3.25), Store Data Online ($\bar{x}$ =3.38), ICT Literacy skills ($\bar{x}$ =3.25), ICT skills for inquiry ($\bar{x}$ =3.38), Investigating ($\bar{x}$ =3.38). Creating ($\bar{x}$ =3.38). Communicating ($\bar{x}$ =3.38), Organising ($\bar{x}$ =3.25), Digital Citizenship ($\bar{x}$ =3.50),

There was no significance difference between the mean ratings of male and female respondents on demands made on Computer education for achievement of the Sustainable Development Goals '4'in, except with File management option with standard deviation of.447 by the year one students of the University of Nigeria, Nsukka. It comes in agreement with (Aturu, 2011) assertion that the fact is that teachers tend to teach as they were taught, there is need to institutionalize in-service training that equips teachers with reflective practice and peer collaboration which becomes an imperative so that these new skills will germinate and the SDGs would be acquired. Supporting this, Didham & Ofei-Manu, (2013:5) recommended among others: - the provision of pedagogies and learning methodologies, along with teaching holistic or interdisciplinary perspectives; -increase teachers' usage of both formative and summative assessment at classroom level to better adapt teaching to students' needs. However, the UN Conference on Sustainable Development reaffirmed that, "full access to quality education at all facets is an indispensable condition for achieving sustainable development, poverty eradication, gender equality and women empowerment, as well as human growth, for the attainment of this internationally agreed development goals,

including Goals4, and for full involvement of both women and men especially the young people (United Nations, 2012).

Conclusion

The students are aware of the 17 SDGs but some do not know how the education system can facilitate the achievement of the SDGs. The results equally reveal that students do not know the competences expected from them in terms of quality teaching and learning for the achievement of the SDGs. This can be done with the provision of the proper and essential teaching with learning facilities and resources required. All these cannot be wholly carried out without Computer; hence Computer Education is still a vital tool to aid Vocational and Technical Education in sustainable Development in Nigeria because of its versatility or usage in all fields of life. For these reasons the researcher made some recommendations.

Recommendations

1. The Expansion of education and training facilities with a view to fostering and improving knowledge and skills relating to sustainable development.
2. Refocused efforts are needed to improve learning outcomes for the entire lifecycle, especially for women, girls, and marginalized people in vulnerable settings.
3. Objectives of the technical and vocational education if achieved will assist to develop the individuals, the societies and the nation at large. In order to achieve this, the government should help to remove the poor image and finance on technical and vocational education, train more teachers that have practical skills to impart at the Universities and Polytechnics.
4. The higher education institutions should start looking at skilling educators who will work throughout the education system.

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