IJAAR PUBLISHING®

International Journal of Research in Education and Sustainable Development | ISSN: 2782-7666
Vol. 4, Issue 4 (April, 2024) | www.ijaar.org/ijresd

ENTREPRENEURSHIP EDUCATION AS A TOOL OF MEETING THE NEEDS FOR SUSTAINABLE DEVELOPMENT THROUGH ENGINEERING, RESEARCH AND INNOVATION IN NIGERIA.

By

Ochuema Agnes Agbede
Dept. of primary Education
FCE Obudu
Phone Number: 08077766691

Atiatobe Stephen Inde
Dept. of Primary Education
FCE Obudu

Ewe Catharine
Dept. of Home Economics
FCE Obudu
Phone Number: 08055658776

Urom Chukwuemake
Dept. of Business Education
FCE Obudu

Abstract
Entrepreneurship Education is a key to economic growth, productivity and self-employed nation as individuals are geared toward creativity and innovation based on research and entrepreneurial skill acquired for competency in operational training. Entrepreneurship education leads to sustainable development as an individual is basically skill oriented for self-reliant in the country. The paper emphasized entrepreneurship education as a means of meeting the needs for sustainable development in the country as it is included in the school curriculum (in tertiary institutions). It's also form basic research instrument that aid in teaching/learning which is practically on skill training. Entrepreneurship leads to competency and perfection of individual in the learnt occupation. The paper also addresses the ways of meeting the needs for sustainable development through research and innovation in entrepreneurship. Its' constraints were also lighted and recommendations were made as: Entrepreneurship education should be adequately funded in higher institutions of learning for capacity buildingtoward sustainable development. Adequate training materials/equipment should be made available to trainees for practical skill acquisition/learning by doing for sustainable development.

Keywords: Entrepreneurship Education, Sustainable Development, Engineering, Research, Innovation, Nigeria, Economic Development, Higher Education, Capacity Building

Agbede, A. O, Inde, S. A., Ewe, C. & Urom, C. (2024). Entrepreneurship Education as a Tool of Meeting the Needs for Sustainable Development through Engineering, Research and Innovation in Nigeria. *International Journal of Research in Education and Sustainable Development*. 4(4), 7-14.

13/04/2024

Introduction

Entrepreneurship is globally considered to be an important source for economic development and prosperity. Entrepreneurship and innovation are increasingly recognized as drivers of economic growth, productivity and employment as a key aspect of economic dynamism (Fayolle & Gaily, 2008). It is of these view that the paper is on Entrepreneurship Education is a mean of meeting the needs for sustainable development, through engineering, research and innovation in Nigeria.

Entrepreneurship Education is a part of education system that involves the acquisition of skills, ideas and management abilities necessary for sustainable development as a way of self-employment and creativity for self-reliance of individuals as careers choice to earn a living (Olorounmoly, 2010).

According to Owuala (1999) said that entrepreneurship education is a programme or part of the programme that prepare individuals to undertake training on creativity and acquisition of skill to enable them start a small business. Entrepreneurship education is designed to equip trainee with the necessary skills knowledge ability, interest and motivation to become entrepreneur (Azubuike, 2006). The sole motive of is to enable them become self-employed to impact positively on sustainable development and reduce poverty in the society. Entrepreneurship goes alongside with competency, skills and mental awareness which is needed to understand the function of an already existing business. Entrepreneurship education is about developing attitude, behaviour and capacities at the individual level based on interest and choice career. It is also about the application of those skills and attitudes that can be transformed during individual's career, creating a range of long term benefits to society and economy (Anho, 2011).

Entrepreneurship education lead to creativity and innovation of individuals, which bring about competency in the learnt career of choice as individual becomes competent in the occupation. Creativity is characterized by the ability to perceive the world in new ways to fined hidden patterns to make connection between seemingly unrelated phenomena and generate solutions (Ambile, 1996). While innovation generally refers to changing or creating more effective processes products and idea that can increase the likelihood of a business succeeding. Business that are innovative create more efficient work process and have better productivity and performance (Frankelius, 2009). Innovation is a catalyst for growth and success of any business that lead to sustainableeducational advancement in technology of that nation (West, 2002). Entrepreneurship education lead to sustainable development as individual would exploit all the available resources to be self-reliance, these it brings about sustainability of that country.

