International Journal of Innovative Social & Science Education Research 12(2):170-175, April-June, 2024

© SEAHI PUBLICATIONS, 2024 www.seahipublications.org ISSN: 2360-8978

Exploring the Difficulties in Introducing New Curricula for Teaching Science in Secondary Schools in Nigeria

[1]Zaruku Jibbo Dallatu, [2]Jibril Aliyu, [3]Hamza Abba & [4]Attahiru Shuaibu

[1]Department of Computer Science
Shehu Shagari College of Education, Sokoto, Nigeria

[2]Department of General Studies
Shehu Shagari College of Education, Sokoto, Nigeria

[3&4] Department of Adult and Non-formal Education
Shehu Shagari College of Education, Sokoto, Nigeria

ABSTRACT
The Nigerian curriculum presents significant complexities in facilitating accelerated learning, particularly evident in the realm of Science Subjects. Many current senior secondary public schools in Nigeria lack adequate science apparatus crucial for effective teaching and learning. Addressing these challenges necessitates reconsidering curriculum innovation to enhance the efficacy of science education. Innovations play a pivotal role in educational systems and curricula as they enable adaptation to rapidly evolving environments essential for societal advancement. Nigeria's technological development hinges significantly on the effectiveness of its science education curriculum, recognizing science and technology as critical tools for sustainable national progress. Various science curricula have been devised to fulfill the objectives of science education, yet their delivery encounters numerous challenges. This paper examines the obstacles to curriculum innovation in senior secondary school sciences, including the imperative to integrate new technologies into science education, insufficient funding, inadequate infrastructure, equipment, and materials, as well as barriers related to teachers' capacity to implement desired innovations. Despite these formidable challenges, prospects for improvement are promising. The paper concludes with recommendations aimed at enhancing science curriculum delivery in secondary schools in Sokoto State, emphasizing the implementation of innovative approaches.
Keywords: curriculum concept, curriculum innovation, challenges of science curriculum

INTRODUCTION

Education plays a pivotal role in societal development, serving as a crucial catalyst for social change, technological advancement, and economic growth. Central to this process is the curriculum, which embodies the envisioned societal transformations outlined in educational policies (Inyong, 2009). As educational systems undergo significant structural shifts from traditional pedagogical methods to more sophisticated approaches, curriculum innovation emerges as a key consideration during implementation. It is recognized that introducing new ideas into curricula and educational systems, essential for preparing individuals for contemporary challenges, is a multifaceted endeavor. This complex process necessitates not only technological resources but also strategic planning, institutional readiness, teacher competencies,

and sustained financial support (Umoreh, 2006). This paper explores the fundamental concepts of curriculum and the imperative role of curriculum innovation

Concept of Curriculum

There are several definitions of the word 'Curriculum' by different scholars in the field. One of the most universally accepted of these is that provided by Tanner and Tanner (1975) who defined the term as planned and guided learning experiences and intended learning outcomes, formulated through the systematic reconstruction of knowledge and experiences, under the auspices of the school, for the learner's continuous and willful growth in social competence. This definition shows that when curriculum is well planned it will lead to all round development of the learner. Okonkwo and Ozurumba (1989) stressed that curriculum is a planned and directed activity programme meant to facilitate the achievement of educational purposes.

Educational purpose can only be achieved if the curriculum content and learning experiences are well implemented. As noted by Ogboji (2008) Nigeria system of education has to be geared towards self-realization, better human relationship, individuals and national economic, political, scientific and technological progress.

A worthwhile curriculum is never static. It is dynamic. When analyzed, the intended objectives, the learning experiences, the methods of instruction, the method of evaluation, all parts of or steps in curriculum development have continued to change.

According to Mohammed (2007), curriculum is the experience a school system provides for its students. It can be viewed as all the experiences/activities (co curricula activities) provided under the auspice of school to bring about a change in the leaner in the desired direction. Ibrahirn and Yahaya, (2008) defined the term curriculum as a systematically organized course of teaching and learning. In formal education or schooling, a curriculum is the set of courses, course work, and content offered at a school or university. As an idea, curriculum stem from the Latin word for race course, referring to the course of deeds and experience through which children grow and mature in becoming adults.

