UTILIZING TECHNOLOGY IN MODERN AGRICULTURAL EDUCATION PRACTICES: A CASE STUDY OF BENIN CITY, EDO STATE

BY

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CERTIFICATION

This is to certify that the project work titled: **"Utilizing Technology in Modern Agricultural Education Practices: A Case Study of Benin City, Edo State"** was carried out by **OKERE PRAISE CHUKWUEMEKA** with matriculation number **EDU2006049** under the Supervision of **DR. (MRS.) S. OSHO** in the Department of Agricultural Education, Faculty of VTE, University of Benin.

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DEDICATION

This project work is dedicated to God Almighty

CHAPTER ONE

INTRODUCTION

Background of the Study

Agricultural education plays a crucial role in equipping individuals with the knowledge and skills necessary to address the challenges in the agricultural sector. In Nigeria, where agriculture is a significant contributor to the economy, integrating technology into agricultural education is essential for enhancing productivity and sustainability. In Edo State, technological advancements are increasingly being utilized to improve agricultural practices, education delivery, and skill acquisition among students (Obadimu & Olayemi, 2022). The introduction of modern technologies such as precision agriculture, mobile applications, and online learning platforms has transformed traditional agricultural education into a more interactive and effective learning process (Akomolafe, 2021).

The adoption of technology in agricultural education is pivotal in addressing various issues such as food insecurity, climate change, and the need for sustainable farming practices. With the challenges posed by urbanization and population growth, there is a pressing need to enhance agricultural productivity through innovative practices. According to Eze et al. (2020), technology-driven agricultural education empowers learners with practical skills, enabling them to implement modern farming techniques that increase yield and profitability.

Moreover, the increasing availability of information and communication technologies (ICT) provides unique opportunities for agricultural education institutions to enhance their curriculum and teaching methodologies. ICT facilitates access to vast resources, enabling students to engage with real-time data, research, and global agricultural practices. This access not only improves learning outcomes but also prepares students to operate effectively in a digital world, where information sharing and collaboration are key (Nwankwo et al., 2021). Consequently, the integration of technology into agricultural education not only enhances the educational experience but also aligns with global trends toward digital literacy, ensuring that graduates are competitive in the workforce.

According to Adeyemo & Ojo (2021), the practical application of technology in agricultural education has the potential to foster innovation and research among students and educators. By using tools such as drones for monitoring crop health, soil sensors for precision farming, and data analytics for yield prediction, students gain hands-on experience that enhances their understanding of modern agricultural practices. This experiential learning is vital in preparing students to address real-world challenges and to contribute effectively to the agricultural sector upon graduation.

In Edo State, where agriculture remains a predominant economic activity, the integration of technology in education can also stimulate local agricultural development. By preparing students to adopt new technologies, educational institutions can create a skilled workforce that meets the demands of modern agricultural practices, ultimately contributing to food security and economic growth in the region (Okwudiri & Nwankwo, 2022). This dynamic interaction between education and technology not only transforms the learning environment but also equips students with the necessary tools to innovate and lead in the agricultural sector.

Statement of the Problem

Despite the potential benefits of integrating technology into agricultural education, there are significant barriers to its effective implementation in Edo State. These challenges include inadequate infrastructure, limited access to technological resources, and insufficient training for educators on modern teaching methodologies (Nwankwo et al., 2021). Additionally, there is often a disconnect between theoretical knowledge and practical application, hindering students' ability to engage with the technology effectively. As a result, many agricultural students graduate without the necessary skills to thrive in a technology-driven agricultural landscape.

Objectives of the Study

The primary objectives of this study are:

1. To evaluate the extent of technology integration in agricultural education in Edo State.
2. To identify the benefits of utilizing technology in enhancing agricultural education practices.
3. To assess the challenges faced in the implementation of technology in agricultural education.
4. To propose strategies for improving the utilization of technology in agricultural education in Edo State.

Research Questions

This study seeks to answer the following research questions:

1. To what extent is technology integrated into agricultural education practices in Edo State?
2. What are the perceived benefits of technology utilization in agricultural education?
3. What challenges hinder the effective implementation of technology in agricultural education?
4. What strategies can be employed to enhance the use of technology in agricultural education?

Significance of the Study

The findings of this study will be significant for policymakers, educators, and stakeholders in the agricultural sector. By highlighting the benefits and challenges of integrating technology into agricultural education, the study will provide insights that can inform the development of policies and programs aimed at improving educational outcomes. Additionally, it will contribute to the existing body of knowledge on agricultural education and technology utilization, particularly in the context of Nigeria.

