

Integrating Entrepreneurship Education Practices through Regulatory and Institutional Frameworks for Sustainable Economic Development

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ABSTRACT

Education institutions of higher learning help individuals to understand their functions, limitations, potentials, capabilities to attain self-fulfillment. Science courses undergo physical application of scientific concepts that could be turn into products if the regulatory framework is legal followed. It was observed that lack of knowledge and ideal innovations make science education to be job seeker instead of job provider. Application of concepts can lead to entrepreneurship skills which will serve as catalyst for sustainable economy development. The astronomical increase in population, increase in banditry and social crimes should not continue but to stop if entrepreneurship skills acquisition is integrated as a process in science education practice, if not eradicated it will reduce all these social verses into barest minimum. The research is empirical descriptive survey design, the population consists of all 300level science education students. Multi stage sampling method was used and the sample comprises randomly selected of fifty (50) students. A structured research questions was raised to get the view of the student towards integrating and practicing entrepreneurship skills in science education (VIPE) using Linkert scale for data collection while frequency, mean and standard deviation were used to analyze the results. A pilot test was conducted for (20) non participants with the reliability co-efficient of (0.81) and (0.80) using Cronbach Alpha. The result reveled that entrepreneurship can be integrated and practices in science education process. It was recommended that entrepreneurship should be integrated into science education practice.

KEYWORDS: Integration, Entrepreneurship, Science Education, Sustainability, Development

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1. INTRODUCTION

Education plays vital roles in all human capacity to be developed this necessitated the wiliness of every individuals to look for better way of acquiring education to suit their demands. Education is a process by which the society trains, forms or moulds individual to achieve the social needs and aspiration (Kindom and Maekae 2013; Aliu, Adedo & Adewuyi, 2024) while Ogbonnaya, (2020) see education as a tool that avails people with knowledge, skills, techniques and information which empowers them to their right and duties towards their society and nation. What we need now is to see how this can be achieved through teaching approaches.

Education effectiveness and efficiency during teaching and learning situation in the classroom a teacher must be able to pay attention to the three teaching and learning domain which includes cognitive, affective and psychomotor. (Ojo, Vincent, Ogunjobi, Adebayo, and Adewale, 2021) view learning as an activity or process of gaining knowledge or skill by studying, practicing, experiencing or being taught while Gbenga, (2021) observed that learning is based on foundation of impulse reactive relation, where student receive feedback for answer, that help them to avoid wrong answer this shows that decision of the student need to be decided at every point of learning through activities doing by practices.

Educational system is not aimed to suffer the learners with the factual knowledge, but at equipping the learners with type of knowledge that will enable him to be capable and relevant anytime and anywhere (National policy on education 2004) NPE revised 2013. This implies that knowledge gained was to promote functional education for skill acquisition, job creation, poverty reduction and the good quality of instruction at all levels of endeavors. This means that teacher needs to see teaching process beyond the classroom situation.

Educational institution performs a significant function of providing learning experiences to lead their students from the darkness of ignorance to the light of knowledge. Ademiotan, JimohYusuf, Adedo, & Abdurauf (2021) view education as a social medium and process of acquisition of relevant knowledge, skills and attitude for survival in changing world while Sanni et al. 2017;

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Adedokun, Lewu, Issa, & Ajani (2021) opined that education is a social service designed to equip learners with relevant knowledge, skills, and attitudes for survival in a changing world. If education is social medium and social service the only way to achieve this change is through new innovations.

The personal skills acquired can be integrated as an ideal into teaching and learning process because science education is beyond the classroom practice. Innovation can be refer to something new or to a change made to an existing product, idea, or field of practices. Innovation is activity supported within the human capital Salavou 2007, its boil down to creativity and willingness to experiment Wach et al, 2022, as a drivers for growth and key stimulus for internalization Akbar et al 2021, as alternative strategies to improve and experimenting to developed human capacity Al-Mamary & Alshallaqi 2022; Usman & Nasiru (2024). The aspect of laying emphasis on theoretical teaching is becoming unproductive this is because the reality have shown that our present education programme does not focus on developing students' skills in sciences, the scientific skills include observation, classification, measurement, prediction, controlling variables, interpretation, communication and drawing conclusion.

