FUNCTIONAL EDUCATION OBJECTIVES AND GLOBAL FOOD AND PROTEIN INSECURITY

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Abstract

One billion people are hungry in sub-Saharan Africa (SSA), Latin America and the Caribbean (LAC), and 2 billion people eat too much wrong food. Global hunger is rising at an alarming rate and there were approximately 193 million people who were highly malnourished in 2021 representing a 40 million increase over the previous year 2020. This critical situation of either undernourished or unable to sustain regular intake of a nutrient-dense diet especially protein increased four times in 2020 from the previous years and seven times in 2021 because of the COVID -19 outbreak. In the year 2021, there were an extra 236 million people who were classified as being in the food crisis across 41 countries and territories. Whereas food security is one of the most crucial elements for the existence of the human race and amidst numerous incredible technological advancements, public agricultural policies, strategies, programmes and projects the globe and Nigeria still cannot ensure food security, quality, safety and availability. The study highlighted the increasing need of functional education attainment for enhanced animal production, agri-food economy, and food and protein security promotion. Importantly, the study recommends more finance be evolved into national functional educational framework to further address food and protein insecurity.

Keywords: Protein insecurity, Food security, Animal production, Hunger

INTRODUCTION

Food is a foremost basic need of people and food security is a *sine qua non* for meaningful development that improves the welfare of people. Therefore, protein and food security need to be a front-burner development concern. It is worth noting that more than one billion people are hungry in sub-Saharan Africa (SSA), Latin America and the Caribbean (LAC), and 2 billion people eat too much wrong food (Kaur, 2019). Global hunger according to the findings of the Global Report on Food Crises 2022, is rising at an alarming rate and there were approximately 193 million people who were highly malnourished in 2021 representing a 40 million increase over the previous year 2020 particularly in the four countries of Yemen, Ethiopia, southern Madagascar, and South Sudan, where people are facing a catastrophe of starvation and death (World Food Programme, 2023; Food Security Information Network, 2022).

This figure of either undernourished or unable to sustain regular intake of a nutrient-dense diet especially protein is rising around the world thus, 2.37 billion people are either undernourished or unable to sustain regular intake of a nutrient-dense diet (United Nations, 2023b). One-third of childbearing women are anaemic as a result of these malnutrition issues (United Nations, 2023b). 22 per cent (149.2 million) of children under

the age of five have a low quality of food, 6.7% (45.4 million) are malnourished, and 5.7% (38.9 million) are obese (United Nations, 2023b) needing assistance with their livelihoods to reduce the risk of natural disasters and so they would not fall into a state of acute food insecurity. This critical situation of either undernourished or unable to sustain regular intake of a nutrient-dense diet especially protein increased four times in 2020 from the previous years and seven times in 2021 because of the Covid -19 outbreak. In the year 2021, there were an extra 236 million people who were classified as being in the food crisis across 41 countries and territories (World Food Programme, 2023).

The World Food Program (WFP) and the Food and Agriculture Organization (FAO) have already warned that hungry people – persons with a sense of inner emptiness – are bereft of a sense of discernment of right and wrong. They settle for anything that can minister to their empty stomachs, even if it offends someone. What is bitter tastes good to them and thus, food problems such as food security, quality, safety, and availability that could worsen in the upcoming decades (Food Security Information Network, 2022) augmenting due to issues of Covid-19 may intensify abject lack of food, clothing and shelter, increase destitute scavengers of waste dumps (Schuldt, 2019; Ghufran, Ali, Ariyesti, Nawaz, Aldieri, & Xiaobao, 2022).

Whereas food security is one of the most crucial elements for the existence of the human race and amidst numerous incredible technological advancements, public agricultural policies, strategies, programmes and projects we still cannot ensure food security, quality, safety and availability (De-Vries, 2021). This unacceptable situation informs the SDG 2 which aims to "end hunger, achieve food security and improved nutrition, and promote sustainable agriculture" by 2030 in all the countries of the world (United Nations, 2023a). The first United Nations Millennium Development Goal (MDG 1) had aimed to "eradicate extreme poverty and hunger" between 2000 and 2015 in all the countries of the world. Poverty is connected to food. Indeed, the thresholds for determining that someone is poor were originally calculated as the budget necessary to buy a certain number of calories, plus some other indispensable purchases, such as housing. A poor person is essentially someone without enough to eat (Banerjee and Duflo, 2011). At the end of the target year, 2015, the G8 countries might have hit the MDGs, but Nigeria certainly did not, with hunger rising and poverty deepening to the point that Nigeria became the poverty capital of the world by 2019 (United Nations, 2023a).

