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RESEARCH ARTICLE

Strategies for Improving the Teaching of Practical Agricultural Science in Secondary Schools for Improved Performance of Senior Secondary School Students in Ebonyi State

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Abstract

The study aimed at examining the strategies for improving teaching of practical agricultural science in secondary schools for increased food production in Ebonyi state. The study was guided by three research questions and three null hypotheses. A descriptive survey research design was adopted for the study. The population for the study was 389 agricultural science teachers in 295 secondary schools in Ebonyi state. The instrument used for data collection was a 28 itemed questionnaire grouped into three sections according to the research questions. The instrument was validated and reliability of the instrument was determined using Cronbach Alpha which yielded 077. Out of 389 copies of the questionnaire distributed 370 were properly filled, returned and used for data analysis representing 95% return rate. Mean, standard deviation and t-test statistics were the statistical tools use. From the result of data analysis, the study identified that the combination of students, teachers and school administrative related strategies are essential for improving teaching of practical agriculture in secondary schools in Ebonyi state. The findings of the study also showed that there is no significant difference in the mean scores of urban and rural teachers on the identified strategies for improving teaching of practical agricultural science in secondary schools in Ebonyi state. Based on the findings, the following recommendations were made; that there is need to develop integrated training programmes for teachers that incorporate the latest agricultural practices, technologies and teaching methodologies to enhance their instructional impact among others.

Keywords: *Practical Agricultural Science; Food Production; Senior Secondary School Students; Ebonyi State*

Introduction

Agriculture is a significant industry in the Nigerian economy. However, since the discovery of oil, the agricultural sector has suffered, greatly impeding the country's progress. According to Olayemi (2020), the current slowdown in Nigerian agricultural growth may be attributed to a variety of factors, including insufficient funding, poor infrastructure, and poor technological innovation. This tendency may be replicated in secondary school education, where practical agricultural science programs do not have adequate resources and trained educators, resulting in disinterest and a poor grasp of student performance on the subject (Ogunleye, 2019).

Agricultural science in Nigeria refers to the multidisciplinary area that incorporates numerous scientific ideas and techniques to increase the production, distribution, and management of agricultural goods and resources (Ogunyemi, 2022). It includes crop production, soil science, animal husbandry, agroforestry, and agricultural economics, all with the goal of ensuring the country's food security and sustainable agricultural practices. Agricultural science is critical in solving difficulties such as climate change, pests, and diseases, while also enhancing farmer livelihoods and contributing to national growth. Agwu and Chikezie (2018) stated that there is a gap between academic knowledge and practical application in agricultural science, which discourages students from pursuing careers in agriculture, hence extending the sector's underdevelopment cycle. Akinyemi (2021) describes practical agricultural science as the application of agricultural concepts in real-world situations, such as crop production, animal management, and soil conservation strategies. Practical Agricultural Science not only prepares students for future agricultural careers, but it also instills in them an understanding of food security and sustainability. Crop production, animal husbandry, agro-ecology, soil science, and agricultural mechanics are examples of practical agricultural sciences disciplines taught in Nigerian secondary schools (Ogunwole, 2020). One major aspect of agricultural science in schools which possess relevance to academic performance is practical agricultural science.

Practical agricultural science in Nigeria refers to hands-on learning experiences and the application of agricultural theories in real-world settings, allowing students to interact directly with farming techniques, crop management, veterinary practices, and other essential components of agriculture (Nwankwo & Agbo, 2023). This educational method improves students' knowledge of academic ideas via practical experiences, provides them with essential skills for the agricultural industry, and encourages innovation in sustainable agricultural practices in Nigeria. Teaching Practical Agricultural Science in Nigerian secondary schools emphasizes experiential learning, with students engaging in fieldwork and practical demonstrations to solidify their understanding of agricultural theory (Akinyemi, 2021). This hands-on approach is crucial for developing students' skills and competencies in various agricultural practices, preparing them for future careers in the field. Practical Agricultural Science is increasingly recognized as an important component of the Nigerian high school curriculum. However, Ogunwole (2020) noted that, like many other disciplines in Nigerian schools, practical agricultural science has various challenges, such as poor facilities, insufficient funding, and restricted teacher training. Several obstacles impede the efficient teaching of Practical Agricultural Science in Nigerian secondary schools, including insufficient resources, insufficiently prepared instructors, and restricted access to contemporary agricultural technology (Olayide, Shehu & Sulaiman, 2022). Many schools do not have adequate instruments and facilities for practical agriculture, limiting students' hands-on learning opportunities (Nigerian Examination Council, 2021). Furthermore, Akinyemi (2021) stated that curriculum frequently lacks connection with contemporary agricultural trends, making it difficult to completely engage students. From these submissions, it is clear that a combination of circumstances may restrict students' readiness and may result in low academic performance in practical Agriculture.