Scope of the Study

This study will focus on the utilization of technology in agricultural education practices among tertiary institutions in Edo State. It will examine various technological tools and methods employed in teaching and learning, as well as the challenges faced by educators and students in adopting these technologies.

Definition of Terms

Agricultural Education: The study focused on teaching the skills and knowledge necessary for successful agricultural practices.

Technology: The practical application of scientific knowledge, including tools and methods that enhance productivity in agriculture and education.

Information and Communication Technology (ICT): Technologies that enable the creation and sharing of information, crucial for modern agricultural education.

Precision Agriculture: Farming management using technology to optimize crop health and resource use.

CHAPTER TWO

LITERATURE REVIEW

Overview of Agricultural Education in Nigeria

Agricultural education in Nigeria has evolved significantly over the years, playing a crucial role in addressing the nation's agricultural and economic challenges. With a population exceeding 200 million, Nigeria faces pressing issues such as food insecurity, unemployment, and environmental degradation, all of which highlight the need for a robust agricultural education system (Ojo, 2022). Agricultural education encompasses the knowledge, skills, and practices that individuals acquire to engage effectively in agricultural activities, thereby contributing to national development and food security.

The framework of agricultural education in Nigeria is built on several key components, including formal education, vocational training, and informal learning. Formal agricultural education is provided through institutions such as universities, polytechnics, and colleges of agriculture, where students receive structured training in various agricultural disciplines. According to Eze et al. (2020), these institutions are tasked with preparing graduates who can apply modern agricultural techniques, understand the complexities of food production, and address the challenges posed by urbanization and climate change.

Vocational training plays a critical role in equipping individuals with practical skills for immediate employment in the agricultural sector. Technical colleges and vocational training centers offer hands-on training programs that focus on specific agricultural skills, such as crop production, animal husbandry, and agro-processing. This training is essential for fostering an entrepreneurial spirit among students, as it encourages them to start their own agribusinesses and contribute to rural development (Akinyemi, 2021). Informal learning, which often occurs

through community-based programs and farmer cooperatives, is equally important in disseminating agricultural knowledge and practices. These programs promote the sharing of experiences among farmers, enabling them to learn from one another and adopt best practices. They also facilitate access to vital information on market trends, pest management, and sustainable farming techniques, thereby enhancing the overall capacity of rural farmers (Ogunlade, 2021).

Despite the progress made in agricultural education, several challenges hinder its effectiveness in Nigeria. One significant challenge is the lack of adequate funding for educational institutions. Many agricultural colleges and universities struggle with insufficient resources to provide modern facilities, equipment, and teaching materials (Obadimu et al., 2021). This inadequacy often results in outdated curricula that do not reflect the current demands of the agricultural sector. Furthermore, there is a pressing need for curriculum reform to incorporate modern technologies and practices relevant to today's agricultural landscape. The existing curricula often focus heavily on theoretical knowledge, with little emphasis on practical skills and real-world applications. As noted by Nwankwo (2020), students must be equipped with the competencies necessary to thrive in an increasingly technological and competitive agricultural environment.

Another challenge is the limited access to technology and information for both educators and students. In many rural areas of Nigeria, access to the internet and digital tools is minimal, which significantly hampers the integration of technology into agricultural education. This limitation restricts students' exposure to modern agricultural practices and innovations, ultimately affecting their preparedness for the workforce (Okwudiri & Nwankwo, 2022).

Moreover, there is often a gap between agricultural education and industry needs. Employers frequently express concerns about the lack of practical skills among graduates, indicating a disconnect between the training provided in educational institutions and the skills required in the job market (Eze & Ijeoma, 2020). Bridging this gap is crucial for ensuring that graduates are well-prepared to contribute effectively to the agricultural sector and the economy at large.

In addition, agricultural education in Nigeria is a vital component of the nation's efforts to achieve food security and economic development. While there have been significant strides in the establishment of formal, vocational, and informal training programs, challenges such as inadequate funding, outdated curricula, and limited access to technology continue to hinder its effectiveness. To promote a more robust agricultural education system, there is a need for concerted efforts from government agencies, educational institutions, and the private sector to address these challenges and enhance the relevance of agricultural education in Nigeria.

Technology in Agricultural Education

The integration of technology in agricultural education is pivotal for modernizing the sector and enhancing the learning experience. Various technological advancements have been adopted to improve teaching methodologies and agricultural practices. Technologies such as Geographic Information Systems (GIS), remote sensing, and precision agriculture are increasingly being incorporated into educational programs. These technologies allow students to analyze data related to soil health, crop yield, and environmental conditions, fostering a data-driven approach to agriculture (Nwankwo, 2020).