It is hoped that SDG 2 which aims to end hunger, achieve food security and improve nutrition, promote sustainable agriculture will fare the global way particularly Nigeria and that pest, disease, foodborne illness which is more severe in underdeveloped and developing countries, contaminated food – a significant concern for consumers also in developed countries (Moradi *et al*., 2020), economic components (finance/investment issues that aids or un-aids food sustainability), land tenure/utilization issues, environmental resource use, agricultural sector forest depletion, emissions (from all sectors), social/cultural issues (anaemia among women and unemployment of especially women and youths), resilience/sustainability capacity (food production variability and indigenous plant and species extinction) will not deter and/or deepen the food insecurity situation.

Therefore, finding the best approaches for enhancing food security, hygiene, quality and availability are essential to overcoming food concerns (Ghufran et al., 2022; Njage, Sawe, Onyango, Habib, Njagi, Aerts *et al*., 2017) and understanding the different factors such as functional education; pest, disease, foodborne illness which is more severe in underdeveloped and developing countries, contaminated food – a significant concern for consumers also in developed countries (Moradi et al., 2020), economic components (finance/investment issues that aids or unaids food sustainability), land tenure/utilization issues, environmental resource use, agricultural sector forest depletion, emissions (from all sectors), social/cultural issues (anaemia among women and unemployment of especially women and youths), resilience/sustainability capacity (food production variability and indigenous plant and species extinction) are important to solving the food security challenge. Thus, the need for this study.

Solving global food and protein insecurity

Improving animal production and solving global food and protein insecurity divides previous literature into two main domains. First, scholars posited enhanced cultivated area and crop production capacity by including chemicals and technological innovations (Ali, Ghufran, Nawaz, & Hussain, 2019). Technological innovations such as genetically modified (GM) crops and food have multiplied the food production capacity since their invention (Aldemita & Hautea, 2018; Raman, 2017; Toma, Barnes, Sutherland, Thomson, Burnett, & Mathews, 2018) without consuming too many natural resources, such as water because GM crops seeds are more resilient in the harsh environment as compared to traditional and organic food (Ali et al., 2019; Ghufran *et al.*, 2022).

This framework on the one hand notably raised concerns on security and nutrition hygiene of packed GM foods which is part of the United Nations Sustainable Development Goals (SDGs) to eliminate the hunger problem in the entire world (Ali, Nawaz, Ghufran, Hussain, & Hussein Mohammed, 2021; Siegrist & Hartmann, 2020; Szenkovics, Tonk, & Balog, 2021). Second, this intervention of enhanced cultivated area and crop production capacity by including chemicals and technological innovations may have climate change devastating impact (GM crops particularly) and, devastating impact on the depletion of natural resources (enhanced cultivated area and crop production capacity particularly), severely affecting the food supply chain and causing food insecurity (Descheemaeker, Oosting, Homann-Kee Tui, Masikati, Falconnier, & Giller, 2016; Sekaran, Lai, Ussiri, Kumar, & Clay, 2021; Smith, Sones, Grace, MacMillan, Tarawali, & Herrero, 2013). Due to these facts, farmers utilize fertilizers and pesticides such as phosphates, nitrogen, organochlorine, neonicotinoids, pyrethroids, biopesticides, carbamate, and urea to increase food production to fulfil consumer needs (Carvalho, 2017; Chen, Wang, Ma, Zou, & Jiang, 2020).

Further, this intervention of enhanced cultivated area and crop production capacity by including chemicals and technological innovations increases fertilizers and pesticide utilization on an extensive scale. While the pesticides are mainly used to kill extra herbs in the farmland and insects harming the entire crop, the fertilizers come into the mix to increase soil fertility and production capacity without understanding the side effects of both on human health. This compounded mix of fertilizers and pesticides, a number of

researchers posit is creating a harmful impact on human health (Adewunmi & Fapohunda, 2018; Anani, Mishra, Mishra, Enuneku, Anani, & Adetunji, 2020; Bonner & Alavanja, 2017; Carvalho, 2017; Reeves, McGuire, Stokes, & Vicini, 2019; Thompson & Darwish, 2019), causing foodborne diseases thus exposing the entire advanced food system leaving vital economic, environmental, social and resilience/sustainability issues unaddressed.

