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Assessing Agricultural Literacy Among Senior Secondary School Students in Kwara State, Nigeria: Implications for Educational Interventions

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Abstrak

Studi penelitian ini bertujuan untuk mengevaluasi tingkat literasi pertanian di kalangan siswa sekolah menengah atas di Negara Bagian Kwara, Nigeria, menggunakan desain penelitian survei deskriptif. Populasi target terdiri dari semua siswa sekolah menengah atas jurusan sains di Negara Bagian Kwara, dan sampel sebanyak 1.200 siswa dipilih menggunakan prosedur sampel multi-tahap. Data dikumpulkan menggunakan kuesioner standar yang telah diadaptasi dengan koefisien reliabilitas sebesar 0,71. Analisis statistik deskriptif dan inferensial dilakukan untuk menganalisis data. Temuan penelitian ini menunjukkan bahwa tidak ada perbedaan signifikan dalam literasi pertanian di antara siswa sekolah menengah atas berdasarkan jenis kelamin atau lokasi sekolah. Namun, penelitian ini mengidentifikasi perbedaan signifikan dalam literasi pertanian di antara siswa sekolah menengah atas berdasarkan jenis sekolah yang mereka hadiri. Oleh karena itu, penelitian ini merekomendasikan agar guru ilmu pertanian memfokuskan pada komponen literasi pertanian lainnya, terutama literasi kebijakan pertanian, untuk meningkatkan pemahaman siswa tentang kebijakan pertanian.

Abstract

This research study aimed to assess the level of agricultural literacy among senior secondary school students in Kwara State, Nigeria, using a descriptive survey research design. The target population comprised all senior secondary school science students in Kwara State, and a sample of 1,200 students was selected using a multistage sampling procedure. Data were collected using an adapted standardized questionnaire with a reliability coefficient of 0.71. Both descriptive and inferential statistical analyses were conducted to analyze the data. The findings of the study revealed that there was no significant difference in agricultural literacy among senior secondary school students based on their gender or school location. However, the study did identify a significant difference in agricultural literacy among senior secondary school students based on the type of school they attended. Consequently, the study recommended that agricultural science teachers should focus on other components of agricultural literacy, particularly agricultural policy literacy, to enhance students' understanding of agricultural policy.

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INTRODUCTION

Education is a crucial process that facilitates the overall development of individuals through the use of appropriate methods and techniques based on their abilities and interests. This process aims to meet societal needs and enable individuals to contribute equally to the development of society. It is a means of empowering children to develop their inherent abilities and skills to function effectively in society.

According to Olunkwa and Nwokolo (2018), education is a process through which individuals acquire the necessary physical and social competencies required for societal progress. Additionally, education helps individuals uncover their creative potential, apply it to their existing skills and techniques, and enhance the effectiveness of their personal and societal efforts, thereby fostering a productive culture (Obasanjo, 2012).

Furthermore, education fosters the development of good citizenship values such as honesty, selflessness, tolerance, dedication, hard work, and personal integrity. These virtues or qualities are not limited to a single discipline or subject; rather, students acquire them through exposure to different subjects such as mathematics, social studies, civic education, biology, and agriculture, among others.

Agricultural education plays a crucial role in instilling societal values such as honesty, selflessness, tolerance, dedication, hard work, personal integrity, and leadership training in individuals. This is achieved through its comprehensive approach, which includes classroom and laboratory instruction, supervised agricultural experience, and participation in leadership development through youth organizations in agriculture.

The primary focus of agricultural education is to teach agricultural science and related disciplines in the school system. Additionally, it involves designing and implementing effective teacher training programs to produce highly qualified teachers who can enhance the quality of instruction and contribute to the provision and maintenance of the required manpower levels for agricultural-related fields (Daluba, 2011).

Agricultural education takes the form of systematic instruction at various levels, including primary, junior secondary, secondary, post-secondary, and adult education. Its primary goal is to prepare individuals for entry or advancement in agricultural occupations and professions, while also promoting agricultural literacy (Phipps et al., 2008; Ikeoji, 2018).