Curriculum refers to the lessons and academic contents thought in a school or in a specific course of study or programs (glossary of educational reforms 2015). Curriculum can also be seen as the sum total of what the students should learn in the school or outside the school under the guidance of teachers. For any nation, community and society to experience economic growth there must be a strong stimulation and growth in the teaching and learning of science. Hence a sound science educational system is accepted the world over as the bedrock of human development and progress. Science is the foundation upon which any technological breakthrough is built. (Gbamanja, 1991) stated that science is an organized and systematic knowledge dealing with man's understanding of the national powers. In the conditions of modern life, a scientifically and technological illiterate person is considerably circumscribed as playing his full potential in the socioeconomic development of his community.

Science Curriculum can therefore be viewed as all the experience in science provided by the school for the achievement of goals of science education and learning. (Adeyegbe, 2004) submitted that curriculum generally is the hub of the activities in any educational endeavors, since it dictate what is to be taught, at what level, by whom, with what equipment and for what purpose and assessed by what means. This then implies that science curriculum does not only dictate but also direct/guides every other process of implementing the programme of activities (Ugwu, 2008).

Science education has introduced a lot of changes in our world today and it will continue to do so in the future (Orukotan, 2007). Achievement in science education will go a long way in reducing illiteracy and poverty which are impediments for national development. In modern science, science teaching should be such that enabled young people have access to new knowledge to expect changes and to behave rationally and creatively towards the problems generated by changes. This is because to ensure change will mean progress (Afangidan 2006). This progress mean exploring new avenue to achieve a better result or result which is synonymous with the result but makes the new result well understood and easier to follow than

the old technique. For the progress to be meaningful and scientifically reasonable, the science teachers, curriculum developers and planners must be innovative.

Curriculum Innovation

Innovation in science education curriculum is inevitable in order to meet man needs. Curriculum innovation refers to change in both methodology and content of the subject matter. Such change influences the essence and the method of performance of the learning activities. The change must be monitored and assessed to ensure that it is achieving the goals specified and that the effects of the change meet the expectation of both the designers and users (Udo, 2005). Okoye (2009) viewed curriculum innovation as ideas, approaches and materials introduced into education to improve the content of the curriculum in order to make it more relevant to the varying need of the learner and to every changing need of the society by improving instructional strategies and techniques in order to help the learners to learn faster and better improve organization of learning experience in order to make teaching-learning activities more meaningful and less tedious. Innovation must be tired to the end product and improvement of education. This is because the essence of introducing innovation in the curriculum is to effect

Some change that are expected to improve on the present educational practices that have been judged as deficient and incapable of meeting the aspiration of the ever-changing society of today.

Ughamadu (2006) maintained that curriculum innovation is quite vital as

i. Curriculum innovations are directed towards improving performance of the school system so as to be result oriented. Hence any innovation introduced into the school curriculum must take into consideration the system of the school.
ii. It provides the mean of trying new research findings.
iii. It Enables education practices to change from time to time so as to reflect the consequent changes in the society.
iv. Enables classroom teachers to solve some instructional problems which they occasionally encounter in the teaching and learning setting.

Enables classroom teachers to acquire new knowledge that will make them more effective and productive. According to, Gbamanja, (1991) Curriculum innovation represents a dynamic and ongoing process within educational institutions aimed at improving learning outcomes and adapting to the evolving needs of students and society. At its core, it involves the deliberate design and implementation of new approaches, content, and methodologies that enhance the educational experience. One of the primary drivers behind curriculum innovation is the recognition that traditional educational frameworks may not always effectively prepare students for the complexities of the modern world. As technology advances and global challenges become more interconnected, there is a growing demand for curricula that foster critical thinking, creativity, collaboration, and adaptability.