On the contrary, the intervention of enhanced cultivated area and crop production capacity by including chemicals and technological innovations may address, resilience/sustainability factors of food production variability and conservation of plants and endangered species, which are vital to dealing with food security issues. This solution which enhanced cultivated area and crop production capacity by including chemicals and technological innovations brings is novel particularly when the world faces unprecedented climate change that intensify food production and supply variability (Campi, Dueñas, & Fagiolo, 2021). This solution is even more novel with the Covid-19 crisis (Béné, 2020), conflicts between countries like Ukraine and Russia (DonnellonMay & Teng, 2022), etc. In these circumstances, enhanced cultivated area and crop production capacity by including chemicals and technological innovations plays a strategic role in attaining resilience and sustainability in the food sector through increasing the production, cultivation of land, and effective use of existing land (Pawlak & Kołodziejczak, 2020; Smyth, Phillips, & Kerr, 2015; Wegren & Elvestad, 2018) and most importantly, the inclusion of the technology to deal with drought and harsh weather situations responsible for limiting the agriculture productivities (Ali *et al.*, 2019; Ali *et al.*, 2021).

The second scholarly domain posits food security improvements that will not increase specifically the pest, disease, foodborne illness which is more severe in underdeveloped and developing countries, contaminated food – a significant concern for consumers also in developed countries (Moradi et al., 2020), economic components (finance/investment issues that aids or unaids food sustainability), land tenure/utilization issues, environmental resource use, agricultural sector forest depletion, emissions (from all sectors), social/cultural issues (anaemia among women and unemployment of especially women and youths), resilience/sustainability capacity (food production variability and indigenous plant and species extinction) and particularly the environmental climate change conundrum. This domain is bereft with little or no studies to the best of the researcher's knowledge. It posits, waste-to-wealth solutions that improves the agricultural economy, devolves the pollution-waste hazard and enhances animal nutritive and overall health to enhance the food and protein security.

Amidst these, education is the driver of revolutionary deliverables associated with economic, scientific, social and overall human development. Thus, Olibie et al (2016) posit that economically strong nations are those with the best performing higher education sector. This informs the need and importance of functional education and its attainment through Nigeria's Philosophy of education in solving and enhancing animal production, agri-production economy productivity and solving global food and protein insecurity. Thus the need for this study in emphasising functional education attainment for positive societal reforms.

Functional education

The specific goals of education in Nigeria are to ensure and sustain unfettered access to equal educational opportunity for the total development of the individual – effectiveness and relevance at all levels, ensure the quality of educational delivery at all levels, promote functional education for skill acquisition, job creation, and poverty reduction, to meet the needs of the society and the world of work – development of the public sector, private sector, non-governmental organizations sector and, local communities to promote positive productive capabilities at all levels (FRN, 2014).

The Nigeria philosophy of education as contained in the national policy of education stipulated or outlined five basic objectives especially for the primary education. They are to: (i) inculcate permanent literacy, numeracy and the ability to communicate effectively, (ii) lay a sound basis for scientific, critical and reflective thinking, (iii) promote patriotism, fairness, understanding and national unity, (iv) instil social and moral norms and values in the child and develop in the child the ability to adapt to the changing environment, and (v) provide opportunities for the child to develop life manipulative skills that will enable the child function effectively in the society within the limits of the child's capability (FRN, 2015).

These outlined five objectives of education are important constructs.

1. **Literacy, communication and language**: Alberta (2022) defined literacy as *the ability, confidence and willingness to engage with language to acquire, construct and communicate meaning in all aspects of daily living*. That is, language is explained as a socially and culturally constructed system of communication. A child's literacy journey begins from the moment of birth. Literacy is crucial in helping us make sense of our world. Children's literacy abilities are nurtured through their families and communities. As children enter the school system, there is a strong focus on the development of reading and writing skills. Children engage in learning opportunities that have them interacting with many different forms of text, in print and digital forms, using words, drawings, diagrams, illustrations, charts and symbols. The dexterity, simplicity, and variety with which school children are helped to develop their literacy goes a long way in determining their future prowess in learning cognitive, affective, and psychomotor domains of learning in particular and in overall national and academic performance in general. It is very vital that this foundational formation is given unique and quality attention.
2. **Scientific, critical and reflective thinking**: Kuhn (2010) affirmed that scientific thinking is defined as *knowledge seeking*. It encompasses any instance of purposeful thinking that has the objective of enhancing the seeker's knowledge. Thus, scientific thinking is something people *do*, not something they *have*. The latter is referred to as *scientific understanding*. When conditions are favourable, the process of scientific thinking may lead to scientific understanding as its product. Indeed, it is the desire for scientific understanding – explanation that drives the process of scientific thinking to produce *Scientific*

thinking skills which include observing, asking questions, making predictions, testing ideas, documenting data and communicating thoughts (Larm, & Jaros, 2017). Reflective thinking is a part of the thinking process that focuses on thinking on what one knows, what was found out and how, as well as what more to find out about it (Hubbard, 2022).

