UNIVERSITY FOR DEVELOPMENT STUDIES, TAMALE

FACTORS INFLUENCING PRACTICAL COMPETENCIES OF AGRICULTURAL SCIENCE STUDENTS IN SENIOR HIGH SCHOOLS IN NORTHERN REGION

BY

EMELIA CHIBELITU

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2017

DECLARATION

Student

I hereby declare that this thesis is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere:

Candidate's Signature: Date:

Name: Emelia Chibelitu

Supervisors'

I hereby declare that the preparation and presentation of the thesis was supervised in accordance with the guidelines on supervision of thesis laid down by the University for Development Studies.

Principal supervisor's Signature: Date:

Name: Prof. G.A. Teye

Co-Supervisor's Signature: Date:

Name: Mr. Alexander Abu

ABSTRACT

The objective of this study is to identify the factors that influence competencies of Senior High School (S.H.S) students in practical agriculture. A mixed method design was used and questionnaire, unstructured interviews and observation checklist were the instruments used to collect data. The study targeted S.H.S Agricultural science students in forms two and three classes and the teachers who teach Agricultural science subjects in S.H.S. The study was carried out in the Northern Region of Ghana. A total population of 312 respondents comprising 300 students and 12 teachers were interviewed. Stratified purposeful sampling was used to select six schools while simple random sampling was used to sample both students and teachers. Data was analyzed using Statistical Package for Service Solution (SPSS). The study results indicate that, more males offer Agricultural science than females in S.H.S. It was also found out that, majority of professional and non-professional teachers do not engage resource persons in their teaching .With regards to embarking on field trips, more than 72% of teachers never embarked on field trips in a year. It was also observed that as high as 90% of teachers do have practical lessons with their students at least once in a term. The students who had many practical lessons in the various Agricultural science subjects believed they can practice Agriculture on their own. Many students were interested in Agriculture and its related areas. Many (77%) were interested in becoming full time farmers after S.H.S and equally many (75%) were interested in specializing in Agricultural related courses at higher levels. The factors that influence practical competencies among S.H.S Students are; frequent practical lessons, embarking on field trips and motivation by teachers. It can be concluded that most teacher do not engage resource persons in their teaching. It is recommended that school farms should be a requisite requirement in schools that offer Agricultural Science.

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DEDICATION

This work is dedicated to the Almighty God for His steadfast love for me that never ceases. It is also dedicated to my sweet mother Kyibeletu Cecilia for the immerse sacrifices she has made in my life.

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LIST OF ACRONYMS AND ABBREVIATIONS

AFNR -Agriculture, Food and Natural Resources

DFID - Department for International Development

GLSS - Ghana Living Standard Survey

S.H S -Senior High School

SPSS -Statistical Package for Social Solutions

MoE - Ministry of Education

UNESCO -United Nations Educational Scientific and Cultural Organization

UNICEF - United Nations Children Fund

CHAPTER ONE

1.0 Introduction

1.1 Background

Agriculture is mainly defined as the production of crops and rearing of animals for man's use (Hornbrook and Hoag, 1997). Due to the broad and changing nature of agriculture, an attempt to define it is usually ambiguous. In the latter part of the twentieth century, modern agriculture was able to meet the world's population demand for food. Some crops such as rice and wheat had high yields and prices of food decreased making hunger slightly reduced. Increase in food production was mainly due to certain factors such as scientific advances and new technologies (Gliessman, 2001).

According to the Ministry of Education (MoE), teaching general agriculture is important in building the national economy with regards to food production, income and employment (MoE, 2010). A skill is a gift that is learnt through a psychomotor act in observing competence. The capacity to be able to perform an observable behaviour that brings about results that are observed is competence (Lindner and Dooley, 2003). To be able to perform a skill effectively, related knowledge makes acquisition of new knowledge possible. Competencies can therefore be explained by collectively combining knowledge, skills and abilities (Lindner and Dooley, 2003).

According to Muchiri, Odilla and Kathuri, (2013), students perceive agriculture as a beneficial subject to them, their school and their surrounding communities. However, majority of students need to be advised and persuaded to take an active interest in the study of Agricultural Science (Muchiri et al., 2013). The most likely way of making students appreciate the importance of agriculture is to support them to have a more positive perception of the subject area (Muchiri et al., 2013).

1.2 Problem statement

One important part of science education is practical work. The teacher, during science lessons, tries to make knowledge of natural world and develop students understanding of ideas, theories and models that are found by scientist to be useful in explaining and predicting behaviour (Millar and Abrahams, 2009). The teaching of agriculture as a subject in Senior High Schools needs to be both theoretical and practical for a better appreciation of the course. The curriculum for agricultural subjects aims at equipping students with the requisite knowledge and skills that should make them self-reliant after school (MoE, 2010). Most schools lack infrastructure such as agriculture laboratories, agricultural tools and school farms for teaching the subject. In Ghana, there is currently no data indicating whether or not students study Agricultural Science due to personal interest and conviction or because it was the only option available (Kabugi, 2013).

The three domains of learning; cognitive, affective and psychomotor are known to agricultural educators. Due to the difficult nature of measuring the other two domains in content, instructional and assessment are usually centred on cognitive domain (Boyd, Dooley, Felton, 2006).

There have been arguments among educators, policy makers and other stakeholders concerning determinants of academic performance. It is, however, generally accepted that the determinants of academic performance vary with context such as culture, institution and course of study (Mlambo, 2011).

Many Agricultural Science students have never kept farm records, touched a bird, applied fertilizer, sprayed chemicals or managed a farm (Famiwole, 2013). It would have been anticipated that demonstration of acquired knowledge and skills be involved in the final examination of agricultural science students, however the final examination covers mainly the theoretical aspects and alternatives to practical. In these recent times, students are able to read a textbook and pass both internal and external examinations in Agricultural Science with good grades with ease without sighting a growing plant or farm (Famiwole, 2013).

According to Millar and Abrahams (2009), most science teachers see practical work as an essential characteristic of their everyday work. Many of these teachers believe that practical work leads to better learning. It is usually easier to understand and remember things that are done than things that are just told. Students like practical work than other kinds of lesson activities. However, from experience, students do not learn from practical work the things that are to be learned.

It is also noticed that, a few weeks of carrying out a practical work, most can only remember specific surface details of the work but many are not able to remember what has been learned from it or what they were doing it for (Millar and Abrahams, 2009).

In another instance, from my own observation as a teacher, many students are usually not able to undertake practical activities well when left alone afterwards to carry out what was studied in class. Students usually show less abilities of carrying out the practical lessons taught.

In the light of the above, it is important to find out the factors that influence practical competencies among Senior High School Agricultural Science students.

1.3 Objectives

General objective

The objective of this research was to identify the factors that influence competencies of Senior High School students in practical agriculture in Northern Region.

Specific Objectives

1. To find out the effects of teachers' qualification (academic and professional) on the use of teaching methodologies.
2. To ascertain how teaching methodologies affect the practical competencies of students.
3. To find out the perceptions of Agriculture Science Students towards pursuing further studies and activities in Agriculture.
4. To examine factors that influence students' perceptions about Agriculture as a career.

1.4 Research Questions

General Question

What are the factors that influence competencies of Senior High School Students in practical agriculture in Northern Region?

Specific Questions

1. What is the impact of teachers' qualifications (academic and professional) on the use of teaching methodologies?
2. How do teaching methodologies affect the practical competencies of students?
3. What are the perceptions of Agriculture Science Students towards pursuing further studies and activities in agriculture?
4. What factors influence students' perceptions about Agriculture as a career?

1.5 Significance of the study

The findings of this study will be useful in these ways;

Students who offer Agricultural Science programme will benefit from the findings, as they identify ways of practicing what has learnt theoretically.

The study will be of value to teaching and learning strategies and resources in the implementation of agricultural science curriculum.

Schools that offer agricultural science courses can use the findings to strategize ways of making agricultural science more practical and relevant.

Ministry of Education in Ghana may find beneficial information that may be useful in curricular development to meet the standards of industries.

1.6 Limitations

Due to inadequate time and limited financial resources, the study was carried out only in the Northern Region.

CHAPTER TWO

Literature Review

2.0 Introduction

This chapter presents a review of related literature under the following subheadings;

Definition and meaning of Agriculture, history of Agriculture, Agricultural Science education in Ghana, importance of Agricultural Science education in Ghana, challenges in Agricultural Science education, teaching methods of Agricultural Science in Senior High School, practical skills among students, secondary schools students' perception towards agriculture, personnel for teaching Agricultural Science in schools, benefits of Agricultural Science to schools, the effect of farming/weeding as a punishment in schools, effects of motivation on Agriculture teaching and learning and theoretical framework .

2.1 Definition and meaning of agriculture

According to Bareja (2014), agriculture may be defined as "the art and science of growing plants and other crops and the raising of animals for food, other human needs, or economic gain". The main importance of agriculture is food. Other purposes of agriculture include clothing, medicines, tools, aesthetic value or for profitable gains (Bareja, 2014). The continuous engagement in farming requires knowledge in the science of agriculture and is important for future production. This helps to make decisions as to what to produce and how to produce it (Barrick, 2012).

2.2 History of Agriculture

Many years ago, several varieties of plants and animals have been domesticated at different times and different places independently. Climate change played the role in the development of agriculture. At the close of ice age, the first agriculture started to develop. Within gathering and hunting communities where plant and animal management was known, a new dimension of natural selection and mutation produced phenotypes that people increasingly rely upon (Nair, 2015). Agriculture development includes an intensification of the processes to extract resources from the environment for more food, medicine, fibre and other resources (Nair, 2015).

One aspect of agriculture is animal husbandry which had domesticated and bred some group of animals. Animal husbandry started during the Neolithic revolution with the domestication of such animals like dogs, horses, sheep, goats, pigs and other similar animals (Mark, 2010). Animals were domesticated, tamed and used as workforce for ploughing, as pets and as a source of food by the time of settlement. Domestication of animals has brought about permanent settlement of man who depended on hunting and gathering (Mark, 2010).

Aquaculture over the past fifty years has grown increasingly with Asia dominating in production. A variety of factors such as pre-existing aqua cultural practices, population and economic growth, relaxed regulatory framework and expansion of export opportunities accounts for the increase production in Asia (Bostock, McAndrew, Richards, Jauncy and Telfa, 2010).

There is much aspiration of society for increased supply of fish protein to fix health needs of the population at affordable levels. In 2007, aquatic animal food consumption excluding mammals and reptiles was forty-three percent globally (Bostock et al., 2010).

There is the possibility of slow decline in arable area in Sub-Sahara Africa and Latin America with some in East Asia to 608 and 586 million ha in 2030 and 2050 respectively (it should be noted that this could change should a sustained growth in the demand for biofuels materialize). Livestock production in growth is observed to be decelerated as consumption of livestock products continue to increase in total food consumption. Growth of livestock will continue to be slightly strong in sub-Sahara Africa (Alexandratos and Bruinsma, 2012).

2.3 Agriculture Education Globally

The changing trends in all sectors of life around the globe has made Universities and other relevant institutions to respond by revising curricula, courses and programmes to enable students acquire the needed competencies to become professionally successful (Lindner and Baker, 2003). Students would always want to have up-to-date knowledge that is in line with standards of industry, and are therefore challenging administrators and faculties to deliver appropriate curricula, courses and programmes to meet the changing trends (Lindner and Baker, 2003). According to Dyer and Osborne (2000), “high school agriculture curriculum development and redesign efforts in the states in the 1990s led to major changes in course offerings and student enrolments”.

In measuring how effective a curriculum is, one measure that is often used is how well students perform. One way of determining the effectiveness of a teacher is by assessing the skills and knowledge of students. Academic results therefore, should show how much is learnt by students and how clear are the objectives achieved in the course of a programme (Cheek and McGhee, 1987). Developed objectives should be laid down and followed to be able to properly use student test as a way of measuring the effectiveness of a programme. Part of the set objectives should be based on the competencies those experts already in the field and industry consider as important for employment (Cheek and McGhee, 1987).

According to Barrick (2012), Agricultural Science teachers focus more on content and content delivery than problem solving due to the fact that students no more have real-life problems to make good use of class instruction (Barrick, 2012). Students, who want to pursue careers in Agriculture, need the science of agriculture more than the vocational aspect. To make Agricultural Science programmes sustainable, the programmes should be relevant, based on agriculture and with more emphasis on the study of Agricultural Science for the future (Barrick, 2012).

Agricultural science teachers in Nigeria according to Akinwande, Olorundare and Uphai (2016), agree that the agricultural science curriculum is appropriate to enable good students' performance in agricultural science in senior secondary schools. Majority of the teachers believe the content and the presentation of topics in the curriculum are good enough to achieve students' preparation to future careers in agriculture (Akinwande et al., 2016).

In the teaching of Agricultural science like other subjects, it is important that teacher trainees gain or learn experiences for themselves through practice (Kira and Komba, 2013). It is however realized that the period of eight weeks at the end of each academic year is inadequate and so it is necessary to revise the duration of practice to acquire the desired outcome. Supervision by University lecturers has also not been the best as lecturers do not discuss strengths and weaknesses of trainees on the intended teaching skills as noted by Kira and Komba (2013). Quality education plays a vital role in the progress of any nation and the reason is that it is easier to mobilize educated people to participate in national development process than uneducated people (Kira and Komba, 2013).

