

CURRICULUM IMPLEMENTATION AND FACTORS INFLUENCING ACADEMIC ACHIEVEMENT IN CHEMISTRY: A NARRATIVE REVIEW OF COLLEGES OF EDUCATION IN NIGERIA

SHITTU, MUHIB LUQMAN

University of Ilorin, Faculty of Education, Ilorin Nigeria

E-Mail: khaalidkhaalid@gmail.com,

OLORUNDARE, ADEKUNLE SOLOMAN

Former Dean of Education, University of Ilorin, Nigeria

E-Mail: adeksol@yahoo.com

Abstract

This paper discusses curriculum implementation and the factors influencing students' academic achievement in Chemistry within Colleges of Education. Curriculum implementation involves translating planned courses into syllabi and lessons delivered by teachers. Effective implementation is crucial for bridging the gap between intended and achieved learning outcomes. However, many well-designed curricula encounter problems during implementation. Teachers, who play a central role in this process, directly impact the quality of education. In Nigeria, teacher involvement in curriculum planning is often limited, raising concerns about effective implementation. Administrative staff also play a significant role. Monitoring curriculum implementation involves observation, feedback, interviews, student assessments, and reports. Several factors hinder effective implementation, including inadequate funding, insufficient facilities, economic factors, and inadequate planning. Researchers have also identified factors affecting students' academic performance, such as communication, learning facilities, proper guidance, and family stress. Teacher-related variables, including age, gender, qualifications, and experience, also influence students' achievement in Chemistry. While teacher qualification and experience can positively impact student outcomes, research findings vary. Teacher experience can also affect students' study habits, with more experienced teachers often being more effective. In summary, this paper highlights the importance of effective curriculum implementation and how various factors, including teacher quality and student-related variables, can influence students' academic achievement in Chemistry in Colleges of Education.

Keywords: Curriculum Implementation, Academic Achievement. Chemistry Education, Teacher Quality, Student Performance

DOI: <https://doie.org/10.0302/SER.2025626646>

Introduction

Curriculum implementation involves enacting officially prescribed courses of study, syllabi, and subjects. It requires an implementation agent, typically the teacher, to translate the planned curriculum into syllabi, schemes of work, and lessons for student delivery. Many educationists have highlighted curriculum implementation as a fundamental impediment to achieving Africa's educational goals (Obanya, 2007, cited in Wordu & Pepple, 2019). Implementation occurs when the learner interacts with the teacher-constructed syllabus, teaching materials, and environment, thereby acquiring the intended knowledge, skills, and attitudes necessary to function effectively in society. Therefore, the learner is central to the curriculum implementation process.

An effective curriculum is one that reflects the "learned curriculum," as described by Obanya (2004, cited in Osuji & Alabere, 2023). However, many curricula fail during implementation; approximately 75% of innovations are deemed unsuccessful (Akanbi & Omosewo, 2014). Effective curriculum implementation depends on teacher quality,

intrinsic motivation, and extrinsic motivation. In Nigeria, however, literature has shown that teachers are not adequately involved in curriculum planning (Ofoha, 2009; Oribabor, 2009; & Alachi, 2014), which undermines the likelihood of successful implementation. Effective curriculum implementation is critical for bridging the gap between the intended and learned curricula and improving the teaching and learning experience.

Concept of Curriculum Implementation

The concept of curriculum implementation is viewed differently by various scholars. Many educationists have discussed curriculum implementation in Africa and identified it as the major setback for achieving educational goals (Obanya, 2007). Curriculum implementation involves putting into practice the officially prescribed courses of study, syllabi, and subjects using appropriate methods, learning experiences, and instructional materials. It demands concerted efforts from end-users of the curriculum at all levels for effective implementation to achieve the desired goals. Thus, Mkpa (2007) defined curriculum implementation as the task of translating the curriculum document into the operating curriculum through the combined efforts of students, teachers, and other stakeholders. Garba (2004) described curriculum implementation as putting the curriculum to work to achieve its designed goals. Similarly, Osuji & Alabere (2023) defined curriculum implementation as the day-to-day activities that school administration and classroom instructors engage in to achieve the goals of a particular curriculum. Implementation hinges on teacher quality, motivation, and involvement in curriculum planning. Teachers, as the primary agents of implementation, play a pivotal role in determining success (Syomwene, 2018; Olorundare, 2014).