In addition, Umoren, (2006). Innovation in curriculum often begins with a reassessment of goals and objectives. Educators and curriculum designers collaborate to identify the knowledge, skills, and competencies that students need to succeed in the 21st century. This process may involve consulting industry experts, conducting research, and gathering feedback from various stakeholders, including students themselves

Furthermore, Okoye (2007) curriculum innovation encourages interdisciplinary learning, breaking down traditional subject boundaries to create holistic educational experiences. This approach not only helps students make connections across different fields of study but also prepares them to tackle complex real-world problems that require interdisciplinary solutions. In addition to content and methods, curriculum innovation also emphasizes the importance of inclusivity and diversity. It seeks to reflect the experiences and perspectives of all students, promoting cultural competency and understanding. This can be achieved through diverse literature, multicultural perspectives in history and social studies, and inclusive teaching practices that accommodate learners from varied backgrounds.

Nwagbo, (2008) Moreover, curriculum innovation encourages lifelong learning by fostering curiosity and adaptability. It encourages students to explore new ideas, take risks, and learn from failure, preparing

them for a future where continuous skill development and learning will be crucial. Curriculum innovation is about creating a learning environment that is flexible, inclusive, and relevant to the needs of both students and society. By embracing innovation, educators can empower students to thrive in a rapidly changing world, equipping them with the knowledge, skills, and mindset needed to navigate challenges and seize opportunities in the years to come.

Challenges of Science Curriculum Innovation in Secondary Schools

According to Abba and Ubandoma (2008) Assert that, there are numerous obstacles hindering the improvement of science education in secondary schools through curriculum innovation. Despite longstanding efforts by the Nigerian government since the 1960s to enhance science education—such as revising curriculum content, ongoing teacher training, offering incentives to teachers, improving evaluation methods, and upgrading school infrastructure—the challenges persist. These difficulties affect teachers, students, and educational institutions alike, preventing the delivery of high-quality, empowering education capable of fostering sustainable development.

While, Adeyegbo (2004). The integration of new technologies in teaching science at the senior secondary level poses a significant challenge. Modern technologies like computers, simulations, Computer-Assisted Instruction (CAI), Computer-Based Learning (CBL), and e-learning are transforming traditional, teacher-centered approaches by providing students instant access to educational resources. Despite Nigeria's initiative to promote computer education, aimed at equipping schools nationwide with technology, the implementation has faltered beyond the initial distribution and installation phase. Consequently, conventional methods such as chalkboards and textbooks continue to dominate classrooms, posing a major hurdle.

In addition, Abba and Ubandoma (2008). Another challenge lies in promoting active learning techniques, where students engage actively rather than passively absorbing information through lectures. Active learning methods like fieldwork, guided discovery, projects, laboratory work, and programmed instruction are crucial for imparting practical and cognitive skills. These methods enhance motivation, creativity, and a sense of achievement among students, reducing conformity in learning.

Aguokoghuo (2002) Inadequate funding remains a pervasive issue for curriculum innovation. Insufficient financial resources hinder efforts to hire qualified teachers, provide ongoing training, recruit technical support staff, and equip laboratories for practical sessions necessary for innovative teaching methods. This funding gap, identified by experts, significantly impedes the effective implementation of educational innovations and compromises their potential benefits.

However, Ereh, (2005) Resistance to change among teachers, school administrators, and education officials presents another challenge. Many stakeholders are skeptical of new techniques or innovations, which can hinder the adoption of curriculum reforms. Teachers, as pivotal implementers of curriculum, often lack the necessary knowledge, skills, or willingness to effectively introduce and sustain innovations in their teaching practices.

Not only that Ereh, (2005) Lack of awareness about the importance of curriculum changes is also a major issue. Some stakeholders fail to recognize the evolving needs in science and technology education, which necessitate ongoing updates to curriculum content. This lack of awareness can lead to outdated educational practices that do not align with current societal and technological advancements. Additionally, inadequate communication channels for disseminating information about revised curricula pose a significant challenge.

Mohammed, (2007). Poor dissemination can disrupt the implementation of new educational strategies, as key stakeholders may not receive critical updates or instructions necessary for successful curriculum adoption. In summary, these challenges underscore the complexities involved in advancing science education through curriculum innovation in secondary schools, highlighting the need for comprehensive solutions to foster effective educational reforms.

CONCLUSION

This paper concludes that science is essential for addressing societal challenges and for human and national development. Concerns regarding the teaching and learning of science should be treated with utmost seriousness. Curriculum matters, particularly those related to innovation, cannot be ignored if the goals of science education are to be achieved. It is crucial for both future and current teachers, school administrators, Ministry of Education officials, and other curriculum implementers to be well-informed and continually updated on innovations in curriculum.

