ASSESSING THE SUITABILITY AND ADEQUACY OF THE NIGERIA CERTIFICATE IN EDUCATION AGRICULTURAL SCIENCE EDUCATION CURRICULUM FOR TEACHER PREPARATION IN NIGERIA

BY

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Abstract

This study assessed the suitability and adequacy of the Nigeria Certificate in Education (NCE) Agricultural Science Education curriculum for teacher preparation in Nigeria. Against the backdrop of agriculture's critical role in national development and food security, the study examined whether the NCE curriculum effectively equips prospective teachers with the necessary knowledge, skills, and competencies to meet current educational and agricultural sector demands. Using a descriptive survey design, data were collected from seven Heads of Department (HODs) and 84 lecturers across public Colleges of Education in South West Nigeria. Two instruments Evaluation Checklist on Content Suitability (ECCSASECASO) and Lecturers' Questionnaire on Content Adequacy (LQCAASEC) were employed. The results revealed that the curriculum content is highly suitable for achieving its predetermined objectives, with all objectives rated to a very large extent (Mean = 3.1–3.4). However, the adequacy of the curriculum in preparing future Agricultural Science teachers was rated only to a large extent (Grand Mean = 2.79). Areas such as climate-smart agriculture, agribusiness, precision agriculture, critical thinking, and industry partnerships were identified as weak points needing enhancement. Although the curriculum provides a solid foundation for teacher education, it lacks sufficient alignment with 21st-century agricultural trends and experiential learning opportunities. The study concludes that while the curriculum is functionally effective, it requires significant enrichment in emerging agricultural technologies and practical applications to ensure comprehensive teacher readiness. Recommendations include curriculum revision, greater emphasis on practical exposure, and enhanced collaboration with the agricultural industry.

Keywords: Curriculum Evaluation, Agricultural Science Education, Teacher Preparation, Curriculum Suitability, Curriculum Adequacy

Introduction

Agriculture serves as the cornerstone of human survival and societal development, providing essential resources such as food, clothing, shelter, and raw materials. It plays a critical role not only in sustaining life but also in shaping cultures and economic systems. In Nigeria and across many developing nations, agriculture is increasingly recognized as a strategic tool for addressing poverty,

unemployment, and food insecurity (Adebayo, Ogunyemi, & Kolawole, 2023). According to Okorie, Eze, and Ibrahim (2021), agriculture encompasses the cultivation of crops and the rearing of animals, including activities like processing, storage, and marketing, all aimed at meeting the needs of society. Furthermore, Yusuf and Salihu (2022) emphasized that agriculture supports both domestic consumption and industrial development, making it vital to national growth. Despite the dominance of the oil sector in Nigeria, agriculture remains a significant component of the real sector and continues to contribute meaningfully to the nation's gross domestic product (GDP) and rural employment (Ibrahim & Oladele, 2023).

Agriculture in Nigeria appears not to have attained its full potential due to some developmental challenges. These shortcomings include the unresponsive agricultural education curriculum to socioeconomic, technological, physical, and environmental changes in the rural sector that could be adaptable for the local context usage. Recognising the need to revamp the nation's agriculture, the Federal government of Nigeria, through the National Policy on Education, sees Agricultural Science, one of the subjects offered in Basic Education and Senior Secondary Schools (Post Basic Education), as a pre-vocational elective and vocational elective subject respectively (Federal Republic of Nigeria, 2013). The ability to impart quality knowledge and skills to the students, especially in agriculture, requires a competent and efficient teacher with good academic and pedagogical background. The National Policy on Education affirms that, for a teacher to teach at the Basic level of education in Nigeria, he or she is required to have a minimum qualification of Nigeria Certificate in Education (NCE) a certificate that is acquired from Colleges of Education in Nigeria (FGN, 2013).

The mandate of the teacher training programme at the NCE level, which is the recognized minimum teaching qualification in Nigeria, is to produce quality teachers for the Basic Education sub-sector (FRN, 2013). The roles of teacher education in sustaining the economy and national security in Nigeria is imperative. It is a known fact that, no nation can rise above the quality of its teachers (FRN, 2013). Oloruntimehin and Akinwande (2023) opined that the success of any plan for improving educational outcomes of any nation depends on the quality of teachers who carry it out, and the quality of the teachers depends on the quality of teacher education available.

