FUNCTIONAL HIGHER EDUCATION SYSTEM: A STRATEGY FOR SUSTAINABILITY AND EMPLOYABILITY IN 21ST CENTURY

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Abstract
The problem of unemployment in the country and employability of many Nigerian university graduates has been lingering for a long time. In a knowledge-based and skill-based economy, education plays a critical role in solving the problem. Higher education system is expected to foster in students diverse skills and abilities to cope with the demands of society jobs. However looking at the challenges of education in the 21st century, it was observed that education courses in most education institutions do not allow room for many learning innovations, are such the denying many pre-service educators' opportunity to develop skills needed for modern day job. 21st century learning skills are referred to as important tools to get a better paying job. The paradigm for effective and functional teacher's education emphasizes knowledge, skill, innovative pedagogical practices and interpersonal skill in tandem with some principles of Education for Sustainable Development {ESD}.This paper emphasizes the importance of education in promoting Sustainable Development Goals [SDGs] which include employment and poverty alleviation. The paper also highlighted some innovative learning practices that can promote the principles ESD. The strategy of ESD is to equip learners at all levels of education with knowledge and skills for sustainable development and employability. The paper further discusses the importance of fostering digital integration in higher institution programmes as a means of preparing university graduates for society jobs that demands digital skills. The paper suggests that education for sustainable development and employability should be part of educators' initial and in-service training. It also suggests retooling of pedagogical approaches in teacher education to support sustainability with focus on the 4Cs (Critical thinking, Communication, Creativity, and Collaboration) of 21st century learning, and taking higher education initiatives for technology in learning.

Keywords: Functional higher education, Education for sustainable development, Employability skills, 21st century learning

Introduction

The world is faced with myriad of problems among which is unemployment, corruption, political upheaval, ethnic diversity and so on. Unemployment among university graduates and other school leavers has been a focus of research and study in recent years. This is because of the alarming rate of unemployment in low and middle economy nations, and the implications on poverty eradication, and other targets of Millennium Development Goals (MDGS) and Sustainable Development Goals (SDGS).

In Nigeria, many university graduates are yet to be gainfully employed by government or private sectors because of lack of capacity to provide Job. Citing Olagoke (2018), the labour force sample survey conducted by the Federal Office of Statistics (FOS) in June 2001 indicated that Government and all private sectors

combined do not have capacity to provide employment for up to 5% of our graduates from various higher institutions of learning. The National Bureau of statistics in 2013 put unemployment rate in Nigeria to be 25% while about 1.8milion new job seekers enter the market every year (National Bureau of statistics, 2013).

Unemployment has many underlined factors, among which include; bad leadership in low economic countries, lack of proper education plan, curriculum deficit, (Kolawole 2016) the challenges of 21st century higher education (Malik,2018) and lack of requisite skill to meet 21st century challenges (Eyisi and Emokasi 2020).

First, bad governance is aptly applicable to the problem of educational underdevelopment and unemployment in Nigeria. The system of education in the country is not well catered for. Specifically, Nigeria leader and politicians are to blame for the high level corruption in the system. As a reference point in the episode in one of the chapters in Ibadan: The penkelemes years, Wole Soyinka (1994) cited in Aiyede, Olagunju and Adeleye (2017) described independence politicians as self-centered, flamboyant, extravagant, exhibitionist facists etc. The description flows with disdain, the dominant attitudes of Nigeria politicians that promote corruption, unemployment etc.

In the knowledge-based and skill-based economy education continues to play a crucial role in economy development, poverty alleviation and national growth. Kolawole (2016) defined education as a process by which young members of a given society become informed, knowledgeable, and acquire values, skills and competences that are desirable and necessary for further development of the society, This definition is aptly applicable to the issue of employment, sustainability and development.

The problem of bad governance has led to poor funding of Nigeria educational system and lack of proper planning of the system. Educational policies have not been properly funded (Akanbi, 2014). The annual national budget to education cannot sustain the system, and this has made the system to be less functional and less productive. The problem of unemployment and employability is related to the issue of bad governance, resulting into less functional education.

A primary purpose of university education according to Okebukola cited by Akanbi (2014) is the production of quality high level man power to propel national development. The role of higher education has been re-defined as universities are expected to prepare their students for society jobs that demand employees to have diverse skills and digital capability. However, observations from different scholars, including Kolawole (2016) and Akanbi (2014) revealed that in the last two decades, there has been a steady decline in the standard of education and quality of our university graduates, as majority of them lack knowledge and critical skills of modern day Jobs.