In the teaching and learning process, an educator as the teacher has the ability of choosing the right approach for effective teaching and learning. Choosing the right approach, involves the ability to; 1. Move with current development in teaching method of teacher-centred to learner-centred methods, 2. Plan lesson and write lesson notes, 3.Utilized adequate teaching methods per topic. 4. Make good use of adequate teaching skills, 5. Make use of adequate teaching strategies, 6. Utilize adequate instructional Aids (Nwakpadolu and Modebelu, 2013).

An agricultural educational programme model developed; illustrate a holistic approach toward the development of individuals. The model reflects the response of Agricultural education to recent recommendations for education and the needs of today's agriculture student population, society, work place and education system.

As indicated by the model, the aims of an agricultural education include (1) increasing agricultural knowledge (2) developing employability, leadership and personal skills (3) promoting lifelong learning and (4) effectively integrating all individuals into the community as productive citizens (Barrick and Hughes, 1993).

Many influences over the period of years have contributed to today's agriculture content and programme design. Changes such as reducing numbers of people engaged in the production of agriculture have great impact on the content and programme pedagogy (Whitaker and Case, 1997). Some factors that have impact on a programme include evolution of vocational education, educational studies and educational reform initiatives. It was found out by Whitaker and Case (1997) that, teachers who design local programme (LPS) initiatives makes their teaching successful as teachers share ideas which boost and increases the standard of excellence on which Agricultural education is founded. The overall purpose of agriculture programmes in public schools is to produce citizens who are capable, knowledgeable and can contribute to development. It is therefore mandatory that agricultural educators play an integral role in preparing and educating students for agricultural careers, building awareness of the industry and developing leadership skills through education (Whitaker and Case, 1997).

2.4 Agriculture education in Ghana

Ghana's development is always compared to that of South Korea and Malaysia as the three countries started almost on the same level, (Akyeapong, 2007). Ghana is now a middle–level income country while her peers at the time of independence have now made giant strides in their economies using Agriculture as the backbone for their development, (Akyeapong, 2007). At independence Ghana's educational system sort to achieve three goals including; producing scientifically literate population, tackling the environmental causes of low productivity and producing knowledge to harness Ghana's economic potential (Akyeapong, 2007).

Later in 1974, a new educational structure by the then new government formed a committee to look into ways of providing the needed teaching staff that are to enforce the government's decision of making agriculture a compulsory subject in senior secondary schools by the year 1980. Agriculture was to be a compulsory subject within the first nine years of education (UNESCO, 1981). According to Ghana Statistical Service (2013) Ghana Living Standard Survey (GLSS), 51.8% of the employed were involved in agriculture as skilled agricultural, forestry and fishery workers with ages between 15 and above.

The national economy of Ghana in the aspect of food production, income generation and job opportunities recognizes agriculture as a very important component of the economy.

The ministry of education in achieving government policies of the full potential of agriculture has the responsibility of reviewing agricultural education to make Ghana an agro-industrialized country (MoE, 2010).

2.5 Importance of Agricultural education to Ghana

The present world economic knowledge in various disciplines of education and technology continues to be a competitive advantage to many countries but knowledge and technology can be utilized to improve productivity and improve the well-being of citizens through a high quality human capital (Oduro, 2000). For Ghana to be in competition with other countries, the knowledge base, techniques of production and skills of the work force must go beyond the inherited skills, attitudes and abilities (Oduro, 2000). Formal education plays a very important role in acquiring skills and the development of human stock. Education is a key factor in the adoption and /or modification of technology. In agriculture, for modern farming practices to be adopted and effectively implemented, farmers must know how to read instructions and how to use the new inputs (Oduro, 2000).

In developing countries, agriculture continues to be sizeable aspect of their economies. Agriculture in Africa contributes about two thirds of the labour force and one half of exports (Department for International Development (DFID), 2002). Agriculture continues to be a source of wealth and an important factor in the overall performance of most African economies. Increased rate of agricultural growth in the short to medium term corresponds with increased incomes of poor people engaged in agricultural production, agricultural processing enterprises and has raised the wages of poor people from agricultural employment (DFID, 2002). Food forms a major part of both urban and rural people's expenses and agriculture growth makes a mark in food security (DFID, 2002).

With an average growing population of three percent per year, Ghana will always be short of food supply as it depends on smallholder farmers to meet the demands of the growing population (Mahama, 2012). To be able to meet the demands of the citizens and improve nutrition and boost productivity, it is wise to take advantage of livestock production as it is one of the greatest assets to Ghana. Livestock help to supply food all year round through milk from cows, animals can be used for labour such as weeding and the dung can be added to the soil to improve the fertility of the soil (Mahama, 2012 and Adzitey, 2013). There are several opportunities for livestock production in Ghana. There is vast useable land size and a large human population that is available for animal and other agricultural activities. Available grass and other plants for animals to feed on cover a great area of useable land in Ghana. Most breeds of animals adapt better to the climatic and environmental conditions. During the period 2001 and 2010, different trends of animal and meat production has been noticed in Ghana (Adzitey, 2013). Demand for meat is more than meat supply, so livestock farmers can take advantage of the opportunities available to increase production despite the numerous challenges that they are faced with in the animal production industry (Mahama, 2012 and Adzitey, 2013).

2.6 Challenges in Agricultural education

There are several factors that hinder the involvement of the youth in farming activities which is the centre of practical agriculture. Factors such as inadequate capital, inadequate modern implements and difficulty in assessing loans has led to low participation of the youth in Agriculture (Issa, Obioma and Sallau, 2014).

At certain instances of teaching Agricultural Science, governments need to release funds and materials for practical lessons. However many heads of Department do not receive funds on time leading to no or few practical lessons as practical skills depend on the materials available (Wootoyitidde, 2010).

Agriculture teachers need a conducive working environment to be able to teach effectively. However, lack of equipped workshops and school farms in most schools in Imenti south district makes the teaching of agriculture ineffective. Most teachers that have much workload tend to have negative effects in their teaching of agriculture, (Kibett et al., 2013).

Akiwande et al., (2016) also asserted that, most schools apart from lack of farms for practical lessons, majority of schools do not possess equipment or machinery for teaching and learning purposes. Just a few of the schools keep animals for learning purposes with none of the schools possessing a fish pond (Akinwande et al., 2016).

Another challenging situation is that many students are much interested in medical plant education intention than in animal husbandry in agricultural training schools (Taghibaygi, Rafe and Moosavi, 2015) just as Ogbuehi and Chukwudum (2013) revealed, that most schools that farms in Nigeria are crop farms.

Other constraints to Agricultural science that parents attribute to their wards failure in Agricultural Science are lack of support and poor environmental study area. Even though there are difficulties that students are faced with, the enthusiasm to perform well in agricultural science shows that with the right support students can improve on their performances, (Mbajiorgu et al., 2014).

There are several serious problems on the way of schools and teachers towards practical work, even though there is good evidence to show that the problems are usually misunderstood and exaggerated to the disadvantage of students learning. One striking factor that hinders the quality and variety of practical is the teachers' lack of time and national assessment framework (Dillon, 2008). Another constraint of practical activities is the lack of both pre-service and in-service train planning, carrying out and evaluating particular practical lessons that would provide learning skills and opportunities to students (Dillon, 2008).

According to Mingu (2012) Malawi is one of the countries in Sub-Sahara Africa with high rates of child labour. This is due to the fact that, parents depend on their own farms for food and income which requires manual labour. Children are forced by their parents to be engaged in work that is beyond their age either on their parents' farms or on other person's farms for money to support their families (Mingu, 2012)

2.7 Teaching methods of Agriculture in Senior High School

As in many other subject areas of teaching and learning, sharing knowledge with students in Agricultural Science topics may be done through several methods, singly or in combination.

These would include; lectures, discussions, demonstrations and electronic methods such as videotaped instructions.

Cano, Garton and Raven (1992), shows that the mindset of a person that is centred on the surrounding field has a field-dependent learning style while the one who separates items from the surrounding field is moving closer to a field-dependent learning style. The field-dependent learning style of teachers encourages their students to learn cooperating as a single unit as they are socially minded. This category of teachers is learner-centred and usually teaches using the problem-solving approach as they find it difficult to solve problems. Field- independent teachers make learners understand that he/she is only a guide and not necessarily a teacher. Field-independent teachers are therefore subject centred and concentrate on achieving set objectives. Field-independent teachers usually use the problem solving approach of teaching as they are critical thinkers and believe in individual achievements (Cano et al., 1992).

Kirimi (2015) asserted that, of the different methods of teaching, lectures and educational tours were the methods that influence the choice of agricultural subjects in the secondary schools.

According to Auwal (2003), the demonstration method of teaching Agricultural science students leads to a better retention memory than the discussion method. Lui et al., (2015) observed that, a very low percentage of (5.6%) of students are taught by allowing students to have practical experiments but as high as 44.4% receive tuition mainly through the lecture method. It must be ensured that teachers know how to teach students to solve problems but not to simply memorize scientific facts. What sets Agriculture Science apart from other subjects is its inherent problem solving nature (Barrick, 2012).

One option of teaching method is videotaped instructions. Videotaped instruction is useful, interesting, and an effective way of acquiring skill in especially schools that do not have much space for practice (Ofoegbe, 2015). The ability to implant entrepreneurship habits in youth is through proper teaching of practical agricultural science in secondary schools. To teach practical agricultural science includes learners being shown actual experiences which are attained generally through the farm (Ofoegbe, 2015). In the absence of actual farm experiences, some skills can be obtained through the use of videotaped instruction for both male and female students, **(**Ofoegbe, 2015).

Learner centred method of teaching should be encouraged in the teaching of Agricultural Science in schools. Students studying Agricultural Science should be at the centre in the teaching and learning process.

Therefore teachers should take measures to make students the centre of activities that are included in the teaching and learning process (Nwakpadolu and Modebelu, 2013).

The learner centred method encourages active participation of students in the learning process, students can interact with the teacher with instructional Aids and the environment, promote the development of basic life skills in students and help students to utilize the learnt skills in solving their everyday problems using their own initiatives (Nwakpadolu and Modebelu,2013).

New learning paradigms, such as interactive learning, incorporation of information technology and participatory methodologies are reported to be successful in the implementation of various agricultural education and training projects. Distance and part-time learning are advantageous to keeping trainees in the work environment. Communication between agricultural teachers and extentionists can provide a base for exchange of ideas and this should be encouraged, as it serves as a link between rural schools and local communities (Nilsson and Wallace, 1997).

2.8 Practical skills among students

According to Famiwole, (2013), the West Africa Examination Council and other examination bodies fail to assess competencies or skills that are gained through school farms which are laboratories for practice. This has led to a decrease in the use of school farm for developing a skill. Lack of clubs and organizations in schools have also led to decline in skills development. In recent times many students pass external examinations in agricultural science without farm practice to boost their technical knowledge and practical orientation but learning through theory (Olaitan and Mama, 2001).

Students, who went through the Farm Practical Year programme during their university programme in Nigeria, had practical gains of the theory learnt in the classroom to real life situation on the field (Oloruntoba, 2008). The students also had the opportunity to combine both theoretical classroom instructions and technical instruction on the field. The programme therefore provided agricultural students with practical skills which are supported by theoretical knowledge in agriculture (Oloruntoba, 2008). In recent times, a lot has been said about the importance and purpose of practical work in science schools. Most of the statement have been that, practical work encourages accurate observation and description, present phenomena in a more real state, arouse and maintain interest, promote a logical and reasoning method of thought (Dillon, 2008).

2.9 Secondary school students' perception of Agriculture

A study among secondary school students in Kenya shows that a negative perception of students in agriculture is partly due to the lack of essential material like working tools, demonstration farm and textbooks (Orodho and Njoroje, 2014). On the other hand, proper use of land for agriculture activities by most schools and commercial purposes make students viewing agriculture as a less difficult subject, to be positive perceptions of students towards agriculture as a subject (Orodho and Njoroje, 2014).

Another positive perception of agriculture is the fact that students in the study agreed that the suggested practical work in the agriculture syllabus for secondary schools in Kenya is adequate (Orodho and Njoroje, 2014).

Again, most teachers perceived that, the accomplishment of procedures suggested by agricultural science curriculum in Nigeria is appropriate.

Teachers also acknowledge that, secondary education lead students to discover agriculture assets in their own environment that help them to produce food and other agricultural creation for themselves. Many teachers also alleged that, the periods for agricultural classes are inadequate for teaching practical (Akinwande et al., 2016).

When students are placed in their respective classes they perform well. In the same vein, parents' willingness to provide better educational opportunities to their children depends on both home and in schools. It has been realized that children of secondary school age recognize their parents support in their education as a motivation towards their achieving greater heights in the academic ladder (Abdullahi, Mlozi and Nzalayaimisi, 2015).

Agricultural science was perceived as a subject good enough for only students who were weak in science (Mohd, 2003). This perception has a negative image on agriculture as a subject and student enrolment in the subject. There is therefore the need to review the policy to encourage students with strong science background to enrol in Agricultural Science (Mohd, 2003). Majority of students, according to Olajide, Odoma, Okechukwu, Iyare and Okhaimoh, (2015) stated that Agricultural Science is not as important as Mathematics and English language which they see as core subjects and that the core subjects are needed to get employment or admission into tertiary level. The students also associate Agricultural Science with the local farmers (Olajide et al., 2015).