Nigeria Certificate in Education (NCE) teachers are trained in different disciplines that cut across different schools in the college, including the School of Vocations, where agricultural science teachers are trained in Agricultural Science education (double major). The contents and other aspects of Agricultural Science Education (double major) are expected to equip the teacher in training in different aspects of agriculture, both in theoretical and practical areas, to enable them teach and impart necessary skills that will develop and equip the young students in the areas of agriculture. Nwankwo (2015) noted that Agricultural Science education is a skill-oriented training and the philosophy of Agricultural Science education programmes of Colleges of Education is tied to the national philosophy of agriculture for self-reliance. Agriculture is an important option and fundamental instrument that can help alleviate Nigeria's unemployment, poverty and hunger. Moreover, the transition from school to work is critical for youths.

Curriculum content of NCE Agricultural Science Education programme is designed to provide both theoretical and practical knowledge to prospective Agricultural Science teachers. The National Commission for Colleges of Education (NCCE) stipulates

a curriculum that includes agronomy, animal science, soil science, agricultural extension, agricultural economics, and mechanization (NCCE, 2020). Despite the comprehensive curriculum, the alignment of course content with modern agricultural trends remains a concern. Studies by Olaitan and Mama (2021) highlighted that, while the curriculum covers fundamental agricultural concepts, there is limited emphasis on emerging areas such as precision agriculture, climate-smart agriculture, and agribusiness entrepreneurship, which are critical for the 21st-century agricultural sector.

The NCCE Minimum Standard (2020) pointed out the following as the objectives of Agricultural Science education:

(i) to prepare graduates with the right attitude to and knowledge/professional competence in vocational agriculture;
(ii) to produce teachers who will be capable of motivating students to acquire an interest in and aptitude for agriculture;
(iii) to develop in the student-teachers the appropriate communicative skills for effective transmission of agricultural information and skills to the students in the context of their environment;
(iv) to equip the student-teachers with adequate knowledge and ability to establish and manage a model school farm effectively, and
(v) to provide a sound background to enhance the student-teachers' academic and professional progression (NCCE, 2020).

The Nigeria Certificate in Education (NCE) Agricultural Science Education programme plays a vital role in preparing qualified teachers for teaching Agricultural Science at the Basic and Secondary school levels. Assessing the suitability and adequacy of the NCE Agricultural Science Education curriculum for teacher preparation is essential, as it contributes to national agricultural development, enhances the Gross Domestic Product (GDP), and addresses critical challenges such as unemployment, hunger, and poverty in Nigeria. This paper examined the suitability and adequacy of the NCE Agricultural Science education curriculum for teacher preparation in Nigeria to achieve the predetermined objectives of the curriculum.

Two research questions were raised to guide the study;

1. To what extent is NCE Agricultural Science Education Curriculum content is suitable for achieving predetermine objectives?
2. To what extent does the NCE Agricultural Science education curriculum content adequately prepare prospective Agricultural Science teachers?

Methodology

This study adopted the descriptive survey research design. The population for this study consisted the Head of Department (HODs) and lecturers from Agricultural Science education department of public Colleges of Education in South West, Nigeria. The sample comprised seven HOD's and all 84 lecturers from the seven public Colleges of Education in South West Nigeria that had established Agricultural Science education programmes before the 2020/2021 academic session. A purposive sampling technique was used to select all seven HOD's and all 84 lecturers from the Agricultural Science Education department. Two research instruments were used to elicit responses from the Heads of Department (HODs), and Lecturers in the Agricultural Science Education department. These instruments included, Checklist on Content Suitability of NCE Agricultural Science Education Curriculum in Achieving the Stated Objectives (CCSASECASO), and Lecturers' Questionnaire on Content Adequacy of NCE Agricultural Science Education Curriculum (LQCAASEC) adapted from Alabi (2022).