Academic performance in Nigeria refers to the measuring of student's achievements in educational evaluations, which might include tests, assignments, and involvement in academic activities (Okon, 2022). It is frequently assessed using grades, test scores, and overall school participation to determine student's knowledge of the curriculum and readiness for future educational or vocational prospects (Olatunji & Salami, 2023). Academic performance of students in Nigeria maybe influenced by socioeconomic position, educational resources, learning settings, and individual motivation, all of which play an important part in determining how well students accomplish academically. Students in Nigeria's senior secondary school examinations (SSE) in practical agricultural science continue to perform poorly. National Examinations Council (NECO, 2022), revealed that only 29.1% of students in 2022 got five credits or more, including credit in agricultural science. Moreover, the West African Examinations Council (WAEC, 2023), observed a persistent fall in student performance in agricultural science over the last few

years, with just 35% of students having a pass mark in 2023. Inadequate teaching resources, lack of practical experiences and insufficient training of teacher in current agricultural methods may contribute to low performance. These highlight the need for improved teaching techniques, better resources, and effective training of teachers in order to improve the teaching and learning outcomes in this critical subject area. Based on the foregoing, several studies have investigated strategies for improving the teaching of this critical subject, focusing on three major areas: student strategies, teacher-related strategies and school administrative-related strategies. (Adekoyejo & Olorunsola, 2021).

Strategies according to Ogunleye (2019), are the techniques employed by a teachers to enhance his teaching. This study regard strategies as the techniques used by a teacher to make his teaching more effective and interesting when using specific method or teaching aid.

Student-related strategies for improving teaching of practical agricultural science are tactics that focus on bringing out the best in students during practical agricultural science programs. According to Adekoyejo and Olorunsola (2021), active learning practices such as collaborative group work and hands-on experience can help students grasp and retain agricultural topics. As a result, encouraging students to engage in practical sessions by including them in real-life agricultural activities may build a feeling of ownership and responsibility, increasing their motivation and performance. Furthermore, Igbokwe, Uzoechi, and Okonkwo (2019) emphasized the necessity of incorporating technology into practical courses. This allows students to access digital resources and learning platforms that provide interactive simulations of agricultural processes. Student strategies were considered as an important variable in this study because their engagement is a key determinant to academic performance. The teacher facilitate learning by permitting the learners own interest, attitude and experiences to influence the kind of leaning that will take place.

Teacher-related strategies for enhancing teaching of practical agricultural science focus on instructors' skills to teach students effectively and efficiently. According to Ogunwole (2020), teacher training programs are important in teaching of practical agricultural science in secondary school because they provide teachers with innovative teaching methods that promote practical skills, which may lead to improved teaching of practical agricultural science. In addition, Eze, Okeke, and Ugochukwu (2021), observed that workshops and seminars may help teachers to learn about current farming methods and effective teaching methodologies. Furthermore, stronger teacher-student interactions may be crucial, since actively engaging and supporting students fosters a pleasant learning environment, which can also lead to increased academic achievement. Teacher related strategies for teaching of practical Agriculture were considered relevant to this study because their competency and pedagogical skills may play a crucial role in the effective teaching of practical agricultural science. The teacher of agriculture cannot succeed in his teaching without the support of school administrators. The teacher must work hand in hand with the school administrator in order to improve student performance.

School administrative strategies are the techniques employed by the school to facilitate or enhance the ease of teaching and learning activities in schools. Akpan (2020) defines administrative support for agricultural initiatives as providing enough facilities, equipment, and resources for practical teaching. Schools may also prioritize the formation of agricultural clubs/societies to encourage students' involvement in agricultural activities outside the classroom. Effective leadership from school administrators may develop a culture of practical learning, exposing pupils to a wide range of agricultural experiences. Furthermore, including agricultural science into the school's overall curriculum might help students realize the significance of the subject in their daily life. Administrative related strategies for teaching of practical Agriculture was considered relevant to this study because effective school administration significantly influences the quality of education, including the teaching of practical agricultural science.