Wolfskill, Wingebach, Rutherford and Fraze, (2011) also observed that a pre-test study showed, Agricultural Science students believing to have more knowledge in agriculture than their colleagues in other fields of studies. However, in a post –test of the study analysis, majority of the Agricultural Science students who originally believed to have more knowledge than their colleagues, realized that they knew less of Agricultural subjects.

The exhibitions of farm products unite schools and communities. Community members can always seek for more knowledge on trends of modern or new methods of farming to improve their farming activities. College and University students perceive that taking part in international activities is important to becoming competent (Irani, Place and Friedel, 2006). Students with success in their academic performance should be given specific attributes from international experiences to encourage other students to perform better. Taking part in international agricultural activities exposes students to new technologies and strategies of making agriculture important to them and their communities (Irani et al., 2006).

Guidance and counselling of students by teachers in choosing subjects in the secondary school has great influence in the selection of agricultural subjects. In schools where external personnel in agriculture and Agricultural Science teachers give guidance and counselling, students tend to have likeness of agricultural subjects (Kirimi, 2015).

Curbelo (2006) stated that, students demonstrated positive attitudes towards the experiential components in Iowa states. Many students indicated that they would recommend supervised agricultural experiences programme to their friends as the programme gives hands-on experiences (Curbelo, 2006).

2.10 Personnel for teaching Agricultural Science in Schools

Muggonzibwa, Kikwilu, Rugarabamu and Ntabaye, (2000) observed in Tanzania that image of a profession, which are good experiences from the work of professionals. Professionals who are caring and supportive to respondents and professionals who demand high respect in the society was perceived as a significant factor in career choice by 88 percent of respondents in a study. Work or profession features factor was ranked second and course characteristics third.

According to Curbelo (2006), creating a welcoming environment for students to learn is the sole responsibility of the teacher. Students have confirmed that their increased knowledge in agricultural science is as a result of their teachers' good and effective performance in the classroom (Curbelo, 2006). Students perceived many of the teachers in secondary programmes to be successfully teaching agriculture in the classroom and also being responsible for their enrolments in the secondary agricultural education programme (Curbelo, 2006).

In spite of a student's interest, instructors of Agricultural Education help students appreciate the value of what they are learning in real, meaningful ways. Agricultural Education also sparks new student benefit, opening the entry for students to find out potential future careers (Ryan, 2015).

During the mid-seventies, it became absolutely clear that for agricultural production in Ghana to be diversified and modernized, much attention need to be given to agricultural training at all levels of education to generate the needed human resource. A committee of enquiry set up in 1974 recommended the establishment of school of agriculture at the University of Cape Coast in order to produce graduates to teach Agricultural Science in secondary schools with government's aim of making agriculture compulsory by 1980 (UNESCO, 1981).

According to Obeng-Mensah, Kwarteng and Bosompem, (2012) in Ghana, about eighty-two percent of teachers teaching Agricultural science in Senior High schools have attained the requisite qualification for teaching agricultural science in the senior high school in the Central Region. Most teachers also believe that continuous assessment is an effective way of agriculture delivery in secondary schools (Ikeoji, Agwubike and Disi, 2007). Kumi, Lui, Abbey Simmons, Yuan and Darko, (2016) found out that, majority of teachers in the senior high schools are Bachelor degree holders. Since bachelor degree is the minimum academic qualification that should attain to teach in the senior high school in Ghana, it means that when the requisite teaching and learning materials are provided they would be able to use their experience in give out their best (Kumi et al., 2016). Most of the Agricultural Science teachers in Delta State were qualified to teach Agricultural Science (Olajide et al., 2015).

2.11 Benefits of Agricultural Science to schools

Teachers believed that integrating agriculture into their classrooms has great benefits for their students, because, in a way it provides connection and authenticity in the teaching content to their students. The implication of this is that, there is an interrelationship between nature and human needs and agriculture provides a basis for discussion (Knobloch et al., 2007).

Foeken, Owuor and Mwangi, (2010) stated that, the relatively high cost of acquiring ingredients from the market in the school feeding programme in Nakuru is been supplemented through school farming activities. Providing school children with lunch has been one of the biggest developmental goals in Nakuru town and schools that engage in farming activities in the town are having positive experiences in the provision of lunch to their school children (Foeken et al., 2010).

University of Minnesota Extension Department (2016) stated the under listed as benefits of farms to schools

- Promoting healthy eating habits and reduces risk of obesity and other health related disorders in children.
- Providing children access to local, healthy and nourishing foods.
- Facilitating education about nutrition, food, and agriculture in and out of the classroom.
- Increasing school meal participation rates.
- Opening up new markets and increase revenues and customer base for farmers.
- Developing community support and awareness about local food systems.

School farms are of great importance to students, parents and the community as a whole. Among other benefits, it has been found out that the underlisted are benefits that can be gotten from keeping a school farm despite the fact that most of the schools under the study were having farms. The benefits include;

- the school farm offers farming experience to pupils especially those without agricultural background
- it helps to develop students' interest and love for agriculture
- it enhances better understanding and retention of facts (Ogbuehi and Chukwudum, 2013).

2.12 Farming/ Weeding as a punishment in schools

According to Bona (2012), weeding as a punishment, discourage the youth from taking farming as a full time job. A UNICEF study stated that, watering or weeding a school garden is a light work that can be given to a child to perform for the transformation of misbehaviour. Experts indicate that, such a punishment should be in a thoughtful manner to help students' self-discipline and values of the culture of society (UNICEF, 2001).

It was noted that both positive and negative forms of corporal punishment are usually given out to students. It was found out that, corporal punishment of which weeding is one, help students to learn better , correct bad behaviour but leaves marks on students body and causes school drop-out (Addison, 2015).

2.13 Effects of Motivation on Agriculture Teaching and Learning

According to (Faghiri, 2013), students' attitude towards entrepreneurships can have a good entrepreneurial motivation effect. Students should therefore have a positive mind towards entrepreneurial activities so as to help them start businesses in agriculture. Again, students who are seen as family and friends model of entrepreneur, stand the chance of starting an agricultural business in the future. Students involving in entrepreneurships education, is also seen to have a great positive impact in encouraging students to go into agriculture entrepreneurships, (Faghiri, 2013).

It was realised that, interpersonal relationship such as free interaction among all members of staff, school heads, school administration and good relations with the community, brings about development and trustworthiness in schools and lead to better teacher performance,(Kibett, Obara, Gikunda and Kirimi, 2013).

Chumbley, Haynes and Stofer, (2015) found out that, one motivation factor that lead students to learning agriculture (agribusiness) is obtaining good grades especially grade 'A' in agricultural science class. Self-effectiveness of students towards learning agriculture is a motivational factor to students performing well in the subject (Chumbley et al., 2015).

A greater number of students in secondary schools and those in agricultural training centers in Kermanshah Province are motivated by their knowledge, skills and information in agriculture for a better life.

These students believe that, for a future secured job, one should attain agriculture education. In addition, there are many advertisements about importance of agriculture in the society and their parents support motivates them to be in the field of agriculture education (Taghibaygi et al., 2015).

2.14: Theoretical framework

Dunkin and Biddle (1974) model which was based on an earlier model by Mitzel (1960) suggested that four-variable illustrates the complexity and interconnectedness of college teaching. Dunkin and Biddle's (1974) model contains four classes of variables for study: presage (teacher characteristics, experiences, training), context (properties of pupils, schools, community, classroom), process (teacher and student actions), and product (immediate and long-term effects) (Groccia, 2012).

The presage variable is the basis in noticing and understanding the problems and difficulties of students in the classroom. The teacher as the giver of knowledge in the traditional classroom setup, require to recognized who they are and the learning situation should be considered by the instructor to see what can be conveyed in the learning circumstances. The more instructors know themselves the better they are able to take advantage of their strengths to improve their teaching and students' learning and reduce their weaknesses.

Factors such as experience from training, the age, social class, training programmes, and experience from teaching, intelligence, motivations, cultural background, academic preparation and personal characteristics, such as thinking, attitude, learning styles and values all affect learning. Personality traits and teaching skills as part of the presage variable also affect classroom environment (context) as student formative experiences and student properties are much considered in the teaching and learning process. One critical element in the design and delivery of effective instruction is the selection or creation of appropriate course content. The accuracy, difficulty level, organization, and meaning of course content, what is taught and learned, must be right to the desired learning outcomes, the learners being taught, and the expertise of instructors (Groccia,2012). The teaching and learning interaction between teacher and students (process) and the outcome of the instruction is also to be carefully planned. The process variable seeks to analyze and bring to the fore, entities such as the instructor, learner, learning process, learning context and the content. For the content to be taught well, the instructor need to carefully choose teaching method over another, taking into accounts the desired learning outcomes, the effectiveness of the different teaching methods, the relevant previous knowledge of the learners and the benefits of the classroom context (Groccia, 2012).

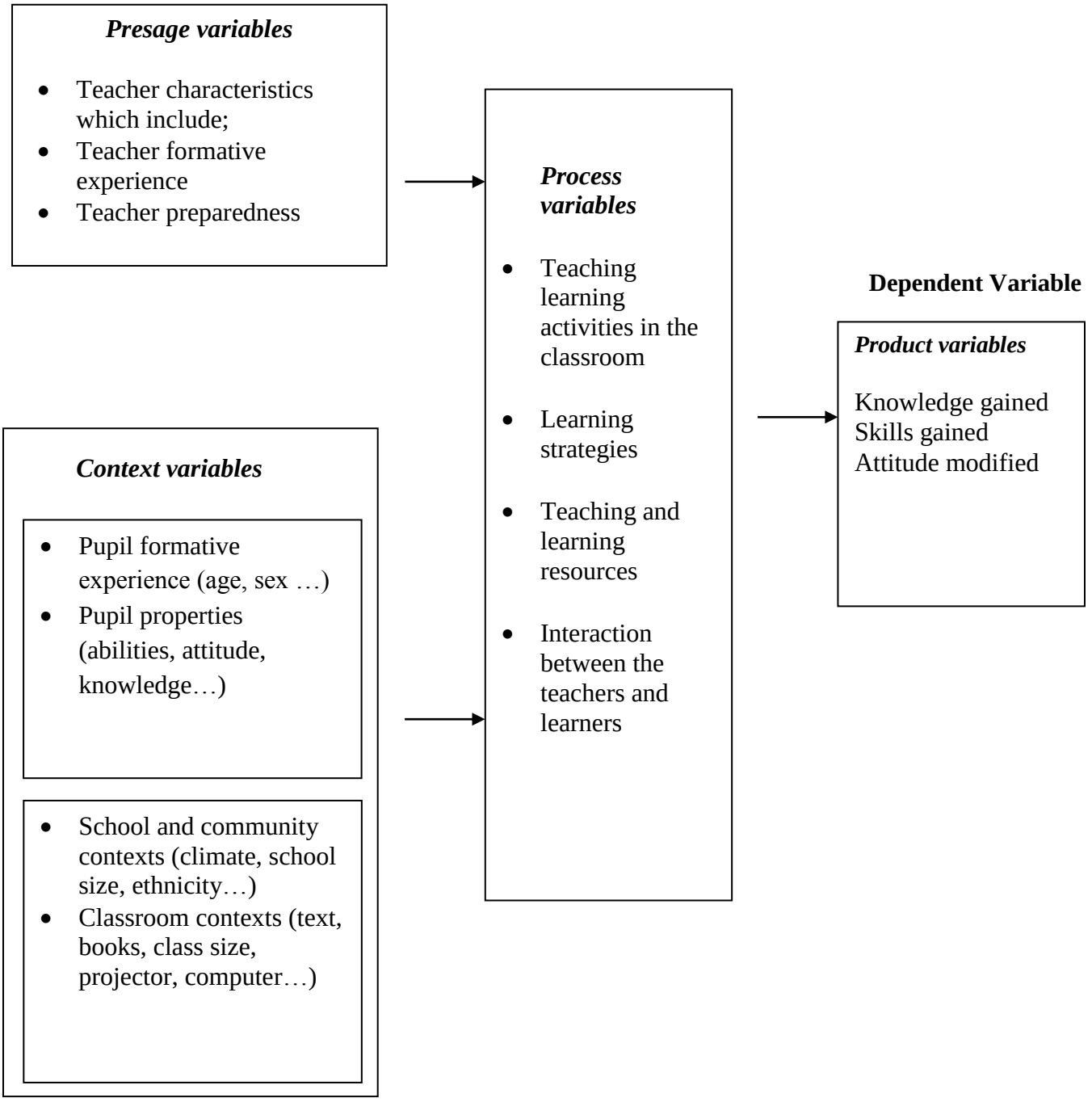
Classroom context, school and community context can on the other hand, affect the perception and attitude towards agricultural science as a programme which in effect can affect the teaching and learning of the subjects. Studying the factors that influence students practical competencies would lead to the improvement of the teaching of basic agricultural practices to students (Groccia, 2012).

Teachers are encouraged to ensure that they handle agriculture as a subject in such a way that will encourage students to take the subject. This can be achieved by ensuring that they teach practical lessons in the laboratory and on the school farm (Kabugi 2013).

Models are communication tools to sum up, simplify, or convey understanding to help make a difficult process or concept more easily comprehended (Groccia, 2012). Mitzel 1960 teaching model below explains the interconnectedness of the complexity of teaching.