Concept of sustainable development has been defined by many in various ways. Hasana (2007) said sustainable development as a kind of development that can be initiated and managed properly in such a way as to give attention to continuity and preservation as people explore an explicit available resource for the enlargement of their existence.

Kudan in Paul Maonie (2008) describes sustainable development as a construct which envision development as meeting the need of the present generation without compromising the needs of the future generation. Hence for the achievement of these there must be human development entrepreneurially (Owolabi, 2003).

According to Adeniyi (1999) said, there are major essential tool for achieving sustainable development these include:

i. Improving the quality of basic Education to include skill acquisition

ii. Re-orienting existing education programme to address sustainable development

iii. Developing public awareness and understanding entrepreneurial skill training for career choice as occupation.

iv. Providing training for all sectors of private and civil society.

These can be achieved when concrete steps are taken to make the youth acquire skills that would enable them to be self-reliant and therefore become the tools for achieving development and its sustainability.

Ways of meeting the needs for sustainable development through Entrepreneurship Education as:-

i. Economic growth of the nation can only be achieved through a well programmed or practicable entrepreneurship education where individuals are self-reliant or self-oriented to their job specification base on their training as an occupational career for competency and efficiency in output or production capacity, these would enhance sustainability and lead to development of that country.

ii. Technological advancement of the nation can also be achieved or reached through Entrepreneurship education. Since most individuals are innovative and creative, it would lead to creating new venture, which will in turn enhance technological advancement and bring sustainable development into the society as new products and technology are introduced into the country. Thus, it would boost the country revenue generation and lead to sustainable development.

iii. Socio economic development is attained through entrepreneurship education, because it would increase the level of self-employed citizens in the society due to entrepreneurship, and enhance sustainable development. Since most individuals would be engaged in their various business ventures.

iv. Increase production efficiency in industries through Entrepreneurship education, as most staffs are competent in their area of job specification, these would lead to competency and perfection in their job and enhance sustainable development in the country.

v. Improve the health status of the entire populate, through entrepreneurship education, as every individual would be engaged in his/her venture or business based on the individual choice or interest, it would combat at most illness and reduce death rate in the country thus enhancing sustainable development in Nigeria as meeting the requirement for millennium development goal.

vi. Improved farm technology and output; these are achieved through entrepreneurship education as most individuals/farmers are trained skillfully toward the use of improved technology in farming system. These would improve production output, and other processing technology is achieved through entrepreneurial training and enhancing sustainable development in Nigeria. However, entrepreneurship education is the driver of every nation economy and its sustainability.

Entrepreneurship Education as a means of meeting the needs of sustainable development through engineering.

Entrepreneurship Education and engineering go hand in hand, because engineering concept is basically skill oriented programme, which is self-reliance and creative in nature. In recent decades the engineering workforce has helped a lot in developed countries eg. United States, such helps are in making substantial advances in communications, health, defense, infrastructure and manufacturing products that have to do with new technologies and their implementation (Blue et al, 2005).

Hence opportunities and challenges continue to require engineers to literally invent the future by developing breakthrough technologies that lead to sustainable development in the country and enhance the quality of life (Kurzweil, 2001).

Engineering Education is the foundation of innovation, to be prepared to enter the workforce and thrive in this ever changing global economy engineers need to be able to collaborate effective as leaders, in team and with their peer.

In addition to their technical and analytical expertise, there need to be flexible, resilient, creative empathetic and have the ability to recognize and seize opportunities which is entrepreneurial (NAE 2004, Sheppard et al. 2008). All of these skills can and should be taught to engineers as part of their formal education. It is the responsibility of engineering education to instill these qualities in students to enable them to be more innovative and entrepreneurial toward achieving sustainable development in the country.