The CCSASECASO checklist was used to assess the suitability of the

curriculum content in achieving the stated objectives outlined by the NCCE for the Agricultural Science Education Curriculum. This checklist was administered to the HODs of the participating Colleges of Education. The LQCAASEC questionnaire contained items designed to elicit information from lecturers regarding the content adequacy of the NCE Agricultural Science Education Curriculum in preparing prospective Agricultural Science teachers. The extent of alignment with the prescribed standards was measured using the following benchmark scale, 4.0 – 3.1 Very Large Extent (VLE), 3.0 – 2.1 Large Extent (LE), 2.0 – 1.1 Small Extent (SE), and 1.0 – 0.1 Very Small Extent (VSE).

To ascertained the consistency of the contents of the instruments and further improve the reliability of the instruments, the test - re-test method of ascertaining reliability was employed. The instruments were administered on the HOD's, and the lecturers from a sample out of the study area. The instruments were administered twice to the HOD's, and the lecturers from public Colleges of Education (Federal and State) in Kogi State, Nigeria within an interval of three weeks. Then, Pearson product moment correlation analysis was carried out on the data obtained from the administration which yielded reliability coefficients of 0.81 for Checklist on Content Suitability of NCE Agricultural Science Education Curriculum in Achieving the Stated Objectives (CCSASECASO), and 0.89 for the Lecturer's Questionnaire on Content Adequacy of NCE Agricultural Science Education Curriculum (LQCAASEC). The data collected were clean, coded and analysed using descriptive statistics such as means, and standard deviation.

Results

Research Question 1: To what extent is NCE Agricultural Science Education Curriculum content is suitable for achieving predetermine objectives?

To provide answer to this evaluation question, responses from the HODs' who filled the Checklist on Content Suitability of NCE Agricultural Science Education Curriculum in Achieving the NCCE stated Objectives in conjunction with the researcher were collated and analysed. The results were summarized as shown in Table 1.

Table 1: Extent of the Suitability of NCE Agricultural Science Education Curriculum Content for Achieving Predetermined Objectives Based on HODs' Checklist

S/N	Objectives of Agricultural Science Education Curriculum as stated by NCCE	Courses Available to Achieve the Objectives	N	Mean	Standard Deviation	Remark
1	To prepare graduates with the right attitude to and knowledge/professional competence in vocational agriculture	VTE110, AGE111,112, 113, 114, 115, 116, 117, 118, & 119	7	3.3	0.49	VLE
2	To produce teachers who will be capable of motivating students to acquire an interest in and aptitude for agriculture	AGE121, 122, 123, 125, 126, 228, 321, 324, 326, & 329	7	3.4	0.53	VLE
3	To develop in the student-teachers the appropriate	AGE124, 127, 213,	7	3.1	0.38	VLE

	communicative skills for effective transmission of agricultural information and skills to the students in the context of their environment	214, 216, 219, 222, 323, 325, 327, 328, & EDU. 311				
4	To equip the student-teachers with adequate knowledge and ability to establish and manage a model school farm effectively	AGE211, 212, 215, 217, 218, 223, 224, 225, 226, 227, 229, & 322	7	3.1	0.38	VLE
5	To provide a sound background to enhance the student-teachers' academic and professional progression	AGE220, 221, 320, & EDU. 323	7	3.1	0.38	VLE
	Average Weighted Score			**3.2**		**VLE**

Benchmark: Between 4.0 and 3.1 Very Large Extent (VLE); Between 3.0 and 2.1 Large Extent (LE); Between 2.0 and 1.1 Small Extent (SE) and between 1.0 and 0.1 Very Small Extent (VSE)

From the table, all the curriculum objectives assessed received a mean score ranging between 3.1 and 3.4, which falls within the 'Very Large Extent (VLE)' category according to the benchmark scale. This indicates that the courses designed to achieve the objectives are generally seen as appropriate and well-structured for meeting the intended learning outcomes. The highest-rated objective (Mean = 3.4, S.D = 0.53) is the ability of the curriculum to produce teachers who are capable of motivating students to develop an interest and aptitude in agriculture. This suggests that the courses covering this objective, such as AGE 121, 122, 123, and others, are perceived as highly relevant and effective. Of the five listed objectives on the checklist, the last three ranked lowest (Mean = 3.1, S.D =0.38). Although they all still rated within the category of Very Large Extent, their relatively lower means suggest possible areas for curriculum improvement. The average weighted score (3.2, S.D = 0.43) further confirms that, on an overall level, the NCE Agricultural Science Education Curriculum content is to very large extent suitable for achieving its predetermined objectives.