Sustainability is the main focus of Millennium Development Goals (MDGs) and one of the goals of MDG is to eradicate poverty by providing gainful employment targeting youths and adults. Sustainable Development Goals (SDGs) has agenda, developed by United Nations (UN) member states in 2015. To ensure equitable quality education and lifelong learning opportunities for all, Goal 4 of the SDGs emphasizes the growing international recognition for Education for Sustainable Development (ESD) as an integral element of quality education and a key enabler for sustainable development (United Nation, 2024).

Higher Education for Sustainability and Employability

Education for sustainable development (ESD) is the key instrument

for achieving sustainable development goals (UNESCO, 2017). Education, especially at higher level is an instrument per excellent for bringing about sustainable economic. The Higher Education Sustainability Initiative (HESI) emphasizes strong imperative to transform education, by seizing global opportunities for innovation, and promoting sustainable and equitable development worldwide (HESII Global Forum, 2024). Most developed countries in the world have embraced reform initiatives in education system through curriculum innovation to the demands of 21st Century and Education for Sustainable development.

21st century learning and education skills are referred to as important tools to get a better paying and profitable job. The skills needed for career development such as skill of communication, creative and critical thinking skills, initiative and productivity skills and soft skills can be developed through the use of innovative strategies in the classroom.

Education that will empower graduates for gainful employment must focus on fostering innovation by putting critical thinking, creativity and the rules of tools of inquiry at the centre of the higher education curriculum (Garba, Garba, Gambo and Mohammed, 2019). Educational institutions should play a more leadership role in building more sustainable development and creating new paradigm through their teaching and research taking higher education initiatives for innovation in learning and embracing technological based learning environment.

21st Century Pedagogy and Paradigm for Skill-based Teacher Education

The emergence of novel innovations in the teaching and learning process, and the reform through infusion of technology into the process has brought about a great challenge to pedagogical practices in the 21st century. Below is a diagram showing phases of different pedagogical practices in the 21st century.

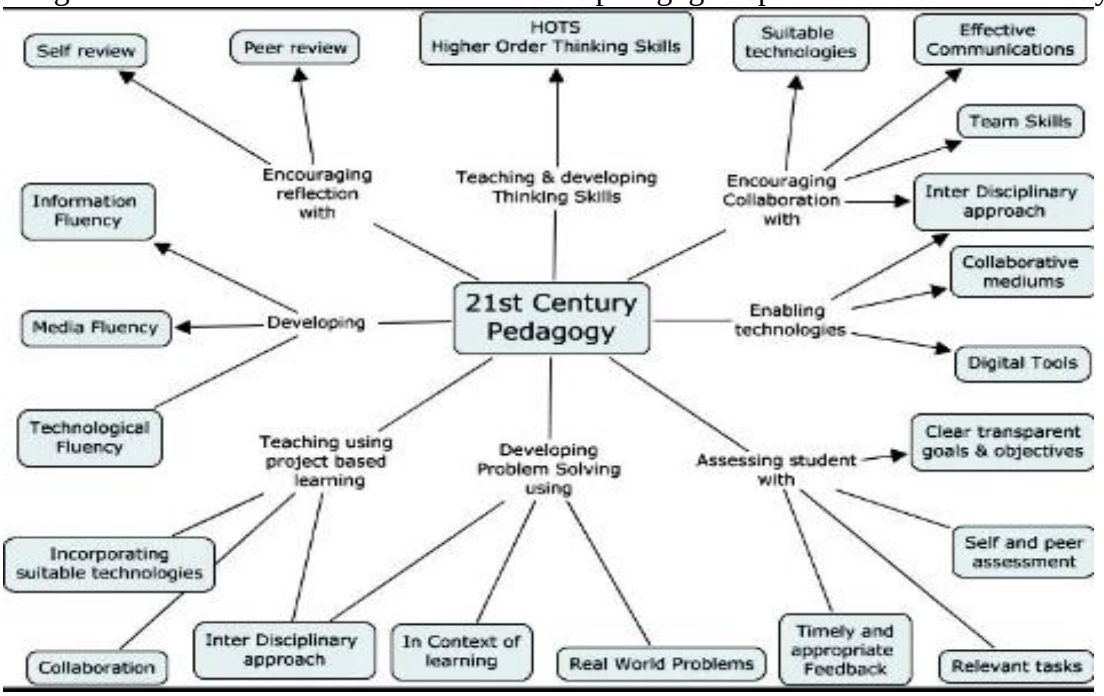

Fig. 1: A Diagram of 21st century Pedagogy (Source: Heick: Teach Though Staff 2013, Omodara and Makinde 2023)