The Importance of Entrepreneurship Education in Engineering

Engineers need to be entrepreneurial in order to understand and contribute to the context of market business. For engineers who starts companies soon after graduation. Entrepreneurship education gives them solid experience in product design and development prototyping, technology trends and market analysis (Nelson and Byers 2010). These skills are just as relevant for success in established enterprises as they are in startup. Hence in recent decades technology entrepreneurs have become heroes in their business or industries. Entrepreneurial process has been embraced as a key element of the country's future success that leads to sustainable development through the effective entrepreneurship (Neck & Greene, 2011)

Entrepreneurship is a mean of driving innovation and improving the education system that leads to high growth in the country development. Entrepreneurship in engineering broadenopportunities for technology and research for both in and outside the classroom learning for skills, knowledge and abilities to manipulate those skills properly in production.

According to Neek and Greene (2011) said that the teaching of entrepreneurship from process based approach with known input and outputs to a method-based approach that support iteration and creativity. It is necessary to incorporate entrepreneurship modules in engineering problem solving in the context of a business opportunity.

Ways of meeting the needs for sustainable development through entrepreneurial research

Education and research institutions, as producers, repositories and diffusers of knowledge and technology as research play a central role in such systems, as it leads to sustainable development as entrepreneurial education leads to the following

1. Entrepreneurship education aids in developing skill required in individual toward the attainment of sustainable developments.
2. Entrepreneurship education improves individuals in fostering innovation and poverty reduction through research and development
3. Entrepreneurship Education assists in exposing hidden talent in individual as people are searching for new ideas, skills and technology through research and leads to sustainable development.
4. Research helps in developing entrepreneurial ecosystem that leads to sustainable development.
5. Research aids in the development of entrepreneurial curriculum to include acquisition of skills, knowledge, development of new ideas and search for hidden potential of individual toward creativity and attainment of sustainable development in the country.
6. Research helps in effective entrepreneurship education programmes focused on developing entrepreneurial attitudes, skills and behaviours. This includes capacity building, self-confidence, self-efficiency and leadership skills, these enhance sustainable development in the country.

According to Hana (2013) said that innovation is a process of transforming the new ideas, new knowledge into new products and services. Innovation as an activity which lead to new producing function new product. Such activity as

i. Introducing a new product
ii. Introducing a new method of production
iii. Opening a new market

Ways of meeting the needs for sustainable development through entrepreneurial innovation

Entrepreneurs fuel innovation by developing new or by improving existing products, services or processes such way in which entrepreneurial innovations aid in sustainable development are:-

1. Entrepreneurial innovation helps in development of skills and creativity as it leads to innovation for sustainable development.
2. Innovation represents an activity of creating a new product or service, new technological process, new organization or enhancement of existing product for sustainable development.
3. Entrepreneurs are individuals who transform these innovations into economic goods using financial and business acumen toward sustainable development.
4. Entrepreneurship drives economic change and innovation into a sustainable goal.
5. Entrepreneurial innovations and in production, development or enhancement of a specific product, innovation in services is offering new or enhancing of existing services for sustainable development in the country.

Constraints associated with entrepreneurship education as a mean of meeting the needs for sustainable development in Nigeria. The following are the constraints such as:-

1. Lack of adequate training materials/equipment for student learning toward skills competency against sustainable development.
2. Lack of adequate workshops/laboratories for effective teaching and learning entrepreneurship education for practical skills training.

3. Inadequate research centres, and research materials are lacking for researchers to key in adequately for skills and competent training.
4. Most graduates of engineering are not entrepreneurially vested, with this, it hinders sustainable development
5. Lack of adequate funding hinders effective entrepreneurship training in higher institution of learning and in turn affects sustainable development.
6. Insufficient training materials; most institution lack sufficient training material for practical learning hence affect the student ability to become competent in that lesson taught to them.

Conclusion

Entrepreneurship Education is needed in the present day education system as it plays the role in self-reliance and reduces unemployment in the country as a key metrics to sustainable development in Nigeria as meeting the needs through engineering, research and innovation in technology advancement.