Literacy, according to the Merriam-Webster Dictionary (2021), refers to the ability to read and write or the ability to understand a particular subject. Specifically, agricultural literacy entails a comprehensive understanding of agriculture and its related terminology. However, as noted by Frick et al. (1995), agricultural literacy does not require a perfect level of understanding, but rather a minimum level. This includes a basic understanding of agricultural products, processes, policies, employment opportunities, and relevant commercial groups.

Moreover, individuals who are agriculturally literate possess knowledge about the origins and values of agriculture and can articulate them. They have the ability to think critically and make value judgments regarding the impact of agriculture on the economy, environment, technology, lifestyle, and its relationship to livestock. They are also aware of the societal and political pressures that arise from those judgments (Powell et al., 2008). Essentially, an agriculturally literate individual has a solid grasp of how the agricultural industry operates. This goes beyond simply knowing where food comes from or who grows it, but also encompasses understanding its impact on various aspects of society.

Agricultural literacy aims to promote a better understanding of agriculture and its role in society. One way to achieve this is by implementing a strong commitment to agricultural education in secondary schools, which can serve as a foundation for promoting agricultural literacy across the country. Abdullahi et al. (2022) describe the Nigerian secondary school agricultural education curriculum as a well-organized course schedule with specific objectives and learning experiences designed to achieve educational goals. However, Afolabi et al. (2017) suggest that the Nigerian agricultural education curriculum, while containing content that may lead to self-actualization by students, lacks practicality. The curriculum's primary goal is to educate every citizen on the importance of agriculture and to instill a culture of food production.

One hypothesis is that males in senior secondary school are more agriculturally literate than their female counterparts. However, it is important to note that despite the fact that the majority of the population does not live on a farm, agricultural literacy is important for eve-

ryone. It enables individuals to engage in dialogue about agriculture and make informed decisions in response to societal choices (Gibbs, 2005; Powell et al., 2008). School students currently have limited involvement in agricultural production, little understanding of the food and fiber system, and limited knowledge of the origins of the food they consume on a daily basis.

The promotion of agricultural literacy is a critical component of the agricultural science curriculum for senior secondary school students. However, the effective implementation of the curriculum is essential to produce a competent workforce in the agricultural sector. The secondary school agricultural education curriculum aims to disseminate agricultural information, facilitate personal growth, and correct various misconceptions about agriculture. Unfortunately, due to the negative perception attached to agriculture, where farming is viewed as a menial job, students are often reluctant to pursue careers in agriculture. This hesitance may stem from a lack of agricultural literacy, which is essential to understanding the diverse fields and prospects available in agriculture.

For many years, the agricultural sector, which employs a significant percentage of the population, has been neglected and misunderstood. Addressing this issue is crucial for the agricultural sector to reach its full potential (Matemilola & Elegbede, 2017). A lack of agricultural literacy can have significant consequences, including public misunderstandings about the vital role of agriculture in society, which can contribute to food insecurity (Chris, et al., 2018). The negative perception of agriculture is a possible cause of food insecurity in Nigeria, and addressing this issue requires improving agricultural literacy among the population.

Matemilola and Elegbede (2017) suggest that food security can be restored in the country by addressing factors such as insufficient production, gender inequality, and poor agricultural literacy. The latter issue is particularly concerning because it can lead to agricultural illiteracy, which refers to the misinterpretation of agricultural concepts and policies due to a lack of education. For instance, the partial closure of the Nigerian border to rice imports in 2019 was a policy aimed at boosting domestic rice production, but it led to widespread smuggling across the Nigeria-Benin border (Oba, et al., 2021). It is crucial to enhance agricultural literacy to help individuals understand the importance of agriculture to their well-being and encourage them to support policies aimed at promoting agricultural development.