Monitoring curriculum implementation involves tools such as observation, feedback questionnaires, focus groups, interviews, student assessment results, and reports (Mckimm, 2007). However, numerous challenges hinder effective implementation. These include inadequate funding, a lack of school facilities, impractical goals, insufficient teacher resources, and inadequate in-service training. Poor planning, a lack of commitment from the government and teachers, and insufficient monitoring and evaluation also contribute to ineffective implementation (Balogun, 1995, cited in Emeh *et al.*, 2011).

Factors Influencing Students' Academic Achievement

Student achievement and curriculum implementation are inextricably linked. Teacher-led teaching and learning processes lead to student achievement. Students' learning achievement is impacted by how chemistry teachers perform during the teaching and learning process. Meanwhile, student achievement is one indicator of how well the curriculum is implemented.

Several factors influence students' academic achievement in Chemistry, including teacher-related and student-related variables. Teacher quality—comprising qualifications, experience, and motivation—is a significant determinant. Kola and Sunday (2015) found that teachers with higher qualifications positively influence students' learning outcomes, as they tend to use higher-order cognitive teaching methods. Teacher experience also predicts students' academic performance, as experienced teachers are often more effective (Hansen, 1988; Wanjala *et al.*, 2015).

Student-related factors include study habits, attitudes toward learning, family background, and stress. Irfau and Shabana (2012) highlighted that communication, learning facilities, and proper guidance positively impact students' performance, while family stress has a negative effect. Abuseji (2007) found that students' gender, study habits, and mathematical ability also significantly influence their academic achievement in Chemistry.

Relationship between Curriculum Implementation and Students' Academic Achievement in Chemistry

The quality of curriculum implementation directly impacts students' academic achievement in Chemistry. A well-implemented curriculum bridges the gap between intended and learned curricula (Obanya, 2004, cited in Osuji & Alabere, 2023). Curriculum relevance is determined by its implementation (Ugwu, 2005), and successful implementation fosters students' acquisition of knowledge and skills.

Research has shown that teacher variables, such as age, qualifications, and experience, influence students' achievement in Chemistry (Abuseji, 2007). Teachers with advanced qualifications and extensive experience tend to ask higher-order questions, facilitating better learning outcomes (Kola & Sunday, 2015). However, insufficient teacher involvement in curriculum planning, as noted by Magaji and Peter (2020), hinders effective implementation and, consequently, students' performance.

External factors, such as inadequate funding, poor facilities, and a lack of resources, also affect curriculum implementation and students' performance. Addressing these issues is essential to enhance educational outcomes.

Research Methods

This study adopted a descriptive survey research design. It utilized the Context, Input, Process, and Product (CIPP) model of curriculum evaluation, given the study's evaluative nature and purpose. The CIPP model provided a framework for structuring the collected data and the research questions. The variables were not manipulated during the study. The variables considered included chemistry lecturers' academic qualifications, chemistry lecturers' teaching experience, chemistry students' ratings of the objectives, chemistry lecturers' ratings of the objectives, the availability and adequacy of chemistry laboratory apparatus, facilities, and equipment, the availability and adequacy of chemistry lecturers, strategies for teaching chemistry topics, problems of chemistry curriculum implementation, teaching effectiveness, and students' achievement in chemistry.

Conclusions

Curriculum implementation is a critical aspect of education, involving translating planned courses into syllabi and lessons delivered by teachers. Effective curriculum implementation is essential for bridging the gap between intended and learned curricula, but it often faces challenges; approximately 75% of innovations are unsuccessful. Teacher quality plays a central role in curriculum implementation and subsequently affects the overall quality of education in a country. Involving teachers in

curriculum planning can accelerate its successful implementation. Methods for monitoring curriculum implementation include observation, feedback questionnaires, meetings, interviews, student assessments, and reports. Factors hindering curriculum implementation include inadequate funding, a lack of facilities, impractical goals, insufficient planning, and inadequate teacher resources and training. Family stress, communication, learning facilities, and proper guidance are factors that can impact students' academic performance.

Recommendations

1. It is recommended that teachers should be actively involved in the curriculum planning process to enhance their commitment and effectiveness in curriculum implementation.
2. Government at all levels should provide adequate funding and resources for schools to address the challenges hindering effective curriculum implementation, such as inadequate facilities and teacher resources.
3. Relevant stakeholders should focus on improving teacher quality through training and professional development programs to enhance their effectiveness in the classroom.
4. NCCE and other education authorities should implement effective monitoring and evaluation mechanisms to track curriculum implementation progress and make necessary adjustments.
5. Teachers, school administrators, parents, counselors, and policymakers should recognize and address the impact of family stress, communication, learning facilities, and proper guidance on students' academic performance.
6. Future study should be investigated on the factors affecting curriculum implementation to develop evidence-based strategies for improvement.
7. Educational authorities, school administrators, and professional development organizations should encourage teachers to prioritize their own qualifications and experience, as these factors can positively influence students' achievement in Chemistry.
8. Government should promote a balanced approach to teacher qualifications, considering other factors that may affect student outcomes, such as teaching experience.
9. Future study should explore the relationship between teacher experience and administrative experience on students' accomplishment in science to better inform education policies and practices.