Mitzel 1960 teaching model

Independent variable



Source: Mitzel (1960)

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.0 Introduction

This chapter presents the research methodology for the study. It describes the research location, research design, the target population, the sampling techniques and sample size, the research instruments, piloting, data collection procedures and data analysis.

3.1 Research Location

The Northern region, occupies an area of about 70,384 square kilometres and the largest region in Ghana in terms of land mass. It shares boundaries with the Upper West and the Upper East regions to the north, the Brong Ahafo and the Volta regions to the south, the republic Togo to the east, and Côte d‟Ivoire to the west. The land is mostly low lying except in the north-eastern corner with the Gambaga escarpment and along the western corridor. The region is drained by the Black and White Volta Rivers and their tributaries such as the Nasia and Daka rivers (Ghana Statistical Service, 2013).

Relatively dry, single rainy season that begins in May and ends in October is the climate of the Region. The recorded amount of rainfall annually varies between 750 millimetres and 1,050 millimetres (Ghana Statistical Service, 2013).

The dry season starts in November and ends in March/April with maximum temperatures occurring towards the end of the dry season (March-April) and minimum temperatures in December and January. The harmattan winds, which occur from December to early February, have a considerable effect on temperatures in the region, making them vary between 14^{o}C at night and 40^{o}C during the day. Humidity is very low, aggravating the effect of the daytime heat. The main vegetation is grassland, interspersed with guinea savannah woodland, characterised by drought-resistant trees such as baobab (*Adansonia digitata* Linn), acacia, (*Acacia longifolia*), mango (*Mangifera*), shea nut (*Vitellaria paradoxa), neem (Azadirachta indica) and dawadawa (Parkia biglobosa),* (Ghana Stastical Service, 2013).

According to Ghana Statistical Service (2013), 51.8% of presently employed persons 15 years and older are engaged as skilled agricultural, forestry and fishery workers in the Northern Region.

3.2 Research Design

The study employed the survey design as this design aims at describing issues as they are. Orodho (2009), states that a survey is a method of collecting information by interviewing or administering questionnaires to a sample of individuals. It is the most frequently used method for collecting information about people's attitudes, opinions, habits or any of the variety of social issues related to education.

For purposes of this study, opinions and perceptions of 299 Agricultural Science Students and 11 teachers from 6 Senior High Schools in the Northern Region were collected. A survey design was appropriate because, this study, believes permits for the capture of data good enough to possess a better description of similar characteristics of the general population.

3.3 Targeted Population

The research population was Senior High School students offering Agricultural Science programme and Agricultural Science teachers in Northern Region of Ghana.

3.4 Sampling techniques and sample size

Out of the twenty-four High Schools in the Northern Region offering Agricultural Science programme, stratified, purposive sampling and simple random sampling were used to select six schools.

Schools, according to the Ghana Education Service, are categorized based on infrastructures, play grounds and student performance into categories A, B and C. Since the different categories signify the general levels of access to and availability of required school infrastructure, the sampled schools have a high probability of representing most Senior High Schools in Northern Region and so act as a good sample.

Each category then becomes a stratum from which the sample schools were selected. Only two schools that offer Agricultural Science Programme in the Northern Region are in category A. All the other schools that offer Agricultural Science programme in the Northern Region are in category C.

Purposive sampling was used to select Ghana Senior High School in Tamale Metropolitan Assembly and Tamale Senior High school in the Sagnerigu District. The other four schools were sampled using simple random sampling technique. They include, Vitting Senior High/Technical School in the Tamale Metropolitan Assembly, Kalpohini Senior High School in the Sagnerigu, District, Pong-Tamale Senior High School in the Savelugu- Nanton District and Kumbungu Senior High School in the Kumbungu District.

The total number of students in the sampled schools was one thousand, six hundred and thirty-two and the total number of Agricultural Science teachers in the sampled schools was thirty.

Simple random sampling was employed to select twenty-five (25) students from form two and twenty-five (25) students from form three classes in each of the schools sampled. Teachers were also selected using simple random sampling technique. Fifty students from each school were sampled making a total of three-hundred. The recommended teacher-student ratio of Senior High Schools in Ghana according to Sekyere (2015) is, 1:25.

Two teachers each were therefore selected from the sampled schools, making a total number of sampled teachers to be 12 for the study. The sample size of the students was determined following Fields' rule (2005).One of the recommended and most common rules is 10 to 15 cases for each predictor in the model.

Going by this rule, to obtain statistical significance, the sample size for this study with two predictors would be anything from 20 (= 2 X 10) to 30 (= 2 X 15) respondents.

The research with the intention of covering a larger number of students, decided to go ten times Field's rule to sample students and following the recommended teacher-student ratio stated above, sampled twelve teachers for the study.

A sample of 312 respondents was used for the study. The sample gives a fair representation of Agricultural Science students in the Northern Region.

3.5 Research Instruments

Questionnaires were used to collect data from students and teachers on factors that influence agriculture practical competencies among Senior High School students.

Observation checklist and unstructured interviews were used to collect qualitative data. Observation checklist was used to confirm the availability of school farms and/or gardens for Agricultural practical/ demonstration lessons in the school. Both students and teachers were observed at different times on different days for one week as teaching and learning take place in the different schools.

Unstructured interviews were also used on both students and teachers in the sampled schools. At least two students each from every school and one teacher each from the schools were interviewed.

3.6 Piloting

Piloting of the research instruments was done in two schools which were not included in the actual study. A total sample of thirty Agricultural Science students and four (4) teachers were used in the pilot study. Twenty-five students were each randomly sampled from forms two and three classes in each of the schools.

Two Agricultural Science teachers each were also randomly selected from the two schools. The schools used for the piloting were, Salaga Senior High School and T.I Ahmadiyya Senior High School both in the East Gonja District. The pilot study was used to identify errors or items in the questionnaire that were ambiguous or unclear to the respondents and hence changed or modified before actual data collection. The pilot study also helped the skill of administration of the instrument.

3.7 Data Collection Procedures

The instruments were administered to the respondents who were given sufficient time to respond to the items on the questionnaire. This was done to ensure achievement of a good return ratio and help respondents to get an opportunity to ask for clarification on items which might have proved difficult to understand. The response rate was two hundred and ninety-nine out of three hundred students and eleven out of twelve teachers.

3.8 Validity

According to Joppe (2000), "validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are". The supervisor's opinion was sought on the ability of the instruments to collect the required information for the study. This was to ensure the validity of the instruments.

3.9 Reliability

Orodho (2009) observes that reliability of an instrument is the consistency in producing similar results over a period of repeated trials.

Joppe (2000) defines reliability as, "the extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability and if the results of the study can be repeated under similar methodology, then the research instrument is considered to be reliable". To ensure the reliability of the instruments, the pilot test was repeated in the same schools after four days using the test and re-test method. The analysis gave similar results. The instrument therefore was reliable.

3.10 Data Analysis

Primary data collected from the field was first edited and cleaned by reading through responses to make corrections and reshaping some of the responses to make them more meaningful. The questions in the questionnaire were then coded under simple headings or titles for easy response entry. The responses were then entered into the coded headings by summarizing some of the responses given by the respondents for analysis. The data was analyzed with the aid of a using Statistical Package for Service Solution (SPSS). Quantitative data was analyzed using descriptive statistics such as frequencies, cross tabulation and percentages, while the qualitative data collected using open ended questions and analyzed under themes. The analyzed data were then presented in the form of tables, pie-charts and bar-graphs where applicable.

3.11 Logistical and Ethical Considerations

A letter was obtained from the Faculty of Education of the University for Development Studies to seek permission from the schools' managements in order to administer questionnaire and have interactions with students and teachers from the sampled schools. This was to do away with the cases of surprise entry into schools without prior notice to clarify the intention of the visit. The letter was therefore photocopied and personally presented to the various school authorities for study and guided or led by the appropriate person(s) to get in touch with students and teachers. Confidentiality of the information given by the respondents was assured. This confidentiality was done by using the information without mentioning the particular names or schools where the data is collected from.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.0 Introduction

This chapter contains results from data analysis, presentation and interpretation of findings obtained from the field. The purpose of this study was to analyze the factors that influence practical competencies of Agriculture among S.H.S students in Northern Region. The data was analyzed based on the research questions which include; how teacher qualification, teaching methodology, perception of students and which perceptions or factors affect practical competencies among students in S.H.S.

4.1 Response Rate

The study targeted 312 respondents, 310 respondents, filled-in and returned the questionnaires making a response rate 99%. According to Mugenda and Mugenda (1999) a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent; therefore, this response rate is excellent for analysis, discussion and conclusion.

4.2 Bio-data of respondents

The response rate for students was 99% (299 responses) and that for teachers was also 92% (11 responses). In this section, information of respondents such as sex, class and teacher qualification is presented.

4.2.1 Distribution of student respondents by sex

The students were asked to indicate their sex and are presented in table 1.

Table 1 show that two hundred and forty-five (245) students (82%) were males and fifty (54) students (18%) were females. This tells that most females do not study Agricultural Science in schools.

Table 1: Sex of student respondents

Sex	Frequency	Percentage
Male	245	81.9
Female	54	18.1
Total	299	100.0

Source: Field Survey (2016)

The study revealed that more males offer Agricultural Science programme than their female counterparts in the Senior High School level (Table 1). This agrees with finding of Ajayi and Buessing (2013) that, over 25 percent of females applying to Senior High Schools in Ghana choose Home Economics and General Arts while males normally dominate in programmes such as Agriculture and General Science. It also agrees with findings from Kumi et al., (2016) who observed that there are more males than females in the science and agricultural science programme in the different institutions in Ghana and this could be ascribed to the general lack of interest in the pursuance of science and its related programmes by Ghanaian female students.

4.2.2 Form (Class) distribution of students

Figure (1) shows that, out of two hundred and ninety-nine (299) student responses, one hundred and twenty-four (124) students (43%) were from form three and the form two students were made up of one hundred and seventy-three (173) students (58%).

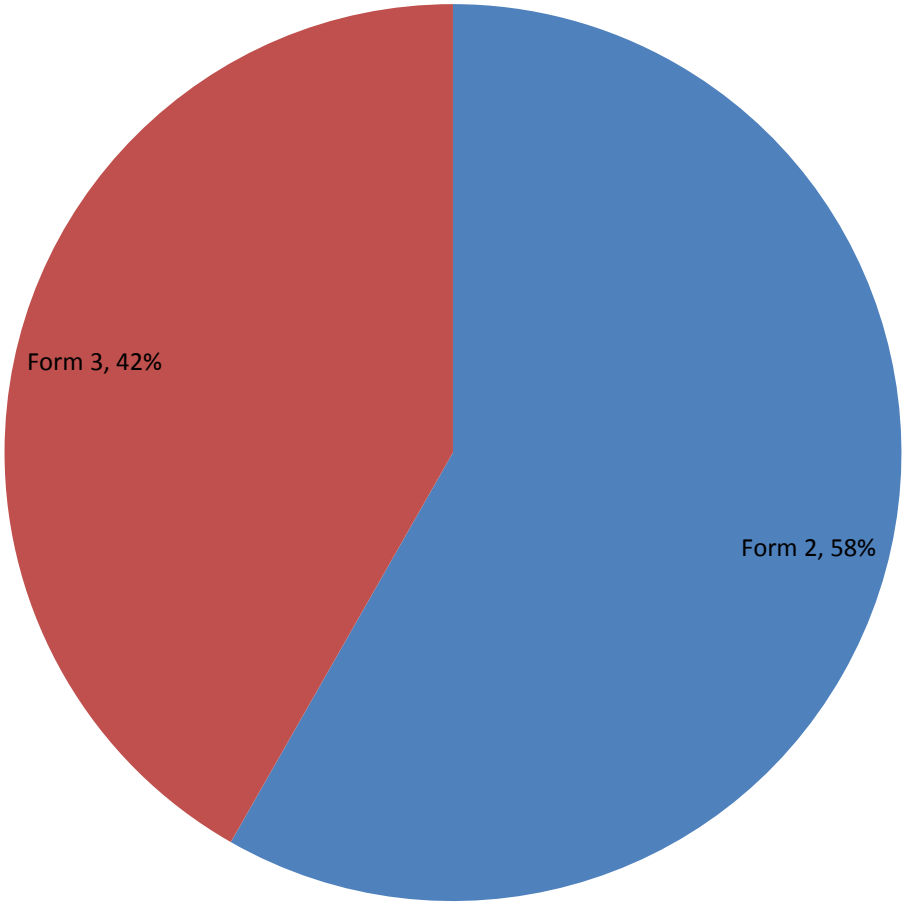


Figure 1: Form Distribution of students

Source: Field Survey (2016)

4.2.3 Distribution of teachers (staff) by sex

Figure 2 shows that (82%) of the teachers were males while (18%) were females. Consequently most Agricultural Science teachers are males. As noted by Kumi et al., (2016), most females do not select science courses in Senior High School. This could be as a result of the saying that science is difficult and females are afraid of it.