RECOMMENDATIONS

I. It is essential to adequately motivate curriculum implementers (teachers) to enhance efficiency and effectiveness, ensuring their active involvement.

II. Educational institutions across all levels should have internet connectivity to facilitate access to information for both teachers and students. This adaptation is crucial in response to the increasing demands of globalization and the need for innovative practices.

III. Despite encountering challenges in innovation, regular curriculum reviews are necessary to ensure it remains responsive to emerging issues in a timely manner.

IV. Governments should demonstrate both political will and implement deliberate policies to prioritize science education. This commitment should extend beyond mere budgetary allocations, which often prove insufficient.

V. The continual training and retraining of teachers should be integral to the curriculum to enable them to keep pace with educational innovations. Given the dynamic nature of education, practitioners in the field must evolve accordingly.

REFERENCES

Abba, I. & Ubandoma, Y. (2008). Global Challenges in the Science Technology and Mathematics Education (STME) Curriculum 49th Proceeding of the Annual Conference of STAN pp 15-17

Adeyegbo, S. C. (2004). Research into STM Curriculum and School Examination in Nigeria. The State of the Art 45th Annual Conference Proceeding of STAN pp 70-80

Afangideh, S. F. (2006). Strategies for effective teaching of science subjects in secondary schools. A Paper Presented during an in-house Seminar organized by Science Teachers of Notre Dame Girls Secondary School, Akwa Ibom State.

Aguokoghuo, C. N. (2002). Problem and Prospect of Secondary School; Curriculum in Nigeria. Nigeria Journal of Curriculum Studies 9(2), 92-97.

Akpan, B. B. (1999) (Ed). Prospective on education and science teaching, from the eyes of UduogieIvowi, Abuja-Nigeria. Foremost Education Service Limited.

Ereh, C.E. (2005). Teacher Characteristics and School Curriculum Implementation in Nigeria Secondary Schools. A Theoretical Review. Journal of the Nigeria Academy of Education 3(1) 111-120.

Gbamanja, S. T. P. (1991). Modern method in science education in Africa. Owerri Totan Press.

Mohammed, M. B. (2007). Selected Classroom Practice for Improving the Science curriculum in Nigeria.50thAnnual Conference Proceeding of STAN49-51.

Inyong, A.U. (2009). Curriculum innovation and information and communication technology (ICT): Implications for counselling. Journal of Curriculum Studies, 16 (2).

Umoren, E. (2006). Information and communication technology and curriculum. Nigerian Journal of Curriculum Studies, 2 (1).

Tanner, D. & Tanner, L. (1975). Curriculum Development Theory. New York: Macmillan.

Nwagbo, C. (2006). Effect of Two Teaching Method on the Achievement in and Attitude of Students in Different Levels of Scientific Literacy. International Journal of Education Research 45(2006). 216-229.

Nwagbo, C. (2008). Science, Technology and Mathematics (SIM) Curriculum Development focus on Problem and prospects of Biology Curriculum Delivery. 49th Annual Conference Proceeding of STAN pp 77-81.

Okoye, N. S. (2007). Theory and Practice of Curriculum Development for Nigeria Students. Abraka: Delsu Investment Ltd.

Okonkwo, C.E. & Ozurumba, M.M. (1987). Fundamental Concept in Education. Owerri: Tota Publishers Ltd.

Orukotan, A. F. (2007): Curriculum Enrichment of STM Education as a Basis for Sustainable Development. 50th Annual Conference Proceeding of STAN. Pp 3235.

Udo, E, (2008). Activity Techniques and its Implications for Science Curriculum Innovation in Nigeria. 49thAnnual Conference Proceeding of STAN. 36-40

Ughamadu, K. A. (2006). Curriculum Concept, Development and Implementation. Onitsha Lincel Publishers.

Ugwu, A.N. (2008). Current Issues on Implementation of Senior Secondary School Science Curriculum in Nigeria. 49th Annual Conference Proceeding of STAN Pp 23-26