A PHENOMENOLOGICAL EXAMINATION OF THE EXPERIENCES AND PERCEPTIONS OF LEARNERS, TEACHERS AND OTHER EDUCTATIONAL STAKEHOLDERS ABOUT THE AGRICULTURAL SCIENCE CURRICULUM IN SELECTED SECONDARY SCHOOLS OF LUSAKA DISTRICT, ZAMBIA

By

Mulenga Muchindu Munsaka

A dissertation submitted to the University of Zambia, School of Education in partial fulfilment of the requirements for the award of the degree of Master of Education in Curriculum Studies

THE UNIVERSITY OF ZAMBIA

LUSAKA

2025

COPYRIGHT DECLARATION

AUTHOR'S DECLARATION

I, **Mulenga Muchindu Munsaka**, hereby declare that this dissertation represents my own original work and has not been previously submitted for award of any degree at the University of Zambia or any other University.

Signature..... Date.....

CERTIFICATE OF APPROVAL

This dissertation by **Mulenga Muchindu Munsaka** has been approved as fulfilling the partial requirements for the award of the degree of Master of Education in Curriculum Studies at the University of Zambia.

Examiner 1

Name.....Signature.....Date.....

Examiner 2

Name..... Signature.....Date.....

Examiner 3

Name.....Signature..... Date.....

Chairperson of the Board of Examiners

Name..... Signature..... Date.....

Supervisor

Prof Innocent Mutale Mulenga, PhD. Signature..... Date.....

ABSTRACT

Among the most effective ways of helping citizens acquire knowledge, skills, values, and attitudes is through education. Policymakers and administrators must recognize that education is the most reliable path to the sustainable development of any nation. In Zambia, the national goal of diversifying the country's economy from mining to agriculture has been a persistent objective for several decades. Despite this, the Agricultural Science curriculum at the secondary education level remains an optional subject and thus not widely taught. It is a known fact that agriculture is one of the main sources of livelihood for most people in Zambia especially for those in rural areas who produce most of the food that is also dependent on by the urban population. However, implementing Agricultural Science as an optional subject may likely lead to what is aimed at in the nation in terms of providing more skills in agriculture to many citizens and diversifying the economy remain in speeches and not in practice. It is for this reason that this study was a phenomenological examination of the experiences and perceptions of learners, teachers and other educational stakeholders about the Agricultural Science curriculum in selected secondary schools of Lusaka so as to understand how national aims are being translated into practical ways in relation to agricultural science. The objectives were to: establish why Agricultural Science is not widely taught to learners in secondary schools, examine learners, teachers', education administrators and parents' perceptions and experiences about the teaching and learning of Agricultural Science in secondary schools and examine the availability of facilities, human resource, teaching and learning resources in schools for the implementation of Agricultural Science in secondary schools which all took place in Lusaka district. The researcher employed a phenomenological research design. Semi-structured interview schedules and focus group discussion guide were used to collect data from teachers, learners, head teachers, parents and an Agricultural Science curriculum specialist. The sample size was 66, consisting of 36 learners, 11 teachers, 12 parents, 6 head teachers and 1 Agricultural Science curriculum specialist. Data was analyzed using the main themes that emerged from the research objectives in relation to related literature that was reviewed and the theoretical framework that guided the study. The findings of the study clearly showed that Agricultural Science curriculum cannot be implemented in all secondary schools because of the absence of various teaching and learning materials and the shortage of qualified teachers of the subject. The perceptions of the implementation of Agricultural Science from various participants were that the subject was not being effectively implemented. It was further revealed that due to lack of funding, there were insufficient teaching and learning resources for effective implementation of Agricultural Science. From this study, it was concluded that the implementation of Agricultural Science was not being effectively done in secondary schools of Lusaka district. It was thus recommended that the government of the Republic of Zambia and the Ministry of Education should give serious consideration to the recommendations of curriculum specialists based on the provision of teaching and learning resources to ensure that practical subjects such as Agricultural Science are effectively implemented.

Keywords: agricultural science, implementation, curriculum, secondary schools, diversify.

DEDICATION

This work is dedicated to my father Morden Munkombwe Munsaka and my mother Charity Mulenga Munsaka for your unending and consistent support. To my small mummy, Mutale Mulenga Syabeenzu. This achievement could not have been possible without your presence, support, patience, prayers, love and sacrifice. To my sister and brothers Metrude Kagele, Lushomo Munsaka and Mweendalubi Munsaka thank you for your ultimate support, love, prayers, companionship throughout my studies. May the good Lord bless you always and forever.

ACKNOWLEDGEMENTS

I thank the Almighty God the owner of my life for giving me good health, strength, courage and the privilege to realise my dream of pursuing my master's degree at the University of Zambia.

May I also express my sincere gratitude to all the people who in one way or another contributed to the completion of this work. My sincere gratitude goes to my dedicated supervisor, Prof. Innocent Mutale Mulenga, for helping and guiding me during the course of this study. Without his encouragements, advice and constructive criticisms this study would not have been successful. May the Almighty God reward you abundantly so that you may continue inspiring others in the academic cycles.

I would also like to acknowledge Prof. Ecloss Munsaka for the guidance and concrete criticisms to help shape my work.

To my class mates Mr Himambo, Mrs Kazanga, Miss Manyika, Mrs Ochola, Mr Dokowe, Mrs Nchimunya and Mr Peunja and to everyone else that contributed to this work being possible, I am grateful for the support, encouragements and companionship I received when I felt discouraged in the process of this study.

Thank you very much, may God reward you abundantly.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

ACRONYMS AND ABBREVIATIONS

CAPS	Curriculum and Assessment Policy Statement.
CDC	Curriculum Development Center
FISP	Farmer Input Support Program
GDP	Gross Domestic Product
SDG	Sustainable Development Goal
8NDP	Eighth National Development Plan
UNZA	The University of Zambia
ZECF	Zambia Education Curriculum Framework

CHAPTER ONE: INTRODUCTION

1.1 Overview

This chapter consists of the background followed by the statement of the problem, purpose of the study, research objectives, research questions, theoretical framework, conceptual framework, significance of the study and delimitations. Operational definition of terms is also included. Finally, the chapter has the summary.

1.2 Background

One of the most sustainable ways of helping citizens acquire knowledge, skills, values and attitudes is through education. Decision makers and administrators should be able to understand this reality that education is the most reliable way to sustainable development of any nation. In Zambia, national goals of diversification of the country's economy from mining to agriculture has been a continuous cry for several decades. The Ministry of Finance, (1966) postulated that both the need to diversify away from mining, as well as the growth of other sectors such as agriculture and manufacturing, were an emphasis for national development. It can be seen that right from independence there has been a continuous need to diversify the economy from mining to agriculture. It is a known fact that agriculture is one of main sources of livelihood for most people in Zambia especially for those in rural areas who produce most of the food that is also dependent on by the urban population.

Mulungu and Ng'ombe (2017) asserted that the agriculture sector had recorded reductions in contributions to GDP (Gross Domestic Product) during the period 1990-2015 owing to low yields on account of poor rainfall, infestations by pests and the inadequate use of new technologies and machinery by most farmers in the sector. The study by Mulungu and Ng'ombe (2017) had shown that agriculture had low yields due to several factors one of them being the inadequate use of new technologies and machinery. The issue of using modern technologies to improve yields could be learnt by all learners in schools if and when Agricultural Science is provided to all of them. But is that the case in Zambian schools?

Moreover, the goal of the Eighth National Development Plan for the period 2022-2026 was to create economic transformation, resilient economy for sustained growth and job creation driven by, among others, agriculture, (Ministry of National Development Planning, 2022). The 8NDP came into being so as to improve the Zambian economy. Thus, the period of time that was

given to it so as to achieve its goals has passed and there is still a continuous plea for a diversified economy.

In this study, the phenomena or concept under study is the implementation of Agricultural Science in secondary schools of Lusaka district. A phenomenological study describes the common meaning for several individuals of their lived experiences of a concept or a phenomenon (Creswell, 2013). Thus, the phenomenon of the implementation of this subject which are the various lived experiences of the participants will be very important to investigate.

A Kaoma secondary school science teacher had implored government to introduce Agricultural Science in all secondary schools and be a compulsory subject to all pupils for diversification of the economy to be a reality (Lusaka Times, 2017). Agricultural Science being infused into the education system for every learner to learn at secondary school level may assist in diversifying the economy in a more sustained way as the teacher argued.

The importance of Agricultural Science has to be well understood in order for it to be implemented. The agriculture sector provides livelihood to more than 70 percent of Zambia's population (Nawiko et al, 2022). Thus, agriculture is very important for Zambia as a nation and its existence feeds the nation, provides employment and many more. Agriculture directly employs about 56 percent of the Zambian population, serves the critical function of shielding employment unpredictability in other sectors, and remains key to ensuring food and nutrition security particularly for financially vulnerable communities (Nawiko et al, 2022). The existence of agriculture is very cardinal for Zambia to grow and for its economy to diversify.

In as much as there is a constant notion in the practice of agriculture being portrayed as important; the nation at large seems to be disinterested in the practice. The Ministry of Finance and National Planning (2022:32) noted that;

> In terms of performance, in the ten-year period between 2011 and 2020, agricultural growth averaged 0.4 percent while its share of GDP was 5.8 percent. The Agricultural sector growth has been lower than the annual national population growth rate of 2.8 percent, yet it is the mainstay of a larger proportion of the population. Implicitly, the incomes of households that are dependent on this sector have been declining. Further, the sector is characterized by low productivity, limited mechanization and is largely rainfall dependent.

However, education being the driver in achieving societal needs, can greatly contribute to the nation being slowly diversified.

The shift within agriculture to higher productivity activities is not practically possible because not even half of the Zambian population practice it. Globalization is also generating new opportunities for resources to shift within agriculture to higher productivity activities, and services as well as manufacturing which can drive diversification and structural transformation (Hallward-Driemeir & Nayaar, 2017). The shift from agriculture to higher productivity activities cannot be done to boost the economy because Agricultural Science has not been well implemented in schools and the nation at large.

Onanuga, Ifamuyiwa and Alebiosu (2021) asserted that the introduction of Agricultural Science is likely to address some of the Sustainable Development Goals (SDGs), particularly goals number one (1), two (2) and (8) of; no poverty, zero hunger and decent work and economic growth, respectively. Not only can the ultimate practice of agriculture diversify the economy, but also a drive in achieving the above-mentioned SDGs 1, 2 and 8.

However, in the Zambian education system Agricultural Science is not as it is depicted and talked about by the national and institutional leadership because it is not compulsory and not widely learnt by learners and thus not taught to most learners in Zambian schools. In the Zambian education system, Agricultural Science is not as prominent as it is portrayed by its national leadership. In fact, a simple walk-in survey in a number of schools in Munali constituency in Lusaka showed that there are some schools that used to offer Agricultural Science but no longer offer it. Moreover, there is even a scarcity of data and literature on this topic for researches such as this one. A clear sign that the teaching and learning of Agricultural Science in Zambian schools is not as significant as it is talked about on the Zambian media, in national meetings, workshops and conferences. It is for this reason that a critical examination of the phenomena of experiences and perceptions of learners, teacher and other educational stakeholders about the Agricultural Science curriculum in selected Zambian secondary schools was vital so as to understand this important aspect of the Zambian education and economic system.

1.3 Statement of the Problem

According to Iowa State University (1987) since independence in 1964, the government of the Republic of Zambia has repeatedly stated its commitment to the goal of diversifying its economy away from mining by tapping into the country's rich agricultural potential. The vision of the government of the Republic of Zambia is to transform the agriculture sector, by deploying a compilation of comprehensive policy implementation instruments, in order to

accelerate inclusive economic growth and end hunger and under nutrition (Crawford, Jayne & Valerie, 2006). While the 2013 and the 2023 curriculum framework are denoted as an outcome-based and competency based respectively, the Agricultural Science syllabus may be said to be insignificant as its implementation provisions are not in line with what is envisioned by leaders in the country. One of the objectives of the Zambia Education Curriculum Framework (ZECF) of 2013, which has also been carried over into the 2023 framework, is to interpret Government's aims and objectives for the formal education system at all levels and help education providers translate the aims into effective teaching and learning experiences. The teaching of Agricultural Science is done in schools as an optional subject. Similarly, this argument and arrangement can also be seen in the 2023 curriculum framework. At the ordinary secondary school level, there are eight pathways which are natural science, technology, agriculture, home economics and hospitality, social science, business and finance, performing and creative arts and physical education and sports (Ministry of Education, 2023). This means that learners will not be obliged to study Agricultural Science. Thus, this vision may continue to remain in speeches and not in practice. It is for this reason that this study was a phenomenological examination the experiences and perceptions of learners, teachers and other educational stakeholders about the Agricultural Science subject in selected secondary schools of Lusaka so as to understand how national aims are being translated into practical ways in relation to Agricultural Science.