Entrepreneurship Education helps in capacity building of individual, through creativity and innovation that lead, to competency in one's occupational choice as a career. Entrepreneurship education is a programme that prepares individuals in undertaking training in creativity and acquisition of skills to enable them function on their own or start up a small business. However, this can be achieved through including entrepreneurship education in engineering as a compulsory course in the university and also making available most research centres entrepreneurial for skills training as providing materials/texts that contain entrepreneurial knowledge in all the localities in the country for sustainable development.

Recommendations

The following recommendations were made based on entrepreneurship education as meeting the needs for sustainable development.

1. There should be adequate training materials/equipment for effective learning by doing for sustainable development.
2. Adequate workshops/laboratories for teaching and learning entrepreneurship should be available for students training.
3. Adequate research centres should be available in all local government areas with text/reading materials which are update for research and development of individuals entrepreneurially.
4. Adequate funding should be given to entrepreneurship education as it would build individuals in acquiring skills that would make them to be competent and self-reliant in their career choice as occupation.
5. Entrepreneurship education should be taught to engineering students as it would developed and make them to be more creative and resourceful as business organizers for sustainable development.
6. Entrepreneurship education should be made compulsory to engineering students, so that those who may want to start a company after graduation have acquired solid experience as in product design and development, prototyping technology trend in marketing analysis.

References

Adeniyi P. (1999) Research Capacity Building for Sustainable Development in Nigeria, Lagos: Unilag Consult.

Amabile, T. M. (1996). *Creativity in context west* view press.

Anho, J.E. (2011) Impart of Entrepreneurship Education and Training on University Graduates for Sustainable Development in E.A Aruboyi N.E. Akpotu and E.P Oghabu (EDS) *A book of Reading: Education and Training for Entrepreneurship.*

Azubuike, R.N. (2006). Challenges and implication of entrepreneurship development for business education in tertiary institution. *Business Education Journal* 2, 47-58.

Blue C.E., Blevins L.G. Carriene P. Gabriele G. Kemitzer S. Vittal R. Ulsoy. G. (2005). The Engineering workforce current state, Issue and Recommendations Arlinghon V. A. National Science Foundation.

Fayolle, A. & Gaily B. (2008) "From craft to science. Teaching models and learning processes in Entrepreneurship Education; *Journal of European Industrial Training* 32, 410 - 428.

Frankelius, P. (2009). Questioning two myths in innovation literature, *Journal of High Technology Management Research* vol. 20 No1 pp40-51.

Hana. U. (2013). *Competitive Advantage Achievement through innovation and knowledge, competitiveness* vol. 5. Issue 1 http:www.cjournal.c2/fles127

Hasana A.M. (2007) "Dimensions of sustainability *Journal of Engineering for sustainable development Energy*. Environment and Health 2 (11): 47-57

Kurzweil R. (2001). The law of accelerating returns. Essoy, March 7. Available online at www.kurwa/ai.net/the-law of accelerating-returns.

NAE/National Academy of Engineering (2004). The Engineer of 2020: *Visions of Engineering in the new century.* Washington: National Academies press.

Nelson A.J & Byers T. (2010) challenges in university Technology Transfer and the Promising Role of Entrepreneurship Education Kuliffman: Engineering Scholars Initiatives.

Owolabi, Y. (2003) "Sustainable development: All stakeholders Affairs: Vanguard. October 17.

Sheppard S. P; Sullivan W.M; Macatangay K; Colby A. (2008) Educating Engineers: Designing for the future of the field. San Francisco: Jossey-Bass.

Paul-Maorie, B. (2008) "Sustainable Development Indicators a Scientific Challenges a Democratic Issues SAP IENSI (I) Sapiens.org. Retrieved 2011- 09-28

Weck H.M. & Greene P.G. (2011). Entrepreneurship Education: Known worlds and new frontiers, *Journal of Small Business Management* 49 (1), 55-70-doi 101111/1540-627x2010.00314x4