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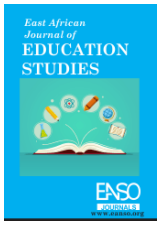

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Original Article

Teacher-Related Factors and their Influence on the Integration of Practical Skills in Teaching and Learning of Agriculture in Secondary Schools in Busia County, Kenya

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Teacher Related Factors, Agriculture, Practical, Teaching and Learning.

ABSTRACT

The purpose of the study was to determine the teacher-related factors and their influence on the integration of practical skills in teaching and learning agriculture in secondary schools in Busia County, Kenya. The study was guided by the experiential learning theory as postulated by John Dewey. The study used the descriptive survey design. Data were collected using questionnaires, interview schedules and observation. The study sampled a total of 367 respondents, which comprised 23 principals sampled using saturated sampling, 23 agriculture teachers sampled purposively and 320 students sampled through simple random sampling and 1 quality assurance and standard officer. Data was analyzed descriptively and presented using tables and charts. The study revealed that teacher-related factors influence the integration of practical skills. The factors include various teaching methodologies, teacher competencies, and teacher qualifications. However, the teaching methodology deployed by teachers does not favour the integration of practical skills, as most teachers prefer the lecture method. The schools however faced various challenges which hampered the integration of practical skills in teaching and learning of agriculture in secondary school in Busia County, Kenya. The study therefore recommends that the agriculture curriculum in Kenya should be aligned with the national agricultural policy and strategy to ensure that students are exposed to the latest developments and trends in the field and other career-related areas after their secondary school education; Teachers be provided with regular professional development courses to enhance their teaching methodology and enough resources be allocated for practical purposes in teaching and learning of agriculture.

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INTRODUCTION

Agriculture plays an important role in the economy of any nation as it is the background on which most of the activities emanate from. Historically, agriculture spans a rich foundation given that it was among the leading civilization agents (Wright, 2012). Reflecting on some of the developments that took place in the early days of civilization up to date, traces of agricultural contribution cannot be ignored. Most of the towns and cities that we see today originated directly from agricultural based activities (Dorosh & Thurlow, 2013). As a result, agriculture has been incorporated into the education system in every nation in an effort to advance its applicability (Wright, 2012).

Africa's secondary agricultural education is rigid and doesn't keep up with student trends and demands, making it unable to meet community needs through agriculture (Blackburn, Bunch, & Haynes, 2017). The region's agricultural education struggles with information rather than actual skills. Farming in secondary schools provides many opportunities for pupils to study and understand different methods and concepts, yet most African countries do little. Unfortunately, few high school graduates work in agriculture, indicating a problem in the education system (Francisca & Samsudin, 2018). Most high school graduates in agriculture went to college without learning practical skills to boost food production (Amuriyaga, Hudu & Abujaja, 2018).

Hakkinen et al. (2017) found distinct forms of agricultural instruction in African high schools. Some countries require agriculture, whereas others do not. As an economic indicator, agricultural science education's practical skills contribute to Namibia's development (Fu et al., 2018). Agricultural education is slowly changing African farming from subsistence to commercial (Ighakpe, 2018).

Uganda has struggled to empower agricultural students to combat food insecurity. Thus, it supports secondary agriculture education through several programs. The Agriculture in Education program provides grants to secondary schools to establish and manage school gardens and livestock projects, while the Youth Entrepreneurship Scheme supports young people in agriculture and other economic activities (Okiror et al., 2017).

Agriculture is Kenya's main source of jobs due to its diversity. Nyasimi & Kosgey (2017) notes that agriculture supports 80% of Kenyans economically. Thus, effective agricultural education in schools increases agricultural output and vice versa. However, Kenya's rigidity in implementing practical teaching and learning has caused a mismatch between secondary school academic possibilities and reality). Secondary school

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agriculture is underutilized due to a lack of facilities and skilled labour, which hinders skill development (Konyango & Asienyo, 2015).

Kenyan universities teach practical agriculture through classroom and fieldwork. Field-based learning applies agricultural theory on farms, in labs, and in other agricultural contexts, while classroom-based learning emphasizes theory. Many Kenyan colleges include agricultural research facilities where students can work on agricultural initiatives. These centres train and advise farmers and other agricultural stakeholders (Ochuodho, 2016). The Kenyan government also promotes practical agriculture in universities through policies and programs. These policies and initiatives support research, build agricultural curricula, and provide scholarships and loans to agricultural students (Ndirangu & Udoto, 2011).

It is important to note that secondary schools should teach agriculture to increase production knowledge and practical skills to mentor self-reliant and resourceful kids. Practical skills in secondary agriculture education will help the government fulfil its employment and food goals, as in the US and China. Most schools should have agriculture workshops, school farms, and machines for the agriculture curriculum (Osakwe et al., 2017). Despite this, various elements must be considered to maximize secondary school practical agriculture instruction.