Research Question 2: To what extent does the NCE Agricultural Science Education Curriculum content adequately prepare prospective Agricultural Science teachers?

To answer this evaluation question, responses from the questionnaire administered to lecturers regarding the extent to which the NCE Agricultural Science Education Curriculum content adequately prepares prospective Agricultural Science teachers were collated and analyzed. A summary of the results is presented in Table 2.

Table 2: Extent of Adequacy of NCE Agricultural Science Education Curriculum in Preparing Prospective Agricultural Science Teachers

S/N	Items	N	Mean	S.D	Decision
1	The NCE Agricultural Science Education content is well arranged to achieve the stated objectives.	84	3.20	0.555	VLE
2	The curriculum content of NCE Agricultural Science Education is relevant to the needs of the agricultural Science teacher.	84	3.23	0.449	VLE
3	Courses and subject matter covered in the curriculum content of NCE Agricultural Science Education are comprehensive and up-to-date.	84	2.79	0.713	LE
4	NCE Agricultural Science Education Curriculum content teaches climate-smart agriculture which is critical for the 21st-century agricultural sector.	84	2.43	0.960	LE
5	The content of NCE Agricultural Science Education Curriculum incorporates agribusiness entrepreneurship	84	2.60	0.713	LE
6	The NCE Agricultural Science Education Curriculum content provides opportunities for students to develop problem-solving and critical-thinking skills.	84	2.68	0.697	LE
7	The curriculum content for NCE Agricultural Science Education provides opportunities for students to acquire teaching skills in agriculture.	84	3.27	0.523	VLE
8	The Curriculum content of NCE Agricultural Science are relevant diverse learners' need.	84	2.93	0.555	LE
9	The curriculum content of NCE Agricultural Science Education provides opportunities for students to engage in hands-on, experiential learning.	84	2.83	0.758	LE
10	The NCE Agricultural Science Curriculum content covers precision agriculture	84	2.24	0.913	LE
11	Different curriculum components (e.g., lectures, laboratory, and fieldwork) are well-coordinated and integrated into the NCE Agricultural Science Education Curriculum content.	84	2.93	0.690	LE
12	The practical and field-based learning experiences of NCE Agricultural Science Education content are well-integrated with the theoretical components of the curriculum.	84	2.81	0.570	LE
13	The practical and field-based learning experiences aligned with the stated objectives of NCE Agricultural Science Education Curriculum.	84	2.87	0.510	LE
14	The curriculum content of NCE Agricultural Science Education provides opportunities for students to work with industry partners or mentors	84	2.50	0.784	LE

15	The NCE Agricultural Science Education Curriculum content promotes inclusivity and diversity in Agricultural Science Education	84	2.60	0.713	LE
	Average Weighted Score		**2.79**		**LE**

Benchmark: 0 to 1.00 - Very Small Extent (VSE); 1.01 to 2.00 - Small Extent (SE); 2.01 to 3.00 - Large Extent (LE); and 3.01 to 4.0 - Very Large Extent (VLE)

The responses from lecturers reveal that while the curriculum demonstrates strengths in foundational areas, there are considerable gaps in its responsiveness to emerging trends and practical competencies in agricultural education. A closer look at the data showed that respondents agreed that, the curriculum is well-structured, relevant to teacher preparation needs, and effective in equipping students with core teaching skills. However, the majority of the evaluated items, including those related to climate-smart agriculture, precision agriculture, agribusiness, critical thinking, and industry collaboration were only rated to a large extent. This signals a clear limitation in the curriculum's ability to integrate contemporary agricultural practices and real-world applications. The grand mean score of 2.79, categorized as 'Large Extent', reinforces this finding. It suggested that although the curriculum content provides a solid foundation, it falls short of delivering a fully comprehensive and future-ready training experience for prospective teachers. Above all, the results highlighted a curriculum that is functionally to a large extent but strategically limited in some areas such as; climate-smart agriculture, precision agriculture, agribusiness, critical thinking, and industry collaboration.