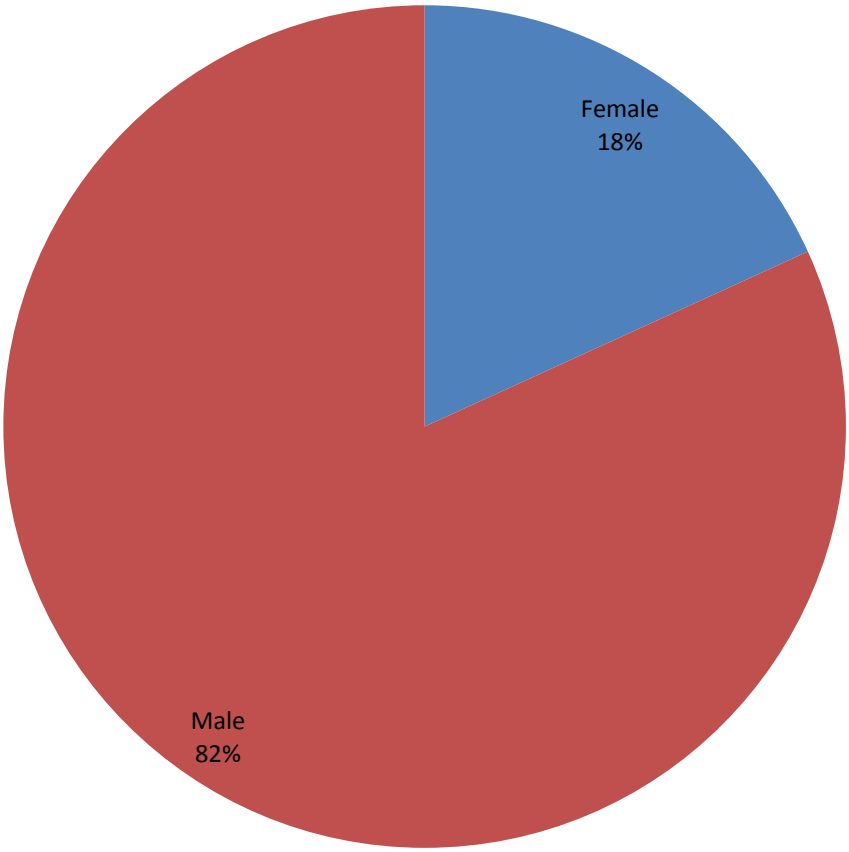


Figure 2: Sex distributions of teachers
Source: Field Survey (2016)

4.2.4 Distribution of teachers by qualification

Table 2: Teacher qualification

Qualification	Certificate type	Frequency	Percentage (%)
Academic Qualifications	Bachelors	9	82
	Masters	2	18
Professional Qualifications	B.ED Agric	1	9
	'A' Three year post sec	7	64
	Diploma in Education	1	9
	Non Professional	2	18

Source: Field Survey (2016)

Table 2, shows that (82%) of teachers had Bachelor of Science degrees while (18%) have Masters Degrees. On the other hand, one (1) teacher had degree in Agric Education, seven (7) had Post-secondary certificates in education, one (1) had Diploma in education and two (2) were non-professional teachers.

It can be generally stated that, most (82%) of those who teach Agricultural Science in Northern Region are professional teachers, (Table 2). This is in line with Obeng-Mensah et al., (2012) and Olatide et al., (2015) findings that, most Agricultural Science teachers in secondary schools have the necessary qualification. Fonseca and Conboy (2006) stated that teaching experience in relation to number of years taught and teacher qualification are factors that are connected to students success.

4.2.5 Years of teaching experience

The number of years that teachers taught was found out to be that, four teachers taught for ten years and above, one taught for between seven and nine years, twenty percent taught for between four and six years (figure 3).

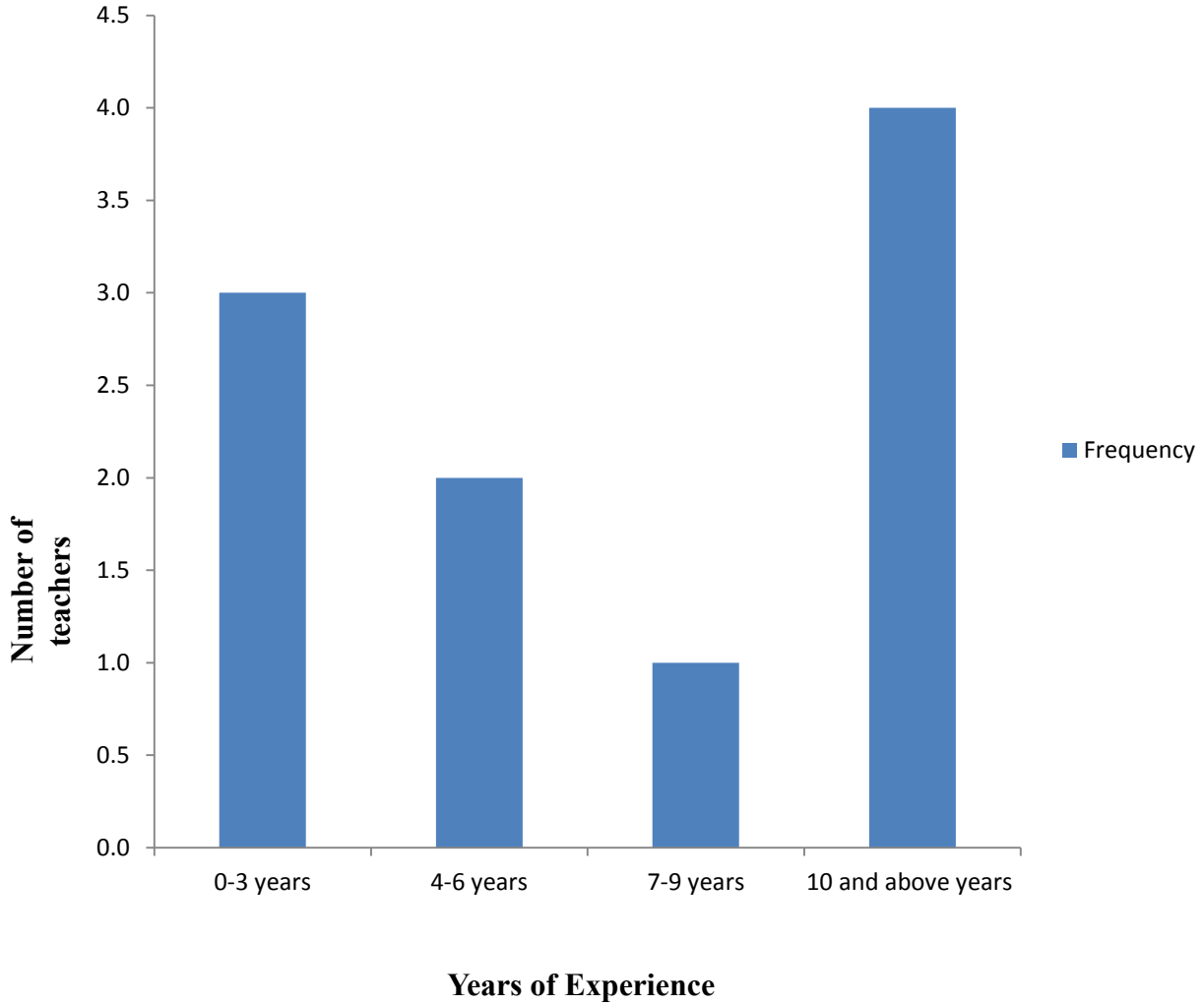


Figure 3: Years of experience of teachers

Source: Field Survey (2016)

Three taught for between zero and three years. From figure 3, it was found out, that seven teachers have taught for four and more years.

4.3 Engagement of resource persons in teaching

Figure 4 shows that five (5) out of the nine (9) professional teachers, have never engaged resource persons in teaching their students, while one (1) teacher out of the two (2) non-professional teachers never engaged resource persons in teaching. Two (2) professional teachers out of the nine (9) indicated they engaged resource persons in their teaching once in a year while one (1) teacher out of the two (2) non-professional teachers engaged resource persons once in a year. Generally, more than fifty percent (50%) of professional teachers do not engage resource persons in their teaching while fifty percent (50%) of non-professional teachers do not engage resource persons in their teaching.

Generally, most professional teachers do not engage resource persons in their teaching while 50% of non-professional teachers do not also engage resource persons in their teaching (Figure 4). The higher percentage of most professional teachers not engaging resource persons could be that, the teachers assume they are exposed to diverse teaching methodologies and probably understand how to explain or present their concepts better to the understanding of their students.

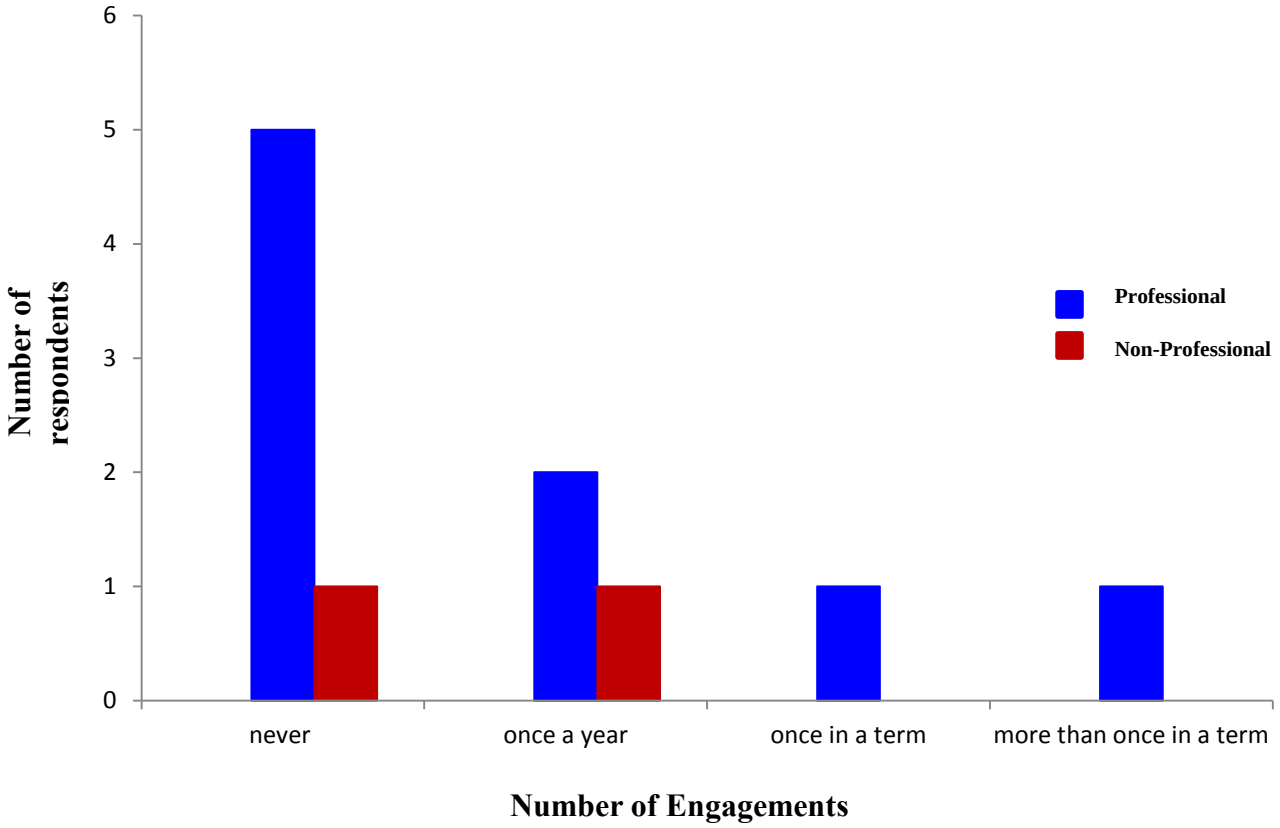


Figure 4: Engaging resource persons

Source: Field Survey (2016)

However, Nilsson and Wallace (1997) stated that, communication between Agricultural teachers and extension officers can provide a base for exchange of ideas, as it serves as a link between rural schools and local communities.

4.4 Embarking on field trips

Three (3) professional teachers have never embarked on field trip with their students. Three (3) professional teachers embarked on field trips with their students once a year while the two (2) non-professional teachers embarked on field trips once a year. Two (2) of the professional teachers said they embarked on field trips once a term but no non-professional teacher embarked on field trips once a term. One (1) of the professional teachers embarked on field trips with students more than once a term (Table 3).

Table 3: Frequency of field trips with students by teachers

Frequency of field trips	Teacher Qualification		Total
	Professional	Non-Professional	
Never	3	0	3
Once a year	3	2	5
Once a term	2	0	2
More than once a term	1	0	1
Total	9	2	11

Source: Field survey (2016)

It was observed that majority of the teachers generally do not embark on field trips with their students (Table 3). Just about one-quarter (27%) of the professional teachers embark on field trips with their students at least once in a term for academic studies. This goes contrary to the statement of Kirimi (2015), who asserted that, of the different methods of teaching, lectures and educational tours were the methods that influence the choice of agricultural subjects in the secondary schools. It could also be due to administrative challenges of funds to organize such trips. This can be related to findings of Wootoyitidde (2010) that, many Heads of Department do not receive funds from government on time leading to no or few practical lessons as practical skills depend on the materials available.

4.5 Frequency of performing practical lessons

The findings was that, six (6) professional teachers have practical sessions with their students while none of the two (2) non-professional teachers have practical lessons more than once a term with their students (Table 4).