Teacher Education institutions are saddled with the responsibilities of producing very skillful teachers and professionals in different fields of endeavor

to propel the nation's economy development. Teacher education institutions also engage in producing high-level manpower and skillful individuals with potentials to fill many existing vacancies for jobs as managers in private companies, admistrators, in schools, educational consultants etc.

In order to have qualified teachers in our schools and colleges Kolawole (2016) emphasized the need for teachers who are imbued with skills (such as pedagogy skills, knowledge skills, interpersonal skills) and can exhibit qualities required to meet the challenges of education and development. Below is the diagram of skill-based teacher preparation:

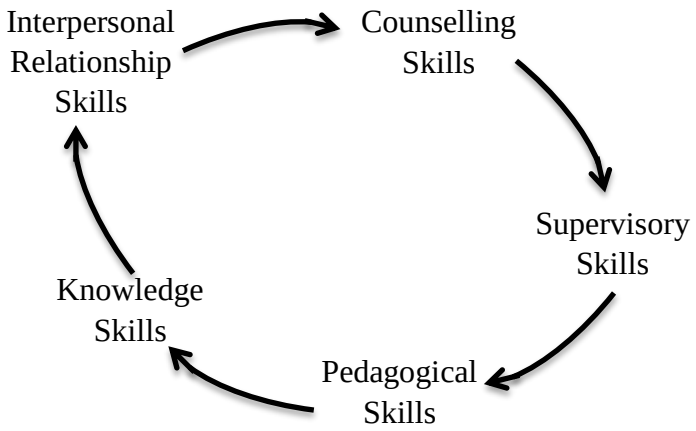

Figure 2: Paradigm for skill-based teacher preparation (Kolawole, 2015).

Teachers are expected to be productive in their careers, and to do so they are expected to demonstrate good dose of interpersonal skills, knowledge and pedagogical skills. At the university level of education, Garba, Gambo and Mohammed (2019) identified creative teaching, audio visual tools and stimulating classroom environment as impetus to promote interpersonal skills, knowledge and pedagogical skills.

Functional Higher Education through Innovative Practices in Teacher Education

Functional educational delivery in teacher education institutions of learning through innovative practices will be a vital step in helping undergraduates to gain more skills for gainful employment and employability. Johnson (2007) cited in Omodara and Makinde (2023) viewed teacher education (TE) as an important aspect of change in promoting social and economic values of sustainable development in the society. To develop successful teachers for the global society, teacher education must be based on a framework and an initiative for the use of the four (4) Cs (Critical thinking, Communication, Creativity and Collaboration) of 1st century learning.

There are evidence-based research and projects to support the use of innovative practices in teacher education programme to bring about the goals of sustainable development. The practices evolved from the approaches in pedagogy that give guidelines for tools, resources and activities that provide or are oriented to provide support for teaching and instruction. Types of teaching strategies that have been investigated and used in teacher education progreamme include; inquiry-based-problem-solving approach, problem-based learning, small-group discussion, peer-tutoring, stimulation, virtual laboratory learning, reflective

learning strategy and so on (Malik, 2018, Kumar 2022, Aiyede, Olagunju and Awolere, 2023, Omodara and Makinde, 2023, Adeyemi, 2023, Bolaji, 2024).

The experiential learning and constructivist learning patterns are basis for the use of project-based learning (PBL) and problem-based learning (PLB) in the classroom. According to Bolaji (2024) the two approaches embodied active learning philosophy and pedagogy that promote learning by doing. The two learning strategies are pragmatic approaches that involve students in hands-on activities. Bolaji (2024) also reiterated that project-based and problem-based learning strategies provide skills that are essential for students to navigate real world challenges and succeed academically and professionally. The use of problem-based learning and other activity-based strategies prepare students for society jobs and demands of 21st century.

The use of innovative teaching strategies among the undergraduates is to provide them with hands-on-experience while studying different courses in the university. Innovations from the use of activity-based strategies can help them develop both pedagogical skills and soft skills that will engender in them employability skills for job and career engagement. Such activity-based practices are common in sciences and both science educators and prospective science teachers are familiar with strategies such as inquiry laboratory lesson, experimentation, field trip, etc.