Moreover, it is critical to evaluate the influence of geographical location of school on strategies for enhancing the teaching of practical agricultural science in secondary schools.

Location highlights the existence or poor of social amenities and infrastructure necessary for waste management practice. According to Ogunleye (2019), the location of a school may impact tactics for teaching practical agricultural science in Nigerian secondary schools. This is because urban and rural schools have different problems and resources, which may impact the teaching of practical agricultural science. According to Agwu and Chikezie (2018), rural communities where farming is the major source of income, including local agricultural techniques and

community involvement might increase students' engagement and comprehension of practical applications. Urban schools, on the other hand, may benefit from collaborations with agricultural research institutes that exposes students to cutting-edge agricultural technology and ideas. Thus, considering location in this study would aid in the development of a relevant and effective agricultural science curriculum that is consistent with students' location.

This study is justified because if poor teaching of practical agricultural science in Nigerian secondary schools continues, student performance will suffer significantly, as it impedes the development of essential hands-on skills required in the agricultural sector (Eze, Okeke, & Ugochukwu, 2021). In addition, Adekoyejo and Olorunsola (2021) discovered that students who are not engaged in practical sessions typically lose interest in the topic, resulting in worse memory of agricultural ideas and lower academic accomplishment. Poor practical experiences can also increase in skill gap making students ill-prepared for agricultural challenges faced in their communities. It is against this background that the study examines the strategies for improving teaching of practical Agricultural science for improved academic performance among secondary schools students in Ebonyi State.

Statement of the Problem

Practical agricultural science in secondary schools in Nigeria aims to equip students with hands-on skills and knowledge essential for modern farming techniques, thus promoting sustainable agricultural practices. It fosters an understanding of the agricultural value chain, encouraging students to appreciate the economic significance of agriculture in their communities. Additionally, the curriculum aims to instill environmental awareness and the importance of biodiversity, helping students recognize their role in conserving natural resources. It seeks to inspire entrepreneurship among students, motivating them to explore agricultural careers and innovations that can contribute to food security and rural development.

However, the researcher observed that the teaching of practical agricultural science in Nigerian secondary schools is sometimes hampered by insufficient resources, such as lack of acceptable laboratory facilities and instructional materials. The researcher also observed that students usually lack opportunities to engage in actual fieldwork, restricting their capacity to apply theoretical information. Furthermore, the curriculum may not be in line with local agricultural practices or current agricultural breakthroughs, exacerbating the disconnection between education and real-world applications. As a result, the current scenario students may not be adequately prepared for success in the senior school exams or agricultural science.

The researcher was concerned that poor teaching of practical agricultural science can lead to lack of engagement among students, resulting in decreased motivation to learn about agriculture. When hands-on experiences are limited or ineffective, students miss out on essential skills and real-world applications, making theoretical concepts feel abstract and difficult to grasp. This disconnection can lead to lower academic performance, as students may struggle to maintain interest in a subject that feels irrelevant to their lives. In addition, inadequate teaching methods can hinder students' ability to collaborate and work in teams, essential skills in both agriculture and other fields. Without proper guidance and encouragement, students may develop negative attitudes towards agriculture, viewing it as less valuable or appealing than other career paths. Consequently, this can diminish their opportunities for future careers in agriculture, ultimately affecting the community's agricultural development and food security. Thus this study examines strategies for improving teaching of practical Agricultural science in secondary schools for improved performance of senior secondary school students in Ebonyi State.

Purpose of the Study

The main purpose of this study was to determine the strategies for improving teaching of practical Agricultural science in secondary schools for improved performance of senior secondary school students in Ebonyi State. Specifically, the study sought to determine;

1. the student related strategies for improving teaching of practical Agricultural science in secondary schools for improved performance of senior secondary school students in Ebonyi State
2. the teacher related strategies for improving teaching of practical Agricultural science in secondary schools for improved performance of senior secondary school students in Ebonyi State

3. the school administrative related strategies for improving teaching of practical Agricultural science in secondary schools for improved performance of senior secondary school students in Ebonyi State

Research Questions

The following research questions guided this study

1. What are the students related strategies for improving teaching of practical Agricultural science in secondary schools for improved performance of senior secondary school students in Ebonyi State?
2. What are the teachers related strategies for improving teaching of practical Agricultural science in secondary schools for improved performance of senior secondary school students in Ebonyi State?
3. What are the school administrative related strategies for improving teaching of practical Agricultural science in secondary schools for improved performance of senior secondary school students in Ebonyi State?