The issue of border closure has been the subject of many misconceptions, with some individuals perceiving it as unnecessary and shortsighted in terms of its potential to contribute to the economic development of the country. However, an agriculturally literate populace is better equipped to analyze emotive appeals and make informed decisions regarding agricultural issues. Kovar and Henry (2013) suggest that a society with a solid understanding of contemporary agricultural practices and their economic, social, and environmental implications is better positioned to address existing agricultural challenges through wise decision-making and appropriate support. Spielmaker et al. (2014) similarly argue that agricultural literacy enables individuals to understand and articulate the source and value of agriculture in promoting human well-being.

The Nigerian agricultural education curriculum is designed to impart agricultural literacy among secondary school students. However, the extent to which this objective is being realized among senior school agricultural science students in Kwara State, Nigeria remains uncertain. This study seeks to address this gap by assessing the level of agricultural literacy among these students.

The overarching aim of this research was to evaluate the level of agricultural literacy among senior secondary school students in Kwara State, Nigeria. To achieve this goal, the study pursued four specific objectives: (i) to determine the degree of agricultural literacy among senior secondary school students in Kwara State, (ii) to investigate whether there are any gender differences in agricultural literacy among senior secondary school students in Kwara State, (iii) to explore whether there are any differences in agricultural literacy among senior secondary school students based on the type of school they attend, and (iv) to examine whether there are any differences in agricultural literacy among senior secondary school students based on their location.

To test these objectives, three null hypotheses were formulated: (i) there is no significant difference in agricultural literacy between male and female senior secondary school students, (ii) there is no significant difference in agricultural literacy among senior secondary school students based on the type of school they attend, and (iii)

there is no significant difference in agricultural literacy among senior secondary school students based on their location.

METHOD

The research method employed in this study is a descriptive survey research method, which was appropriate for addressing the research question and objectives. The population for this study consisted of all senior secondary school science students in Kwara State. A sample size of 1,200 students was selected using a multistage sampling procedure. In the first stage, 20 senior secondary schools were selected from each of the three senatorial districts, resulting in a total of 60 senior secondary schools. In the second stage, senior school III science students were purposively sampled, as they were expected to have acquired agricultural literacy. In the third stage, 20 students were randomly selected from each of the chosen schools, resulting in a total of 1,200 students.

The instrument used for data collection was a standardized questionnaire adapted from Craig (2016). The questionnaire was divided into two sections. Section A sought demographic information of the respondents, while section B contained 30 items structured in a four-Likert scale to measure the four components of agricultural literacy. The instrument was validated by three experts, two from the Department of Science Education and one from the Department of Agricultural Extension and Rural Development at the University of Ilorin, Ilorin. Their comments and suggestions were incorporated before producing the final copy. The reliability of the instrument was ensured by administering fifty copies of the questionnaire to senior school students in non-participating schools over a four-week period using a test-retest method, which yielded a reliability coefficient of 0.71.

The data collected for this study were analyzed using descriptive statistics, such as mean and rank order, to answer the research question. The inferential statistics of independent t-test was used to test the hypotheses at the 0.05 alpha level. The methodological approach of this study was thorough, rigorous, and appropriate for achieving the research objectives.

RESULT AND DISCUSSION

Here are the findings regarding the four research objectives and the three null hypotheses. The research objectives include the level of agricultural literacy among secondary school students, the difference in agricultural literacy between male and female senior secondary school students, the difference in agricultural literacy among senior secondary school students based on school type, and the difference in agricultural literacy among senior secondary school students based on school location. The null hypotheses state that there is no significant difference in agricultural literacy between male and female senior secondary school students, no significant difference in agricultural literacy among senior secondary school students based on school type, and no significant difference in agricultural literacy among senior secondary school students based on school location. The results of the objectives and hypotheses testing are presented in Table 1 to Table 4.