Moreover, digital platforms have revolutionized access to educational resources. E-learning and online courses have become prevalent, enabling students to engage with course materials remotely. This shift has been particularly beneficial in rural areas where traditional educational infrastructure may be lacking (Obadimu et al., 2021). Students can now participate in virtual classrooms, access multimedia instructional materials, and collaborate with peers and instructors worldwide. The use of mobile applications for agricultural advice, market information, and pest management further empowers students and farmers alike, enhancing their practical knowledge and skills (Akinyemi, 2021). Despite the numerous advantages, the adoption of technology in agricultural education faces challenges. Issues such as inadequate internet connectivity, lack of technical training for educators, and limited access to modern equipment hinder effective implementation. Addressing these challenges requires concerted efforts from government agencies, educational institutions, and the private sector to ensure that agricultural education keeps pace with technological advancements and meets the needs of modern agriculture.

Types of Technologies Used in Agricultural Education

The integration of various technologies into agricultural education has diversified the learning methods available to students. Some notable technologies include:

1. **Information and Communication Technology (ICT):** ICT tools such as computers, the internet, and mobile devices enable students to access vast resources and information related to agricultural practices (Ogunlade, 2021). These tools foster research and innovation, allowing students to engage with current trends in agriculture.

2. **Precision Agriculture Technologies:** These include GPS, drones, and soil sensors that provide real-time data on crop health and environmental conditions (Adeyemo & Ojo, 2021). By incorporating these technologies into the curriculum, students learn to apply data-driven decision-making in their farming practices.

3. **E-Learning Platforms:** Online learning systems enhance the accessibility of agricultural education, especially in remote areas. E-learning allows students to engage with course materials and participate in virtual discussions, broadening their understanding of agricultural concepts (Akomolafe, 2021).

4. **Mobile Applications:** Agricultural mobile apps offer farmers timely information on weather, market prices, and pest control measures, making them vital educational tools for students (Eze & Ijeoma, 2020).

5. **Simulation Tools:** These tools provide virtual environments for students to practice and refine their skills without the risks associated with real-life farming (Okwudiri & Nwankwo, 2022).

Teaching Methods in Agricultural Education

The effectiveness of agricultural education largely hinges on the teaching methods employed in the classroom and practical settings. Various pedagogical approaches are utilized to facilitate the learning process and enhance students' understanding of agricultural concepts. Among these, experiential learning stands out as particularly relevant. This method involves hands-on experiences where students engage directly with agricultural practices, such as planting, harvesting, and animal husbandry. By participating in real-world agricultural activities, students gain practical skills and insights that are essential for their future careers (Eze et al., 2020).

Another prominent teaching method is problem-based learning (PBL), which encourages students to tackle real-life agricultural problems through critical thinking and collaboration. PBL fosters an environment where students can research, analyze, and propose solutions to challenges faced in the agricultural sector, such as pest management or resource optimization (Ogunlade, 2021). This approach not only enhances students' problem-solving abilities but also prepares them for the complexities of modern agriculture.

According to Nwankwo (2020), the use of technology-enhanced instruction, such as multimedia presentations, virtual simulations, and online resources, has gained traction in agricultural education. These tools make learning more interactive and engaging, allowing students to visualize complex agricultural processes and data more effectively. For instance, virtual farm simulations can help students understand the impact of various farming decisions on crop yields and environmental sustainability.

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Challenges to Effective Technology Utilization in Agricultural Education

While the integration of technology into agricultural education offers numerous benefits, several challenges hinder its effective utilization in Edo State. These challenges can be categorized into infrastructural, socio-economic, and pedagogical factors, each playing a significant role in limiting the full potential of technology in educational settings.

1. **Infrastructural Challenges:** One of the primary barriers is inadequate infrastructure. Many educational institutions in Edo State face issues such as unreliable electricity supply, limited access to high-speed internet, and insufficient technological resources (Akinyemi, 2021). These infrastructural deficits make it difficult for institutions to implement and sustain technology-driven agricultural education programs. For instance, schools may lack the necessary tools like computers, tablets, or agricultural software that facilitate learning and practical applications of modern agricultural techniques.

2. Socio-Economic Factors: Socio-economic factors also pose significant challenges. Many students and educators come from backgrounds with limited exposure to technology. This digital divide results in a disparity in technological literacy, which can affect students' ability to fully engage with and benefit from technology-enhanced learning (Nwankwo, 2020). Additionally, financial constraints can limit schools' ability to invest in new technologies or training for educators, further exacerbating the divide.