Statement of the Problem

Kenya's rural and urban livelihoods depend on agriculture; therefore, it's crucial that agricultural actors pool resources and ideas to keep things running smoothly. Since agriculture has many cycles from production to consumption, every player can fit into the agricultural economy cycle. Research demonstrates that countries with serious agricultural practices have stable economies and food security, which remains a problem in most regions. However, a solid foundation is needed to complete the agricultural economy cycle because it guides all other agricultural undertakings. Schools are the foundation of agricultural education, which promotes progress, innovation, and invention. Thus, secondary schools in nations like Kenya, where agricultural education is offered, must prioritize teaching and learning agriculture in both theoretical and practical ways as per education standards. One thing that stands out from successful countries like the US and China is that the practical approach is taken seriously to assist students in building a solid foundation (Njura, 2020)

Previous studies in this area prove that agricultural education is not well received in schools and pointed towards several issues including the teaching and learning methods and lack of practical approach to specific (Kipkemei, 2012; Obare & Kibet, 2015; Njoroge & Orodho, 2017; Njura, 2020). Agriculture is a technical subject that should endeavour practical approaches to attain the objectives that are set in the syllabus. Rigidness in the proper implementation of practical skills in teaching and learning of agriculture in secondary schools therefore leaves a worrying trend in terms of academics, professional paths and country food security. In this regard, it is imperative that education stakeholders rethink this worrying trend that may leave the future of agriculture education in secondary schools in jeopardy. It is therefore, against this background that the current study sought to establish the factors which influence the integration of practical skills in the teaching and learning of agriculture in secondary schools in Kenya's Busia County.

Purpose of the Study

The study sought to determine the teacher-related factors and their influence on the integration of practical skills in teaching and learning agriculture in secondary schools in Busia County, Kenya.

LITERATURE REVIEW

Research shows that teacher-related factors affect agriculture students' success. Teacher academic

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qualification, effectiveness, teaching approach, experience, rate of syllabus completion, attitude toward the subject, relationship with students, and guidance were found to strongly affect student performance (Bett, 2021).

Researchers disagree on whether instructor academic qualification influences agriculture student performance. According to Abbas and Mir (2012), instructors with better academic credentials should be more valuable. Such data suggest that teachers with advanced degrees can perform effectively because they are well-prepared. However, Cakir and Bichelmeyer (2016) and Jega and Julius (2018) reveal that agricultural achievement was unrelated to teacher education. According to Huang and Moon (2009), teacher qualification accounts for 40–60% of student performance variance.

Teaching experience also ensures students' consistency in practical and theoretical agriculture. According to Kosgei et al. (2013), experienced teachers can employ a range of ways to manage classroom issues. This ultimately benefits all pupils. An experienced teacher also knows how to handle different students, especially those who struggle to understand. However, Bolaranwa et al. (2020) claim that experienced teachers can interpret and turn knowledge from many fields that would have been incomprehensible to pupils into useful information that will benefit them.

Waiganjo (2015) investigated public secondary agriculture teachers' instructional techniques in Nakuru County, Kenya. The study found that agriculture content dissemination is crucial to agriculture curriculum implementation. One hundred fifty-one teachers completed surveys for the correlational investigation. Teacher-related characteristics did not correlate with teaching strategies. The study found no correlation between institutional characteristics and instructional methodologies. Still, curriculum and teaching practices were linked. The study suggested strengthening the curriculum, particularly in practical areas, to allow students to participate in practical activities.

Ng'ang'a (2007) investigated Loitokitok Division Kajiado District agriculture students' instructional methods and academic performance. The study claims that huge sums have been spent improving education quality, yet there is no evidence. Qualitative research and journal, book, and newspaper literature augmented student and instructor data. According to the survey, agriculture teachers mostly lectured. Teachers prioritized exam preparation over skill development because pupils wanted to pass exams.

Makori (2019) interviewed Kisii and Nyamira students about why they study agriculture. The questionnaire-based cross-sectional survey collected data from 352 respondents. Teachers' methods influenced pupils' subject selections. Secondary school pupils choose agriculture based on parents, the Ministry of Education, and background. The report advised regularly monitoring instructors' curriculum adherence to fulfill student and Ministry of Education standards. The research urged pupils to get enough supervision to realize agriculture's relevance. The report suggested the Ministry of Education provide schools with enough teaching and learning resources.