Students' responses regarding the level of agricultural literacy were analyzed through item-by-item mean analysis. The questionnaire consisted of 4 items structured with a four-response type. Items with mean scores close to 4.0, 3.0, 2.0, and 1.0 were classified as indicating very high, high, low, and very low levels of agricultural literacy, respectively. The overall level of agricultural literacy was determined based on the grand mean obtained for the items. A summary of the statistics is presented in Table 1.

The findings of this study reveal that senior school students possess a high level of agricultural literacy. This is supported by the high grand mean score, indicating an overall high level of agricultural literacy among the participants. The study further identifies the main areas of agricultural literacy among senior secondary school students, which include Environmental and Natural Resources Agricultural Literacy, Agricultural Career Literacy, and General Agricultural Knowledge. Interestingly, the students displayed a low level of Agricultural Policy Literacy.

This finding underscores the importance of improving students' understanding of agricultural policies. It is noteworthy that these findings align with previous research. For instance, Birkenholz et al. (1994) reported that college students at Southeast Missouri State University showed a primarily general knowledge of agricultural science and agricultural science policy. Similarly, Trexler et al. (2013) found that children with direct experience in growing food and preparing meals demonstrated a better understanding of the food system. Additionally, Isabel and Christopher (2016) observed that both Hispanic

Table 1 Agricultural literacy level of senior secondary school students in Kwara State, Nigeria

Items	Mean	Ranking	Remarks
General Agricultural Knowledge	3.61	1st	Very high
Agricultural Career Literacy	2.96	2nd	High
Environmental and Natural Resources Agricultural Literacy	2.81	3r d	High
Agricultural Policy Literacy	2.34	4th	Low
Grand mean	2.93		High

Source: Field Survey, 2021

Table 2 t-test analysis of difference in male and female senior secondary school students level of agricultural literacy

Gender	N	Mean	Std.	df	t-value	Sig.	Decision
Male	543	40.72	3.54				Ho1
				1198	1.25	.21	Accept hypothesis
Female	657	39.62	3.88				

ρ >0.05

Table 3 t-test analysis of difference in agricultural literacy of senior secondary school students based on school type

Gender	N	Mean	Std.	df	t-value	Sig.	Decision
Private	480	37.37	3.17				Ho2
				1198	3.94	.00	Rejected
Public	720	41.79	2.15				

ρ >0.05

Table 4 t-test analysis of difference in agricultural literacy of senior secondary school students based on school location

School Location	N	Mean	Std	df	t-value	Sig.	Decision
Rural	340	38.29	3.21				Ho3
				1198	1.56	.12	Accept hypothesis
Public	860	39.72	3.29				

ρ >0.05

and non-Hispanic students scored highest in the area of environmental and natural resources agricultural literacy.

Research objective two and HO1: The purpose of this research objective is to investigate the disparities in agricultural literacy between male and female senior secondary school students in Kwara State, Nigeria, and determine if there are any variations in agricultural literacy based on school type. Specifically, hypothesis one (HO1) aims to assess whether there is a significant difference in agricultural literacy between male and female senior secondary school students. The results presented in Table 2 indicate that the computed t-value of 1.25 with a p-value of 0.21 (at the 0.05 alpha level) supports the null hypothesis one. Consequently, there is no statistically significant difference in agricultural literacy between male and female senior secondary school students in Kwara State (t{1198} = 1.25, p>0.05).

This finding contradicts previous studies such as Colbath and Douglas (2010), which reported that male freshmen achieved significantly higher agricultural literacy scores than female freshmen, and Birkenholz et al. (1994), which found a statistical difference in agricultural literacy between male and female college students at Southeast Missouri State University. In conclusion, this study provides evidence that there is no gender-based disparity in agricultural literacy among senior secondary school students in Kwara State, which could have implications for future educational and policy interventions

aimed at promoting agricultural education and literacy.

Research objective three and HO2: The objective of this research is to examine the variations in agricultural literacy among senior secondary school students in Kwara State, Nigeria, based on school type, and determine if there is a significant difference in agricultural literacy between public and private schools. Specifically, hypothesis two (HO2) aims to test whether there is a significant difference in agricultural literacy between senior secondary school students from public and private schools.