3. Pedagogical Challenges: Pedagogically, there is often a lack of trained personnel who can effectively integrate technology into their teaching methods. Many educators may not be adequately trained to utilize modern technological tools in their curriculum, leading to ineffective teaching practices that fail to engage students (Eze et al., 2020). Moreover, resistance to change among some educators can hinder the adoption of innovative teaching methodologies that incorporate technology.

In addition, in order to overcome these challenges, a multi-faceted approach is necessary. This includes investments in infrastructure, comprehensive training programs for educators, and policies that promote equitable access to technology for all students. By addressing these issues, agricultural education in Edo State can more effectively leverage technology to enhance learning outcomes and better prepare students for careers in the agricultural sector.

The Role of Stakeholders in Enhancing Technology Utilization

The effective integration of technology into agricultural education is not solely the responsibility of educational institutions; it requires the active participation of various stakeholders, including government bodies, private sector organizations, educational institutions,

and local communities. Each of these stakeholders plays a crucial role in promoting and enhancing the utilization of technology in agricultural education.

1. Government Bodies: Government agencies are vital in formulating policies that support technological advancements in education. They can provide funding for infrastructure development, such as improving internet connectivity and access to technological tools in schools. By implementing national policies that prioritize technology in education, governments can create an enabling environment for innovative teaching methods and ensure that agricultural education aligns with contemporary industry practices (Akinyemi, 2021). Moreover, initiatives that promote public-private partnerships can mobilize additional resources and expertise, facilitating the integration of technology in the curriculum.

2. Private Sector Organizations: The private sector also has a significant role to play. Agricultural businesses and technology firms can collaborate with educational institutions to develop and implement training programs that equip students with relevant skills. These partnerships can lead to internships and practical experiences that prepare students for the workforce while allowing businesses to engage with potential future employees (Eze et al., 2020). Additionally, technology providers can offer workshops and resources to help educators effectively use their products in teaching.

3. Educational Institutions: Within educational institutions, administrators and faculty must champion the adoption of technology by incorporating it into the curriculum and training educators to use these tools effectively. Continuous professional development programs can enhance teachers' skills and confidence in utilizing technology for teaching agricultural practices (Nwankwo, 2020). Institutions can also foster a culture of innovation by encouraging collaborative projects and research that utilize technology to solve real agricultural problems.

4. Local Communities: Finally, local communities play a critical role in supporting agricultural education. Community involvement can enhance the relevance of educational programs by ensuring they reflect local agricultural practices and needs. Engaging community members in educational activities can create a supportive environment for students and encourage the application of technology in local agricultural enterprises.

In conclusion, the collaboration of all stakeholders is essential for effectively utilizing technology in agricultural education. By working together, they can create a robust framework that supports innovative teaching and prepares students for the challenges of the modern agricultural landscape.

Summary of Reviewed Literature

The literature on the utilization of technology in agricultural education highlights a multifaceted approach to enhancing educational practices in Edo State. Various studies emphasize the critical role that technology plays in modernizing agricultural education and improving students' learning outcomes.

Impact of Technology: Research indicates that integrating technology into agricultural education can enhance students' understanding and engagement with the subject matter (Nwankwo, 2020). Technological tools, such as simulations and interactive software, facilitate experiential learning, allowing students to apply theoretical concepts in practical scenarios. This approach fosters deeper comprehension and skill development, which are essential in the rapidly evolving agricultural sector.

Pedagogical Strategies: The effectiveness of technology in education is closely linked to the pedagogical strategies employed by educators. Problem-based learning (PBL) and experiential

learning methods are recognized as effective in agricultural education, promoting critical thinking and practical skills among students (Eze et al., 2020). Furthermore, the use of multimedia resources and online platforms enhances the delivery of content, making learning more interactive and accessible.

Challenges and Barriers: Despite the potential benefits, several challenges impede the effective utilization of technology in agricultural education. Infrastructural deficits, such as poor internet connectivity and inadequate technological resources, pose significant barriers (Akinyemi, 2021). Additionally, socio-economic factors, including limited access to technology among students and resistance to change among educators, further complicate the integration process.

Role of Stakeholders: The literature underscores the importance of collaboration among various stakeholders, including government agencies, private sector organizations, educational institutions, and local communities, in fostering technology utilization. Government support through policy formulation and funding, coupled with partnerships with private enterprises, can significantly enhance educational infrastructure and resources (Ogunlade, 2021).