Oyier (2013) examined how certain factors affect Rachonyo North Sub-County students' academic performance. The teacher component was significantly and positively correlated with performance. Njoroge and Orodho (2017) also evaluated teachers' effects on curriculum implementation. The study used a descriptive survey of 250 respondents. The study found that intended and actual curricula diverge. Results showed that institutional factors like teacher quality (measured by training level), competence, experience, innovativeness, commitment, teaching load, job satisfaction, financial and non-financial motivation, and class attendance positively affect

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student achievement and agriculture curriculum dissemination.

Wootoyitide (2010) examined practical integration in Ugandan agriculture education. Because agricultural education involves land, equipment, and a well-equipped lab, the study found many practical activities. Many institutions cannot afford these facilities, preventing practical work. Practical agriculture education can be taught with enough resources, according to studies.

Cheruiyot et al. (2017) evaluated how teaching and learning materials affect secondary school students' agriculture choices in Nakuru County, Kenya. The study presumes secondary school agricultural teaching and learning require resources. Post-hoc research used 357 questionnaires. Students' topic choices were highly affected by agricultural teaching and learning tools. Resources make practical lessons entertaining and easy. Agriculture education's resources and facilities are examined. This investigation attempts to fill the resulting void.

Theoretical Underpinnings

John Dewey's 1938 experiential learning theory states that true learning requires experience. Experiential learning stimulates active learning, applies classroom lessons, and makes connections between old and new material. Independent thinking and hands-on learning are essential for students. Experiential learning and agricultural education have always been linked, according to the National Council for Agricultural Education (2020). Agriculture education emphasizes learning by doing (Maharaj-Sharma & Sharma, 2017). Students can apply classroom lessons to real-world circumstances. (Longmore, Grant, Golnaraghi, 2018) Well-designed experimental learning activities link cognitive learning to life skills.

Konyango (2012) quotes Dewey (1938) on learning the universe. Agriculture students could benefit from practical instruction. The presenter will explain, compare, and help students assess their experiences after the farm practical. Since agriculture involves effective idea communication, practical experience is a good learning technique (Herman and Pinard, 2015).

Learning activities include student-centred and laboratory-based instruction. Teacher-centred instruction doesn't benefit students because they're the emphasis. In-class experiments and conversations aid comprehension. Aholi (2018). Students learn from practical exercises. These labs teach students how to adapt concepts to improve topic performance (Herman & Pinard, 2015). This paradigm guides practical agriculture education. Practicals improve student interaction and topic knowledge. Students choose and use practical skills while studying.

RESEARCH METHODOLOGY

Research Design

The study utilized a descriptive survey research design. According to Mugenda Mugenda (2003), a descriptive design looks to learn about existing phenomena by examining people's perceptions, attitudes, behaviours, and values.

Study Area and Study Sites

The research location was Matayos, Busia County. It has a population of 142,408 people and an area of 196.2 square kilometres (2009 census). Latitude 0° and 0° North and Longitude 34° 25 East define the boundaries of the Sub-county. The county is bordered to the east by Kakamega, to the southwest by Siaya, and to the north by Bungoma. The county borders the Republic of Uganda to the west and a portion of Lake Victoria to the southeast. Teso South, Teso North, Funyula, Matayos, Nambale, Budalangi, and Butula are the seven constituencies in the county. KNBS (2019) estimated that the county's population was 953,337, consisting of 456,356 men and 496,981 women. While sugarcane and cassava are the main crops grown for commercial purposes in Busia County, subsistence farming of cassava is practised widely there.

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Residents include people of the Somali ethnic group as well as the Luhyas, Luos, Tesos, and Kikuyus. The sub-county is perfect for farming because it gets a reasonable amount of rain throughout the year and has rather fertile soils. The people's primary economic pursuits are small-scale farming, retail and wholesale trade, transportation, real estate, and buying and selling of cereals.

Busia County was chosen as the study area for various reasons. The Kenya National Bureau of Statistics (KNBS, 2019) found that it is one of the counties with relatively good weather and has a unique mix between rural and urban areas. The study of this county's rural and urban areas means that the results can be applied to other counties in Kenya. This is because the rural and urban areas of this county are similar to those in other parts of the country.

Study Population

This investigation targeted the principals, teachers, and students of secondary schools in the Matayos sub-county, Busia County. The study specifically targeted 23 principals, 23 agriculture instructors, 1,591 forms three and four agriculture students, and one quality assurance officer. The selection of these population units was influenced by their awareness of the factors that affect the incorporation of practical skills into the teaching and learning of agriculture. These organizations are responsible for formulating, designing, and implementing the incorporation of practical skills into agricultural education.

Sampling and Sample Size

Sampling

This study used both stratified and simple random sampling, which are both types of probability sampling. The study used stratified random sampling to choose respondents from different groups. The divisions were made up of three types of schools: private, extra-county, and sub-county. This helped the researcher choose which respondents to include in the study. After stratification, the study used a simple random sampling method to choose participants from each group. The researcher used stratified random sampling because it lowers bias and makes sure that all groups in the study are represented well. Saturated sampling was used to put respondents into two groups: secondary school leaders and agriculture teachers.