1.4 Purpose

The purpose of this study was a phenomenological examination the experiences and perceptions of learners, teachers and other educational stakeholders about the Agricultural Science subject in selected secondary schools of Lusaka District, Zambia

1.5 Objectives

The objectives of this study were to:

- **a)** establish why Agricultural Science is not widely taught to learners in secondary schools of Lusaka district.
- **b)** find out learners, teachers', education administrators and parents' perceptions and experiences about the teaching and learning of Agricultural Science in secondary schools of Lusaka district.

c) establish the availability of facilities, human resource, teaching and learning resources in schools for the implementation of Agricultural Science in secondary schools of Lusaka district.

1.6 Research Questions

a) Why is Agricultural Science not widely taught to some learners in secondary schools of Lusaka district?

b) What are the perceptions and experiences of learners, teachers' education administrators and parents about the teaching and learning of Agricultural Science in Lusaka district?

c) How is the availability of facilities, human resource and teaching and learning resources in secondary schools for the implementation of Agricultural Science?

1.7 Theoretical Framework

Adom, Hussein and Agyem (2018) defined a theoretical framework as a framework based on a theory in a field of investigation that is related and reflects the hypothesis of a study. This study was guided by the concepts of pragmatism under the theory of instrumentalism or experimentalism as explained by Dewey (1910) who has been one of the most influential education philosophers for many centuries. The ideas behind instrumentalism are that reflective thought is always involved in transforming a practical situation. According to this theory, education should be able to create means of transforming thought into practice. In this study, what is said in speeches based on diversifying of the economy from other sectors to agriculture should be effectively put into practice by the use of education. Education can be a vehicle or practice of change in various societies which can help in achieving various societal values. Human beings always create new values and education should help in achieving them. Since values may change from time to time, it is important that what is deemed valuable at a certain point in time should be immediately effectively implemented in education. Learners should learn what is going to be useful to them in society. If certain values and knowledge are only stated but not acquired, it may create a major crisis in a country or society. Diversification of the Zambian economy from mining to agriculture could be achieved if only decision makers in education ensured that Agricultural Science may be learned by most if not all learners at secondary level of education. However, this can only be achieved if the Agricultural Science curriculum is well supported and implemented. Dewey considered that thought is an instrument by which man adopts himself to his environment. The thought of the Zambian society to

diversification of the economy which stemmed from the abundant availability of natural resources can only become a reality if pragmatism leads the way. All in all, the inclusion of Agricultural Science for all learners at secondary education may be helpful in the achievement of the diversification of the economy.

1.8 Conceptual Framework

A conceptual framework is a structure which the researcher believes can best explain the natural progression of a phenomenon to be studied (Camp, 2001). It is the researchers' explanation of how the research problem would be explored. A conceptual framework presents an integrated way of looking at a problem under study (Liehr & Smith, 1999). Thus, this conceptual framework will help to explain the implementation of Agricultural Science that may lead to all learners acquiring knowledge, skills and values on agriculture science. When most learners learn Agricultural Science, individuals would begin to acquire competencies of agriculture in society and finally higher chances of the diversification of the economy. On the other hand, implementation of the Agricultural Science curriculum will enable some learners to learn the subject. However, not all individuals would acquire competencies of agriculture in society which would create a continuous need to diversify the economy. Being a practical and theoretical subject Agricultural Science if well implemented is likely to help learners acquire competencies they may be used in their future life. Figure 1.1 shows the conceptual framework of this study.

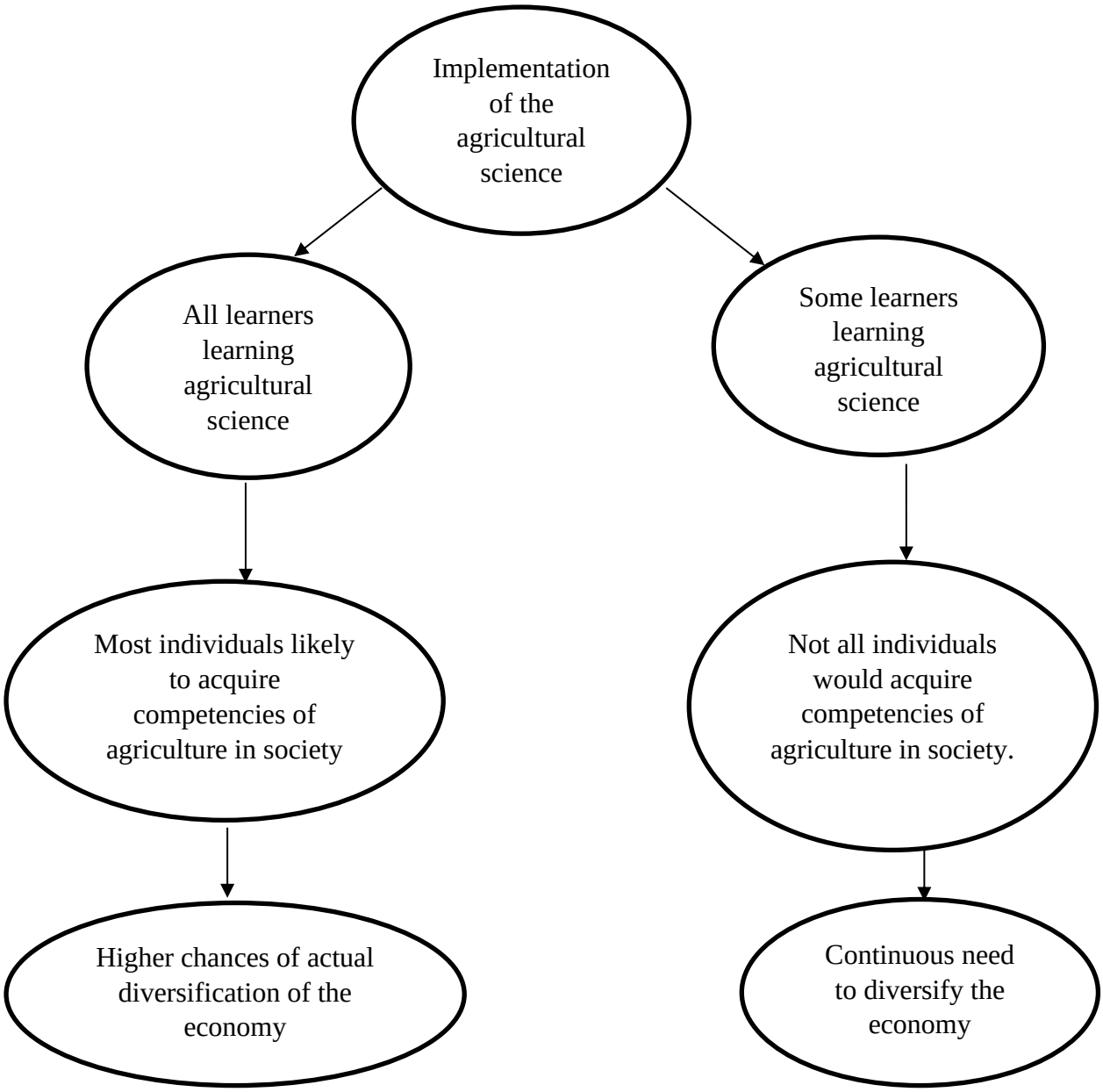


Figure 1.1: *Conceptual Framework*

1.9 Significance of the study

Oso and Onen (2009:44) defined significance of the study as "the relevance of the study in terms of academic contributions and practical use that might be made of the findings". The findings of this study are likely to inform various individuals at the curriculum development center on how best Agricultural Science could be implemented for the secondary education system. It may also inform policy makers on how important it is for learners to learn Agricultural Science which can have long term effects and can be useful in policy formation.

This study may significantly contribute to the existing literature concerning the experiences and perceptions of learners, teachers and other educational stakeholders about Agricultural

Science in Zambia. The findings of this study may also provide further insight for future decisions to be made in the educational system regarding Agricultural Science. Furthermore, this study may also provide literature for other researchers' use to build on various related studies.

1.10 Delimitations

Creswell (2003) contended that, delimitations are used to address how the study is narrowed in scope. This study focused on a phenomenological examination the experiences and perceptions of learners, teachers and other educational stakeholders about the Agricultural Science subject in selected secondary schools of Lusaka leaving out other subjects taught in schools like civic education, food and nutrition, physics and many more. In addition, this study is specified to secondary schools in Lusaka leaving out other schools in the mentioned province.

1.11 Limitations

The researcher had a challenge with finding parents at home. However, the researcher had to get their numbers in order to carry out the research on phone at the parents' appropriate time.

1.12 Operational Definition of Terms

The following terms were defined and applied in this study as follows:

Curriculum: A set of well selected experiences provided to learners under the school authority in order to achieve desired outcomes meant to be best utilized for a nation.

National Aims: A specific goal of what has always been set and to be achieved by the Zambian government.

Curriculum Implementation: Putting the curriculum into practice and ensuring that it is effective.

Economy diversification: The inclusion of other activities taking place in a country so as to improve the standards of living in the country.

1.13 Summary

In general, the focus of this chapter was to introduce the study. Thus, the background of the study has been provided to give a brief outline of the study and the statement of the problem showing the gap to be addressed. The purpose of the study, objectives and research questions

which guided the study have been provided as well. The final part of this chapter includes the theoretical framework, conceptual framework, significance of the study, delimitations, limitations and operational definition of terms. In the chapter that follows, a review of related literature has been done.

CHAPTER TWO: REVIEW OF RELATED LITERATURE

2.1 Overview

This chapter has related literature of the area under study. This has been done under the subheadings; rationale of Agricultural Science, perceptions of Agricultural Science according to learners, parents and teachers and availability of resources used in the teaching and learning of Agricultural Science.

2.2 Rationale of Agricultural Science

Each subject that is introduced in the curriculum has a significance and agriculture is introduced into the curriculum for secondary schools because of its educational value and relevance to the needs of the individual learner and society as a whole (Ogunleye, 2002). The introduction of Agricultural Science enables needs of both the learner as an individual learning Agricultural Science and the society as a whole to benefit from the subject. Temisan, Lukman and Ayodeji (2016) stated that agriculture as one of the science subjects at the secondary school level is an important subject and an instrument per excellence for self-reliance; It is also needed as a pre requisite to study disciplines such as veterinary medicine, agricultural engineering, fishery, livestock production, forestry among others. This shows that learners could even have pre requisite knowledge for their tertiary education related to Agricultural Science.

There should be understanding of Agricultural Science and according to Obue (2019), it is the vehicle for national development as it helps in the transmission of knowledge, skills and attitudes in agriculture from one generation to another through the educational system. The transmission of agricultural knowledge should take place in secondary schools so that in the long run, national development can take place.

In addition, Agricultural education is the type of education that is employed in training learners in the improved agricultural production process as well as in the techniques for the teaching of agriculture (Ogbuoka & Odinaka, 2023). When learners are given an opportunity to learn new and various innovations it can enable them to not only improve agricultural practices but also, have knowledge on various improved agricultural practices. Thus, it is important that learners understand how to be able to incorporate all the new innovations with what already exists.

Similarly, modern Agricultural education programs are designed and developed to offer learners the chance to obtain innovative content knowledge and practical skills required to

succeed in post-secondary education, and the workplace (Brand, Valent & Browning, 2018). Learners should be given an opportunity to have such innovative knowledge which can allow them to spread out that rich knowledge into their societies. Mwangi & Mwai, (2012) and Vandenbosch, (2006) postulated that in East Africa, the teaching of Agricultural Science particularly in Kenya and Tanzania is expected to promote the acquisition of skills for self-reliance in farming. This being an objective of Agricultural Science, educational administrators should understand this so that all learners at secondary education may contribute to national development.

In Africa, Agricultural education and training in secondary schools will play a strategic role in helping to prepare Africa's rapidly growing youth populations for productive careers in the growing segments of the agri-food system (Tschirley, Young & Brent, 2015). School administrators should be able to have this vision which can show its benefits during their secondary school days and post-secondary. The production of food would begin on a small scale which would extend nationally.

Ochu and Umunnagbu (2005) opined that secondary school Agricultural programs are suitable for developing the right caliber of manpower for the agricultural subsector of the economy. It is important that learners learn Agricultural Science so as to provide competent manpower for the agriculture sector. Agricultural Science is key to developing the school learners' awareness, knowledge and skills for the agricultural workforce and productivity (Gule, Alademerin & Dlamini, 2023). Various leaders of educational institutions should be able to understand that secondary school learners should be able to have Agricultural Science as one of the subjects that is taught. This is likely to help grow the economy and the agriculture that is carried out in the nation at large.