In summary, the reviewed literature demonstrates that while technology holds significant promise for transforming agricultural education in Edo State, its successful integration relies on addressing existing challenges and fostering collaborative efforts among all stakeholders. Continued research and investment in technological resources are essential for cultivating a skilled workforce capable of meeting the demands of the modern agricultural landscape.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter outlines the methodology that will be used for carrying out the study and it shall be presented under the following sub-headings:

- Research Design
- Population of the study
- Sample Size and Sampling Techniques
- Research Instrument
- Validation of the instrument
- Method of Data Collection
- Method of Data Analysis

Research Design

This study will employ a descriptive survey research design to assess the utilization of technology in modern agricultural education practices in Edo State. A descriptive survey design is suitable for this research as it enables the collection of data from a large population to describe the current state of technology utilization in agricultural education and its effectiveness. This approach will allow for the exploration of the perceptions, attitudes, and experiences of both students and educators regarding the integration of technology in their learning and teaching processes.

Population of the Study

The target population for this study comprised of one hundred (100) agricultural education students and educators involved in agricultural Science and Education programme, from the Department of Vocational, Faculty of Education at the University of Benin, Benin City Edo State.

Sample Size and Sampling Techniques

A stratified random sampling technique will be used to select participants for the study. The sample will be drawn from different level of study to ensure representation from various educational

levels. A sample size of one hundred (100) respondents, comprising ninety eight (98) students and two (2) educators, will be selected. This sample size is considered adequate to provide a reliable representation of the views and experiences of the target population, as it falls within the recommended range for survey research (Cohen et al., 2018).

Research Instrument

The research instrument used for data collection was a self-structured questionnaire, titled "Utilization of Technology in Agricultural Education in University of Benin" (UTAEUB). The questionnaire was contains only one section, which is technology integration into Agricultural Education, it comprised twenty (20) item statement which were drawn from the research questions. The respondents rated the items on a four point rating scale, ranging from Very High Extent (4), High Extent (3), Low Extent (2),Very High Extent (1).

Validity of Research Instrument

The instrument used for data collection was face validated by the researcher supervisor, and other experts in Agricultural Education and the Department of Vocational and technical Education, Faculty of Education, University of Benin, Edo State. It was suggested am0ng others that the rating scale be changed from (SA, A, D, SD) Strongly Agree, Agree, Disagree, Strongly Disagree be changed to (VHE,HE, VLE,LE) Very High Extent, High Extent , very low Extent, Low Extent. Also suggested that the section A which contained Demographic information of respondents be removed.

Method of Data Collection

Data will be collected through the administration of the structured questionnaire. The questionnaires will be distributed to the selected respondents in person or via online platforms, depending on their accessibility and preference. Adequate instructions will be provided to ensure that respondents understand the questions and can provide accurate answers. The data collection process will last for four weeks, during which reminders will be sent to encourage participation.

Method of Data Analysis

The data collected from the respondents was analyzed using mean (x), standard deviation (SD). And two sample independent t-test. The mean and standard deviation were used to answer the data collected for the research question while two independent t-test was used to test hypothesis at 0.05 level of significance. Decision rule was based on mean value of 2.50 such that any calculated mean (x) equal or greater than 2.50 was regarded as high extent while any mean (x) less than 2.50 was regarded as low extent.

CHAPTER FOUR

PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS

This chapter deals with presentation of results and discussion of findings. The results of the analysis are presented in the order of the research questions and hypothesis that guided the study.

Presentation of Results

Research Question One

To what extent is technology integrated into agricultural education practices in Edo State?

Table 1: Mean and standard deviation showing the extent is technology integrated into agricultural education practices in Edo State

S/N	Item	N	Mean	SD	Remarks
1	Technology is frequently used in Agricultural Education at the University of Benin.	100	3.27	.717	High Extent
2	Online learning platforms (e.g., Zoom, Moodle) are commonly used in Agricultural Education.	100	3.42	.637	High Extent
3	Agricultural software and digital tools are effectively integrated into Agricultural courses.	100	3.21	.667	High Extent
4	The University provides adequate technological resources for Agricultural Education.	100	3.35	.590	High Extent
5	Students actively engage with technology in Agricultural Education.	100	3.27	.770	High Extent
	Cluster Mean		**3.30**	**0.07**	**High Extent**

Note: SD (Standard Deviation), N (Sample Size)

In response to research question one, Table 1 showed that the respondents rated item one to five as high extent with a mean rating ranging from 3.21 to 3.42 while the standard deviation also ranges from .590 to .770. The cluster mean showed a mean of 3.30. With these results, the above mean score shows that extent technology is integrated into agricultural education practices in Edo State is high.