Hands-on activities play a crucial role in all four levels of inquiry-based learning in science education. The implementation of hands-on-experiments develop students' knowledge and skills in a constructivist way. The principle of inquiry-based science education (IBSE) is presented on a particular example of hands-on-activities in the frame of European research project: Professional Reflection Oriented Focus on Inquiry Based Learning and Education through Science (PROFILES).

Below are some illustrations from different academic field in the Universities:

1. Science, Technology, Engineering and Mathematics (STEM) Education

i. **PROFILE:** Profile is a support for teachers in inquiry-based science education (IBSE). Profile improves the teachers' skills in developing creative, scientific problem solving environment. The profiles project is divided into eight work packages (WPs) to conduct innovative learning environment. The supportive work packages for teachers include WP4 and WP5. Both supportive action strategies are supported to raise the self-efficacy of science teachers to enable them take ownership in more effective ways in science teaching, (National Science Educational Standard, 2010, Bolaji, 2024).

ii. **Survey Method:** While working in a small groups using a survey method in science education, the lecturer assists the student to design a survey to determine methods used within a local community to reduce waste and to conserve energy and water and to answer questions related to recycling.

iii. **Experimentation:** Focusing on problem-solving and decision making in science classroom, the teacher as the facilitator teaches the specific strategies, skills and processes that will enable the students design an inquiry/experiment into the properties of elements and compounds, to test the effect of the variables on the corrosion process.

2. Arts Education (English Language)

i. **Docudrama in Literature Classroom (e.g. LIT 209):** Student were directed to choose a narrative events from selected texts to reflect the life of characters in the novels of 19th century. The events were

documented in the class, and in group of ten and fifteen, they enacted some of the actions.

ii. **Choral Reading (EFL/ESL Classroom):** ESL students develop their oral skill through teacher-led classroom activity to a better known folksong of Ibadan using J. P. Clark poem. The teacher as the facilitator produces the lesson with the description of Ibadan, using as an example the short poem 'Ibadan'.

iii. **Computer Assisted Learning (CAL):** The use of computer to learn new skills and practice new skills has become a widely use tool in language teaching. The facilitator led students in group to use open-ended software (grammar programmer) on the computer to reinforce their ability to identify and name some parts of the sentence (e.g. subject, object and predicate). CAL is a motivating tool that can engage students when doing a repetitive task.

3. Vocational and Business Education

i. **Computer Assisted Learning (CAL):** In an accounting lesson, where students are taught how effective accounting and financial statements contribute to the success of a business, the facilitator provides a template in simple accounting software programme. Students work through the balance sheet (the template) and income statement activities.

ii. **Collaborative Teaching (Creative Arts):** Students can come together to create artistic impression to reflect some activities in the university. This can help to extend their learning opportunities and develop their creative and artistic skills.

iii. **Practicals (Home Economics Flat):** Using magazine, manuals and some materials gathered in Home Economics practical lesson, students make an illustration to create arrangement to cater for different occasions like naming ceremony, wedding ceremony, etc. in a prepared flat for Home Economics practicals.

For the purpose of this study, the focus is on inquiry-based problem solving learning approach, because it is among the most widely used innovative strategies. Beside, inquiry process is widely applied in science education, and is being applied to other disciplines. In science education, the National Science Education Standards (NSES) and American Association for the Advancement of Science (1989) advocated the use of inquiry-based learning as a core essence of science reform. According to McCain (2005) inquiry into authentic questions generated from students' experiences is the central strategy for teaching science. Inquiry also involves students actively engage in science process skills and engaging in higher-level problem-solving skills (National Research Council, 2012).

Inquiry involves practicing discipline-based activities e.g. interactive hands-on classroom activity and projects. Popular terms used for inquiry in the world of practicing teachers include 'doing science', hands-on science' and 'authentic science' as descriptions of inquiry based learning approach. A good example of inquiry practice is Process-oriented guided-inquiry learning (POGIL) which was originally developed and created in chemistry teaching cited in Aiyede, Olagunju and Awolere 2023).