Table 4: Frequency of practical lessons with students by teachers

Frequency of field trips	Teacher Qualification		Total
	Professional	Non-Professional	
More than once a term	6	0	6
Once a term	3	1	4
Never	0	1	1
Total	9	2	11

Source: Field Survey (2016)

Three professional teachers engaged their students in practical lessons once a term and one of the non-professional teachers had practical lessons once a term with the students. One of the non-professional teachers never had practical lessons with his/her students (Table 4).

The results suggest that all the professional teachers are aware of the need to have practical lessons with their students as they progress in their Agricultural Science programme. The professional teachers, therefore, try to have practical sessions with their students at least once in a term.

The non-professional teachers, however, undertake practical lessons once in a term or as and when they deem it necessary (Table 4).

The professional training of teachers could be an influencing factor to their inclination toward more practical lessons with their students.

Generally, majority of the teachers agreed that the more practical lessons, the better students can perform on their own. This assertion from the teachers on practical lessons with students agrees with what Auwal (2003), stated that, demonstration method of teaching Agricultural Science students leads to a better retention than the discussion method.

Practical lessons per term in Animal Husbandry

Fifty-one percent (51%) of students reported that, they do not have practical lessons in Animal Husbandry in a term, but can practice agriculture on their own, eighty-six percent (86%) of those who have one practical lessons per term stated that, they can practice agriculture on their own. Ninety-three percent (93%) of students who said they have two practical lessons in a term, indicated that, they can practice agriculture on their own, about ninety-four percent (94%) of students who said they have three practical lessons in a term, stated that, they can practice agriculture on their own. Ninety-one percent (91%) of the students who have four practical lessons in a term, can practice agriculture on their own while all those (100%) students who have five practical lessons in a term, said they can practice agriculture on their own (Table 5).

Table 5: Practical lessons per term in Animal Husbandry in relation to practicing Agriculture

Response	**Frequency of practical lessons**						**Total**
Ability to practice	None	Once	Twice	Thrice	Four Times	Five Times	
Yes	21(51%)	51(86%)	39(93%)	30(94%)	10(91%)	4(100%)	155
No	20(49%)	8(14%)	3(7%)	2(6%)	1(9%)	0(0%)	34
Total	41	59	42	32	11	4	204

Source: Field Survey (2016)

On the other hand, about forty-nine percent (49%) of students who do not have practical lessons in Animal Husbandry cannot practice agriculture on their own, about fourteen percent (14%) of those who had one practical lesson in a term cannot practice agriculture on their own. Seven percent (7%) of the students who have two practical lessons in a term, six percent (6%) of students who had three practical sessions, and also nine percent (9%) who had four practical lessons in a term, stated that cannot practice agriculture on their own while all of those who have five practical lessons in a term stated that they cannot practice agriculture on their own (Table 5).

Student respondents were asked to indicate the number of times they have practical lessons in Crop Husbandry in a term. The results are presented in table 6 below.

Table 6: Practical lessons per term in Crop Husbandry in relation to practicing Agriculture

Response	**Frequency of practical lessons**						**Total**
Practice on own	None	Once	Twice	Thrice	Four Times	Five Times	
Yes	9(64%)	6(67%)	8(89%)	8(80%)	4(67%)	4(100%)	35
No	5(36%)	3(33%)	1(11%)	1(20%)	2(33%)	0(0%)	12
Total	14	9	9	5	6	4	59

Source: Field Survey (2016)

The results shows that sixty-four percent (64%) of the students can practice agriculture on their own even though they have not been having practical lessons in a term.

Sixty-seven percent (67%) of students who had practical lessons once a term, indicated that, they can practice agriculture on their own, while eighty–nine percent (89%) of those who had two practical lessons in a term indicated that they can practice agriculture on their own (Table 6).

Eighty percent (80%) of students who had three practical lessons in a term can practice agriculture on their own, sixty-seven percent (67%) who had four practical lessons in a term can practice agriculture on their own while all those hundred percent (100%) of students who have five practical lessons in a term said they can practice agriculture on their own (Table 6). On the other hand, about thirty-six percent (36%) of students who do not have practical lessons in a term cannot practice agriculture on their own. Another thirty-three percent (33%) who had one practical lesson in a term, and eleven percent (11%) who had two practical lessons in a term, cannot practice agriculture on their own. Twenty percent (20%) of students who have two practical lessons and thirty-three percent (33%) who had four practical lessons, in a term said they cannot practice agriculture on their own (Table 6).

Students were once again asked to indicate the number of times they have practical lessons with their teachers in General Agriculture in the course of a term. The results are shown below.

Sixty-nine of students who do not have practical lessons in General Agriculture stated they can practice agriculture on their own (Table 7). Eighty percent of students who have one practical lesson, eighty-six percent of students who have two practical lessons and about eighty-nine of students who have three practical lessons in a term can practice agriculture on their own. All (100%) of the students who have four or five practical lessons in a term indicated they can practice on their own.

Table 7: Practical lessons per term in General Agriculture

Response	**Frequency of practical lessons**						**Total**
Ability to practice	None	Once	Twice	Thrice	Four Times	Five times	
Yes	37(69%)	47(80%)	49(86%)	33(89%)	14(100%)	10(100%)	190
No	17(32%)	12(20%)	8(14%)	4(11%)	0(0%)	0(0%)	41
Total	54	59	57	37	14	10	254

Source: Field Survey

Thirty-two percent of students who do not have practical lessons in General Agriculture stated that, they cannot practice agriculture on their own (Table 7). About twenty percent of students who have one practical, fourteen percent of students who have two practical lessons, and eleven percent of students who have three practical lessons in a term stated they cannot practice agriculture on their own.

As the number of practical lessons increases in the course of studying animal husbandry, the percentages of students who desire to practice the concepts on their own increased. Similarly, the more practical lessons in animal husbandry, general agriculture and crop husbandry, the higher the number of students who said they can practice Agriculture on their own. This implies, the more practical lessons, the better the performance of practice.

4.6 Self practicing of Agriculture by students after S.H.S

A total of two hundred and ninety-one students responded to the question of whether they can practice agriculture on their own or not. From the total of two hundred and ninety-one students, two hundred and thirty-six (81%) indicated that they can practice agriculture on their own while fifty-five (19%) stated that, they cannot practice agriculture on their own (figure 5).

Those, who can practice agriculture on their own, stated practices such as grafting, budding, fertilizer application, dehorning, debeaking and compost preparation. Other concepts include, animal production, making a garden, feeding non-ruminants and transplanting. This could be as a result of either witnessing the concepts being done practically during lessons or through the explanation in class, students believe they can practice on their own. During data collection however, it was observed that most of the schools did not have school farms or gardens where students can physically practice concepts in Agriculture. Therefore, students believing that they can practice certain concepts on their own cannot be assured.

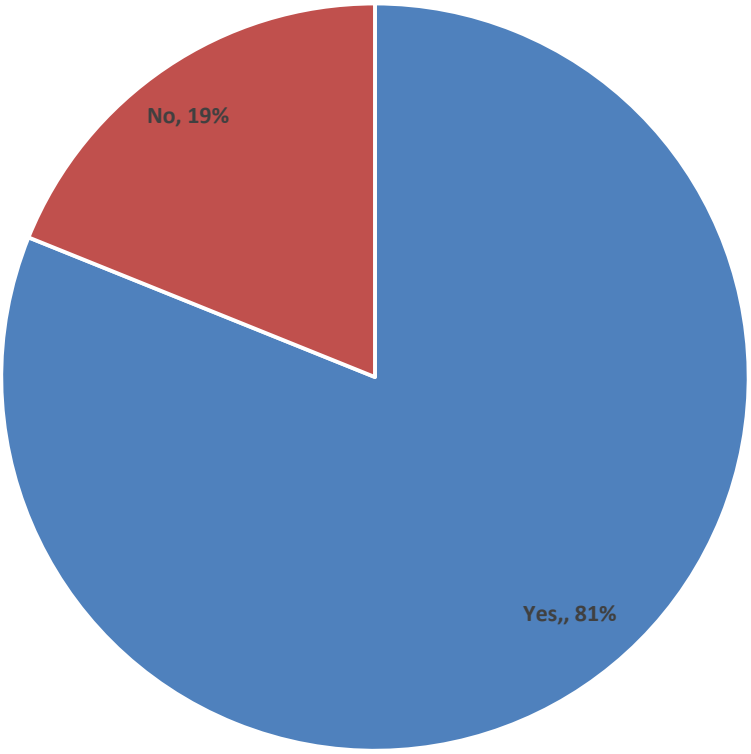


Figure 5: Students practicing agriculture on their own

Source: Field Survey (2016)

Thirty-three percent (33%) of students who have practical lessons monthly can practice agriculture on their own up to seventy-five percent and above (75%). None of the teachers agreed that students practicing Agriculture above fifty (50%) on their own is possible if practical lessons were done monthly, thirty-three (33%) percent of teachers said students who have practical lessons monthly can practice agriculture up to fifty percent (50%).

About thirty-three percent (33%) of teachers also said that students who have practical lessons on monthly basis can practice agriculture on their own up twenty-five percent (25%) and above, none of the teachers indicated that students who have practical lessons monthly cannot practice agriculture on their own (Table 8).

Table 8: Teachers' assessment of students' practical performances in relation to frequency of practical lessons

Frequency	**Performance of students on practice**					**Total**
	75% or more	More than 50%	About 50%	More than 25%	None	
Monthly	2(33%)	0(0%)	2(33%)	2(33%)	0(0%)	6(100%)
Once a term	2(50%)	1(25%)	1(25%)	0(0%)	0(0%)	4(100%)
Never	0(0%)	0(0%)	0(0%)	0(0%)	1(100%)	1(100%)
Total	4	1	3	2	1	11

Source: Field Survey (2016)

Fifty percent (50%) of teachers who have practical lessons once a term, said that students can practice agriculture on their own up to seventy-five percent and more (75%), twenty-five percent (25%) of teachers said, students who have practical lessons once in a term can practice agriculture on their own up to fifty percent and above (50%).

On the other hand, twenty-five percent (25%) of teachers said students who have practical lessons once a term can practice agriculture on their own up to about fifty percent (50%).

None of the teachers said students who have practical lessons once a term can practice agriculture more than twenty-five percent (25%) and none of the teachers agreed that students who never had practical lessons can practice agriculture up to twenty-five percent (25%) on their own. Hundred percent (100%) of teachers agreed, that students who never had practical lessons cannot practice agriculture on their own (Table 8).

Teachers generally agreed that, students (50%) who have regular practical lessons, at least once in a term, can practice agriculture on their own. The teachers also indicated those students who never had practical lessons (25%) cannot even practice agriculture on their own (Table 8).

Even though majority of students and teachers agreed that more practice lead to perfection, from observation and interactions with students during data collection, it has been noticed that most schools do not have school gardens/farms for practical lessons. The few schools that even have school farms are farms that exist only in the rainy seasons.

Out of the six selected schools, only one school keeps animals even though all the schools teach animal husbandry as a subject.

Figure 6 shows that, seven teachers representing sixty-four percent (64%) asserted that Agricultural Science students after the completion of S.H.S, would be able to practice agriculture but with a lot more training.

Four teachers, representing thirty-six percent (36%) also agree that, Agricultural Science students after completing S.H.S can practice agriculture on their own.

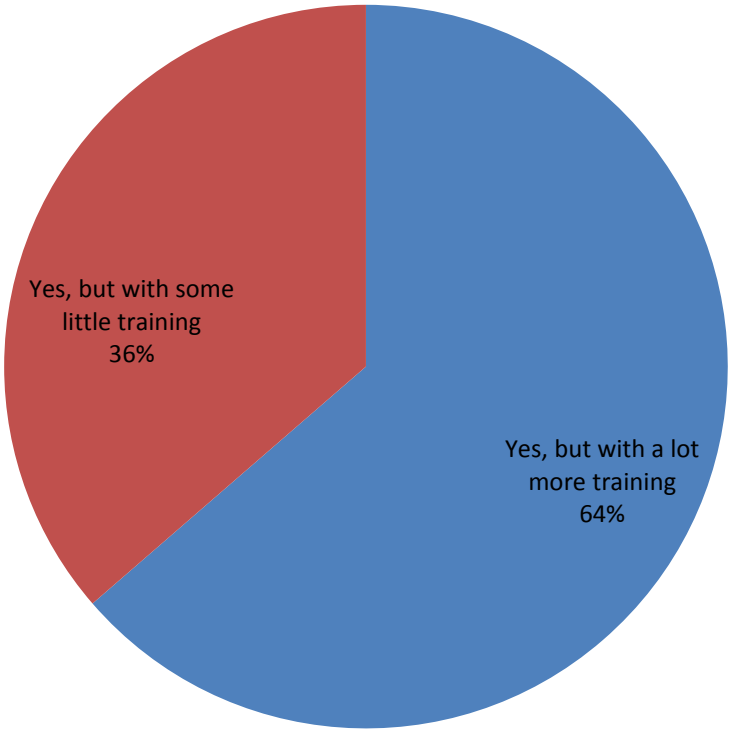


Figure 6: Teachers' assessment of the establishment of agriculture enterprises after S.H.S

Source: Field Survey (2016)

The teachers' evaluations of their students suggest that, even though the students have high interest in agriculture, they need more practical experience to enable them practice agriculture efficiently (Figure 6).

Olaitin and Mama (2001) also observed that, in recent times many students pass external examinations in agricultural science without farm practice to boost their technical knowledge and practical orientation by learning through theory only.