Integration of scientific concepts application is inevitable; science education practices might be in the best way to provide the appropriate skills needed to develop economically. Most of the sciences consist of some applicable concepts that can be translated into product or materials Obi 2010; Adigun 2013; Taiwo and Onasanya 2024 and Adaramoja and Adedo (2025) remarked that training and re-retraining of the skills, attitudes and experience that will make one productive and self-reliance become crucial for national development. The tools for integration of individuals effectively into a society is to achieve self-realization, promote unity and strive for social, economic, political, scientific, cultural, potentials, capabilities and fulfillment to develop national consciousness (Adedo, Umar & Adesoji 2022). Achieving a sustainable development may be jeopardise if integration of new idea or innovation is missing. As rightly noted by, Alada, et al., 2017; Adedo, et al., 2022 and Adaramoja and Adedo (2025) that development of a nation and its citizen does not occur in a vacuum, but can be actualized through advancements in science education.

Science education introduces learners to both the content and methodologies required for acquiring scientific knowledge and applying it to practical life endeavors however integrating new advance ideal will greatly assist in moving for realization of educational objectives. Opataye 2012; Adedo. and Omoniyu (2024) that science education as making of efficient provision of preparation for citizens which have been observed to be possible when there is provision of scientifically literate teacher who have the idea innovation of their global needs for teaching with the aim of instilling scientific and skill values in learner. This will allow a literate scientific teacher to establish his/her knowledge application in teaching and learning process.

The standards for science education provide expectations for better development of better understanding that concerned with sharing science content and the process with individuals not traditionally considered part of scientific community, the work of science education includes science content, science process (scientific method and the pedagogy that involve. Aliu, Adedo & Adewuyi, (2024) noted that the practice of science education has been increasingly informed by research as a science of teaching and learning that relies mostly on the wide varieties of methodologies, borrowed from many branches of science and engineering. Science education is recognized as a cornerstone of all growth that set down the foundation for skills development, technical progression and the capacity to utilize the country's natural resources, science education is a body of knowledge and facts which can be rationally explained, observed, experimented, applied and proven (chineta, 2023; Yahaya 2023). This means that frequent replication of the above procedures when put into practice, can serve as a catalyst for skills acquisition in science education entrepreneurship. One of the aims of education today is to make the student gain the thinking skills and strategies that they will use throughout their lives rather than storing information

Integrating entrepreneurship into education is critical an interdisciplinary approach which allows the students to develop different skills while pursuing their trade or career opportunities with specific goals, that would enabling them to make immediate strides toward future self-employment. This equips students with essential skills, idea innovation, creativity with leadership skills, fostering adaptability, economic growth, and a preparedness for future challenges This approach not only enhances individual career opportunities but also promotes a more dynamic and resilient society capable of meeting today's challenges. Entrepreneurship skills can initiate a commercialization of their innovative skills in chemistry to acquire great financial profits, become job creators and contribute positively to the national economy especially in global economic recession period through products production.

The mismatched gaps between science education curriculums seem to be the entrepreneurship orientation and skill competencies. Kuratkos. 2005; Odiagbe and Otemuyiwa 2021; Taiwo and Onasanya 2024; Adedo and Olubunmi (2024) stated that entrepreneurship is a vision, change and creation, process that involves exploring idea generation, The call for the integration of entrepreneurship into science education practices is termed science education entrepreneurship with the aims of producing students that can convert the understanding of practice concepts knowledge into products and materials learning.

The most important aspect of entrepreneurship is that it is a cognitive process that uses mental approaches to demonstrate the potential of human knowledge; it is a process where assumption and aspiration can be established through mental innovations to

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become an inventor, and the sharing of these innovative ideas through interpretation is what it means to be an entrepreneur. Cognitive science demonstrates how concepts form in students' minds and, more crucially, how they are linked, which may indicate students' conceptual knowledge. Students' conceptual understanding will continue to improve and will require both knowledge of interdisciplinary capacity to utilize scientific concepts based on a current scientific theory. These can be translated into entrepreneurship science education in order to achieve the Federal Government of Nigeria's targets as spelled out in the Sustainable Development Goals (SDG).