There is more literature to bring out concerning the rationale of Agricultural Science but scarce Zambian literature. Various educational administrators need to understand the importance of Agricultural Science and the researcher carried out this study in order to find out whether this was the case. It may allow the learners and society at large to be nurtured in a way of well understanding of the subject. However, this well understanding of the importance of the subject may also lead to improved agricultural practices within a society.

2.3 Perceptions about Agricultural Science

It is important to understand what is being taught through the lens of various stakeholders. In this view, various stakeholders included learners, parents and teachers. This was done in order to understand their perceptions of Agricultural Science.

2.3.1 Learners

Agricultural education plays a major role in agricultural development and it is concerned with the provision and maintenance of quality education and training to support environmentally and economically appropriate and sustainable agriculture (Mutambara, Zvinavashe & Mwakiwa, 2013). For there to be sustainable agriculture in a society like Zambia, its learners of the education system have to accept it as a subject that can enable them to be innovative even after they leave school. All secondary school learners should be made to study agriculture because of its importance to human lives (Fabiyi, Obaniyi, Olukosi & Oyawoy, 2015). Agricultural practices provide food and shelter for humans and without agriculture no man and animal can survive (Adekinsanmi, 1994). However, this is not practiced in the Zambian educational system as Agricultural Science is placed in the education system as an optional subject which only allows some learners to learn it. This research was done to find out why the subject is offered as an optional subject.

It is cardinal to understand learners' views on Agricultural Science so as to know if they truly understand its importance. Learners equated agriculture with science, but not with computers, engineering, and teaching (Conroy, 2000). If learners are not made aware and exposed to various facts and knowledge of agriculture, then they might not be aware of the extensive diversity of career opportunities that exists for the graduates in Agricultural Sciences (Esters & McCulloh, 2008). However, the attitude that learners have concerning Agricultural Science is limited. There is a substantial need to educate learners about Agricultural careers and may ultimately attract them to careers of Agricultural Science (Thoron & Myers, 2008). Onu and Ikehi (2013) in Nigeria postulated that, Agricultural Science was not a first choice for higher studies, but admission and seat limit struggle in other fields compelled the students to choose Agricultural Science. This shows how the dislike or disinterest for agriculture stretches all the way to higher education. If having such perceptions of the subject changes from secondary school level, then this negative perception overflowing to higher education may cease to occur.

In addition, the Ominde Report (1964) in Kenya recommended the absorption of Agriculture in the science syllabus. The report provided one reason that as a subject, Agriculture had become a disagreeable word associated with punishment and tedious tasks. Agricultural Science being found as a subject related to punishment and manual labor had pushed away learners from wanting to learn the subject. The researcher intended to find out whether this is the case in the designated area of study in Zambia.

Darko, Offei-Ansah, Shouqi and Jun-ping (2015) opined that Agriculture has a poor image as a career choice in the eyes of most learners in senior high schools of Ghana. Agriculture in this case, is a subject that is taken in low regard thus, not being wanted by most learners. Some of the factors that have significant effect on Agricultural education are the attitudes and perceptions of people, especially the learners towards Agricultural education, as it has been discovered in some parts of the world that learner willingness to pursue agriculture as a career was related to learners' attitudes towards Agricultural education (Darko, Offei-Ansah, Shouqi & Jun-ping, 2015). Learner willingness to learn is a very important factor for teaching and learning to effectively take place. Having a positive perception of a subject could change the willingness to learn the subject.

The agriculture sector has been perceived as having a poor reputation mainly due to high risk (Afande, Maina & Maina, 2015), labor intensive (Hall, 2013), low salaries (Zaki, Abdul Rahman & Kushairi 2015), menial work and limited career prospect (Baliyan & Nenty, 2013). There may be a lot of disadvantages of Agriculture that one may list however, it is important that even societies understand its' importance to the society and that knowledge can be shared with learners. Thus, many factors influence a learners' career choice. Their attitudes towards the agriculture sector do impose a great role in the declining interest towards careers in agriculture (Baliyan & Nenty, 2015).

James and Denis (2015) found that the majority of learners in Uganda regarded Agriculture as a prestigious career to pursue. Their study revealed that learners are interested in Agricultural related careers because they believed that the Agricultural sector could provide better career development and demonstrate high job significance as it was seen as the main contributor to their country's economic development (Zaki et al., 2015). Learners should be able to understand the importance of agriculture in their lives. This may enable them to appreciate it as it should be. This being the case the research wondered what could have been the situation in Zambia.

Zaki et al. (2015) also argued that the low socio-economic standard and prestige associated with the agriculture sector are the prime reason that promotes a negative attitude among the young generation towards an agricultural career. Thus, further understanding on the influence of perceived social status on an agricultural career should be done in greater depth (Zaki et al., 2015). The perceived social status on Agriculture careers should change in a positive way so as to enable learners to want to learn it as a subject in schools.

In a study carried out by Konadu (2016), in Ghana it was found that punishment methods such as digging or weeding in schools affected learners' perceptions and attitudes towards agriculture science subjects. Similarly, Bergman (1980), reported that in many schools, learners were sent to work on the school farms as punishment which was bound to create a negative attitude to farm work rather than fostering positive attitudes towards Agricultural Science subjects. This being the case, creates a negative perception by many learners in that, Agricultural Science may be taken as a punishment rather than one of the subjects to be learned.

Finally, a study carried out in Ghana by Konadu (2016) showed that learners' perceptions towards the learning of Agricultural Science were affected by the inadequacy of tools and equipment. Similarly, there was also inadequate land for Agricultural practical work in their schools (Konadu, 2016). The availability of tools and equipment would enable learners to fully appreciate Agricultural Science for what it can truly provide an individual with. Adequate land can enable learners to practice and also have a hands-on experience of how to correctly engage in various Agricultural practices. It was important to find out through this research, what the Zambian situation is among learners in terms of their attitude towards the subject in question.

2.3.2 Parents

Parental influence has been recognized as a predictor of career choice in a child's life. Kotrlik (1987) found that parents were the dominant influence on a student's decision whether to enroll in agriculture classes when attending high school. Thus, parents and guardians need to know what could be useful for their children to learn of even before being in the world of work.

In the findings of a study by Adebo and Sekumade (2013) in Kenya, showed that parents with an agricultural background wished their children to secure a better job as professionals rather than working in the agriculture sector due to the difficulties they experienced in the past. If parents have such desires, their children who are learners would not stand a chance to even learn agriculture.

Similarly, in South Africa schools offering Agricultural Science as a subject are mostly dominated by black learners and are mostly found in rural areas which are inhabited by small-scale livestock and crop production farmers (Mbajiorgu et al., 2014). Therefore, this situation prevented parents from involving themselves in their children's school activities due to their work schedules, lack of transport and stress of living in poverty (Nzama, 2021). This shows that parents make their decisions based on their experience of agriculture in the past. This should not be the case as Agricultural practices have evolved over the years which should make Agricultural practices different from many years ago. Therefore, it was significant that the researcher carried out this study in order to find out what the parents' perception were in the Zambian case of Lusaka district.

In Zimbabwe, Peresu and Nhundu (2009) asserted that one of the challenges in introducing Agriculture as a core subject in schools was the perception of parents on the subject; parents tended to have negative perceptions of the subject, as they thought it was not at all beneficial to their children. Rather than the subject benefiting their children, some parents felt that teaching Agriculture to pupils is nothing but a process of "ruralizing" the educational system (Peresu and Nhundu, 2009). This kind of mindset was then transferred to the children through family discussions and social talks which could eventually lead to children developing negative attitudes towards the subject (Tenha, Ndlovu & Mhlanga, 2021). Therefore, a home and society at large have a huge role to play in a child or a learners' life.

Agriculture is viewed as a less prestigious career by some parents and guardians from both rural and urban areas and thus they discouraged their children from taking Agriculture as a career choice since the subject is considered non-profitable as most of the rural farmers lives in absolute poverty (Gibbs, 2005). Parents being vital individuals in learners' lives, need to understand the importance of each subject being offered in schools. This is so because their misconceptions and doubts about certain subjects would hinder them from seeing each subject's importance. Therefore, with parents and proper understanding of each subject can enable them to guide and advise their children according to the subjects they could choose to learn if given a choice.

Miller (2023) carried out a study which had indicated that parents found it important and even more important in many instances, to teach Agricultural topics in school. When parents understand the importance of various subjects offered in schools it makes it easier for teachers

to teach the subject. Thus, it is important that parents understand the existence of Agricultural Science.

Parents are important individuals in learners lives therefore, it was cardinal that this research focused on parents' perception about the teaching and learning of Agricultural Science in secondary schools of Lusaka district.

2.3.3 Teachers

According to Parker, Thomsen and Berry (2022) teachers are important in assisting learners make decisions about their future and entrepreneurship skills. Agricultural Science is a subject that can enable teachers to assist their learners to make use of entrepreneurship skills in agriculture or to explore other ways of benefiting from the subject. When teachers do this, it may enable many learners to benefit and the society at large. Thus, teachers should be able to perceive Agricultural Science as a subject to create various opportunities for learners when they are introduced into the world of work and even in their daily lives.

In Zimbabwe, Tenha, Ndlovu and Mhlanga, (2021) postulated that most teachers had a positive attitude towards the teaching of agriculture. Attitudes play a critical role in the implementation of a curriculum introduced to an education system. There is a relationship between teacher attitude towards a curriculum and its ultimate effectiveness (Carver, 2013, Mason, 2003 & Myer et. al, 2005). However, as Fullan (1991) postulated the most important advantage of having teachers with a positive attitude towards a subject is that the teachers can easily influence parents and learners as well.

In Kenya, Waithera (2013) noted that teachers were poorly equipped to deal with some of the challenges that the system possessed such as the reality of large class sizes, unavailability of didactic materials and gender disparities. If teachers are provided and equipped with sufficient resources, the implementation of the subject could be effective. Demonstrations, practical, experiments, projects and problem-solving are hardly used (Tenha, Ndlovu & Mhlanga, 2021). However, this may result in teachers losing the skill in other teaching methods in that, they will only use ones that do not consider demonstrations.

For Agricultural Science to be well implemented, there should be the availability of teaching and learning materials. The Curriculum and Assessment Policy Statement (CAPS) of South Africa, noted that for schools to offer Agricultural Sciences subjects they should be provided with textbooks and Agricultural Science laboratories (DBE, 2011). For the smooth learning of

the subject there should be sufficient provision of teaching and learning resources to aid the teaching and learning process. The sufficient provision and availability of teaching and learning resources is what the researcher sought to find out. In relation to the statement by CAPS, some scholars have explained that most teachers of Agricultural Science find it difficult to teach if required resources of facilitating learning are not available (Ikeoji, Agwubike & Disi, 2007). Another study carried out in Kenya showed that school farms, Agriculture tools, Agriculture classes, livestock units/tools and Agriculture laboratories were inadequate (Waithera, 2013). Clearly, the teaching and learning process of agriculture science needs adequate resources otherwise it may pose as a serious challenge.

Masha and Maphutha (2022) in Limpopo province of South Africa carried out a study which showed that, teachers found it difficult to administer assessments in agriculture because some assessments required practical work for which schools did not have equipment to carry them out. This resulted in learners not engaging in all the required assessments. According to Dunkin and Biddle (1974) if the process variables are not well implemented then the product variables will be negatively affected. With no resources, learners never learn to their full potential (Masha & Maphutha, 2022). However, this shows that teachers should be provided with teaching and learning resources so that a good learning process could take place. It was cardinal that the researcher in this study found out the extent to which practical teaching and assessments were done.

In Mozambique, poor teacher education and training, insufficient materials and lack of pedagogical support led to most teachers relying on teacher-centered didactic methods, emphasizing repetition and memorization over learner-centered approaches that encourage creative thinking and skills-based learning (Tenha, Ndlovu & Mhlanga, 2021). It was further noted that teachers were poorly equipped to deal with some of the challenges that the system possesses such as the reality of large class sizes, unavailability of didactic materials and gender disparities (Waithera, 2013).

A study conducted by Waithera (2013:53-54) noted that;

> The following were their responses: that there was inadequacy of agriculture teachers, 54 inadequate resources for teaching and learning agriculture, that some students had a negative attitude to cultivating in the farms, that some students who live in urban areas found it hard to cultivate their pieces of land for agriculture practicals as it was their first time to farm and that there is inadequate rainfall discouraging agricultural practices.

These results were gathered from headteachers and as it is seen, various schools undergo different challenges in the implementation of Agricultural Science. Even the learners themselves could be seen as a challenge in its implementation due to their negative attitude towards the subject. It is the teacher's duty to promote the subject and the school administration to provide a positive environment and correct equipment to enhance teaching and learning. Not all learners can have a negative attitude towards Agricultural Science but, this research had to take place in order to find out if this was the case.