Hypotheses

The following null hypotheses tested at 0.05 level of significance guided the study.

1. There is no significant difference in the mean scores of teachers in rural and urban schools on the students related strategies for improving teaching of practical Agricultural science in secondary schools for improved performance of senior secondary school students in Ebonyi State
2. There is no significant difference in the mean scores of teachers in rural and urban schools on the teacher related strategies for improving teaching of practical Agricultural science in secondary schools for improved performance of senior secondary school students in Ebonyi State
3. There is no significant difference in the mean scores of teachers in rural and urban schools on the school administration related strategies for teaching of practical Agricultural science in secondary schools for improved performance of senior secondary school students in Ebonyi State

Research Method

This study adopted a descriptive survey research design. A survey research design is that in which generalization are made over the entire population from an ample of a sample population (Uzoagulu, 2013). The design was used because the researcher made use of questionnaire to collect data from agricultural science teachers.

The study was conducted in Ebonyi state. The population for the study comprised of 389 respondents made up of 206 teachers in the rural areas and 183 teachers in the urban areas in the three education zones. (Soource: Statistics unit, PPSMB Ebonyi State). The entire population was used for the study because the population size was manageable, therefore no sampling was made.

A self structured and validated questionnaire titled “Strategies for Improving Teaching of Practical Agricultural Science Questionnaire (SITPASQ)” was used as primary instrument for data collection. The questionnaire was divided into two sections A and B. Section A consisted of demographic data of the respondent while section B was on strategies for improving teaching of practical agricultural science. It has four clusters. Cluster one had eight (8) items on the students related strategies; cluster two had ten (10) items on the teacher related strategies, while cluster three had ten (10) items on the school administrative related strategies for improving teaching of practical agricultural science in secondary schools in Ebonyi State. The questionnaire had twenty eight (28) items in all. Each item has a four point response option of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) with weighting numerical values of 4,3,2 and 1 respectively. The reliability of the instrument was determined using Cronbach’s Alpha Coefficient. It revealed that cluster one had an estimate of (0.77), cluster two (0.72) and cluster three (0.82). The overall reliability estimate of (0.77) signifies that the questionnaire was reliable and hence suitable for this study.

The researcher administered the questionnaire by visiting the schools and administering the questionnaire directly to the teachers with the help of three briefed research assistants. The questionnaire was collected on the spot which minimized errors in order to achieve a 100% return rate. However, after data collection it was found that nineteen (19) copies of the questionnaires were filled incorrectly thus only 370 questionnaires were used for data analysis. This gave a 95% return rate. Data collected on research questions relating to the study were analyzed using mean and

standard deviation, while the hypotheses were tested using t-test at 0.05 level of significance. The decision rule was that any item with mean of 2.50 and above is regarded as Agree (A), while mean score below 2.50 is regarded as Disagree (D). For hypotheses, when the p-value is equal or greater than 0.05, the null hypotheses were accepted. However, when the p-value is less than 0.05 the null hypotheses were rejected.

Results

Research Question 1:

What are the student related strategies for improving teaching of practical Agricultural science in secondary schools for improved performance of senior secondary school students in Ebonyi State?

Table 1: Mean Scores and Standard Deviation of teachers on the student related strategies for improving teaching of practical Agricultural science in secondary schools for improved performance of senior secondary school students in Ebonyi State

S/N	*Student related strategies for improving teaching of Practical Agric Science*	*Urban* $\bar{X}_1$	*N = 166* SD_1	*Rural* $\bar{X}_2$	*N =204* SD_2	*Overall* $\bar{X}_G$	*Overall SDG*	*Decision*
1	Students to attend workshops and field trips to expose them to real agricultural practices.	3.53	0.68	3.49	0.53	3.51	0.60	Agree
2	Collaborating with local farmers and agricultural experts for mentorship programs.	3.31	0.59	3.38	0.59	3.34	0.59	Agree
3	Encouraging students to engage in school gardening and farming projects.	1.59	0.51	3.43	0.89	3.01	0.70	Agree
4	Students to implement project-based learning that requires practical application of agricultural concepts	1.78	0.41	3.42	0.62	3.10	0.51	Agree
5	Students' active participation in agricultural competitions and exhibitions.	2.60	0.59	2.88	0.81	2.74	0.70	Agree
6	Students organizing peer teaching/learning sessions where knowledgeable students assist their classmates.	3.31	0.66	3.25	0.67	3.28	0.66	Agree
7	Students utilizing digital tools and platforms for interactive learning experiences in agriculture.	3.35	0.51	3.50	0.68	3.42	0.59	Agree
8	Establishing student-led agricultural clubs to foster interest and involvement in the subject	3.64	0.51	3.06	0.29	3.35	0.40	Agree
	Grand Mean/ SD	**2.89**	**0.65**	**3.30**	**0.64**	**3.21**	**0.59**	**Agree**