4.7 Student interest in agriculture as a profession

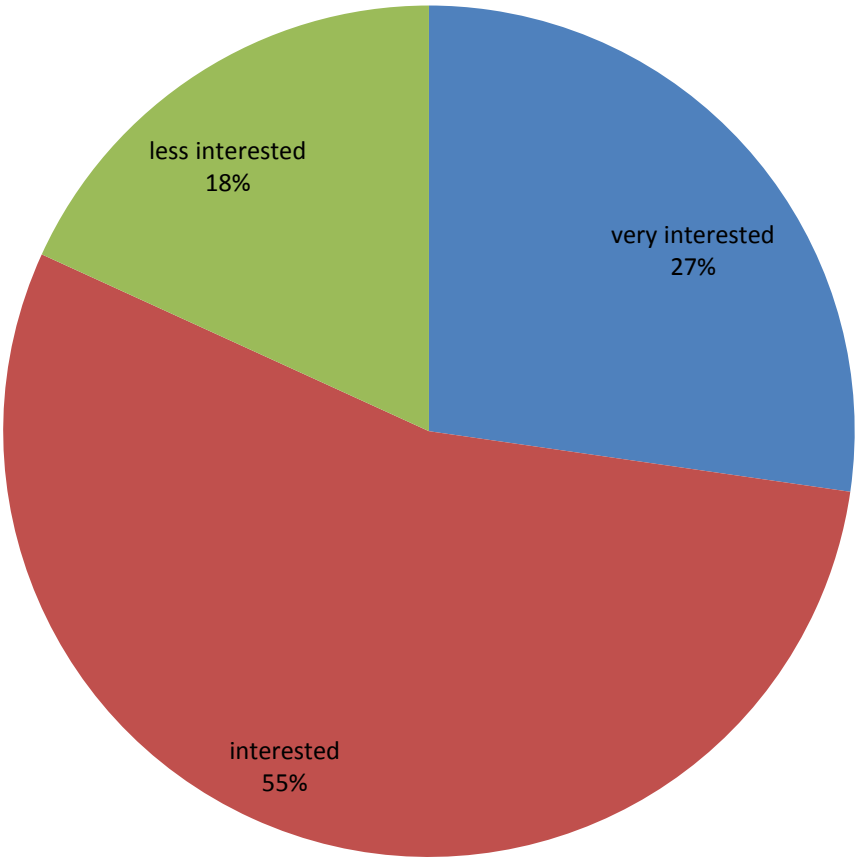


Figure 7: Attitude of Agricultural Science students towards the course

Source: Field Survey (2016)

The results indicate that, 27% of teachers indicated that, their students are very interested in agriculture. 55% of the teachers assess their students to be interested in Agriculture. Eighteen percent 18% of the teachers noted their students to be less interested in agriculture (figure 7).

From the unstructured interview during data collection, it was gathered that some items such as vegetables, pasture grasses and some farm tools are brought to class for identification and discussion of the growth and uses of these items in the classroom. This could be a motivating factor to students being interested in agriculture. The findings of Famiwole (2013), who stated that examination bodies fail to, assess competencies or skills that are gained through school farms which are laboratories for practice is in line with this finding.

Table 9: Interests in full time farming after S.H.S

Response	**Numbers**	**Percentage (%)**
Yes	229	78
No	66	22
Total	295	100

Source: Field Survey (2016)

From Table 9, seventy-eight percent (78%) of the students were interested in becoming full time farmers after S.H.S, while twenty-two percent (22%) were not interested in practicing farming as a full time job after S.H.S.

Table 10 shows the various areas that students would like to specialize in after S.H.S. Seventy-five percent (75%) of the Agricultural Science students are interested in pursuing Agricultural Science and its related courses at the higher levels of education.

Table 10: Area of specialization at higher levels of education

Area of study	Frequency	Percentage (%)
Agriculture related	210	75
Health related	50	18
Education related	8	3
Others	12	4
Total	280	100

Source: Field Survey (2016)

Eighteen percent (18%) were interested in studying health related courses, three percent (3%) were interested in education related courses and four percent (4%) were interested in studying others courses.

Table 11 shows the response of students as to whether they will choose farming as an additional job. Seventy-seven percent (77%) stated they would definitely practice farming in addition to their main job. Twenty-two percent (22%) may practice farming in addition to their main job and one percent stated that, they would not practice farming in addition to their main job.

Table 11: Students interest in farming as a part time / additional job

Response	Frequency	Percentage (%)
Yes definitely	221	77
Maybe	65	22
No	3	1
Total	289	100.0

Source: Field Survey (2016)

A higher percentage of students said they would engage in agriculture and its related areas after school (Tables 9, 10 and 11). As high as 77% of students, would want to be full time farmers after school.

The high interest in becoming full time farmers could be linked to the fact that, most students are encouraged by their teachers in the course of their studies to pursue agricultural science at the higher level. Majority of the students also indicated that their teachers educated them about potentials and the career opportunities of Agriculture, therefore the high interest in practicing farming after school.

4.8 Factors that influence students' perception of Agriculture as a Career Choice

Table 12 shows the influence of sex on becoming a full time farmer. Both male (78%) and female (76%) students showed very high interest in practicing farming as a full time job after S.H.S. Twenty-three percent (23%) showed no interest in full time farming after S.HS. Males, however, had a slightly higher interest in full time farming after S.H.S.

Table 12: Sex as an influencing factor to students being interested in full time farming

Sex	Response				Total
	Yes	%	No	%	
Male	188	78	54	22	242(100%)
Female	41	76	13	24	54(100%)
Total	229	77	67	23	296(100%)

Source: Field Survey (2016)

Majority (82%) of teachers observed their students to be interested in agricultural science. This positive interest perhaps is a contributing factor to the teachers' belief that, students have perceptions such as growing food for their families and agriculture as job opportunity.

Males have more interest in farming activities than their female colleagues (Table 12).This could be linked to the perception that, farming is a strenuous work which makes it less suitable for females. These findings fall in line with Soboyejo (2007), who stated that male students have a little more positive attitude than their female colleagues towards science. Akyina et al., (2014) listed factors such as interest in agriculture science, employment avenues in agriculture, high academic ability in agriculture and influence by teachers and parents as factors that influence female students' choice of Agriculture Science programme.

The effect of sex as an influencing factor to choosing farming as an additional job

Seventy-nine percent (79%) of the males stated that, they would definitely engage in farming in addition to their main jobs in future (Table 13). Nineteen percent (19%) indicated they may practice farming as an additional source of income. Only three males stated that, they are not sure of practicing farming in addition to their main jobs. Another three male students stated that, they would practice agriculture in addition to their main jobs.

Table 13: Sex as an influencing factor to students being interested in farming as a part-time/additional time job

Sex	**Response**				**Total**
	Yes	Maybe	Not sure	No	
Male	186 (79%)	44 (19%)	3 (1%)	3 (1%)	236(100%)
Female	35 (66%)	14 (26%)	4 (8%)	0 (0%)	53(100%)
Total	221 (77%)	58 (20%)	7 (2%)	3 (1%)	289(100%)

Source: Field Survey (2016)

Sixty-six percent (66%) of the females indicated they would practice farming as an additional source of income, about twenty-six percent (26%) may practice farming and about eight percent (8%) were not sure of practicing farming as an additional source of income. None of the females indicated that they would not engage in farming as additional source of income. In all, a total of seventy-seven percent (77%) of students are interested in undertaking farming as an extra income source, twenty percent (20%) may practice farming as an additional source of income and the remaining more than two percent (3%) not engage in farming as an additional source of income. More males have a more interest in farming as an additional source of income than their female colleagues. This could be due to the traditional division of work where males are engaged more in farming activities than their female counterparts in the Northern Region.

4.9 Motivational factors to students being interested in practical farming after school.

Table 14 shows the influence of field trips to becoming a full time farmer.**Table 14: Field trips as a motivation to become a full time farmer**

Frequency of Field trips	**Response**				**Total**
	Yes	%	No	%	
Not Applicable	71	75	24	25	95(100%)
Regularly	16	89	2	11	18(100%)
Sometimes	97	79	26	21	123(100%)
Once	42	74	15	26	57(100%)
Total	226	77	67	23	293(100%)

Source: Field Survey (2016)

The study revealed that, seventy-five percent (75%) of students who do not embark on field trips were interested in full time farming while twenty-five percent (25%) are not interested in practicing farming as full time job.

Students who embark on field trips regularly are more (89%) interested in full time farming, only few (11%) were not interested in full time farming.

Seventy-nine percent (79%) of students who sometimes embark on field trips are also interested in being full time farmers while twenty-one percent (21%) are not interested. Seventy-four percent (74%) students who embark on field trips are interested in full time farming but twenty-six percent (26%) of them are not interested (Table 14).

Despite the fact that majority of the students do not embark on field trips, they are still interested in practicing agriculture. Students who regularly embark on field trips are more interested in practicing agriculture than those who do not embark on field trips (Tables 14 and 15). Irani et al., (2006) affirm this by stating that, taking part in international agricultural activities exposes students to new technologies and strategies of making agriculture important to them and their communities. Curbelo (2006) also attested to this fact that, many students agreed they would recommend supervised agricultural experiences programme to their friends as the programme gives hands-on experiences.

Cross tabulation was used to find out whether embarking on field trips have an impact on students being interested in taking up farming as an additional source of income. The results are shown in Table 15 below.

Table 15: Impacts of field trips on students' interest in farming as an additional job

Frequency of Field trips	Response				Total
	Yes	Maybe	Not sure	No	
Not Applicable	73 (79%)	14 (15%)	5 (5%)	1 (1%)	93 (100%)
Regularly	15 (83%)	2 (11%)	0 (0%)	1 (6%)	18 (100%)
Sometimes	90 (74%)	29 (24%)	1 (1%)	1 (1%)	121 (100%)
Once	41 (75%)	13 (24%)	1 (2%)	0 (0%)	55 (100%)
Total	219 (76%)	58 (20%)	7 (2%)	3 (1%)	287 (100%)

Source: Field Survey (2016)

Table 15 revealed that, most students, seventy-nine percent (79%) who do not embark on field trips are interested in practicing farming as an additional source of income, fifteen percent (15%) may engage in farming, five percent (5%) are not sure of taking up farming as an additional source of income, one percent (1%) indicated, they would not engage in farming as an additional source of income.

On the part of students who regularly embark on field trips, eight-three percent (83%) of students stated that they would definitely take up farming as an additional source of income, eleven percent (11%) stated they may take up farming as an additional source of income. Six percent (6%) indicated that they would not want to engage in farming as an additional source of income at all. Seventy-four percent (74%) of students, who sometimes embark on field trips, stated that they would engage in farming as an additional source of income, twenty-four percent (24%) of the students who sometimes embark on field trips stated they would engage in farming as an additional source of income. Most students who embarked on field trip once a term (75%) stated that, they would definitely engage in farming as an additional source of income, about twenty-four percent (24%) stated they would engage in farming as an additional source of income. The total respondents showed that about seventy-six (76%) of the students would definitely engage in farming as an additional source of income, about twenty percent (20%) may engage in farming, and only two percent (2%) are not sure of engaging in farming as an additional source of income (Table 15).

4.10.1: Teacher motivation as a factor to students being interested in agriculture

Out of the 288 respondents, 267 (93%) of the student respondents indicated that they had received some form of encouragement from their teachers. Of all students who claimed to have been encouraged to pursue Agriculture, nearly four out of every five (79%) respondents who had received encouragement from their teachers indicated their willingness to become full time farmers in future while only fifty-seven students (21%) are not interested in agriculture despite their teachers encouragement (Table 16).

Table 16: Teacher encouragement to students being interested in full time farming

Full time farmer	Encouragement from Teachers				Total	
	Yes	%	No	%		%
Yes	210	79	12	57	222	77
No	57	21	9	43	66	23
Total	267	100	21	100	288	100

Source: Field Survey (2016)

From the twenty one who responded negatively to the question of whether they received encouragement from teachers or not, 43% indicated disinterest in the full time agriculture later in life, while 57% of indicated their interest in full time agriculture.

This indicates that teacher encouragement is a major factor in determining the perceptions of students regarding the pursuance of Agriculture full time in future (Table 16).

Two hundred and seventy-eight students responded to both questions of teacher encouragement and their course of study after S.H.S.

Out of the total number of student respondents to these questions, two hundred and fifty-nine students indicated that they are encouraged by their teachers to pursue agriculture at the higher level. One hundred and ninety-eight students (76%) stated they would become full time farmers after S.H.S due to their teachers' encouragement (Table 17).

Table 17: Teacher encouragement as a motivation to students' pursuing agricultural science

Course to pursue	**Encouragement from Teachers**				**Total**	
	Yes	%	No	%		%
Agric Related	198	76	11	58	209	75
Health Related	44	17	6	32	50	18
Education Related	7	3	1	5	8	3
Others	10	4	1	5	11	4
Total	259	100	19	100	278	100

Source: Field Survey (2016)

The remaining sixty-one students representing (24%) are interested in other areas of study than agriculture. Nineteen students out of the two hundred and seventy-eight students indicated that their teachers do not encourage them to pursue agricultural science at higher institutions. Even though, these nineteen students claim they are not encouraged by their teachers, eleven (58%) are interested in pursuing agriculture at the higher institution.

Way forward in agriculture

A total of two hundred and seventy-one students (96%) indicated that, there is room for improvement in agriculture. Twelve students (4%) however, think that nothing can be done to improve agriculture (figure 8).