2.4 Availability of resources used in the teaching and learning of Agricultural Science

Part of the resources used in the teaching and learning of Agricultural Science are teaching materials. Teaching materials are resources which a teacher and learner utilize in the teaching and learning process of a lesson in order to make the content of the lesson more understandable to the learners (Ikehi, Paradang, & Zimoghen, 2014). The teaching and learning of vocational studies as well as skilled based sciences such as Agricultural Science, have often called for the use of teaching and learning materials during class so as to aid learners' learning pace and retention (Onu & Ikehi, 2013).

Kiguthi, Shiundu and Wangila, (2019) asserted that teaching and learning resources are the bedrock on which effective and efficient teaching and learning is anchored especially in practical and technical subjects such Agricultural Science. With the availability of teaching and learning resources teaching and learning or Agricultural Science becomes interesting. A laboratory, farm, workshop equipped with metal and woodworking equipment, gas and electric welders, power generators, fuel storage tank, tractors, combined harvester, science laboratory facilities, the school farm, a departmental vehicle and funds for running the department and cultivators are among the teaching materials that are required to effectively teach Agricultural Science in secondary schools (Amadi, 2015).

Obede (2017) carried out a study in Nigeria and observed that some tools and equipment were locked up in the principal's offices and in the science laboratory as a means of maintaining and managing them. It is fine to find strategies to preserve tools and equipment that a school has. However, this is only good if teachers can easily access them each time that they are need for teaching.

Uvia (2017) also of Nigeria, stated that few equipment and tools available are seldomly serviced or maintained. Equipment that is always serviced or maintained can easily carry out

its purpose when used or during an experiment. Oduh (2018) stressed that there were poorly trained technicians to repair equipment which was one major cause of poor maintenance. When schools invest in having well trained technicians, it can enable the school to keep equipment for a good period of time. The implementation of Agricultural Science also includes the proper servicing of the equipment used in practicals.

In addition, Kyule, Ochieng' Konyango and Nkurumwa (2016) asserted that Agricultural Science being an optional subject and blocked with other subjects at the same time, learners and their teacher had to look for vacant rooms if available during the lesson time. This indicated an insufficiency of classes from which teaching and learning was to take place which could lead to the improper implementation of Agricultural Science.

Recently, in Nigeria Abubakar (2023) postulated that, apart from standard Agricultural Science laboratory that were not available for teaching Agricultural Science, other Agricultural Science equipment and facilities such as Visual aids like diagrams, charts, posters, pictures and photograph, Fishing tools like gill net, basket, hook and line where not available too, Survey facilities such as ranging pole, measuring tape, prismatic compass, and Gunter chain, and Simple farm tools such as hoe, cutlass, axes, garden fork, hand trowel, head pan, budding knife were available in their respective senior secondary schools for teaching Agricultural Science. This being the case, teachers can be able to implement the subject and improvise on Agricultural Science laboratories.

Another study was conducted to find out whether teaching resources for teaching Agricultural Science were available in Secondary Schools in Ogbomosho, Oyo State of Nigeria and it was found that the teaching resources were available (Soetan, Olamnrewaju, Onojah, Abdulrahman & Onojah, 2021). The availability of resources gives an opportunity for effective implementation of Agricultural Science.

Teachers being part of resources in schools should be adequate and qualified to teach the subject. Abubakar (2023) carried out a study which showed that classrooms were overcrowded with little or no relevant and adequate learning facilities even the school personnel appeared to be in short supply. The study was all about the availability and utilization of facilities for teaching and learning of Agricultural Science. Overcrowding and inadequacy of school staff need to be enough as it enables the proper implementation of the curriculum otherwise it can lead to an imbalance with the teacher pupil ratio. This research allowed the researcher to find

out if the teaching and learning facilities including teachers were adequate. This was also done so as to understand if Agricultural Science was being implemented well.

2.5 Research Gap

The review of various literature in relation to the implementation of Agricultural Science in secondary schools has brought to light several aspects of great interest. One outstanding aspect in the reviewed literature has been that of lacking equipment to be used in experiments. It had also been noted that some learners do not have an interest in Agricultural Science and do not have any sort of motivation to learn it. Furthermore, it has been established that there have been no initiatives, yet, that have sought to provide good teaching and learning materials to ease the teaching and learning process. Hence, this study had attempted to fill these gaps by analyzing the implementation of Agricultural Science in selected secondary schools of Lusaka district, Zambia which seem not be have been clearly known.

From the literature, very few research seemed to have been conducted in Zambia to explain how the implementation of Agricultural Science is in secondary schools of Lusaka district. This study included perceptions of various stakeholders (learners, parents and teachers). Additionally, this study also included the rationale of teaching and learning Agricultural Science and the availability of teaching and learning resources subject. There was an indication in the literature reviewed that Agricultural Science was not well implemented because of the unavailability of teaching and learning resources and the various perceptions the stakeholders had about it. The literature reviewed established the gap for this study. The next chapter that follows is on the methodology that was employed in this study.

CHAPTER THREE: METHODOLOGY

3.1 Overview

This chapter brought out the methodology that guided this research. To begin with, the research paradigm and design are provided, and shall then be followed by descriptions of the study sample, sampling procedure, research instruments, quality control, data collection procedures, data analysis, ethical considerations and finally the summary.

3.2 Research Paradigm

A research paradigm is defined as the researcher's thinking or philosophical orientation or perspective that influences what should be studied, how it should be studied, and how the results of the study should be interpreted (Okesina, 2020). This research was guided by a qualitative paradigm. Qualitative research is described as an effective model that occurs in a natural setting and enables researchers to develop a level of detail from high involvement in the actual experiences (Creswell, 2009). However, this paradigm was chosen for this study because experiences and perceptions of learners, teachers and other educational stakeholders about Agricultural Science were to be gathered from the participants to take part in this research. The researcher used this paradigm to guide this study.

3.3 Research Design

Through a research design one can conceptualize an operation plan to undertake the various procedures and tasks that are required to complete the study and ensure that these proceedings are adequate to obtain valid objectives and accurate answers to the research questions (Zulu, 2019). This study used a phenomenological research design. Phenomenology is a qualitative research design of inquiry in which the researcher describes the lived experiences of individuals about a phenomenon as described by participants involved (Creswell, 2014). The phenomena of having Agricultural Science as an optional subject has been going on for a long time and seems to be acceptable in the Zambian education system. However, what is said about the place of agriculture in the whole nation and what is being done in schools do not seem to match. In Zambia, agriculture is one of the main economic drivers together with mining. Leaders and especially politicians paint a picture that the nation needs to diversify its economy from mining to agriculture. Despite the national stance and understanding of agriculture being such an important economic activity of the Zambian people, how Agricultural Science is treated as an optional subject in schools and in the whole Ministry of Education seems to be at variance with

the national direction. The researcher therefore, carried out this research to find out the various lived experiences at home and in school concerning Agricultural Science as a subject to understand their experiences of its implementation in Zambian secondary schools in Lusaka district.

3.4 Study Sample

The target population is "the entire aggregation of respondents that meet the designated set of criteria" (Burns & Grove 1997:236). The target population included all secondary schools, learners, parents, teachers and head teachers and deputy head teachers (if head teachers would not be available) in secondary schools in Lusaka district and Curriculum specialists of Agricultural Science. Bryman (2001) explained that a sample is a segment of the population that is selected for investigation. There were 6 schools in total, 36 learners, 11 teachers, 12 parents, 6 head teachers or deputy head teachers and 1 Curriculum specialist of Agricultural Science giving the study a total of 66 participants. However, there were only 11 teachers and 1 Agricultural Science curriculum specialist available for the study. This was because one school only had one teacher of Agricultural Science and there was not more than 1 Agricultural Science curriculum specialist at CDC. Just as Patton (1990:184) noted that, "There were no rules for sample size in qualitative inquiry". The most important aspect in this research was saturation where all the themes and categories have saturated and there was no new data generated (Morse, 2000).

3.5 Sampling Procedure

Kasonde-Ng'andu (2013: 37) defined sampling techniques "as part of the research that indicates how cases are to be selected for the study. It is the process a researcher uses to gather people, places or things to study on." This study used purposive sampling technique. Purposive sampling technique is a non-probability sampling technique that involves handpicking of individuals from the population on the authority's or the researcher's judgment or knowledge (Msabila & Nalaila 2013).

3.5.1 Schools

In the selection of secondary schools in Lusaka district, purposive sampling was employed. The schools were selected from three zones in Lusaka. In each zone two (2) schools were selected: one (1) school that offered Agricultural Science and one (1) school that did not offer Agricultural Science. This was because the researcher was targeting schools that offered

Agricultural Science which were being learned and taught by learners and teachers respectively and the other schools that had learners and teachers who did not learn and teach Agricultural Science. This was done in order to get the views of both sides which was the schools that offered Agricultural Science and those that did not offer Agricultural Science.

3.5.2 Learners

The selection of learners was done by the use of homogenous purposive sampling which enabled the researcher to sample the learners by their gender (i.e boys and girls). The researcher purposively picked grade twelve learners who learn Agricultural Science. This is because they had learned most of what is in the syllabus and they must have interacted with the subject for a longer period in school. The researcher also purposively selected grade twelve learners at different schools that did not offer Agricultural Science. This was aimed at finding out if those learners would have wanted to learn Agricultural Science and other cardinal information concerning the implementation of Agricultural Science. Each school had 6 learners giving the study 36 learners from all schools.

3.5.3 Parents

The selection of parents for this study was carried out by the use of convenience sampling. This meant that the parents that were easily accessed or that stayed near the schools were sampled for this study. The researcher sampled two (2) parents from both schools that offer and that did not offer Agricultural Science which gave the study a total of 12 parents from all the schools.

3.5.4 Teachers

The researcher of this study used selected teachers by the use of expert purposive sampling in the schools that provided Agricultural Science and convenient sampling in the schools that did not offer the subject. This was because these teachers have experience in the implementation of the subject and the other teachers can give their view on if they would have liked to have the subject offered in their school. Thus, two (2) teachers were selected from each school offering Agricultural Science and each school not offering agriculture thus giving the study twelve (12) teachers for the whole study. However, one school offering Agricultural Science only had one teacher of Agricultural Science making the sample drop to (11).

3.5.5 Head Teachers

The study used purposive sampling to select head teachers as advised by Kombo and Tromp (2006) that in purposive sampling, the researcher purposely targets a group of people believed to be reliable for the study. The power of purposive sampling lies in selecting information rich cases related to the central issues being studied which in this case are the school head teachers (Lubasi, 2019). All head teachers from the six (6) schools that were sampled, were included in the study because they were directly responsible for the supervision of the implementation of the school curriculum. Head teachers are also responsible for guiding the school which career pathway was to be implemented. In cases where the head teacher of a school was not available, the researcher interviewed a deputy head teacher. Bearing in mind that there are different types of purposive sampling, the researcher used specifically homogeneous purposive sampling because it helped to pick a small sample with similar characteristics in order to describe some particular subgroup in depth.

3.5.6 Curriculum Specialist of Agricultural Science

This study also involved an Agricultural Science curriculum specialist who was sourced from CDC. There was only one (1) curriculum specialist that was selected using expert purposive sampling. The researcher needed information from this specific individual because they are in charge of guiding the process of prescribing what is taught to the learners in schools and also evaluation of the effectiveness of curriculum implementation.

3.6 Research Instruments

The researcher collected data using the following research instruments; interview guides and a focus group discussion guide. These were used to collect data that gave answers to each of the research questions.

3.6.1 Interview Guide

Mugenda and Mugenda (1999) noted that an interview guide is a set of questions that the interviewer asks the interviewee when interviewing. Ritchie and Lewis (2003) postulated that an interview guide is ideal in qualitative research because of its ability to help a researcher obtain in-depth information that may be key to understanding a particular phenomenon. The researcher had a face-to-face interaction with the interviewee without losing track of the topic

to be asked to the interviewee. This enables the interviewee to express themselves through open-ended questions.

3.6.1.1 Semi-structured interview guide for Teachers

This study used semi-structured interview guide to collect data from teachers. A semi-structured interview guide is one that does not have a standard format but there is an agenda that is used as a reminder to ensure that all the basic points are covered (Sapsford & Jupp, 2006). Researchers can easily have a guide to remind them what needs to be questioned so that forgetting can be heavily avoided. This also involved those teachers that were in schools that did not offer the subject. The researcher had to find out whether those schools not offering the subject also wanted the subject to be offered in their schools as well. Information gathered was based on how important it is for learners to learn Agricultural Science and much more.

3.6.1.2 Semi-structured interview guide for Parents

Interviewing parents was done by the use of a semi-structured interview guide. Parents were interviewed based on how important it was for their children to learn Agricultural Science. Parents of learners that did not learn Agricultural Science were also interviewed and the researcher needed to find out whether they would have liked their children to take Agricultural Science and how important it was.