Note: x ≡ Mean, A- Agree, D- Disagree, SD- Standard Deviation

The analysis on Table 1 revealed that the overall average mean of 3.21 signifies that the respondents agreed that all the items are student related strategies for improving teaching of practical Agricultural science in secondary schools are applied in secondary schools in Ebonyi State. The analysis shows that the overall mean score for item no 1 which is above 3.50 depicting strongly agree. The low standard deviation of 0.59 indicates that the respondents has similar opinion on the items.

Hypothesis 1:

There is no significant difference in the mean scores of teachers in rural and urban schools on the student related strategies for improving teaching of practical Agricultural science for improved students performance in examination.

Table 2: Summary of T-Test of analysis of mean scores of teachers in rural and urban location on the student related strategies for improving teaching of practical Agricultural science in secondary schools for improved performance of senior secondary school students in Ebonyi state

Variables	*N*	*X*	*SD*	*Df*	*Sig*	*P-value*	*Decision*
Rural	204	3.30	0.64	368	0.05	0.42	Accept Ho
Urban	166	2.89	0.65				

Table 2 shows that the calculated P-value is 0.42 while the sig is 0.05. Since the calculated p-value (0.42) is greater than the 0.05, the null hypothesis was not rejected. It then shows that there was no significant difference in the mean scores of teachers in rural and urban secondary schools on the student related strategies for improving teaching of practical Agricultural science in secondary schools.

Research Question 2:

What are the teacher related strategies for improving teaching of practical Agricultural science in secondary schools for improved performance of senior secondary school students in Ebonyi State?

Table 3: Mean Scores and Standard Deviation of teachers on teacher related strategies for improving teaching of practical Agricultural science in secondary schools for improved performance of senior secondary school students in Ebonyi State

S/N	*Teacher related strategies for improving teaching of Practical Agric Science*	*Urban* X_1	*N = 166* SD_1	*Rural* X_2	*N =204* SD_2	*Overall* X_G	*Overall SDG*	*Decision*
9	Teachers should write their lesson plan.	2.51	1.52	3.47	0.65	2.99	0.58	Agree
10	Teachers should take students to established farms	3.65	0.58	3.36	0.55	3.50	0.56	Agree
11	Teachers should adopt inquiry-based and experiential teaching/ learning approaches.	3.07	0.46	3.34	0.82	3.20	0.64	Agree
12	Establishing mentorship programs for novice teachers with experienced agricultural educators.	3.41	0.91	3.87	0.47	3.64	0.69	Agree
13	Facilitating collaborative curriculum development involving teachers and agricultural professionals.	3.48	0.65	3.41	0.65	3.44	0.65	Dis Agree
14	Providing platforms for teachers to share best practices and teaching strategies.	2.98	0.64	3.40	0.65	3.19	0.64	Agree
15	Integrating technology into lesson plans to enhance teaching effectiveness.	3.49	0.68	3.41	0.65	3.45	0.66	Agree
16	Offering incentives and recognition for teachers who excel in practical agricultural education.	2.92	0.86	3.28	0.87	3.10	0.86	Agree
17	Participating in agricultural competitions and exhibitions with students.	3.47	0.80	3.34	0.63	3.40	0.71	Agree
18	Providing mentorship for new teachers by experienced educators.	3.20	0.64	3.44	0.63	3.32	0.63	Agree
	Grand Mean/ SD	**3.02**	**0.72**	**3.43**	**0.66**	**3.32**	**0.66**	**Agree**

Note: x̄ Mean, A- Agree, D- Disagree, SD- Standard Deviation

Data presented in Table 3 indicates that the items overall mean rating ranges from 2.99 to 3.64 depicting agree. This shows that the items are teacher-related strategies for improving of practical agricultural science for improved

performance of senior secondary school students in Ebonyi state. The overall cluster mean of 3.32 indicates agree. The low standard deviation of 0.66 shows that the respondent's opinions do not differ remarkably to the itemized.