Sample Size

The sample size was calculated using the Yamane (1967) method because the population of interest was already known. Since the Yamane formula is the most precise scientific formula available, it was used to determine the appropriate size of the sample. The students' target population of 1,591 resulted in a sample size of approximately 320. The sample size for each stratum was calculated using a fraction nf/N. Since nf=320 and N=1,591, the sampling fraction f=nf/N. At this level, n- is the sample size, at a confidence level with -+5% precision, desired sample (nfc)-denotes the desired sample size of each category while the population size Nc denotes the number of staff in each category. *Table 1* shows the distribution of the sample size across the 23 sub-county schools."

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Table 1: Sample Size Distribution

Target populations	Target Population	Sample Size	% from target population	Sampling technique
Students	1, 591	320	20	Simple random
Teachers	23	23	100	Purposive sampling
Principals	23	23	100	Saturated sampling
Quality assurance and standard officer	1	1	100	Census sampling
Total	1, 637	366		

Data Collection Instruments

This investigation utilized both primary and secondary sources to collect information, allowing for the accumulation of both qualitative and quantitative details. The researcher distributed questionnaires with both open-ended and closed-ended questions to both students and teachers. Due to their clarity and absence of room for interpretation, closed-ended questions were preferred due to the limited time allotted for the snapshot research. Principals and the officer in charge of quality assurance and standards were interrogated in semi-structured meetings lasting between 40 and 60 minutes.

Principals were interviewed because it was believed they had the most knowledge of the practical integration process. The observation was also used by the researcher to determine whether the institutions were operationally functional. They assisted in evaluating the school's facilities. The researcher observed the farm, classrooms, school laboratory, poultry and cattle pens, school museum, and farm-based educational initiatives. Thus, the researcher was able to collect unfiltered primary data. This assists in determining whether or not agricultural education resources are available and utilized.

Quality assurance

This was done by using a pilot study, the validity of the study instruments and the reliability of the instruments.

Pilot Study

The pilot study was conducted in two classrooms in the Mumias East sub-county of Kakamega County. The selection of the two adjacent institutions was influenced by both inclusiveness and exclusivity considerations. The selection of these institutions was influenced by their proximity and comparable organizational structures. Mugenda (2019) suggested that, depending on the sample size, a pilot sample should range from 1 to 10 percent. The pilot study sampled 32 participants from the Mumias East sub-county in Kakamega County, which represents approximately 10% of the total sample size of 320 participants.

Validity of the Study Instruments

There were three main types of tool validity: face validity, construct validity, and content validity. To make sure that all of the study variables were covered, the researcher made sure that the surveys and interview schedules were face-validity. In the first part of the questionnaire, respondents were asked about their demographics. In the second part, questions got into the theories behind the study variables. In the third part of the questionnaire, an interview schedule was included to get opinions about the study variables. This was done to make sure that the questions on the tools were about the people who were being studied.

Regarding the content validity of the study instruments, the researcher sought assistance from faculty members and supervisors in the Curriculum and Instructional and Technology department at Masinde Muliro University of Science and

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Technology. Based on their suggestions, the questionnaires and interview schedule were revised to improve their utility, clarity, and wording. When calculating the CVI, the researcher also considered the supervisors' opinions regarding the study equipment.

Reliability of the Instruments

The researcher administered 37 questionnaires in the Mumias East sub-County as part of a pilot study. After piloting the questionnaire, Cronbach's Alpha was calculated using SPSS version 20 software for the research variables. Across the board, Cronbach's alpha was 0.791, with all research variables scoring above 0.7 on the scale. According to the findings of the study, the questionnaires were appropriate for data collection because they had an internal consistency of at least 0.70.

Since the calculated value exceeds the prescribed value of 0.70 for Cronbach's alpha coefficient. Based on the results, it appears that descriptive analysis is appropriate for the research variables used in the study. All of the study's individual variables were likewise trustworthy, with Cronbach's alpha coefficients exceeding the threshold of 0.7 considered statistically significant for reliability.

Data Analysis and Presentation Techniques

After the data collection was complete, each questionnaire was given a unique identifier to prevent data duplication and streamline the coding process. The information was then coded, entered into an Excel spreadsheet, and cleaned up to remove any inconsistencies or missing numbers. After the data was cleaned, it was sent to SPSS version 20 for analysis. The researchers decided to use SPSS version 20 since it has robust tools for data translation, manipulation and variable comparison. Descriptive and inferential analyses were performed on the collected data.