Discussion

The findings of this study revealed that the NCE Agricultural Science Education Curriculum content is to very large extent suitable for achieving its predetermined objectives, despite this overall positive alignment, some aspects of the curriculum were perceived as less effective, particularly in areas related to communication skills, farm management, and the provision of an academic foundation for continuous professional development. These findings are in agreement with the submission of Nwosu and Akpan (2020) and Adeyemi and Adebayo (2021) respectively, who highlighted persistent challenges in Agricultural Science teacher training programs, especially in building effective communication and managerial skills. Courses designed to address agricultural communication and extension may require further strengthening to better prepare graduates for real-world interactions with students and agricultural stakeholders.

The feedback also pointed to the need for improved practical exposure, especially in areas related to farm management. This supported the conclusions of Adeyemi and Ogundipe (2018) and Olatunji and Osunde (2023) that many agricultural teacher education institutions continue to emphasize theoretical instruction at the expense of hands-on learning. As a result, graduates may find it difficult to manage school farms effectively or translate classroom knowledge into real-life agricultural practice. These insights underscore a potential gap between the curriculum's theoretical design and its practical application. Bridging this gap could involve introducing more farm-based internship opportunities, enhancing industry collaboration, and revising existing courses to emphasize experiential learning.

The findings from the study further revealed that while the NCE Agricultural Science Education

Curriculum provides a solid foundation in pedagogical content and basic agricultural knowledge to a large extent, it falls short in preparing prospective teachers with competencies required for modern agricultural practices. This aligned with the submission of Igbokwe, Alade, and Nwankwo (2022), who affirmed that the NCE Agricultural Science programme adequately prepares pre-service teachers in core educational content, particularly in traditional instructional delivery and subject-matter understanding. However, the low ratings in curriculum components related to climate-smart agriculture, agribusiness, critical thinking, and industry collaboration raise concerns which suggests that the curriculum is not fully responsive to contemporary demands in agricultural education, particularly in a rapidly evolving agricultural economy. Adebayo and Ogunlade (2021) found similar limitations, noting that most teacher education programmes in Nigeria remain heavily theory-driven, with minimal integration of hands-on and entrepreneurial experiences necessary for 21st-century agricultural productivity. Furthermore, Okoli and Nwachukwu (2020) also argued that agricultural education curricula in Nigeria must evolve to include digital and smart farming innovations if they are to remain relevant and impactful.

Conclusion

The study concluded that the NCE Agricultural Science Education curriculum is, to a very large extent, relevant to national educational goals by equipping graduates with foundational pedagogical and agricultural knowledge. It supports the mandate of training competent teachers for the basic education sector and fosters student interest in agricultural careers. However, the curriculum's limited alignment with current global and technological trends such as climate-smart agriculture, agribusiness, and digital innovation reveals a gap in its responsiveness to the evolving context of agricultural development.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. The NCE Agricultural Science Education Curriculum should be urgently reviewed and updated to reflect emerging global trends in agriculture, including climate-smart agriculture, precision farming, digital agriculture, biotechnology, and agribusiness.
2. Core components promoting 21st-century skills such as entrepreneurship, digital literacy, communication, critical thinking, and problem-solving should be fully integrated into the curriculum.
3. The curriculum should be aligned with national agricultural development policies, Sustainable Development Goals (SDGs), and current labour market demands to ensure relevance and employability of graduates.
4. Practical modules such as Supervised Farm Practice (SFP) and Student Industrial Work Experience Scheme (SIWES) should be restructured to ensure standardization, consistency, and better coordination across institutions.
5. Institutions should develop clear frameworks and allocate adequate funding to support the implementation of practical activities and field-based projects.

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