In language education programme, student teachers are prepared to become active 21st century critical thinker, effective communicators. To acquire skills necessary for effective participation in jobs and career, inquiry practice has emerged as a means that allow for more effective pedagogical development. Scholars including Aiyede, Olagunju and Awolere

(2023), argued that inquiry improves critical thinking, information processing skills, and creative thinking, which are among the 4c of 21st century learning goals. However, researcher indicated that many EFL programmes in education institutions are still linea, and do not allow room for better innovations Olakunde (2023). English as a foreign language (EFL), educators, like their science counterpart should be innovative in exploring more innovative strategies to make learning more effective.

Functional Higher Education through ICT-driven Curriculum-based Learning

In consonance with the stance of UNESCO (2017) on modern learning, technology usage in teaching learning process (TLP) and in teacher education (TE) act as impetus for effective and functional education. According to Mukana, (2015) UNESCO's planning guide for information and communication technology (ICT) in teacher education cited three key principles for effective ICT development in teacher education. The three principles were to; (i) infuse technology into entire teacher education programme (ii) introduce technology in context and (iii) help students experience innovative technology supported learning.

Effective application of ICT to promote quality education among teachers trainee has been the focus of several researchers. Cheng and Townsend (2002) cited in Karyawati and Ashadi (2018) noted that the challenges of knowledge driven economy and the impacts of information technology have driven numerous educational changes in different part of the world. Technological globalization in education has increased the level of social globalization learning globalization and economic globalization which are necessary for sustainability and employability. Cheng and Townsend (2002) further emphasizes a great demand for ICT-driven learning environment in order to support paradigm shift in teaching and learning.

For holistic education and functional higher education in the 21st century, digital education provides students with the skills that are increasingly demanded by employers. Such skills include proficiency in digital tools, computer literacy, critical thinking and creativity, that will make students more employable (Ojo and Ojo, 2020, Bashiru, Sani and Ome, 2023).

For technology to play its important roles in education for sustainable development (ESP), a more active student-centred pedagogy must be embedded into technology in the classroom. For example, the integration of computer technology into project-based learning made student-centred learning in technology a rich environment (Karyawati and Ashadi, 2018). Many technologies enhanced student-centred learning environments have been developed, ranging from situated learning, problem-based approaches, inquiry-based learning (Aiyede, Olagunju and Awolere, 2023, Bolaji, 2024) to micro worlds and specialized manipulation tools (Karyawati and Ashadi, 2018).

Teacher trainees are all well aware of the importance and essentiality of computers in education in information age. An example is the use of virtual learning environment (Omodara and Makinde, 2023). A virtual learning (Web-based learning strategy) is a browser-based deliverer for the automated details of course of study, usually within educational institutions. It offers educators digitally-based solution to create interactive, active learning environment. There is also use of Dynamic Webtool and EQUIP in Inquiry-based science learning which were central to the professional development of teachers

Olakunde (2023) in her literature review cited examples of ICT usage in English language courses. Olakunde also found out in her study that the use of ICT improve students' performance education

in English language courses in Adeyemi University of Education. The use of technology in learning has compensated for other pedagogical supports for individual learning strategies, creative strategies and teaching skill. There is also possibility of the conceptualization and instructional practice of inquiry models cited in Oladiti (2023) reported that through ICT, teachers are able to share a vision of enquiry and collaborative learning, creating a new learning experience.

The most critical factors in the successful integration of ICTs into teacher education according to Mukana (2015) is the extent to which the teacher educators have the knowledge and skills for modeling the use of ICTs in their own teaching practices/designing and implementing successful ICT-enabled teacher education programmes is the key to fundamental, wide-ranging educational reforms, necessary for the actualization of SDG goals (Goals 4) and the realization of vision 2030.

Suggestions

The paper suggests that education for sustainable development and employability should be part of educators' initial and in-service training. It also suggests retooling of pedagogical approaches in teacher education to support sustainability with focus on the 4Cs (Critical thinking, Communication, Creativity, and Collaboration) of 21st century learning goal, and taking higher education initiatives for technology in learning.

Conclusion

The rate of unemployment in many low and middle economy countries has become an area of concern in educational discourse. Education, especially at the higher institution level has been identified as the major tool in solving the problem in tandem with sustainable development goals (SDGs) and strategies of education for sustainable development (ESD). There is a need for supportive pedagogy in teacher education in order to support the commitments from higher institutions to teach and encourage research on innovations in education and promote sustainable development goals. The use of supportive pedagogy in ICT learning is also important for higher education pursuit to enhance job and career opportunities in the 21st century.

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