School education and other forms of knowledge that; guide to make observations, ask questions, make predictions, experiment and report findings, acknowledge opposite viewpoints and look for weaknesses is strategic and must be encouraged as functional education to, develop reflective thinking of looking back at an experience or a situation, and learning from it in order to improve for the next time around.

3. **Patriotism, fairness, understanding and national unity**: Patriotism is the feeling and expression of love for one's home country, along with a feeling of unity with those who share those feelings. It is one of the necessities of being the stereotypical "good citizen". Along with love, patriotism is the feeling of pride, devotion, and attachment to a homeland, as well as a feeling of attachment to other patriotic citizens. The feelings of attachment may be further bound up in factors like race or ethnicity, culture, religious beliefs, or history. However, patriotism, like many well-intentioned things, can be harmful when taken to an extreme (Longley, 2022). Teaching on appreciation of and respect for our different ethnicity, culture, religious beliefs in order to promote unity and national cohesion ought to have a solid foundation of functional education.
4. **Social and moral norms and values**: Social norms refer to the informal rules that govern behaviour in groups and societies. Social norms are seen as central to the production of social order or social coordination (Bicchieri, Muldoon, & Sontuoso, 2018). Moral norms are element of social consciousness. They are a kind of standard by which social behaviour is evaluated (positively or negatively). Learning the importance of moral values early can have profound and positive impact on the people. It helps them to integrate into society in a healthy way. According to UNICEF (2021), moral norms influence behaviour when an individual chooses to engage in a practice on the basis of what they believe is morally correct. Thus, moral norms are usually followed out of a personal sense of moral duty, regardless of the expectations of others (UNICEF, 2021). Functional education development is capacity development that develops student's cognitive ability to process abstract concepts – an invaluable skill. For adults and children alike, the ability to adapt to life's unavoidable changes. Unfortunately, it's not a skill that comes naturally to many of us, especially young children. Building skills in adaptability is very fundamental in functional education. It provides learners with long-term benefits as they get older; embrace and adapt to challenge and change.

5. **Manipulative skills**: Manipulative skills are movement skills that require an ability to handle an object or piece of equipment with control. They include skills also referred to as 'object control skills'. According to Kid Sense (2022), manipulation skills are skills sometimes take for granted. However, they all require the coordination of many skills for successful performance, including fine motor (muscle) control, bilateral integration, coordination and hand-eye coordination. These skills are strategic for taught school functional education.

Functional education and development

Contemporary societies have always depended on the education sector for the production of manpower needs. Realization of this crucial task starts from functional education even at the primary school level since pupils in primary schools are very fundamental to vibrant and functional society. Thus, the introduction of the Universal Basic Education Programme (which is basically three years of official junior secondary formal school education added to primary education) and other education curricula/programmes is to position the overall society fundamentally to achieve the objectives enough of an egalitarian system through philosophy of education and nurture, groom, develop entrepreneurs and graduates capable to function effectively in the society within the limits of improved capability (FRN, 2015).

Again, to attain development especially food, environmental health improvement amongst others, expedient designs and strategies attuned to functional education objectives is fundamental. Overall, cognitive ability of inculcation of permanent literacy and numeracy as, core in functional education is obvious. Thus, functional education plans, and execute literacy content to evolve cognitive learning abilities to process, store and extract information including attention, memory and reasoning ability of the human brain (Sternberg & Sternberg, 2009; Yueqi & Shaowei, 2021). If in overall cognitive ability is lacking, part of the information delivered during the learning process will be lost especially in the process of information processing, reducing, the output of effective information and leading to lower individual development and/or academic performance (Mirrian, Franzis and Henz, 2020). Functional education content impacts reflective moral development of learners in learning how to live harmoniously in society and imbibe both intellectual and moral values of, honesty, responsibility, respect among others (Bipoupout, 2018). This will equally motivate the learner to advance attempts to make more discoveries and enhance learning outcome (FRN, 2015).