References

- Abuseji, F. A. (2007). Student and teacher related variables as determinants of secondary school student's academic achievement in chemistry. *Journal Pendidikan*, **32** (2): 3-18.
- Adeniji, I.A. (1999). *A path analytic study of some teacher characteristics and teacher job performance in secondary school in Ogun State, Nigeria* (Unpublished Doctoral Dissertation). Department of Teacher Education, University of Ibadan, Nigeria.
- Akanbi, A. O. & Omosewo, E. O, (2014). Assessment of quantity and quality of Lecturers for effective implementation of the Nigeria Certificate in Education Physics Curriculum. *Acta Scientiarum Journal*, **36** (2): 317-321.

- Alachi, O. V. (2014). Education For All: The Role Of Curriculum Planning And Implementation In Nigeria With Their Challenges. *Journal of Teacher Perspective*, **8** (4). Emeh, J. Isangadi, A. Asuquo, P.
- Agba, K. & Ogaboh, A. (2011) Curriculum review: Reactions from educational stakeholders in south- south states of Nigeria. *Global Journal of Human Social Science*, **11** (2): 33-42.
- Irfau, M., & Shabana, N. (2012). Factors affecting students' academic performance. *Global Journal of Management and Business Research*, **2** (9).
- Kola, A. J., & Sunday, O. S. (2015). A review of teachers' qualifications and its implication on students' academic achievement in Nigerian schools. *International Journal of Educational Research and Information Science*, **2** (2): 10-15.
- Magaji, A. Y., & Peter, O. (2020). An Evaluation of Mathematics Curriculum Implementation in Nigerian Colleges: A Case Study of Adamu Tafawa Balewa College of Education, Kangere. *ATBU Journal of Science, Technology and Education*, **8** (3): 253-265.
- Mantosa, J. S. (2014). The experiences of foundation phase teachers in implementing the curriculum Nomvuy Iso Theorin Makeleni. *Mediterranean Journal of Social Sciences*, **5** (2): 103-109.
- McKimm, J. (2007). Curriculum design and development. *Medical Education*, 1-32.
- Mkpa, M. A. (2007). Curriculum development. Owerri: Totan Publishers Ltd.
- Obanya, P. (2004). The Dilemma of Education in Africa, Ibadan: Heinemann Educational Books Nigeria Plc.
- Odey, O. & Effiong, A. (2012). The Challenges of curriculum implementation in Nigeria teacher education. *Journal of Education and Practice*, **3** (15): 127- 131.
- Ofoha, D., Uchegbu, C. N., Anyikwa, B., & Nkemdirim, M. (2009). A critical appraisal of the mode of implementation of Nigerian secondary school curriculum: Towards socio-economic empowerment of youth. *ERNWACA Research Grants Programme*.
- Olorundare, A. S., & Kayode, D. J. (2014). Entrepreneurship education in Nigerian universities: A tool for national transformation. *Asia Pacific Journal of Educators and Education*, **29** (8): 155-175.
- Oribabor, O. A. (2009). A critical review of the involvement of teachers and students' interest in current English Language curriculum in Nigerian secondary. *African Research Review*, **3** (1).
- Osuji, C. U., & Alabere, I. J. (2023). Trends in Educational Studies Journal (TRESJ) **15** (Issue 1): January-June, 2023 University of Port Harcourt.
- Syomwene, A. (2018). Effective school indicators for quality curriculum implementation process. *African Journal of Education, Science and Technology*, **4** (3): 150-159.
- Ugwu, O.I. (2005). Teachers' motivation: A challenge for implementing agricultural science curriculum in *Nigerian Journal of Curriculum studies*, **12** (1): 234-238.
- Wanjala, N. T., Akala, J. B., & Khatete, D. W. (2015). Student, Teacher and School Related Variables as Determinants of Chemistry Achievement in Kenya: A Case of the Mole Concept. *Building Capacity Through Quality Teacher Education Nairobi, Kenya* July 14-16, 2015, 498.
- Wordu, H., & Peple, E. O. (2019). Strategic Resources for Curriculum Implementation Practices for Sustainable Development Goals (SDGs) Achievement in River State.