Hypotheses 2:

There is no significant difference in the mean responses of teachers in rural and urban schools on the teacher related strategies for improving teaching of practical Agricultural science for improved performance in examination.

Table 4: Summary of t-test analysis of mean responses of teachers in rural and urban location on the teacher related strategies for improving teaching of practical agricultural science in secondary schools for improved performance of senior secondary school students in Ebonyi State

Variables	N	X	SD	Df	Sig	P-value	Decision
Rural	204	3.43	0.66	368	0.05	0.12	Accept Ho
Urban	166	3.02	0.72				

The result in Table 4 shows that the calculated P-value is 0.12 while the sig is 0.05. Since the calculated p-value (0.12) is greater than the 0.05, the null hypothesis was accepted. It then shows that there was no significant difference in the responses of teachers in rural and urban secondary schools on the teacher related strategies for improving teaching of practical Agricultural science in secondary schools in Ebonyi State.

Research Question 3:

What are the school administrative related strategies for improving teaching of practical Agricultural science in secondary schools for improved performance of senior secondary students in Ebonyi State?

Table 5:

Mean Scores and Standard Deviation of teachers on the school administrative related strategies for improving teaching of practical Agricultural science in senior secondary schools for improved performance of senior secondary school students in Ebonyi State

S/N	*Administrative related strategies for improving teaching of Practical Agricultural science*	*Urban* X_1	*N = 166* SD_1	*Rural* X_2	*N =204* SD_2	*Overall* X_G	*Overall SDG*	*Decision*
19	Allocating sufficient budget for practical agricultural facilities and materials.	3.27	0.52	3.06	0.99	3.16	0.75	Agree
20	Ensuring regular maintenance and upgrade of agricultural laboratories and equipment.	3.46	0.76	3.41	0.55	3.43	0.65	Agree
21	Incorporating practical agricultural science into the school's strategic development plans.	3.31	0.59	3.25	0.67	3.28	0.63	Agree
22	Promoting a collaborative culture among departments to integrate agricultural science into other subjects.	2.60	0.59	3.38	0.59	2.99	0.59	Agree
23	Designating time in the school timetable specifically for practical agricultural lessons.	2.15	0.63	3.43	0.24	2.79	0.43	Agree
24	Establishing partnerships with local agricultural institutions for resource sharing.	3.28	0.55	3.43	0.51	3.35	0.53	Agree
25	Organizing annual agricultural fairs and events to showcase student projects and achievements.	1.77	0.59	3.27	0.74	3.02	0.66	Agree

26	Providing administrative support for teachers' engagement with the community in agricultural practices.	3.39	0.66	3.07	0.27	3.23	0.46	Agree
27	Facilitating access to professional development opportunities for teachers.	1.88	0.75	3.68	0.53	3.28	0.64	Agree
28	Encouraging collaboration among departments to integrate agriculture into various curricula.	3.31	0.59	3.32	0.77	3.31	0.68	Agree
	Grand Mean/ SD	**2.84**	**0.62**	**3.33**	**0.59**	**3.18**	**0.60**	**Agree**

Note: x ≡ Mean, A- Agree, D- Disagree, SD- Standard Deviation

Data presented in table 5 above shows that the overall mean responses of the 10 items ranges from 2.52 to 3.44 indicating Agree. The implication is that the items are the school administrative related strategies for improving teaching of practical Agricultural science in senior secondary schools for improved performance of secondary school students in Ebonyi state. The low standard deviation of 0.60 shows that the respondents have homogeneity in their responses to statements in the items.

Hypothesis 3:

There is no significant difference in the mean responses of teachers in rural and urban schools on the school administration related strategies for improving teaching of practical Agricultural science in secondary schools for improved performance of senior secondary students in Ebonyi State.