Statement of the problem

Science education was known to be into teaching and learning methodology. In the history of education, the integration of entrepreneurship into practices is to represents a transformative shift, stipulating a new era in learning and teaching methodologies. This suggests that the rate of unemployment and social criminal vices that directly or indirectly affecting sustainability of economy in Nigeria can be mitigated if is well attended to by the concerned stakeholders.

It is sad to note that the continuous ever increase in unemployment rate in Nigeria has assumed a daunting trajectory that might be the sole administrator of others challenges that led to banditry, herdsman with other social crimes, this must be mitigated.

It's of great surprise that student of science education become job seeker instead of job provider this needs to be corrected.

Laying emphases on theoretical hard made it difficult for student to understand the theory behind the scientific concept that cannot be encourage in science methodology in teaching process.

Unaware of the importance of science education as a tool for entrepreneurship skills provider and awareness as a catalyst for national and economy development,

This led the researchers to posit the integration of entrepreneurship practices as a catalyst for sustainable economy development.

Objective of the study

The following objectives are to be determined:

1. To see science entrepreneurship education as profession
2. How science entrepreneurship education can be put in to practices
3. To see the importance of science entrepreneurship education as a catalyst tool for sustainability in an economy
4. To give awareness of science entrepreneurship education in economy development
5. To see the contributory effects of science entrepreneurship practices education on students' performance in skills acquisition.
6. To exposed the students to practical application of scientific skill that can make them functioning in the society.

Research Questions

This study sought answers to the following research questions:

1. What is the level of integrating science entrepreneurship education into teaching and learning process towards economy development
2. What is the level of putting integrating science entrepreneurship education into teaching and learning as a practices

RESEARCH METHODOLOGY

The research is empirical descriptive survey design, the instruments used for data collection was a structured questionnaire for the students to determine level of integrating science education entrepreneurship into practice. (VIEP). Five science application contents was demonstrated for the student on saponification (Soap), fermentation (Vaseline), Scurrying Powder (Egg shell), Egg incubation and Electric Stove. A multi stage sampling technique was used, (50) fifty of 300level students were randomly selected from faculty of education. Linkert scale was adopted for data collection using Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). Research question was raise consisting of 14 questions item in two fold, A is on integration with six questions item while B is on the practices with eight questions item. Pilot test was conduct for 20 non-participating student using Cronbach Alpha with reliability coefficient of 0.80. Frequency, mean and standard deviation was used for the result analysis.

Table 1; Statistics showing the responses of the student on the integration of science education entrepreneurship

		Mean	Std. Deviation	Decision
1	Most of the entrepreneurship products were mainly products produce from science concepts	2.66	.172	AGREED
2	This same scientific concept product can be produced by the expert in science education	2.80	.172	AGREED
3	The product produce still have the same characteristics to the original that make it suitable for used	2.60	.843	AGREED

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4	The practical production of changing scientific concepts into product may serve as new idea in acquiring scientific skills	3.92	.716	AGREED
5	Appropriate and adequate use of new innovations make science to be an entrepreneur	2.72	.188	AGREED
6	An entrepreneur become self-employed so the need for entrepreneurship skills integration into science education is inevitable for economy development.	2.45	.173	AGREED

Source; Shodangi, Nuhu & Adedo, (2025)

The research questions one showing the responses of the student on the integration of science education entrepreneurship. Table 1 Based on the application of turning some scientific concepts into products during the classroom teaching it was agreed by the view of the students to determine either entrepreneurship be integrated in science education teaching. The response in 1, 2,3, 4, and 5 shows that entrepreneurship can done in classroom teaching while item 6 show that it can be integrated. From the mean score of 2.66, 2.80, 2.60, 3.92, 2.72 and 2.45 respectively which is higher the than decision rule of 2.5. It's concluded that entrepreneurship can be integrated into science education. In line with experiment conducted on classroom crises Onwuka 1990; Adedo, Jimoh, & Monsur, (2021), that knowledge of available techniques is a valuable asset towards effective teaching. Generally, success in teaching depends to a large extent on the appropriate selection and application of a teaching strategy from each subject matter. The strategies the teacher employs determine all other factors both in planning, organizing, practice and integrating.