Descriptive statistics were employed to organize the data and make it easier to spot trends and draw conclusions from the study's findings. The study relied on measures of central tendency (frequency, percentage, mean, and standard deviation) to accomplish its aims. Descriptive statistics were utilized to organize the information included in the study's tables and figures. The data gathered from the interviews was examined by categorizing the responses into themes that reflected the goals of the research. These responses corroborated the study's questionnaire findings, providing support for those results.

FINDINGS AND DISCUSSION

The objective set to determine the influence of teacher-related factors on the integration of practical skills in teaching and learning agriculture in secondary schools. To achieve this, the study considered various issues as discussed in the sub-sections as follows;

Various Teaching Methodologies Used by Teachers

Teaching methods are very important in the process of teaching and learning, given that they inform the way teacher organizes and deliver content and how students respond to learning outcomes. For a teacher to deliver what the curriculum dictates and ensure that they utilize maximum learners' potential, the guiding principles have to be in perspective. Different learning environment requires that a teacher uses the most effective teaching methodology in his or her teaching process. In this regard therefore, teachers were asked to indicate the teaching methodology they use in teaching agriculture in their schools. The results are presented in the table below.

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Table 2: Various Teaching Methodologies Used by Teachers

Instructional method used	Frequently		Rarely		Never		Total
	F	%	F	%	F	%	F
Lecturing	20	100	0	0	0	0	20
Discussion	14	70	6	30	0	0	20
Demonstrations	11	55	9	45	0	0	20
Laboratory experiments	6	30	8	40	6	30	20
Fieldwork	6	30	9	45	5	25	20
ICT integration	7	35	12	60	1	5	20
Project-based	0	0	18	90	2	10	20

Source: Field Data (2019)

The results in *Table 2* indicate that lecturing, discussion, demonstration, laboratory experiments, field trips, and ICT-aided teaching methodologies are the teaching technique that is used in teaching.

The lecture method is the most commonly used teaching method in schools. From the responses given, all 20 (100%) teachers indicated that they use the lecture method on a frequent basis. Commenting on the reason why this is the case, the teachers gave various responses. Among the responses given include; it is the most effective method to use to teach given that it helps the teacher to have ample time with students, it helps to offload the heavy agricultural syllabus, and it is the cheapest way in terms of resources and time. The findings are in line with Darko et al. (2015), who established that the lecture teaching method is the oldest teaching method in agricultural science and the most effective, cheapest and easiest.

Teachers also indicated that they use discussion methods in the teaching of agriculture in secondary schools. Findings from the figure above indicate that 16 (80%) of the teachers indicated that they use this method frequently. Commenting on why they prefer using the method frequently, they indicated a number of reasons including; it helps the students synthesize information and demonstrate its understanding, it helps students enhance each other's understanding given that they can share among themselves in a way that they can understand in groups and lastly, it helps students to remain active hence enhancing participation. A study by Dela (2018) postulated that the discussion method is critical for teachers who want to ensure that students take part in demonstrating their understanding and helps the teacher to know where their strengths and weakness may be for improvement purposes.

The findings also indicate that the demonstration method was among the teaching methods that were employed by agriculture teachers in their teaching process. Data from the figure above shows that 10 (50%) use this method frequently, while the remaining 50% rarely use it. This implies that this method is used but to a varying extent. Teachers who indicated they use this method frequently said it is good in encouraging and motivating students to understand that they can achieve what they learn verbally, it has the ability to convince the student that what they learn is not as tough as it seems and finally, it helps students to focus on the basics that help in building understanding in a broader perspective. Suomela et al. (2013) reiterated that the demonstration teaching method helps the students to connect with the concept in context and raises their interest in the topic as it simplifies some tough concepts that are taught verbally. Those who used the method rarely indicated that it is time-consuming hence derailing syllabus coverage and requiring additional resources which may not always be available in their schools.

Furthermore, the teachers indicated that they used laboratory experiments in their teaching endeavors. However, the results here were a little bit different since all the responses were found to be in play. From the figure, it is evident that only 5 (25%) of

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the teachers indicated that they used laboratory experiments in their teaching process. Commenting on why they considered this method, the respondents said that it helps the students interact with specimens which translates into real agricultural setups outside class, which helps them be motivated about agriculture. The majority of the respondents, which amounted to 13 (65%), indicated that they rarely used this teaching method. Finally, only 2(10%) indicated that they had never used this teaching methodology. This implies that the practical aspect that is laboratory aided was not well considered. Research conducted by Shoulders (2012) indicates that problem-solving learning is well achieved when students are exposed to agricultural laboratory experiments. By going to the laboratory, students are able to be involved in scientific-based learning, which helps them think beyond, be innovative and come up with solutions that are worth the changes taking place in the agricultural sector.