3.6.1.3 Semi-structured interview for head-Teachers

The researcher used the semi-structured interview guide for head teachers so as to get information from them based on their perceptions of the implementation of Agricultural Science, the availability of facilities, human resources and teaching and learning resources and finally various challenges that they faced in offering Agricultural Science in their schools. This also involved those head teachers of schools that did not offer Agricultural Science. It was important that the researcher found out whether it was one subject that was needed to be taught in such schools. This was important for the researcher because this information was coming from the schools' administrators being the head of the schools.

3.6.1.4 Semi-structured interview guide for Curriculum Specialists of Agricultural Science

The researcher used this type of interview guide to collect data from the Curriculum Specialist so as to get views on the implementation of the subject, availability of various facilities, human

and teaching and learning resources and how important Agricultural Science syllabus is for learners to learn. It was important to hear their views because they are part of the development of the syllabus that was provided for the guidance of what was being learnt and taught. The researcher had to also find out how important it was for all learners to learn Agricultural Science.

3.6.2 Focus Group Discussion Guide for Learners

The researcher used focus group discussion guides to find out from learners their perceptions on the implementation of the subject and the availability of facilities, human and teaching and learning resources. The researcher had to collect data from learners so as to gather information from the direct beneficiaries of education which helped the researcher to have exact information on how they felt about the subjects' implementation. Information from the learners not learning Agricultural Science informed the researcher on how these learners felt about the subject. Lubasi (2019) asserted that a focus group discussion is an interview conducted by a trained individual which takes place among a small group of respondents in an informal and genuine way where respondents are free to give views from any aspect. The researcher also used this as a way of being able to capture a good number of learners at a goal.

3.7 Trustworthiness

Lincoln and Guba (1985) relied on three general criteria in their approach to trustworthiness which are credibility, transferability and confirmability. Ensuring trustworthiness begins with the research findings, which must be as truthful as possible. Trustworthiness in this study was ensured by giving a clear and distinctive description of the research context, selection and characteristics of respondents, data collection as well as the procedure for data analysis.

3.7.1 Credibility

Credibility is the equivalent of internal validity in research and is concerned with the aspect of truth-value (Lincoln & Guba, 1985). One method of promoting credibility is through the various processes of triangulation (Stahl & King, 2020). Triangulation was achieved because the researcher used various data collection instruments to collect data from different participants about the same subjects.

3.7.2 Transferability

Transferability is the degree to which research can be transferred to other contexts or settings. In this study; transferability was insured by a large description of the participant's responses (Lubasi, 2019). The researcher of this study ensured this by giving a detailed description of the qualitative data. Ideally, these results should be applicable to any Zambian secondary school.

3.7.3 Confirmability

Confirmability, as outlined by Nowell, Norris, White, and Moules (2017:3) "is concerned with establishing that the researcher's interpretations and findings are clearly derived from the data, requiring the researcher to demonstrate how conclusions and interpretations have been reached". The researcher of this study ensured that no personal biases interfered with the study results. Member checking was also used to ensure confirmability. Member-checking is viewed as a way to correcting errors and by allowing participants to eliminate any information they think is not a true reflection of what they meant during the interview (Thomas, 2017).

3.8 Data Collection Procedures

In order to collect data, the researcher got ethical clearance from the ethics committee at the University of Zambia and consent from the relevant authorities. Permission was sought from the Assistant Dean Post Graduate in the School of Education for the researcher to be given permission to freely interact with the selected respondents without revoking any protocol. Consent was also sought from all participants before they take part in research. The researcher first carried out a focus group discussion to grade twelve (12) learners from the twelve (6) secondary schools in Lusaka district. This was followed by conducting semi-structured interviews with the teachers of Agricultural Science and teachers that did not teach Agricultural Science. These were from the selected secondary schools in Lusaka district. Thereafter, the researcher also interviewed two (2) parents who had children at the selected schools and they were conveniently sampled. The researcher proceeded to use semi-structured interviews to interview the head teachers of these schools who were 6 in total. Then lastly, semi-structured interviews were used in conducting interviews for an Agricultural Science curriculum specialist from CDC.

3.9 Data Analysis

Kombo and Tromp (2006) indicated that data analysis involves uncovering the underlying structures, extracting important variable, detecting anomalies and testing assumptions.

In this study, data was gathered using interview guides and focus group discussions. The analysis of this data was done by the use of various themes within the study. In using this form of analysis major concepts were identified. Kombo and Tromp (2006) asserted that in this analysis the researcher does the following: The researcher peruses the collected data and identifies relevant information related to the research questions and objectives, develops a coding system based on the samples of collected data, classifies major topics, rereads the texts and highlights key quotations, indicates the major themes, places the coded material under the major themes, develops a summary and uses direct quotes to present the findings. The researcher of this study was guided by this process as explained in this section.

3.10 Ethical Considerations

Research ethics seeks to protect human participants, serving the interest of participants and examine specific activities for the ethical soundness and informed consent (Patton, 2002). Based on this knowledge, before data collection, an introductory letter was obtained from the University of Zambia (UNZA) and obtain clearance from the Ethics Committee. Informed consent was sought from all participants. Diener and Crandall (1978) defined the principle of informed consent as the process in which individuals choose whether to participate in an investigation after being informed of facts that would be likely to influence their decision. The researcher of this study considered the following ethical aspects:

3.10.1 Validity of Research

Validity of research should take place in order to avoid wasting resources like time and money. Mertens (1998) remined researchers that not only can faulty research be a waste of time and money but also cannot be conceived as being ethical because it does not contribute to the well-being of the participants. This being a phenomenological study, the researcher ensured to read widely on the implementation of Agricultural Science in secondary schools, phenomenology and related issues of the study like diversification of the economy. This being the case assured validity of this research.

3.10.2 Confidentiality Assurance

Confidentiality assurance was ensured by the researcher making sure that no participant gave out their name at any point during the research. It was important the identity of participants was kept confidential or anonymous and the assurances extend beyond protecting their names to also include the avoidance of using self-identifying statements and information (Fleming & Zwgwaard, 2018). The researcher had to maintain this throughout the research with every participant taking part. Therefore, the researcher had to be alert and of sound mind to ensure that confidentiality is not breeched.

3.10.3 Informed consent

As a way of assuring informed consent, participants remained anonymous and were not referred to by name and this is a traditional ethical requirement aimed at minimizing negative repercussions for participants in light of the outcomes of the study (Mulenga, 2015). The researcher only carried out this research through informed consent. If names were mentioned, pseudo names were used in the research. The researcher encountered participants who had positions that were easily recognized like the curriculum specialists. This is the case where some institutions or participants may be readily identifiable because they may have unique features which make them easily recognizable (Frankfort-Nachmias and Nachmias, 1992). In this case, the researcher had to ensure not to give out their position name or their name as an individual.

3.10.4 Reciprocity

Mulenga (2015:105) explained that "the goodwill and generosity of research participants can be reciprocated with favors and commitments on the part of the researcher". This action has been commended for helping to build a sense of mutual identification (Glazer, 1982). However, researchers should be careful with this act as it may interfere with the results of the research. If generosity is shown to some participants by giving them money, it may affect their response. Thus, the researcher of this study did not use any form of reciprocation towards the participants that took part in the research.

3.11 Summary

In this chapter, details on the methodology which was employed for the study have been explained. These include research design, study sample, sampling procedure, research

instruments, quality control, data collection procedures, data analysis as well as ethical considerations.

CHAPTER FOUR: PRESENTATION OF FINDINGS

4.1 Overview

In the previous chapter, the researcher described the qualitative methodology which was used to obtain the results presented in this chapter. After analysis, the results have been presented according to themes that emerged from the data collected through interviews and focus group discussions. The research questions that were being answered in this study were as follows:

a) Why was Agricultural Science not widely taught to learners in secondary schools of Lusaka district?

b) What were the perceptions and experiences of learners, teachers' education administrators and parents about the teaching and learning of Agricultural Science of Lusaka district?

c) How was the availability of facilities, human resource and teaching and learning resources in secondary schools for the implementation of Agricultural Science?

4.2 Findings of the Study

In order to obtain the findings presented in this chapter, the researcher employed a qualitative research paradigm, specifically the phenomenology design as explained in chapter three. Most importantly, it should be noted here that questions in the research instruments were triangulated across participants in line with the research objectives as a way of validating the responses. During analysis, the researcher also identified themes in relation to research objectives, as well as emerging themes from the research participants. In the description of the responses from participants, actual words were used as much as possible, unless where necessary, some phrases have been paraphrased for the sake of clarity and coherence. Some ideas were similar hence, could fall into more than one category. The following themes emerged from the study.

4.3 Agricultural Science Predetermined as an Optional Subject

Research question one (1) sought to establish why Agricultural Science was not taught to some learners in secondary schools in Lusaka district. The researcher gathered information from head teachers, teachers and the Agricultural Science curriculum specialist.

4.3.1 Agricultural Science as an option subject

Agriculture is a very important aspect of the Zambian economy and it being important has been part of the education system. Research question one sought information to establish why Agricultural Science was not widely taught to most learners in secondary schools in Lusaka district. If agriculture occupies such an important aspect of the Zambian economy the research backed by literature review sought to find out why it is not widely taught to learners. Participants were asked as to "why Agricultural Science was taught as an optional subject in the Zambian educational system" Teacher 1 in school 1 said that:

> *The whole issue starts with having Agric science being predetermined as an optional subject. The biggest challenge seems to be manpower which are teachers trained in Agricultural Science even now that is the challenge that is there. The Ministry cannot make it compulsory because the teachers are not enough to handle all the grades. Even here we are just the three of us we have a challenge already teaching grade 8 to grade 12. The biggest challenge is that the teachers are still few that are trained in Agricultural Science.*

In a similar view teacher 9 from school 5 also said that:

> *It is probably because the number of teachers of agriculture is low. Because for a subject to be implemented properly there should be sufficient teachers to teach the subject.*

The head teacher of school 5 had similar sentiments as teacher 1 at school 1. The head teacher mentioned that:

> *There were reasons that led to it being optional. Agricultural Science needs a lot of resources like land. Schools in urban areas do not have land to carry out practicals. Schools especially in urban areas that offer agriculture do not have enough space to teach the practical part. The schools in the rural area have enough land to practice on.*

In stressing the point that was advanced by the head teacher from school 5, teacher 2 from school 1 remarked that:

> *Maybe it is because of space where to carry out practicals. For example, this school does not have enough space. Imagine if all the classes used to learn Agricultural Science, where are they going to practice their farming? The land*

to carry out practicals is not sufficient so maybe that is why not all schools offer Agricultural Science.

Similarly, teacher 12 of school 6 had as well stated that:

In my opinion it is the location of some schools. For example, here where you've come, there is limited land because it is in the urban area. Because of that, I feel some schools decide not to offer Agricultural Science. At times it is as well the pathway that the school has picked depending on the materials available and even the teachers to teach the subject. In a small way I feel it can be implemented everywhere if it wasn't for all the things I have mentioned.

When asked a similar question was asked to the curriculum specialist as to why agricultural science was restricted to one career pathway in the Zambian educational system and was not a compulsory science the curriculum specialists' response was that:

It is not compulsory just like many other vocational and technical subjects. So, there are two things there. There are two career pathways there is the academic and the vocational. The traditional sciences and subjects like mathematics and English are part of the academic then agriculture is one of the vocational subjects which is an option. Not every school is able to offer agriculture. So, we restrict only to the vocational because some schools may not have the facilities, land or even teachers. So, it is not compulsory based on those grounds. Only those schools having the facilities are the ones that are offering Agricultural Science.

Agricultural Science being optional has quite a number of reasons from the above-mentioned participants. It is a subject that is seen to have insufficient teachers to teach it and as well as insufficient land to carry out various practicals. However, the Agricultural Science curriculum specialist had put it that Agricultural Science is a subject in the vocational pathway because not every school can manage to offer it due to the absence of various teaching and learning materials for its proper implementation. This in turn, restricts most learners to learn the subject.

4.3.2 Learners' placement to an Agricultural Science class

In the Curriculum Framework, guidelines are given on how learners are supposed to choose a career pathway. The guidelines are that learners should chose a pathway of their interest. Thus, in this study participants were asked about how learners were allocated to a class that had Agricultural Science as one of the subjects. When the deputy head teacher from school 2 was asked how learners were allocated to Agricultural Science classes, he said that:

Yes, the learners have a say during enrollment they are asked which educational pathway they would like. They are not imposed.

The same question was asked to teacher 2 at school 1 who explained that:

Yes, the learners have a say. This happens when they come to enroll to be at our school, they are asked to choose which class they want to be in.

In partial agreement with what the above two participants stated, teacher 5 at school 3 also added that:

The ones I have interviewed had a say to be in the Agricultural Science class. But these others I think they are just put in the classes.