Strategic to functional learning is scientific and reflective thinking of making observations that helps in developing learners' visual literacy skills which contribute to overall critical thinking skills and lifelong learning (Innovative Instructor, 2013). Engaging learners in making predictions and test ideas are part of the processes that may be employed to achieve scientific and reflective thinking – a method of perception of reality, improving the quality of knowledge itself and contributing to individual's self-improvement. Scientific and reflective thinking also achieves in students the retrospective learning and/or experience-situational learning in order to improve on experiences going forward. It is equally important to stimulate the curiosity of the learner in order to enhance scientific

knowledge and reflective thinking (Mata, 2022).

Promotion of patriotism and national unity is another objective of functional education. Longley (2022) noted that patriotism is the feeling of love for one's country. Being patriotic is one of the necessities of being the stereotypical 'good citizen'. Turner (2021) noted that patriotism goes beyond one loving his/her country. It incorporates one loving and respecting fellow citizens, express faith in the country. Patriotic rituals do not matter, but one cannot be patriotic if one does not stand up and help people around. Students should therefore be made to know how they can practice patriotism by being supportive of fellow citizens.

Attaining functional education involves building social and moral norms in school learners of, gratitude, cooperation and empathy. That is, functional education teachers equally praise or reward for good behaviour, honesty and sharing. Teachers should equally mete out punishment for wrong doing, model social norms, teach morals through religious studies. Grateful children tend to be happier, more optimistic and have better social support. They also report more satisfaction with their schools, families, communities, friends and themselves. Grateful children also tend to give more social support to others as well (Amy, 2020). To teach children, friends or relatives gratitude remind them of all the people, places and things that enrich their life. It lets them know that gratitude is listening to good things if they are dealing with hardship; point out how obstacles can make them stronger and help shed light on the positive aspects of life (Adam, 2020). Moral values are essential from early childhood. They are like guidelines that assist a person in choosing right from wrong, good from bad. Understanding these values is crucial for making honest, credible and fair decision in everyday life. Thus, following moral ideas can help students develop a likable character and a pleasant personality (Gongala, 2023).

Attaining the objective of functional education is to develop the child's ability to adapt to her changing environment. This can be achieved by understanding learners' needs and offer encouragement and support. Akubuilo (2014) maintained that students' needs and dispositions are very crucial for effective learning outcome. Functional education infuses learners' needs through learning of the past learning situations and examination result. This goes a long way in deciding objectives that are achievable and of course the contents of the discipline that are to be included in subject topics. In order to achieve a good adaptation to environment, functional education impacts resilience, promotes self-regulation, dispel the fear of failure, encourage continuous learning, discuss' why change is inevitable and a natural process even in the physical and social environment and, intimate students on the need for adaptation. Thus functional education attainment through Nigeria's Philosophy of education for environmental waste-wealth advancement is essential.

More so attaining objectives of functional education offers opportunities for developing manipulative skills. This include the engagement of learners in resistance tests and in manipulating various apparatuses individually and in a large group to, demonstrate concern for the care and safety of others and for equipment (FRN, 2015).

Conclusion and recommendation

Food security improvements need not increase specifically the pest, disease, foodborne illness which is more severe in underdeveloped and developing countries,

contaminated food – a significant concern for consumers also in developed countries, economic components (finance/investment issues that aids or un-aids food sustainability), land tenure/utilization issues, environmental resource use, agricultural sector forest depletion, emissions (from all sectors), social/cultural issues (anaemia among women and unemployment of especially women and youths), resilience/sustainability capacity (food production variability and indigenous plant and species extinction) and particularly the environmental climate change conundrum such as wasteto-wealth solutions that improves the agricultural economy, devolves the pollution-waste hazard and enhances animal nutritive and overall health to enhance the food and protein security needs to be canvased and investigated more.

Functional education attainment for the enhancement of animal production, agriproduction economy productivity and solving global food and protein insecurity is possible despite functional education challenges in both urban and rural areas. Besides, there seem to be total neglect of education and Nigeria's education philosophy of functional education particularly at the foundation level despite education acknowledged as one of the critical sectors in any society. Education sector in Nigeria, yet receives insignificant amount in the budgetary allocation yearly resulting in several challenges facing the sector today. Amidst that, the seeming collapsing of the education industry particularly and, other institutions in general paint no irony that that the country is racing down the praecipes and it is the revamping of the education industry that may ensure desired goals in other sectors is achieved (Adeaga, 2012). This essential move should start from the foundations which is functional education and functional education attainment. Thus, the need for functional education attainment through Nigeria's Philosophy of education.

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