Another teaching method that was found applicable to agriculture teachers, according to their responses, was the field trips. However, this method was not so much deployed by teachers since only 5(25%) of the respondents indicated that they use it frequently, while 15 (75%) of respondents indicated that they rarely use it as a teaching method. The teachers who use this method opined that the method is effective in teaching topics that are more practical, and the schools have no capacity to deliver the necessary resources. This is almost similar to what those who used rarely commented about the teaching method, saying that it is effective for advanced teaching and learning but so much more expensive. Another reason that was cited that makes the teachers use this method was the fact that the curriculum guides them to do so as a way of exposing the students to practical skills.

The study also established that project-based teaching was used by agriculture teachers in their teaching endeavours. Again on this, only 7(35%) of the respondents indicated that they used this method frequently against the remaining 13(65%) of respondents who rarely used the method. From the comments given about the use of projects as a teaching methodology, it was evident that the method was used because it was an exam requirement by KNEC and, therefore, eligible for candidates only. Additionally, teachers commended that this teaching method required a lot of resources hence making it difficult to be used frequently. A study conducted by Warner et al. (2006) indicated that schools that are equipped with laboratories that promote agricultural-oriented activities produce students who are complete practical agriculture. The findings are also in line with Ogechukwu et al. (2020), who established that laboratories helped in producing fully equipped students in both crop and animal husbandry through the experience gained from various practical lessons.

Today, ICT-integrated teaching has been cropping into the education system, and its applicability has been so wide. In regards to this, teachers also indicated that they used ICT-aided teaching methods. Data from the figure above shows that 4(20%) of teachers indicated that they deploy ICT-aided teaching, while 10(50%) of the respondents indicated that they rarely use ICT-aided teaching methods. Lastly, 6(30%) of the respondents indicated that they had never used ICT-aided teaching methodology. The respondents who use this teaching method indicated that it is so effective in organizing and delivery of lessons, and for students, it is a way to help them retain the knowledge they acquire. Additionally, they indicated that it is easy to show real practical skills to students without necessarily taking them to the field.

Students' Views on Various Teaching Methodologies

Students were asked to rate their preferred method of teaching as applied by their teachers during the teaching and learning process. They were required to rate all seven teaching methodologies on a rate of 1 to 6, where 1 represented the most preferred and 7

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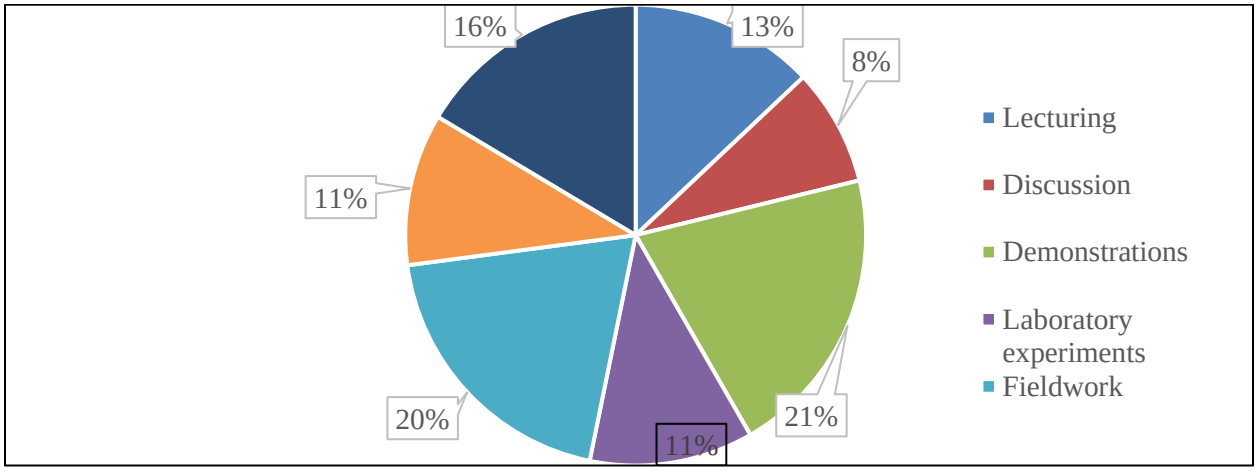
the least preferred. The results are presented in *Figure 1* below.