This view was made stronger when the head teacher from school 3 also mentioned that:

We would prefer learners who have a background of Agriculture Science but in most cases, we just allocate them especially if they are good in sciences. We have two pathways one being Agriculture Science and the other being physical education. Though sometimes we ask the parents if it is okay that we put their child in the Agriculture Science class and most parents prefer Agriculture Science to physical education.

It was cardinal that the researcher understands how allocation of learners to classes of Agricultural Science takes place in terms of understanding if learners have a say in learning Agricultural Science or not. The findings seem to indicate that in some cases learners have a choice while in some learners are actually just put in the Agricultural Science class without their consent.

4.3.3 Agricultural Science being part of the vocational pathways

Since the 2013 curriculum framework was rolled out to schools, Agricultural Science has been one of the subjects in the vocational pathway. The question asked was if Agricultural Science was supposed to be an optional subject or there are reasons that led to it being optional was asked and the head teacher from school 4 explained that:

I may not say that it was supposed to be an optional subject. Maybe the background of the curriculum in the beginning had set it for only those schools in the rural areas are to be offering it. But when it came to schools in the urban area due to insufficient land, they could not make it compulsory.

Another participant who is teacher 9 from school 5 gave their response to the same question that:

> *I do not think it was supposed to be an optional subject, but I still think what led it to being an optional subject is that we do not have many teachers trained in Agricultural Science. I am not sure if it because we are not motivated or what.*

The Agricultural Science curriculum specialist who is part of curriculum development was also asked the same question and he mentioned that:

> *From inception it was supposed to be optional. In the sense that, it is not one of the core subjects. The core subjects are five. But we ran away from the term optional because it is either you take it or you do not so we have placed it under the vocational pathway. So, in this case it becomes the main subject and these others become option.*

4.4 Summary of results on Agriculture being an optional subject

The responses from respondents were that there was insufficiency of manpower, learners having different learning abilities and interests, insufficiency of land and that agriculture science is only part of the pathways in the education system and not that it is an optional subject. In the next section, are the views of participants towards Agricultural Science.

4.5 Participants perceptions towards Agricultural Science.

In the previous section, the researcher gathered information on why Agricultural Science was an optional subject in secondary schools. In this section research question two which was: focused on the perceptions and experiences of learners, teachers, educational administrators and parents about the teaching and learning of Agricultural Science in selected secondary schools in Lusaka district provided some data to this study too. There were various attitudes both good and bad which could contribute to the implementation of the subject. Therefore, it was imperative that the researcher gathered this data. The following were the findings on the various attitudes of participants based on Agricultural Science gathered from teachers, school administrators, parents and learners.

4.5.1 Attitudes towards Agricultural Science

In research question two, the research sought to examine learners, teachers', education administrators and parents' perceptions and experiences about the teaching and learning of

Agricultural Science. Thus, the researcher asked participants about the attitudes of teachers, administrators and learners towards the teaching and learning of Agricultural Science. The responses from some participants were negative as others were positive attitudes. Attitudes of participants especially learners towards Agricultural Science are important as they affect the perspective one has towards the subject. Teacher 1 from School 1 responded that:

> *I have never had a challenge from here everyone is very supportive. Because what we do is when we plant, we do our practicals, even the teachers here benefit because we sale those vegetables at a price that is affordable. So, they are also supportive because they benefit in one way or the other. Even the administration is supportive. They do buy implements for us when we need them. Usually, when the learners come, they have that negative attitude towards the subject but as you go on, they start liking the subject and they do what we tell them to do.*

However, teacher 2 from school 1 opposed that the teachers are actually not supportive of Agricultural Science because of they do not understanding its importance. Teacher 2 actually explained that:

> *With teachers it has been negative. In short, they do not understand its importance. The school administration is in support of Agricultural Science. The learners' attitude is mixed and why I say this is because they see their friends are placed in the other classes like those in commerce classes. They admire their friends doing a subject related to what they would want to do at tertiary education level.*

The deputy head teacher for school 3 also had this to say about the attitudes of teachers and learners:

> *Generally, the attitude of teachers is very positive compared to the attitude of learners. These pupils being town pupils is something else for them. They are not used to being in the garden, drawing water or making beds.*

The deputy head teacher for school 2 had a similar response and said the following:

> *The learners like it. They like it when they are in the fields and garden and for some it is taken as an adventure especially when they have a tour at the farms it is not just crops that they see and learn about but also the animals. So, I can say that their attitude is positive even when they go to water their plants and*

make their beds you can see the passion as they do these activities. The teacher is as well very passionate.

Learners possess various attitudes in relation to Agricultural Science and it is up to a teacher to be able to manage these attitudes especially when they are negative towards the subject.

4.6 Features individuals should possess when they learn Agricultural Science

When a subject is taught to learners there is a certain set of knowledge and skills they should possess. This shows that the implementation is being well done. Agricultural Science being a practical subject, is one that enables learners to have a set of skills. Various participants gave their views on what the learners should possess when they learn Agricultural Science. This clearly brought out their deep sited attitudes towards the subject.

4.6.1 Self-reliance

Self-reliance should be a skill that learners acquire as they learn Agricultural Science. As noted by some participants, learners can be self-reliant when they learn Agricultural Science. They can be able to do certain things for themselves and their families when they engage in Agricultural Science. Thus, participants were asked as to why it was important for learners to learn Agricultural Science. The deputy head teacher from school 1 stated that:

Learners need to learn this to have a know-how on improving the food security of the country and also the economic status of the country and as well as the provision of food for themselves. Agriculture is not all about food but they can also earn money so the country can develop economically. This makes them self-reliant.

Similarly, parent 7 with a child at school 4 said that:

Agricultural Science equips them with skills for the future. With this lack of employment today, it can be used as a way to sustain themselves. I was with my children for 8 weeks at the farm and they keep these avocado seeds so that they can plant them. That shows you how children are also now being inculcated with the mentality of doing better in terms of agriculture.

Teacher 3 from school 2 also mentioned that:

The learners themselves can be producers of food and the nation at large. They can earn some income for themselves and they don't even need to go through tertiary education to learn agriculture. They can produce their own crops and livestock on their own and have extra income and food for their homes. I have

seen learners at some schools who sponsor themselves or buy themselves uniforms and school shoes through the business of agriculture.

Parent 12 from school 6 also added that:

It is very important for them to learn Agricultural Science. For instance, if they are they are able to rare chickens these would give them eggs. Growing crops, or even fish farming would be quite beneficial too. Learners should have this skill because even for them one day they will have their own homes. So, they need to grow with these skills and many more which will contribute to the GDP and make them self-reliant.

4.6.2 Production of food and extra income

Learners being part of a household can contribute to the provision of food at household level. Various participants said that learner's knowledge in Agricultural Science can improve food production at household level. With that production of food, there as well can be extra income from the excess food. For instance, the curriculum specialist of Agricultural Science mentioned that:

Without agriculture like I said before, there would be no food in the country. The country would not be food secure as you can see the complaints now due to the droughts that we have experienced these years. There is a shortage of mealie meal. There is no food which is now making government to import food.

Teacher 3 from school 2 as well said:

The learners themselves can be producers of food and the nation at large. Agriculture can be a source of income for the learners themselves they don't even need to go through tertiary education to learn agriculture. They can produce their own crops and livestock on their own and have extra income and food for their homes. I have seen learners at some schools who sponsor themselves or buy themselves uniforms and school shoes through the business of agriculture.

Learner 1 from school 4 disagreed and said:

Personally, I wouldn't like to learn Agricultural Science because I perceive it as a subject involving getting dirty and tired. I also feel Agricultural Science, is affected by a lot of things like climate change. For instance, this year, the

country has been affected by having less rainfall. I feel it would be a loss trying to learn something which will not work out in the end.

An individual that has learnt or one that learns Agricultural Science may be self-reliant or even be able to produce their own food and extra income. The researcher had to gather this data to be able to understand the various perceptions individuals have about Agricultural Science.

4.6.3 Competencies learned and relationship of what is learned and taught

In a practical subject like Agricultural Science, learners should practice what they learn in school. There are various competencies that are learnt by learners in Agricultural Science. When these competencies are learned they should be practiced by learners when they go back to their homes. These were the various responses from the Agricultural Science curriculum specialist, parents, teachers and learners when asked about the competencies they noticed learners using at home as a result of learning Agricultural Science in school?

Parent 1explained that:

My child helps out with the garden by removing weeds, planting and even watering the plants. She also helps with spraying the vegetables. So, I think I am benefiting from my child learning agriculture because I am seeing her do here at home what they learn at school.

Additionally, teacher 1 from school 1 had not experienced what competencies learners practice at home. Teachers should be able to know what competencies are being practiced by learners at home and not mere thoughts of wondering what competencies learners practice while at home. However, there should be as well a relationship between what is learned and what they practice at home. This was the response from the only teacher of agriculture at school 3 when the question about the relationship between what learners learnt in Agricultural Science in school and the activities that they did at home was asked:

I try by all means to co-join the activities by encouraging them to do basic agriculture at home even just having a small bed of vegetables. The accommodation arrangement in Lusaka is such that there is a mdadada kind of arrangement where most learners live. So, I advise my learners to plant in sacks which will enable them to have any kind of vegetable. The learners themselves give me seeds to plant till they reach seedling level so that they can transfer them to their garden at home.

However, Teacher 4 from school 2 had this to say when asked a similar question.

There is a discrepancy between what learners learn at school and what they do at home. I feel a few have some gardens at home but I'm sure that they do not practice it as they should. There is no much practicality in the area of learners actually practicing what they are taught in Agricultural Science.

Understanding the perceptions of head teachers, parents and teachers about views on the competencies learners learnt in school, which were practiced at home was important for the researcher to gather information. Now it was as well important to know how the learners felt about this. Learners felt that it was somehow impossible to carry out practices at home due to various reasons. These were the responses of learners when asked about how practical it was to practice at home what they learnt in school (Are you able to practice what you learn at home? Was the question) Learner 1 from school 2 responded that:

For me it's not because we don't have a garden at home. And to be honest it is difficult to make a garden.

Learner 4 from school 3 was asked the same question said:

When we look at livestock and other vast topics, we come to notice that there are some animals that cannot be domesticated in a small place. So, topics like that cannot be practiced at home in any way even if we wanted to.

Similarly, learner 5 from school 3 said that:

So, you need a vast piece of land, like a farmland. So, this can be a disadvantage to us as pupils. Then, like here at school, we find that we do not have those livestock which we learn about, we do not have chickens, we have nothing.

The researcher had found out that competencies learned in school were not well taught to learners in schools. Learners felt it would not be possible to practice some competencies at home because of not having some facilities at home and the scanty implementation of Agricultural Science.

4.6.4 Motivation and demotivation to learn Agricultural Science

To learn something with a drive and to want to know more, learners should be motivated to learn the subject. There should be various measures put in place by the teachers to attract learners to like and then learn the subject. Just as there is motivation to take Agricultural Science, learners as well get demotivated to study it. Thus, teachers need to be aware of these so as to know how best to deal with them. This is what Teacher 1 from school 1 had to say

when asked to explain based on his experience in teaching the subject, about what he thought motivated learners to learn Agricultural Science? The teacher indicated that:

> *Firstly, the teacher should be able to show interest in the subject then the learners may also start to enjoy the subject. The other thing is when you plant something and they begin to see it grow, up to the time it is sold they get to understand how it is done. They also would want to do that on their own. Another thing we do to motivate them is when we do a project, we tell them to pluck the vegetables so that they can take that food to show their parents at home.*

The only teacher of agriculture at school 3 also added that:

> *I have told them it is not a punishment because they have seen me do it. The problem comes in when learners have not seen the teacher practicing agriculture.*

Teacher 3 from school 2 as well had mentioned that:

> *Agricultural Science is a practical subject. Visiting farms, going for tours, doing projects, lab experiments, these are what motivate the learner to participate. The learners get very bored when they're just being taught in class, it's meant to be a practical subject. They want to be shown whatever they're being taught because that's how they build curiosity and interest in the subject.*

Learner 4 from school 2 also said that:

> *The way she said about planting crops, it motivates me to go out to plant crops. Agriculture, to me, is my best subject. I've never gotten below eighty percent.*

The issue of motivation and demotivation was as well asked to the teachers. This was because teachers understand learners and their behavior in the classroom. The question of as to what demotivates learners to study the subject was asked and these were the responses of some teachers.

Teacher 1 at school 1 mentioned that:

> *Usually, it is discouragement from their friends. Some will be telling their friends that they will just be getting dirty. The whole essence of agriculture is not just about keeping animals or planting we also teach them the skill of starting up something and also how to market the produce.*

The only teacher of Agricultural Science at school 3 said:

Demotivation comes from the community. Agriculture has been stigmatized. Even their friends discourage them from taking it and calling it a dirty subject.

Teacher 4 at school 2 added that:

It is the lack of proper practicals and without that practical part it is quite boring for the learners. They need to see and have a hands-on experience with what they learn in the classes.