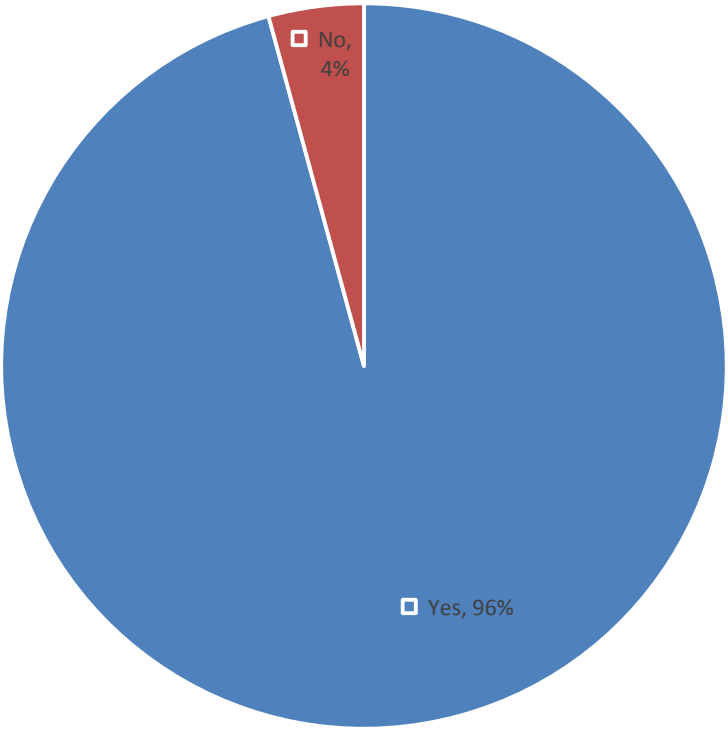


Figure 8: Frequency of improvement in agriculture

Source: Field Survey (2016)

Majority of students in this study believe that teaching and learning of Agricultural Science can be improved. Some of the suggested ways by which students further stated the improvement in agriculture education, include, the establishment of school gardens or farms, more agriculture trained teachers, more tools for teaching and learning agriculture, motivation such as scholarship packages for agricultural science students and more practical sessions.

This goes in line with Linhart et al., (1994) that, if elementary educators are to make agricultural information as part of the existing curricula, then agricultural educators are to rely on individuals to teach these concepts successfully. Also, a better picture on good farming practices, improvement in agriculture together with careers in agriculture would help improve student enrollment (Falvey and Matthews, 1999). Curbelo (2006) also asserted that, students have confirmed that their increased knowledge in agricultural science is as a result of their teachers' good and effective performance in the classroom.

Key Findings

- Majority of the schools do not have school gardens for practical demonstrations.
- Majority of schools do not have school animal farms, even though all of them offer Animal Husbandry as a subject.
- Most of the practical work done is basic and mainly limited to class-based identification of tools and equipment.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

From the findings of this study, it can be concluded that majority of students who study Agricultural Science in secondary schools are males and consequently majority of the Agricultural Science teachers are males.

Teachers in the Senior High schools have the basic qualification for teaching in the S.H.S and the experience or expertise needed to make teaching and learning interesting and meaningful to Agricultural Science students if they are provided with the necessary materials.

It can also be concluded that, most teachers do not engage resource persons in their teaching. Majority of the teachers do not also embark on field trips with their students to places where students can have a real experience of certain concepts or materials that cannot be made available in their school environment for studies.

Students who had more practical lessons with their teachers can practice Agriculture on their own as compared to their counterparts who had less practical sessions in school. Most students are more interested in pursuing Agricultural Science at the higher levels and also interested in practicing agriculture after school.

Generally, the factors that influence practical competencies among students include; frequent practical sessions, embarking on field trips, motivation by teachers and engaging resource persons to share their expertise with students.

6.2 Recommendations

1. Establishing school farms should be a requisite requirement in schools that offer Agricultural Science. In cases where school farms cannot be sited, Agricultural resource centres should be cited in some schools in the various Districts by Government to serve as avenues for practical lessons and practice.

2. Just as in vocational and technical courses, Agricultural subjects should have specific time period on the schools time table for practical work and students should be examined on the practical projects in the school or the school community instead of the classroom practical examination.

3. Scholarship packages should be awarded to best performing Agricultural Science students to serve as a motivation to students in practicing agriculture.

4. Studies should be done in different Regions, to assess the factors that hinder the practice of agriculture after school.

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APPENDICES

APPENDIX I: QUESTIONAIRE FOR STUDENTS

PLEASE FILL IN THE BLANKS AND TICK WHERE APPROPRIATE

1. Sex

   (a) Male (b) Female

2. Form

   (a) Two (b) Three

3. Name of your school: …….

4. What are your elective subjects?

   (a) ……..

   (b) ……..

   (c) ……..

   (d) ……..

5. Do you have practical lessons in your electives?

   (a) Yes (b) No

6. Averagely how many times do you have practical lessons in a term for each of the elective subjects?

   Subject Number of practical per term

   (a) …….. ……..

   (b) …… ……

   (c) …… ……

   (d) ……. ……

7. How often do you go on field trips with your teachers?

   (a) Not applicable (b)Sometimes (c) Once (b)No

8. List two (2) agriculture practical works you have learnt this academic year

   (a) ……

   (b) ……

9. Can you perform some of the agricultural practices on your own?

   (a) Yes (b) No

10. If yes to question 9, list some of the agricultural practices you can do on your own.

   (a) ……

   (b) ……..

   (c) ……

   (d) …….

11. Are practical lessons beneficial to your studies?

   (a) Yes (b) No

12. Mention how beneficial practical lessons are to you

   (a) ……

   (b) ……..

   (c) …….

   (d) …….

13. Are the agric practical lessons in school adequate enough for you to start your own farm after S.H.S?

   (a) Yes (b) No

14. Have you ever practiced the agricultural knowledge you learnt from school at home?

(a) Yes (b) No

15. Would you want to be a full time or commercial farmer after S.H.S?

(a) Yes (b) No

16. If yes/no to question 15, why?

……

17. In future when working, will you like to take farming as an additional source of income?

(a) Yes definitely (b) Maybe (c) I am not sure (d) No (e) Not at all

18. What course would you like to pursue after S.H.S? Mention one (1).

……..

19. Why do you want to pursue that course?

……

20. Do your teachers encourage you to pursue Agriculture to the highest level?

(a) Yes (b) No

21. Do you think that something can be done to improve practical agriculture in school?

(a) Yes (b) No

22. Mention the two (2) most important things that should be done to improve the study of agriculture in school.

……

APPENDIX II: QUESTIONAIRE FOR TEACHERS

Please fill in the blank spaces and tick where applicable

1. Sex

(a) Male (b) Female

2. Qualification

(a) Academic……

(b) Professional…….

3. What subject/ subjects do you teach?

…….

4. How long have you been teaching this/these subject(s)?

……..

5. Is there any Agricultural Science laboratory in the school or district that you teach?

(a) Yes (b) No

6. What are some of the major agriculture equipment that you have in the school? State at most five.

…….

…….

…….

……..

…….

7. Do you have school farms?

(a)Yes (b) No

8. What type of farm do you have?

(a) School farm (feeding students) (b) demonstration farm (c) garden

9. What is the total size of the farm(s)?

……..

10. What is the purpose of the farm?

……

11. How often do you have practical lessons with your students within a term?

(a) Weekly (b) monthly (c) once a term (d) never

12. During practical lessons, what proportions of students are able to perform agricultural practices with little or no supervision?

(a) 75% or more (b) more than 50% (c) about 50% (d) more than 25% (e) less than 25% (f) none

13. What are some of the agricultural practices that you perform in school?

(a) ……

(b) ……

(c) ……

(d) ……

14. Have you ever invited an external resource person for agricultural practical lessons?

(a) Yes (b) no

15. How often do you engage external resource persons for agricultural practical lessons in school?

(a) Never (b) once a year (c) once in term (d) more than once a term

16. How often do you go on field trips with students?

(a) Never (b) once a year (c) once a term (d) more than once a term

17. What is/are the general perception(s) of students towards agricultural science as a course?

(a) ……..

(b) ……

(c) ……

(d) ……

18. What attitude do students put up towards practical lessons?

(a) Very interested (b) interested (c) no comment (d) less interested (d) not interested

19. Do you think that the practice students get during their course of learning can make them establish their own practical agricultural enterprises after S.H.S?

(a) Yes but with a lot more training (b) yes but with some little training

(c) I am not sure (d) not likely (e) not at all

20. What accounts for the observation in question 19?

……

21. Do you think something needs to be done to improve practical agriculture studies in S.H.S?

(a) Yes (b) no

22. What do you think can be done?

……

APPENDIX III: ETHICAL REVIEW FORMS

Form A

UNIVERSITY FOR DEVELOPMENT STUDIES (UDS)

FACULTY OF EDUCATION (FOE)

Name of Researcher: ……

Institutional Affiliation: …….....

Department: ……

Programme of Study: …….....

Title of Research …….....

Purpose of Research …….....

Description of Research Methodology

……

……

Description of Research Target (I.E., Persons, Animals, Community Resource, etc)

……

……

Description of Field Protocols to be followed (Community Entry, Support):

Description of Sources of Data:

CHECKLIST

1. HUMAN SUBJECTS

a. Does your research involve minors (persons younger than 18)?

b. Does your research involve the collection of primary data from human subjects?

c. Are your questions requiring data that are considered personal?

d. Does your research require the revelation of the identities?

2. ANIMALS

a. Does your research involve the use of animals?

b. Are any endangered species involved in the study?

c. Is the animals' health or life likely to be compromised in any way?

3. CULTURAL RESOURCES

a. Will you be collecting data of ethnographic nature?

b. Will your data be requiring revelations of sacred places?

c. Are you going to be photographing sensitive sites of the community?

4. SOCIAL SENSITIVITY CONCERNS

a. Will your research not revive an old conflict that has not been managed well?

b. Will your research not prejudice or damage a particular social, ethnic, cultural or religious group?

c. Will your research lead to a closure of opportunities to a particular social group?

5. ECOLOGICAL CONCERNS

a. Will your research involve felling economic trees?

b. Will your research lead to deforestation of your study area?

c. Will your research lead to environmental pollution of one form or another?

d. Will your research lead to ecological hazards in a way?

Ethical Form B

UNIVERSITY FOR DEVELOPMENT STUDIES (UDS)

FACULTY OF EDUCATION (FOE)

TAMALE CAMPUS

FOE CONSENT FORM

Name of Researcher: …….....

Institutional Affiliation: …….....

Title of Research: ……

Purpose of Research: …….....

What are the nature and the degree of participants' involvement?

……

…….....

What measures will you put in place to ensure the confidentiality and anonymity of your respondents?

……

……

What are the possible risks that you think the research may expose the participants to?

…….....

.....

What precautionary measures will you put in place to prevent/minimize/address the risks?

.....

.....

What are the benefits that the participants may accrue from the research?

……

……

Signature of Participant ……..... Date: .....

Signature of Witness: ……..... Date: .....

Ethical Form C

UNIVERSITY FOR DEVELOPMENT STUDIES (UDS)

FACULTY OF EDUCATION (FOE)

TAMALE CAMPUS

RESEARCH AGREEMENT FORM

1. RESEARCHER(S):

……

……

……

2. DEPARTMENT:

……

……

……

3. TITLE OF RESEARCH:

……

……

……

4. Please Indicate whether the following pieces information have been addressed with a mark of X:

( ) Identity/Background of Researcher

( ) Process of obtaining informed consent including sample cover letters to participants. Note specific guidelines for child participants

( ) Research Instruments .e.g. Questionnaire, Structured interviews, experimental procedures etc

( ) Procedures for insuring confidentiality/anonymity

( ) Means of discussing risks/benefits with participants

( ) Precautionary measure regarding risks and confidentiality

( ) Process of Dissemination of Research Results to Participants

C. Declaration:

I am familiar with the current Ethical Procedures and those of relevant institutions in Ghana and elsewhere and have made provisions that adequately address all ethical concerns. As the principal researcher, I take sole responsibility of any eventualities.

Signature of Principal Researcher (s): ……..... Date: …….

Signature of Supervisor: …… Date: ……...

Signature of Dean/Coordinator: …… Date: ……..

APPENDIX IV: INTRODUCTORY LETTER

UNIVERSITY FOR DEVELOPMENT STUDIES

FACULTY OF EDUCATION

DEPARTMENT OF DEVELOPMENT EDUCATION STUDIES

TAMALE CAMPUS

Memorandum

From: Graduate Coordinator (FoE)

To: Whom it concerns

Date: 1st February, 2016

Subject: Letter of Introduction

The bearer of this letter, Chibelitu Fmelia .is a student embarking on a research exercise as part of his/her work in the fulfillment of the requirements for his/her degree in the University for Development Studies (UDS). He/She is doing the thesis on the topic Assessing factors that influence practical Agriculture competencies in senior High schools: A case Study in northern Region. Information gathered is for this purpose although findings may be used for future research. Please. I would be grateful for your support and cooperation.

Thank you.

Sincerely,

Asante

Rev. Fr. Dr. Thomas Asante

(Graduate Coordinator, FOE)

Coord of Graduate Programs
Faculty of Education
U D S
P. O. Box 1350
Tamale, Ghana