Figure 1: Students' Views on Various Teaching Methodologies



Source: Field Data (2019)

Results in the figure above indicate that students had varied views on their preferred teaching methodology. As indicated, the majority of the respondents (21%) preferred demonstrations as the best method of teaching. It is worth noting that this teaching methodology is one of the methods that facilitate the best teaching and learning of practical agriculture. Furthermore, respondents who rated this as the most preferred method cited some reasons, inter alia; effectiveness in helping the students ground themselves in various areas that may not be understood well in class and its time-saving approach to practical teaching and learning process. The second teaching method preferred by the students according to the results presented in *Figure 1*, was field trips, with a 20% rating score. Field trips are among the effective ways of teaching and learning about agriculture. Students who rated this as their preferred teaching methodology commented on its effectiveness in exposing them to new concepts and ideas that may not be obtained if teaching and learning only happened in their classes and school compounds. Another practical approach to teaching that was the third most preferred was project work. As indicated in the figure above, 16% of the respondents rated project work as their preferred teaching method as it exposes them to the real skills that are necessary in agricultural science.

On the contrary, the lecture method was preferred by only 13% of the respondents as the most effective method of teaching. This is the opposite of what the case is in the real situation, as the findings from teachers indicated that they use mostly lecture methods in teaching. Other teaching methodologies like ICT-aided teaching, laboratory experiments and discussion method with 11%, 11% and 8%, respectively. One of the reasons why this is the case may be attributed to the fact that schools are not equipped with modern ICT facilities and laboratories that would impact the integration of practical skills in teaching and learning agriculture. Additionally, the discussion method consumes a lot of time, proving it a challenge for teachers to balance teaching through this method and finish the workload in the agriculture syllabus.

From these findings, one aspect that is evident is that students preferred teaching methods that have a more practical approach. However, this is opposite to reality as the findings from this study indicate that the teaching and learning process mostly favours theoretical work. As Kyule (2015) established, the integration of practical skills in agriculture is faced

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with numerous challenges that hinder students' expectations and abilities from achieving greater heights in their learning process. Additionally, the administration's willingness to boost practical skills is hampered by a lack of support from the national government where the curriculum emanates. In this case, therefore, students suffer at the expense of the curriculum developer, which eventually has a spillover effect on various agricultural sectors as the students being produced may not be as good as required.

Agriculture Teacher Teaching Competency

The study sought to establish whether teachers were competent enough in their teaching process, especially in practical related areas. The research developed a Likert scale rating with a 3-point response where 1= Fully, 2=Partially and 3=Not at all

Table 3: Students' responses to teachers' competency

Statement	1	2	3
Teacher demonstrates an understanding of various practical topics	230	26	0
Teachers use a variety of teaching methods related to practical lessons	60	196	0
Teachers pay attention to students' abilities	45	100	111
Teacher correctly tackles questions during practical lessons	180	43	33
Teacher uses practical examples from his farming experience	25	212	19
Teacher Incorporates students' innovative, practical ideas	21	70	165

Source: Field Data (2019)

Teacher practical teaching competencies are imperative since they ensure that most of the areas that are to be covered in practical lessons are done so in a way that satisfies students' needs. Findings in the table above indicate that 230 respondents indicated that teachers fully demonstrated an understanding of various practical topics that they were teaching. This implies that the teachers were well equipped in matters of knowledge according to the syllabus guidelines since only 26 respondents indicated that their teachers demonstrated partial understanding. A study conducted by Melisa (2011) indicated that the first step towards effective teaching of practical lessons by the teacher was the ability of the teacher to demonstrate understanding in various practical areas. She says by doing so; students are encouraged and motivated that they are headed in the right direction.

The study also asked the students to respond on whether or not teachers used various teaching methodologies that are aligned with practical lessons. The majority of the respondents (196) indicated that teachers partially used all the teaching methods that are aligned with practical lessons. This is in line with the findings on teachers' frequency of usage of various teaching methods, which indicated that the lecture method was the most commonly used method in teaching and learning agriculture in secondary schools. This implies that practical is not given much emphasis given that various teaching methods used are just partially applied for the purposes of syllabus coverage. However, there were 60 respondents who indicated that teachers fully used the various teaching methodologies that are aligned to practical agriculture lessons directed by the curriculum. This may be attributed to the fact that some schools are equipped, and therefore teachers may have more resources as compared to those who partially used various teaching methodologies.

The aim of practical lessons is to demonstrate various abilities in line with what the syllabus directs. The study sought to establish if teachers were able to pay attention to various students' abilities in practical lessons. The results, as shown in the table above, indicate that 111 students indicated the teachers did not pay attention to students' abilities. Additionally, the data indicate

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that 72 and 68 respondents indicated that teachers recognized students' abilities fully and partially, respectively. The number of teachers recognizing various abilities being low may be attributed to the fact that most of the teachers concentrate only on teaching for purposes of exams and have little to do with nurturing various abilities. As Mbiu (2015) established, teaching practically requires that teachers be competent in realizing students' abilities in various areas. He opines that students are different and take different approaches to various practical lessons. It is therefore, the responsibility of teachers to understand how to motivate and encourage various abilities that are exceptional.