Table 2 ; Statistics showing the responses of student on the practice of science education entrepreneurship

		Mean	Std. Deviation	Decision
7	Scientific enquiry/investigation usually being determine by the use of scientific process	2.44	.364	AGREED
8	Using the scientific process is in evitable during skills acquisition	2.62	.185	AGREED
9	Applied practical in scientific concepts is to improve student skills towards the use of science process as a practice	3.30	.185	AGREED
10	Application of scientific knowledge gained without practice allow individual to be nuisance to the society	2.84	.217	AGREED
11	Demonstration method in teaching was design to develop and inculcate scientific attitude and skills into the student to practice and function within the society	3.20	.166	AGREED
12	Since demonstration method be done in the classroom situation entrepreneurship can also be practice in the same way	2.62	.125	AGREED
13	Application of practical concept as entrepreneurship skills can be term science education entrepreneurship skills practice	3.24	.170	AGREED
14	Continuous training on science entrepreneurial skills can legitimate become entrepreneurial practice	2.74	.191	AGREED

Source; Shodangi, Nuhu & Adedo, (2025)

The research questions one showing the responses of the student on science education entrepreneurship into practice. Table 2 shows that based on the application of turning some scientific concepts into products during the classroom teaching it was agreed by the view of the students to determine either entrepreneurship be put into practice in science education teaching. From the mean scores of question items, 7, 8,9,10,11,12,13 and 14 of 3.00, 3, 00, 3.13, 2.87, 2, 53, 2, 93 and 2.74 respectively which is higher than the decision rule of 2.50. I was concluded that science entrepreneurship skills can serves as a practice and can be practice within the classroom situation. In line with Aliu, Adedo & Adewuyi (2024) that input on acquiring training in teaching functions serve as practice to access and improve student pedagogical content knowledge.

DISCUSSION OF THE RESULT

The result of the findings revealed the need for integration of science entrepreneurship skills as a practice to serve as a catalyst for economy development is inexorable Kuratkos. 2005; Odiagbe and Otemuyiwa 2021; Taiwo and Onasanya 2024; Adedo and Olubunmi (2024) stated that entrepreneurship is a vision, change and creation, process that involves exploring idea generation that call for integration into science education practices. Science education entrepreneurship with the aims of producing students that can convert the understanding of practice concepts knowledge into products and materials learning. Opataye 2012; Adedo. and Omoniyu (2024) that science education as making of efficient provision of preparation for citizens which have been observed to be possible when the idea innovation of their global needs for teaching with the aim of instilling scientific and skill values in learner.

CONCLUSION

Integration and practice are two different words but synonymous to each other in entrepreneurship content because there are some skills that one need to integrate into practice if not done probability of loosens such skills may inevitable. Problems arise when teachers are expected to apply certain practice into students with vastly different ideas. Adapting lessons to students and tailoring the content to their needs takes time, To achieve of having sustainable economy development entrepreneurship skills can be a catalyst therefore there is the need to integrate science education entrepreneurial skills and practice it in our teaching and learning process this will mitigate or reduce unemployment with other social crimes which serve as a barrier in any development.

RECOMMENDATIONS

1. The education stake holders should find the way for the inclusion of science education entrepreneurship skills is establish in the school setting.
2. Science education teachers should see how this entrepreneurship skills be introduce into classroom practice
3. To see science education entrepreneurship skill practice beyond the classroom teaching
4. Adequate training should give to science teacher on how practical applied concepts on entrepreneurship is to be taught
5. Organizing seminars and workshop on entrepreneurial skills
6. Giving adequate and enough financial assistance needed that will enable government and the education stake holders to realized the objectives of the integration and practice.

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