Table 6: Summary of t-test Analysis of mean responses of teachers in rural and urban area on administrative related strategies for improving teaching of practical agricultural science in secondary schools for improved performance of senior secondary school students in Ebonyi State

Variables	*N*	*X*	*SD*	*Df*	*Sig*	*p-value*	*Decision*
Rural	204	2.84	0.62	368	0.05	0.25	Accept Ho
Urban	166	3.33	0.59				

The result of t-test analysis in table 6 shows that the calculated P-value is 0.25 while the sig is 0.05. Since the calculated p-value (0.25) is greater than the 0.05, the null hypothesis was accepted. It then shows that there was no significant difference in the responses of teachers in rural and urban secondary schools on the administrative related strategies for improving teaching of practical Agricultural science in secondary schools for improved performance of senior secondary school student in Ebonyi State.

Summary of Major Findings

With respect to the analysis above, the following major findings were deduced:

1. Student related strategies are required for teaching of practical agricultural science and there was no significant difference in the responses of respondents based on location.
2. Teacher related strategies are important for teaching of practical agricultural science, there was no significant difference in the responses of teachers based on location
3. Administrative related strategies are necessary for teaching of practical agricultural science and there was no significant difference in the responses based on location.

Discussion of Findings

The findings of the study in Table one revealed that student related strategies are required for teaching of practical agricultural science in secondary schools for improved performance of senior secondary school students in Ebonyi state. Some of these strategies include; students to attend workshops and field trips, collaborating with local farmers and agricultural experts for mentorship, encouraging students to engage in school gardening and farming projects among others. This finding was in line with the finding by Adekoyejo and Olorunsola (2021), who noted that active

learning strategies, like collaborative group work and hands-on practice, significantly enhance students' understanding and retention of agricultural concepts. Also Igbokwe, Uzoechi and Okonkwo, (2019), supported this findings by highlighting the importance of integrating technology into practical lessons, enabling students to access digital resources and learning platforms that offer interactive simulations of agricultural processes. The findings of the study revealed that there was no significant difference in the mean scores of rural and urban teachers on the students related strategies of senior secondary school students in Ebonyi state. This implies that location of the respondents did not have a significant impact on the observed differences in mean scores between the two groups.

The findings in research question two revealed the following teachers related strategies for improving teaching of practical agricultural science teachers writing their lesson plan, teachers should take student to established farms, teachers adapting inquiry-based and experimental teaching learning approaches, participating in agricultural competition and exhibition among others. This finding was in line with findings of Ogunwole (2020), who revealed that in order to improve teaching of practical agricultural science in secondary schools, teacher training programs should focus on equipping educators with innovative teaching methods that promote practical skills. Furthermore, the study indicated that there was no significant different in the mean scores of rural and urban teachers on the teacher related strategies for improving teaching of practical agricultural science in secondary schools for improved performance of senior secondary school students in Ebonyi state. This implies that the responses of both rural and urban teachers did not impact the identified strategies aimed at improving students performance in agricultural science.

The findings of the study in Table three revealed that administrative strategies are necessary for teaching of practical agricultural science. These administrative strategies include; allocating sufficient budget for practical's, ensuring regular maintenance of agricultural laboratories, designating time in the school time table for practical lessons, organizing annual agricultural fairs among others. The findings was in line with findings of Akpan (2020), who revealed that administrative support for agricultural programmes may include providing adequate facilities, tools, and resources necessary for practical lessons. This findings were not in line with findings of Eze, Okeke and Ugochukwu (2021), who revealed that the teaching of practical agricultural science cannot be effectively implemented due to lack of teachers, facilities and Equipments for practical work, and further notes that where there are teachers the delivery is usually theorized, because of lack of competence on the part of the teacher or due to inadequate equipment, thus students graduate without any firsthand experience. Furthermore, the study found no significant difference in the perceptions of rural and urban teachers regarding administrative strategies. The location of the respondents did not influence their understanding of the significance of these strategies in improving students performance in agricultural science practical's.

Conclusion

This study showed that students' performance in senior secondary school examination could be improved through a combination of student-related, teacher-related, administrative-related, and government-related strategies for teaching of practical agricultural science. Also, the lack of significant differences in responses from respondents in both rural and urban locations underscores the need for these strategies to be employed in both rural and urban schools.

Recommendations

The following recommendations were made based on the findings of this study:

1. There is need to develop integrated training programs for teachers that incorporate the latest agricultural practices, technologies, and teaching methodologies to enhance their instructional impact.
2. Teachers should revise the agricultural science curriculum to include more hands-on, experiential learning activities that engage students and relate to real-world agricultural issues.
3. Schools should implement community awareness campaigns to highlight the importance of practical agricultural education and encourage parental and community involvement in supporting agricultural science initiatives.

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