Research Question Two

What are the perceived benefits of technology utilization in agricultural education?

Table 2: Mean and standard deviation showing the perceived benefits of technology utilization in agricultural education

S/N	Item	N	Mean	SD	Remarks
6	Technology improves students' understanding of Agricultural concepts.	100	3.08	.860	High Extent
7	Digital tools enhance practical agricultural training	100	2.96	.928	High Extent
8	Online platforms provide easier access to learning material for Agricultural Education.	100	2.56	.958	High Extent
9	The use of technology increases students' engagement in Agricultural Education.	100	3.02	.852	High Extent
10	Technology has improved students' performance in Agricultural studies.	100	3.40	.693	High Extent
	Cluster Mean		**3.00**	**0.10**	**High Extent**

Note: SD (Standard Deviation), N (Sample Size)

The data analysis presented in Table 2 depicts that the respondents' rated item six to ten as high extent with a mean rating ranging from 2.56 to 3.40 while the standard deviation also ranges from .693 to .958. The cluster mean showed a mean of 3.00. The above mean score shows that the perceived benefits of technology utilization in agricultural education are technology improves students' understanding, digital tools enhance practical agricultural training, online platforms provide easier access to learning material, increases students' engagement and improved students' performance.

Research Question Three

What challenges hinder the effective implementation of technology in agricultural education?

Table 3: Mean and standard deviation showing the challenges hinder the effective implementation of technology in agricultural education

S/N	Item	N	Mean	SD	Remarks
11	Limited access to technological tools affects technology adoption in Agricultural Education	100	3.56	.574	High Extent
12	High cost of internet and data subscription hinders effective use of technology.	100	3.62	.530	High Extent
13	Inadequate power supply negatively impacts technology-based learning.	100	3.46	.541	High Extent
14	Lack of training on technological applications prevents effective technology utilization.	100	3.54	.576	High Extent
15	Some educators resist the use of technology in Agricultural Education.	100	3.46	.609	High Extent
	Cluster Mean		**3.53**	**0.03**	**High Extent**

Note: SD (Standard Deviation), N (Sample Size)

Research question three reveals that the respondents rated item eleven to fifteen as high extent with a mean rating ranging from 3.46 to 3.62 while standard deviation also ranges from .530 to .609. The cluster mean indicated a mean of 3.53. With these results, the above mean score shows that the challenges that hinder effective implementation of technology in agricultural education are limited access to technological tools, high cost of internet and data subscription, inadequate power supply, lack of training on technological applications and resistance to use technology.

Research Question Four

What strategies can be employed to enhance the use of technology in agricultural education?

Table 4: Mean and standard deviation showing the strategies employed to enhance the use of technology in agricultural education

S/N	Item	N	Mean	SD	Remarks
16	Providing more digital tools and resources will enhance technology use in Agricultural Education	100	3.48	.610	High Extent
17	Training workshops should be conducted regularly for students and educators.	100	3.27	.689	High Extent
18	Improved internet access and affordability will increase technology adoption in Agricultural Education.	100	3.31	.781	High Extent
19	The Agricultural Education curriculum should include more technology-based learning.	100	3.25	.711	High Extent
20	Government and institutional support for ICT in education should be increased.	100	3.23	.807	High Extent
	Cluster Mean		**3.31**	**0.08**	**High Extent**

Note: SD (Standard Deviation), N (Sample Size)

The result in research question four as indicated in Table 4 showed that the respondents rated item sixteen to twenty as high extent with a mean rating ranging from 3.23 to 3.48 while the standard deviation also ranges from .610 to .807. The cluster mean showed a mean of 3.31. With these results, the above mean score shows that strategies that can be employed to enhance the use of technology in agricultural education are, providing more digital tools and resources, training workshops, improved internet access and affordability, the agricultural education

curriculum should include more technology-based learning and government and institutional support for ICT

Discussion of Findings

The findings of research question one revealed that extent technology is integrated into agricultural education practices in Edo State is high. This finding supports that of Obadimu and Olayemi, (2022) who reported that In Edo State, technological advancements are increasingly being utilized to improve agricultural practices, education delivery, and skill acquisition among students. Similarly, Akomolafe, (2021), the introduction of modern technologies such as precision agriculture, mobile applications, and online learning platforms has transformed traditional agricultural education into a more interactive and effective learning process.