It was vital for the researcher to find out if the learners were either motivated or demotivated to learn the subject. The researcher needed to find out about this in order to understand to what extent learners are motivated or demotivated to learn the subject so as to understand how these issues could be addressed.

4.6.5 Societal perceptions and attitudes towards Agricultural Science

Knowing and understanding how the society views Agricultural Science as a school subject was very important for the researcher to find out. Parents especially were to give out this information. Some participants said that their societies had mixed feelings about agriculture. Thus, societal views about agriculture were important to get so as to understand why it is not given its importance in schools. Parents and head teachers were participants that were asked this question. There were negative responses that were given saying that people do not have any interest in agriculture even though they benefit from it. The question was that "what is the attitude of your society towards agriculture?"

Parent 7 from school 4 gave this response:

In my society, people view agriculture as a poor man's activity. It is stereotyped as unschooled, for the jobless or poor people.

Parent 8 at school 4 as well, mentioned that:

They don't take it as a business. They don't go into farming as commercial farming. Normally, they take farming solely as a means of consumption. And they are not self-sufficient; they don't think that farming can put them in a situation where they can become self-reliant. And the bad attitude is they blame the government. For instance, they usually complain that they "Can't get fertilizer. The government can't give us fertilizer." But serious farmers, have a very good attitude, they plan in advance. Two, three years they are supported by the government, but after three, four years later, they are able to stand on

their own. They are able to buy their own inputs, and they don't wait for loans. I think when government organizations it can deliberately bring in education.

Parent 2 of school 6 had similar sentiments:

Perception's people have about agriculture is very poor because people do not see the benefits of it. People do not understand that they can use small things to help themselves. That is why people wake up every day to look for tomatoes, onion and vegetables. Those are things that people should not be buying or fighting for to buy at the household level they should be readily available at household level because they lack that knowledge.

Agriculture being an important aspect in Zambia has various positive issues attached to it. Only one parent specifically had seen people viewing agriculture in their society as positive. Parent 4 from school 2 said:

From my perspective I think people like agriculture. Most of the people use it as a source of income. Some use it as a way to help them pay for their children's school fees.

The head teacher of school 5 had said:

People are talking of agriculture as one of the factors in growing the economy. We can produce food for our country and exporting it to other countries and can bring revenue. This time the attitude of the society based on agriculture is positive.

Parent 9 at school 5 mentioned that:

Attitude is very positive. Everyone wants to try it. So, people want to cut costs by planting for usage at home.

Most participants felt that their societies had mixed feelings towards agriculture. Agriculture being the mainstay in the Zambian society in these responses it was not being seen as important. Parent 1 from school 1 said that:

The attitude is in the society is average. Some are for and some are against agriculture. The ones that are for agriculture do practice it and they as well have farms and engage in business. Then the ones that are against do not practice it. They feel it is a tedious job and that it is something that they do not have interest in and just prefer to buy food that has already been grown.

Parent 2 with a child at school 1 said:

The attitude towards agriculture is with mixed feelings or multifaceted. In the positive attitudes, agriculture is deeply rooted in the Zambian cultures with many considering farming and keeping animals as a noble or respectable occupation. And again, those with positive attitudes, consider it as of economic importance. People recognize agriculture as a vital sector for economic growth. The government has initiated programs to help farmers with FISP for farming inputs. Then there are those with negative attitudes towards it. Some people especially some youths, think that it is for retirees, for old people or people living in the rural areas and yet it is not supposed to be like that. There is little or no information out there about farming. So, other people have not embraced it and many other Zambians view agriculture as a subsistence activity rather than a commercial venture whereby it can be ones job to make one an employer at a commercial level.

However, Head teacher of school 6 stated that:

I think people are beginning to realize that agriculture is the way to go. The market is what makes it challenging for certain people. There must be a systematic way of a market where people can go and sale their products. Like at Soweto market you will find a pile of tomatoes just rotting. That is a sign of market being hard to find. If agriculture is going to be promoted, and to ask children to venture into it by studying it while in school and they see a situation like that, they begin to wonder if agriculture is all about losses or selling things. It is not their fault that they negatively think about agriculture, it is because it is a system, we have created for ourselves. It is what we see that motivates us to venture into it. Look at how many people are still pursing gold in make ship mines and dying because of the nature of getting the gold. If agriculture was to be treated that way, believe me there would be no land today in Zambia left without agriculture activities on it. So, if we change that narrative then things may be better but if not, issues related to Agricultural Science in school and in society will remain the same.

Since the learners come from the society it was as well important to understand the attitudes and perceptions of what their society think about agriculture. The researcher needed to have this information so as to understand what type of societies the learners came from. After all,

once they leave school, they go back to those same societies to use the competencies that they would have acquired in school.

4.7 Reasons to continue learning Agricultural Science at higher levels

The attitude a society has, may also influence the attitude of parents and guardians of learners. Guardians and parents have various opinions about their child learning Agricultural Science at post-secondary school. The learning of Agricultural Science was asked to parents if they would like their children to do a program in agriculture at post-secondary school level. Thus, those who showed interest in having their children pursue Agriculture related programs at post-secondary level were asked as to why they wanted they children to do so.

Parent 7 with a child from school 4 said:

> *Because I have seen how scarce jobs are. If my child enrolls for agriculture, they would learn agriculture at a more advanced level and may be self-employed than them being stranded without a job after tertiary education.*

Parent 12 with a child from school 6 also mentioned that:

> *Because my child would be self-sustained. It would be good for my child to learn a new skill which will also contribute to improving the economy. You need to teach a child in a way that he/she should grow so that they never depart from it. And hard work or some sort of physical workout is good for children.*

In agreement with the above two quotes, parent 10 from school 5 said:

> *Yes, to have the skill and be self-reliant. It would help them save money for small things. It can help them to have entrepreneurship skills.*

Additionally, Parent 8 from school 4 said that:

> *Because they would be able to know various advanced ways of farming like mechanized farming and how agriculture should be practiced as a business. So, for me if my child would go and learn Agricultural Science at tertiary level, it would be thumbs up.*

Some learners' guardians had explicitly put it that they would like their children to go ahead and study agriculture related programs at tertiary education. This shows that some parents and guardians do have an interest in agriculture and this was important for the researcher to understand.

4.8 Sensitization of the importance of Agricultural Science

Sensitization about the importance of Agricultural Science is very importance in that, various individuals may not understand its importance. Participants felt that it was important to sensitize the society on the importance of learners learning Agricultural Science in school. This question was asked to all participants. Head teacher of school 6 explained that:

> *The agriculture environment should be motivating and encouraging. Learners should be motivated to learn the subject. Agriculture needs to be well advertised and sensitized then learners will flock and will want to take the subject. But for now, there's nothing motivating them. Schools also need to be properly prepared because land is an issue in most schools.*

Parent 5 with a child at school 3 said that:

> *It needs to be made more practical. It must also be made known that agriculture is not made for failures, poor, or the uneducated. There is even a misconception from some parents who would refuse their children to do agriculture at tertiary education level. They wish they children did medicine or law. They demonise the subject. The subject should not be neglected. It should be well marketed just as other subjects have been marketed. The adverts made for seed-co showing a farmer in a kabudula (short pants) and a chisote (hat). No child would want to become that and not even I would want to become that. Pilots and doctors are always shown as well dressed. The advertisements can be made to look better and branded better because now learners will opt to go for music because they have seen Yo Maps (Zambian musician) in jewels.*

Teacher 11 from school 6 also mentioned that:

> *Learners need to be educated more, they need to see it on their own how beneficial it is, they need to be educated more and to be sensitized on the importance of Agricultural Science and finally they need to have first-hand experience in the subject which will build their interest in the subject.*

Finally, Parent 5 of school 3 said:

> *The societies they come from should be motivated to do agriculture then even the learners will learn it with confidence. This can be done by sensitizing the public of the importance of agriculture.*

Sensitizing the public on the importance of agriculture is cardinal. This would be important so as to inform all those who do not understand its importance in the society. When learners

understand this, they would learn agriculture with confidence knowing what the subject provides.

4.9 Summary of participants perceptions and attitudes towards Agricultural Science

The purpose of this section of findings was to respond to research question two which sought to examine learners, teachers', education administrators and parents' perceptions and experiences about the teaching and learning of Agricultural Science in secondary schools of Lusaka district. The attitudes and perceptions that participants had towards Agricultural Science were mixed. Various competencies are learned by learners in Agricultural Science but not all competencies can be practiced at home. Some learners are motivated to study the subject and enjoy it as well. On the other hand, there are some learners that were not motivated to learn Agricultural Science. This needs the teacher to create some strategies to change their perceptions. It was also important for the researcher to understand why learners' guardians would like their children to learn Agricultural Science.

4.10 Availability of resources to implement Agricultural Science

In this study the third research question was about the availability of facilities, human resource and teaching and learning resources in secondary schools for the implementation of Agricultural Science. The researcher had to find out about this significant aspect regarding the implementation of Agricultural Science in school because for an effective implementation of Agricultural Science to take place, there has to be availability of appropriate resources to implement the subject. This information was gathered from head teachers, teachers and learners.

4.10.1 Availability of Teaching and learning materials

Agricultural Science is both a theoretical and hands-on subject which requires learners to carry out various experiments and practical demonstrations in the laboratories and do field visits. Participants were asked what teaching and learning resources were not available in the school for the effective implementation of Agricultural Science. Teacher 4 from school 2 explained that;

> *95% of the tools needed for teaching and learning Agricultural Science are not available in our school. We have chicken rans which are not fully ours we also have other animal husbandry implements we do not have milking machines,*

branding tool and more. In fact, if I said 100%, I would not be wrong because all we have is a hoe and a sprayer.

Even the deputy head teacher for school 1 had similarly put it in the same way as teacher 4 from school 2 that:

We do not have much but we are trying. We do not have a fish pond, piggery, or farm for the school. This is only to mention but a few of the many equipment that the school does not have.

The only teacher at school 3 as well, had similar sentiments towards the availability of resources for the implementation of Agricultural Science. He said that;

A lot of equipment is not available. We have to seriously look for equipment. Even simple things like garden hoes which are only three in the whole school. Watering cans, watering pipes, rakes, hoes, forks just to mention but a few, are not available in this school.

The availability of resources for the implementation of Agricultural Science was as well asked to the Agricultural Science curriculum specialist he said that:

The other inspectorate is the one in charge of that. But from the bit that I know, there are few specialized rooms to carry out practicals from. Books also need to be provided by the Ministry of Education but most schools do not have any.

Most participants who were asked on how sufficient human resource is in schools for the teaching of Agricultural Science, said teachers were insufficient and that there was need for more teachers to be employed for Agricultural Science. These were their responses:

The deputy head teacher of school 2 stated that:

If anything, at this school we don't have a teacher trained in Agricultural Science. The teacher we have is on PTA who was here for his teaching practice and afterwards we tried to return him as he waits to be deployed by the government. In a nutshell, we do not have enough teachers for Agricultural Science but we would like to be eclectic by using those teachers who did science so that they can help out in the teaching of Agricultural Science.

Similarly put, deputy head teacher from school 3 said that;

Not really. Like here we only have one teacher of agriculture.

Head teacher of school 1 said;

> *No, they are not enough. We need more teachers. If more teachers are recruited, then it could probably be offered as a compulsory subject.*

Head teacher of school 4 exclaimed that;

> *No even for the marking of grade nine exams we do not have enough teachers.*

Teacher 3 from school 2 said;

> *No, they aren't enough teachers. There is a growing interest from students and parents alike in this subject and the number of teachers isn't enough for the growing interest.*

The procedure taken in the processes of curriculum development and curriculum implementation is supposed to be well informed so that the aims of learning a program can be met. So, the curriculum specialist of agriculture science was asked as to whether when developing the Agricultural Science curriculum, it was considered that schools had the required human resources, various facilities (labs, lab instruments, chemicals, text books etc.) and other teaching and learning materials before it was introduced. The curriculum specialist explained that:

> *Our part is to design and develop the curriculum and that's where we end. We also recommend for materials so it is up to the Ministry of Education to provide the required teaching and learning resources during implementation. We may also monitor the implementation otherwise; the rest is done by other directorates in the ministry.*

Most schools have insufficient teaching and learning materials and teachers for the implementation of Agricultural Science. However, this being the case, it was important for the researcher to have gathered this data.