The results presented in Table 3 demonstrate that the computed t-value of 3.94 with a p-value of 0.00 (at the 0.05 alpha level) rejects the null hypothesis two. This indicates that there is a statistically significant difference in agricultural literacy between senior secondary school students from public and private schools in Kwara State (t{1198} = 3.94, p>0.05).

Public senior secondary school students obtained higher scores in agricultural literacy, with a mean score of 13.79, compared to private senior secondary school students, who had a mean score of 9.37. This finding suggests that public school students may have an advantage in agricultural literacy, possibly due to greater access to textbooks and educational resources in public school libraries, or a higher level of exposure to agricultural practices.

This result carries important implications for policymakers and educators, emphasizing the need to ensure equitable access to resources and opportunities for all students to enhance agricultural education and literacy. In conclusion, this study provides evidence of a significant difference in agricultural literacy between public and private senior secondary school students in Kwara State, underscoring the importance of further research and interventions to enhance agricultural education and literacy for all students.

Research objective four and HO3: The objective of this research is to determine whether there is a difference in agricultural literacy among senior secondary school students in Kwara State based on school location. Hypothesis three (HO3) posits that there will be no significant difference in agricultural literacy between rural and urban students.

The results presented in Table 4 indicate that the computed t-value is 1.56, with a p-value of 0.12 when computed at the 0.05 alpha level. As the p-value is greater than 0.05 alpha level, the null hypothesis three is accepted. Therefore, there is no statistically significant difference in agricultural literacy between rural and urban senior secondary school students in Kwara State (t{1198} = 1.56, p>0.05).

The findings of this study reveal that there is no significant difference in agricultural literacy among senior secondary school students in Kwara State based on school location. This result contradicts the popular expectation that urban students would have less knowledge compared to their rural counterparts. However, this finding aligns with the assertions made by Meischen and Trexler (2003) and Hess and Trexler (2011), suggesting that children living and attending school in rural areas may not necessarily have stronger ties to agriculture than urban youth.

Furthermore, this result contradicts the findings of Leslie (2013) and Nkembe (2013), who reported that urban students have higher agricultural literacy than rural students. It also differs from the findings of Pense and Leising (2004), which revealed a significant difference in agricultural science literacy among Oklahoma High School students based on rural, urban, and suburban school settings.

In summary, this study provides evidence that there is no significant difference in agricultural literacy among senior secondary school students in Kwara State based on school location. These results challenge existing assumptions and highlight the need for further exploration of the factors influencing agricultural literacy among students in both rural and urban areas.

CONCLUSION

In conclusion, this study reveals that senior secondary school students in Kwara State possess a high level of agricultural literacy, with a specific focus on environmental and natural resources literacy. Gender and school location were found to have no significant impact on agricultural literacy, but school type emerged as a significant factor, with public school students demonstrating higher agricultural literacy compared to their private school counterparts. The study suggests that the lack of agricultural policy literacy among students may contribute to support for the illegal smuggling of agricultural produce.

Based on these findings, several recommendations are proposed. Firstly, it is crucial to provide training and retraining for agricultural

science teachers, particularly in the area of agricultural policy, to enhance their knowledge and teaching effectiveness. Secondly, the agricultural science curriculum should be revised and updated to incorporate agricultural policy content, accompanied by innovative instructional aids that can be integrated into the school curriculum. Lastly, private school proprietors in Kwara State should ensure the provision of necessary facilities to facilitate effective teaching and learning in their schools.

Implementing these recommendations can contribute to the enhancement of agricultural literacy among senior secondary school students in Kwara State. This, in turn, will help cultivate a more knowledgeable and supportive citizenry in the agricultural sector. By fostering a deeper understanding of agricultural policy and practices, students can become active participants in shaping the future of agriculture in the region.

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