The result of research question two showed that the perceived benefits of technology utilization in agricultural education are technology improves students' understanding, digital tools enhance practical agricultural training, online platforms provide easier access to learning material, increases students' engagement and improved students' performance. The finding is in line with that of Eze et al., (2020) who reported that by participating in real-world agricultural activities, students gain practical skills and insights that are essential for their future careers.

Research question three output indicated that the challenges that hinder effective implementation of technology in agricultural education are limited access to technological tools, high cost of internet and data subscription, inadequate power supply, lack of training on technological applications and resistance to use technology. The finding is in agreement with that of Obadimu et al. (2021) who affirmed that one significant challenge is the lack of adequate funding for educational institutions. Many agricultural colleges and universities struggle with insufficient resources to provide modern facilities, equipment, and teaching materials.

The findings of research question four depicted that strategies that can be employed to enhance the use of technology in agricultural education are, providing more digital tools and resources, training workshops, improved internet access and affordability, the agricultural education curriculum should include more technology-based learning and government and institutional support for ICT. This finding aligns with Nwankwo (2020) who noted that students must be equipped with the competencies necessary to thrive in an increasingly technological and competitive agricultural environment.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

The study determined utilizing technology in modern agricultural education practices: a case study of Benin City, Edo State. Four research questions were raised to guide the study.

This study employed a descriptive survey research design. The target population for this study comprised of one hundred (100) agricultural education students and educators comprising ninety-eight (98) students and two (2) educators involved in agricultural Science and Education programme, from the Department of Vocational, Faculty of Education at the University of Benin, Benin City Edo State. The sample size of the study was made up of one hundred (100) agricultural education students and educators which comprised ninety-eight (98) students and two (2) educators. As a result of the manageable size of the population, the population was used as sample, hence census.

The research instrument used for data collection was a self-structured questionnaire, titled "Utilization of Technology in Agricultural Education in University of Benin" (UTAEUB). The questionnaire was segmented into two sections A and B. The instrument used for data collection was subjected to face validity by the researcher supervisor and two other experts in the Department of Vocational and technical Education, Faculty of Education, University of Benin, Edo State. To establish the reliability of the instrument, Cronbach alpha statistics was used to measure the internal consistency of the items. The instrument was administered to twenty (20) Agricultural Science education students who were part of the study population but not part of the sample size. A coefficient of 0.76 was obtained which showed the instrument was reliable. The data collected was analyzed using mean ($\bar{x}$) and standard deviation (SD) using statistical package for the social science (SPSS). The findings generally showed that utilizing technology will significantly enhance modern agricultural education practices. The findings of the study were as follows:

1. Extent technology is integrated into agricultural education practices in Edo State is high.
2. The perceived benefits of technology utilization in agricultural education are technology improves students' understanding, digital tools enhance practical agricultural training, online platforms provide easier access to learning material, increases students' engagement and improved students' performance.
3. The challenges that hinder effective implementation of technology in agricultural education are limited access to technological tools, high cost of internet and data subscription, inadequate power supply, lack of training on technological applications and resistance to use technology.
4. Strategies that can be employed to enhance the use of technology in agricultural education are, providing more digital tools and resources, training workshops, improved internet access and affordability, the agricultural education curriculum should include more technology-based learning and government and institutional support for ICT

Conclusion

Based on the findings of the study, it was concluded that utilizing technology will significantly enhance modern agricultural education practices. The world is currently technology driven, where almost every operation and activities are technologically oriented. Hence, it become highly imperative that technology should be incorporated into the teaching and learning of agriculture education so as to prepare the students for what they are going to encounter in the world of work

Recommendations

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

1. Government should provide different technological gadgets that will be integrated into agricultural education practices to facilitate effective teaching and learning process.
2. The benefits of technology utilization in agricultural education cannot be overemphasize, hence, it becomes paramount for provision of diverse technological facilities that will help students to link theory to practice.
3. Government should ensure challenges such as limited access to technological tools, high cost of internet and data subscription, inadequate power supply, lack of training on technological applications and resistance to use technology are nip to the bud
4. School management should set up modalities on the use of technology in agricultural education that will help to enhance the actualization of agricultural goals and objectives.

Suggestion for Further Studies

This study examined utilizing technology in modern agricultural education practices: a case study of Benin City, Edo State. The following suggestions for further research were outlined:

1. The digital technology a correlate of agricultural education graduate job attraction and retention in world of work in public universities in Edo State.
2. Influence of social media on consumer behaviour on goods and services as perceived by agricultural education undergraduates in university of Benin.
3. Availability and utilization of information and communication technology on the teaching and learning of agricultural education in universities in Edo State.