For teachers to demonstrate that they have an understanding of various practical concepts, they should be able to respond to questions that come from the students without any problems during the practical lessons. In responding to this issue, the majority of the respondents (210) indicated that teachers were fully able to answer questions related to practical lessons without any problem. The remaining 46 respondents indicated that their teacher could partially tackle practical-related questions during lessons. This implies that teachers were well-equipped with practical knowledge and ready to disseminate the information they had at their disposal. Mirambo and Ndalu (2016) postulated that some teachers face it rough in the practical lessons as they tend to fail to reproduce their best as it is in their lecture method. They attributed this to the fact that some teachers sail from a background that may not be so much advantaged agricultural-wise, as exemplified by those who were born, grew and schooled in urban settings.

Lastly, data in the table above indicate that 169 of the respondents indicated that teachers did not incorporate their innovative ideas in practical lessons. However, 21 respondents gave an opposite response to the first one, given that they indicated that their teachers fully incorporated their innovative ideas in the practical lesson, with 70 of the respondents indicating that their ideas were incorporated partially. This would be attributed to the fact that the packed lessons have less time for practicals in addition to a lack of resources to incorporate innovative ideas. However, this is very unfortunate on the side of the students as it kills their motivation to pursue agriculture, given that their ideas cannot be appreciated. Njura (2015) encourages teamwork between the student and teachers is very important in ensuring student success from both theoretical and practical perspectives. He further points out that some students have very brilliant ideas which, when well understood, can translate to the addition of both knowledge and skills in the agriculture sector at large.

Table 4: Attendance of training sessions in workshops, seminars and teacher development course

	Frequency	%
Once a Month	4	20
Termly	4	20
Yearly	2	10
Twice Per Term	3	15
None	7	35
Total	20	100.0

Source: Field data (2019)

Study findings in *Table 4* show that most of the teachers (7, 35%) do not attend training sessions organized by the county education office with regard to agriculture subjects, 20% of them attend training either monthly or termly while only 2(10%) of the teachers attend the training session yearly. In general, the study findings imply that the schools in Busia County do not value skills development while

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on the job but prefer other forms of training. In contrast, a number of the respondents (2, 10%) were of the view that job training programmes are effective in enhancing the integration of practical skills in the teaching and learning of agriculture.

The study findings are consistent with past research findings that linked practical skills to training quality. It was noted by Bett (2016) that teacher quality is assessed with reference to the level of education and training. In general, it is evident that for improved performance, the following mode of training should be prioritized in order; classes supervision, workshops, orientations, seminars and especially mentoring. Schools should embrace seminars for teachers and induction programmes like class demonstrations.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The study's second objective sought to determine the influence of teacher-related factors on the integration of practical skills in teaching and learning agriculture in secondary schools. The study established that teaching mythologies, teacher competency, and teacher professional development had a great influence on the integration of practical skills in teaching and learning agriculture. However, results revealed that the teaching methodology used mostly in class was the lecture method with a limited practical approach to teaching and learning. This, therefore, implies that despite the fact that teacher-related factors can only help in the integration of practical skills in the teaching and learning process upon the choice of the teacher. Furthermore, the results revealed that teacher development plays an important role in the integration of practical skills in teaching and learning agriculture.

CONCLUSION

In Kenya, the secondary school syllabus for agriculture includes topics such as crop and animal production, soil science, agricultural mechanization, and agricultural economics. The curriculum also includes practical components, such as field trips and hands-on projects, to give students hands-on experience with the concepts they are learning. The aim of the syllabus is to equip students with the knowledge, skills and attitudes needed for the sustainable use and management of natural resources and farming practices. The syllabus also focuses on building a strong foundation for students to pursue further studies and careers in agriculture-related fields.

Various teacher factors were found to influence the integration of practical skills in the teaching and learning of agriculture. These include the teacher's knowledge and understanding of the subject matter, their teaching methodologies skills, access to professional development opportunities, access to resources, attitude towards practical skills, and collaboration with other actors. A teacher with a deep understanding of the subject matter can effectively integrate practical skills into the curriculum and provide students with hands-on learning experiences. Teachers with strong pedagogical skills can create opportunities for students to engage in hands-on learning experiences that allow them to apply the content they are learning. Professional development opportunities, access to resources, and fostering collaboration with other actors can also provide teachers with the tools and resources necessary to effectively integrate practical skills into the curriculum. Furthermore, a teacher with a positive attitude towards practical skills is more likely to actively seek out opportunities for students to gain practical experience.

Recommendations

Teachers should be provided with regular professional training development opportunities to enhance their knowledge and skills in teaching practical agriculture. This will help teachers develop the student-centred approach, where students are encouraged to take part in hands-on

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activities, which can help to foster interest in agriculture and enhance their practical skills.

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