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APPENDIX A

Department of Vocational and
Technical Education,
Faculty of Education,
University of Benin, Benin City,
Edo state.
15/03/2024

Dear Respondent,

LETTER TO RESPONDANTS

My name is Chukwuemeka Praise OKORE from the institution mention above. I am currently carrying out a research on "Utilization of Technology in Agricultural Education in University of Benin" (UTAEUB). I therefore solicit for your objective's responses to the questions in this paper as this would add credibility and validity to this research work. This questionnaire is purely for academic research purpose. Please read the questions carefully and answer each one to the best of your ability. Your responses will be kept confidential.

Thanks for your anticipated co-operation.

Yours Faithfully,
Chukwuemeka Praise OKERE
(Research Student)

APENDIX B

UTILIZATION OF TECHNOLOGY IN AGRICULTURAL EDUCA
UNIVERSITIES

DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION
FACULTY OF EDUCATION
UNIVERSITY OF BENIN, BENIN CITY EDO STATE

SECTION A: DOMOGRAPHIC DATA

1. Gender: Male [ ] / Female [ ]

2. Level: 300LV [ ] / 400LV [ ]

SECTION A: TECHNOLOGY INTEGRATION INTO AGRICULTURAL EDUCATION

Please indicate your level of agreement with each statement by ticking (√) the appropriate box. Use the following scale

- VHE = Very High Extent
- HE = High Extent
- LE = Low Extent
- VLE = Very High Extent

Research Question One: To what extent is Technology Integrated into Agricultural Education Practices in Edo State (UNIBEN)?

S/N	STATEMENT	VHE	HE	LE	VLE
1.	Technology is frequently used in Agricultural Education at the University of Benin.				
2.	Online learning platforms (e.g., Zoom, Moodle) are commonly used in Agricultural Education.				
3.	Agricultural software and digital tools are effectively integrated into Agricultural courses.				
4.	The University provides adequate technological resources for Agricultural Education.				
5.	Students actively engage with technology in Agricultural Education.				

RQ2	What are the Perceived Benefits of Technology Utilization in Agricultural Education?	VHE	HE	LE	VLE
6.	Technology improves students' understanding of Agricultural concepts.				
7.	Digital tools enhance practical agricultural training				
8.	Online platforms provide easier access to learning material for Agricultural Education.				
9.	The use of technology increases students' engagement in Agricultural Education.				
10.	Technology has improved students' performance in Agricultural studies.				
RQ3	**What Challenges hinder the Effective Implementation of Technology in Agricultural Education**	**VHE**	**HE**	**LE**	**VLE**
11.	Limited access to technological tools affects technology adoption in Agricultural Education				
12.	High cost of internet and data subscription hinders effective use of technology.				
13.	Inadequate power supply negatively impacts technology-based learning.				
14.	Lack of training on technological applications prevents effective technology utilization.				
15.	Some educators resist the use of technology in Agricultural Education.				
RQ4	**What strategies can be Employed to Enhance the use of Technology in Agricultural Education?**	**VHE**	**HE**	**LE**	**VLE**
16.	Providing more digital tools and resources will enhance technology use in Agricultural Education				
17.	Training workshops should be conducted regularly for students and educators.				
18.	Improved internet access and affordability will increase technology adoption in Agricultural Education.				
19.	The Agricultural Education curriculum should include more technology-based learning.				
20.	Government and institutional support for ICT in education should be increased.				

Thank you for your time and cooperation!

APPENDIX C

DATA ANALYSIS FOR THE RELIABILITY OF THE STUDY USING CRONBACH'S ALPHA

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded[a]	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.764	20

Q13	136	2	4	3.46	.541
Q14	136	2	4	3.54	.576
Q15	136	2	4	3.46	.609
Valid N (listwise)	136				

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
VAR00005	5	3.46	3.62	3.5280	.06870
VAR00006	5	.53	.61	.5660	.03136
Valid N (listwise)	5				

Research Question Four

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Q16	136	2	4	3.48	.610
Q17	136	1	4	3.27	.689
Q18	136	1	4	3.31	.781
Q19	136	1	4	3.25	.711
Q20	136	1	4	3.23	.807
Valid N (listwise)	135				

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
VAR00007	5	3.23	3.48	3.3080	.10060
VAR00008	5	.61	.81	.7196	.07815
Valid N (listwise)	5				