4.11 Hindrances from proper implementation of Agricultural Science

Teachers as curriculum implementers, do face some hindrances in the implementation of the subject. Insufficiency of resources and lack of funding are the hindrances that this study revealed. Teachers and head teachers were asked if there were any barriers hindering the Agricultural Science curriculum from being well implemented

4.11.1 Lack of funding

Various schools go through this problem of lack of funding. Agricultural Science being a practical subject needs proper resources and as well requires good funding to purchase various equipment, maintenance and renovation of facilities and buying of specimen for experiments. This study revealed that there was acute shortage and lack of funding to the schools. For instance, Teacher 1 from school 2 stated that:

> *The steps we take to acquire resources delays plans. If they can streamline the whole process of obtaining resources that would benefit us a lot. When the students report, they expect practicals to be performed, but because of the financial delays and insufficient funding from the government, learners cannot perform the practicals.*

Teacher 4 at school 2 as well agreed and pointed out that:

> *For this school, it is either no funding or delayed funding. If funds can be given to us on time, it can be good.*

The implementation of Agricultural Science should be well prepared for, having sufficient and qualified teachers would be one of the ways of ensuring that implementing the subject will be effective. The Agricultural Science curriculum specialist was also asked about the hindrances of the implementation of the subject and he said that:

> *A lot of money is needed for proper implementation of the subject, Agricultural Science labs, qualified teachers from recognized institutions and teachers should learn this in full time and not on distance education because this is a practical subject.*

4.11.2 Topics taught without practice in Agricultural Science

The researcher asked if there were specific topics in Agricultural Science that were taught without the practical part and yet such topics demand that the practice aspect of the subject is done. Teacher 2 from school 1 said that:

> *The topics that are taught without the practical part are soil science, crop science, livestock production, farm machinery, farm management, forestry, conservation farming and agriculture in Zambia.*

Another response from teacher 4 of school 2 was that:

> *Most animal husbandry topics are only taught theoretically due to lack of teaching and learning resources. This part of the subject has theory too but it is expensive to teach because the resource required such as ploughs are so costly.*

Teacher 3 from school 2 further said:

> *Topics that we actually teach without practicals are farm structures, farm machinery, forestry and soil science. Soil science deals with types of soils and there are many of them, but we don't have the resources to access them easily, because some types of soils are very far away. For example, a different type of soil may be found on the Copperbelt, it is difficult to have access or ways to actually get hold of that type of soil so as to be able to show the pupils the soil.*

It was found that there are some topics in the Agricultural Science curriculum that are not taught due to the absence of teaching and learning materials in the school premises.

4.12 Summary

In this chapter, the research findings of this study have been presented based on the themes that emerged from the research. Based on the responses to the three research questions, the findings suggested that Agricultural Science is a subject that cannot be implemented in all schools because of insufficient teaching and learning materials. The researcher also found various perceptions and attitudes participants had towards the teaching and learning of Agricultural Science. The study established that according to the availability of teaching and learning resources, they were insufficient. Furthermore, this also led to the researcher finding out on what hinders teachers from properly implementing Agricultural Science curriculum which found that funding and teaching and learning materials insufficiency to teach some topics. The next chapter had addressed the discussion of the findings.

CHAPTER FIVE: DISCUSSION OF FINDINGS

5.1 Overview

In the previous chapter the findings of the study have been presented. In this chapter, the research findings are discussed following the themes that emerged from the analysis. Literature presented in chapter two and the theoretical framework that has been explained in chapter one has been used to further understand the findings as they were being discussed.

5.2 Agricultural Science predetermined as an optional subject.

Agriculture is currently one of the largest sectors contributing to the growth of the Zambian economy. It directly employs about 56% of the Zambian population, serves the critical function of mitigating employment instability in other sectors, and remains essential to ensuring food and nutrition security, particularly for economically vulnerable communities (Nawiko et al, 2022). According to Obue (2019), Agricultural Science is the vehicle for national development, as it facilitates the transmission of knowledge, skills and attitudes of the practice of agriculture from one generation to the next through the education system.

As observed in the findings related to objective one, there was an insufficient provision of teachers of Agricultural Science to teach learners, and this shortage of teacher has led to making the subject optional. Participants noted that the number of teachers available to teach Agricultural Science is quite low. The effective implementation of Agricultural Science requires a sufficient number of teachers. Given the importance of Agricultural Science in Zambia, all learners should have the opportunity to study it. Participants argued that Agricultural Science is an optional subject due to the lack of space or land available for practical agricultural activities in various schools. The goal of encouraging learners to pursue Agricultural Science will only be achieved if schools have access to large areas of agricultural land, among other facilities and equipment (Gyeltshen, 2021). Participants further argued that, while Agricultural Science is important for all learners, various factors prevent many schools from offering the subject. Some schools lack the necessary teaching and learning materials, which has led to certain schools not offering Agricultural Science. Thus, the position that Agricultural Science occupies in the curriculum framework, of being optional, only provides some learners with an opportunity to study it.

The participants also noted that learners have some say in whether they are enrolled in a class offering Agricultural Science or not. It was mentioned that guardians could express a preference for whether their children should be placed in a class that offers Agricultural Science

or not. In contrast, Darko, Yuan, Okyere, Ansah, and Liu (2016) conducted a study in Ghana, where the curriculum for Senior High School included core subjects and elective subjects. Every student took four core subjects: English Language, Mathematics, Social Studies, and Integrated Science (which included Agricultural Science, Biology, Chemistry, Environmental Studies, and Physics). This suggests that Agricultural Science is a subject that all learners can learn without giving learners a leeway to opt out. This contrasts with the current study, whose findings shows that parents were able to decide whether their children could learn Agricultural Science or not. It was also noted that some learners were assigned to the Agricultural Science class without having a say in the matter, as Darko et al. described.

However, the Kalumbila District Administrative Officer Frank Siatwinda has urged the government of the Republic of Zambia to consider making Agricultural Science a compulsory subject in schools so as to engage children in agricultural activities from an early age. He emphasized that the agriculture sector has the potential to employ a large number of school leavers who are currently unemployed (Lusaka Times, 2023). Various government officials in Zambia have expressed a desire to make Agricultural Science a compulsory subject in the education system. However, it may not be fully recognized that there are several issues on the ground that need to be addressed before making it a compulsory subject nationwide. This is aligned with the theory employed in this study, which suggests that education should be able to transform thought into practice. Achieving this transformation requires careful planning, and such a plan must be thoughtfully executed. While Agricultural Science is currently an optional subject, a great deal of consideration is needed before the idea of making it compulsory can be effectively implemented. Decision-makers, policymakers, and curriculum specialists should collaborate to devise ways of transforming well-planned ideas into practical applications.

5.3 Participants perceptions towards Agricultural Science

The findings of this study revealed that attitudes towards Agricultural Science vary. The findings in this study showed that teachers have mixed attitudes regarding the implementation of Agricultural Science in secondary schools in Lusaka district. Some participants stated that teachers held positive attitudes towards the implementation of Agricultural Science and were supportive of the subject. This aligns with the assertion by Tenha, Ndlovu, and Mhlanga (2021), who found that most teachers had a positive attitude towards teaching Agricultural Science. There is a recognized relationship between teachers' attitudes towards a curriculum and its ultimate effectiveness (Carver, 2013; Mason, 2003; Myer et al., 2005). This is

significant because, as curriculum implementers, teachers must have a positive attitude towards the implementation of Agricultural Science so as to enhance the effectiveness of the subject.

Evidently, as Fullan (1991) posited, that the primary advantage of having teachers with a positive attitude towards a subject is that teachers can influence both parents and learners with having interest in a particular subject matter. While learners and parents may have differing perceptions of Agricultural Science, a teacher's positive attitude and confidence in the subject are likely to spark curiosity and interest among learners and parents. If teachers adopt a positive mindset towards Agricultural Science, it can motivate learners to engage with the subject. Conversely, a negative attitude could result in fewer learners choosing Agricultural Science and may even lead to poor performance.

Participants also indicated that learners had mixed feelings about the implementation of Agricultural Science. Learners from urban areas, or "towns," where reported to be struggling with agricultural practices because they were not accustomed to farming activities. This observation aligns with a study by Waithera (2013:53), who noted the following challenges that:

> There were inadequate numbers of Agricultural Science teachers as well as lack of resources for teaching and learning Agricultural Science. Additionally, learners from urban areas experienced difficulties in engaging in agriculture activities as it was their first time working on the land. There was inadequate rainfall, which discouraged learners to carryout agriculture practices.

Participants further argued that learners did not see the value in studying Agricultural Science, often admiring their peers in other classes who were studying subjects they intended to pursue at tertiary level. Learners may not feel confident about being part of an Agricultural Science class unless the teacher demonstrates a positive attitude and confidence in the subject. However, it was also mentioned that learners enjoyed studying Agricultural Science, especially when lessons involve hands-on activities such as making garden beds, watering plants, and going on field trips. This suggested that learners can enjoy Agricultural Science when it includes activity-based teaching methods. In line with this, Onanuga, Ifamuyiwa, and Alebiosu (2021) argued that using a "learning by doing" teaching strategy promotes students' curiosity and motivates them to understand agricultural concepts and principles. However, it is crucial that teachers maintain confidence and a positive attitude when teaching Agricultural Science as a way to foster interest among learners. Teachers should also employ various teaching strategies to further cultivate curiosity and positive engagement with the subject.

Learners who have studied or are studying Agricultural Science should possess certain qualities as a result of gaining knowledge and skills in the field. The findings of this study indicated that learners who studied Agricultural Science became more self-reliant and were capable of producing food to sustain themselves and their families. In support of this, Ciroma (1994) noted that many young people facing unemployment could turn to agriculture, using the skills learned to boost food production while simultaneously reducing unemployment. Moreover, learners can sell the produce they grow, thereby generating income. A participant expressed satisfaction in observing children who were learning Agricultural Science and were able to apply what they learnt when they went home. For example, some learners even kept seeds to grow avocado trees, demonstrating how they were putting their agricultural knowledge into practice. Temisan, Lukman, and Ayodeji (2016) emphasized that Agricultural Science, as a subject at the secondary school level, is a vital tool for self-reliance. Additionally, it was noted that some learners had used their knowledge of Agricultural Science to purchase their own school uniforms and shoes, illustrating how agricultural practices can support learners in meeting their personal needs. Another finding was that learners gained knowledge in various aspects of agriculture, such as fish farming, crop cultivation and poultry farming. The Agricultural Science curriculum provides learners with a broad understanding of different farming practices, thus offering them valuable information about diverse agricultural techniques.

The production of food and generation of extra income are important outcomes that learners of Agricultural Science should achieve. Participants expressed that without agriculture, there would be no food, and the country would not be food-secure as it has been noted in Zambia that during periods of drought, there is a shortage of mealie meal. Therefore, if every household practiced farming on a small piece of land, the nation would not face food shortages. Additionally, it was found that due to the knowledge and skills learners acquired in Agricultural Science, they could contribute to food production, which may also lead to earning extra income. Agricultural Science is taught in some secondary schools to equip learners with skills in food production, nutrition, and animal husbandry skills that can improve both the learner's living conditions and the country's overall well-being (Aholi, Konyango, & Kibett, 2018). By producing food at their own level and using it as a basis for a small business, learners can contribute to national development. One finding was that learners could acquire knowledge and skills in agriculture through secondary education, which would be sufficient for them to make money from their businesses, reducing the need to pursue agriculture at tertiary education. Studying Agricultural Science at the secondary school level provides learners with

a solid foundation to understand the subject's importance and benefits. Agriculture is integrated into secondary school curriculum material because of its instructional value and relevance to the requirements of the individual learner and society as a whole (Ogunleye, 2002). Apart from addressing concerns of food security and the development of various companies and jobs, the requirement for Agricultural Science to be taught in secondary schools extends to managing economic challenges that may arise as the population grows (Ilesanmi, Owoseni & Fasanmi 2022).

Furthermore, as indicated in chapter 4, there were competencies learned by learners and a clear relationship between what was taught and what was learned. The acquisition of practical skills and attitudes is a critical component of agriculture education (Ouma, Toromo, Wanami, Waswa, Kabesa, and Mubichakani, 2020). The findings of this study showed that some respondents reported that learners helped with gardening by removing weeds, planting, watering plants, and even spraying vegetables. Parents and guardians thus noted the benefits of their children learning Agricultural Science in schools. While it is not mandatory for parents to benefit from their children's agricultural education, it demonstrates that the subject can offer more advantages than drawbacks. This aligns with the findings of Ouma et al. (2020), who stated that learners' acquisition of competencies, particularly in crop production practices, can be most effectively achieved through practical lessons in farm fields. It is crucial that learners have the opportunity to practice what they learn in agriculture science, as it is a practical subject. One participant mentioned that there was not much opportunity for practicing competencies at home. Teachers of Agricultural Science, as implementers of this practical subject, should assess the extent to which learners can practice the subject outside the classroom. The saying "practice makes perfect" suggests that continuous practice allows learners to improve their skills and proficiency.

Similarly, another participant observed that practical application was lacking in the Agricultural Science taught in secondary schools. This implied that learners might not practice what they learnt in school, as what was taught may not be fully applied in practical settings. To address this, some learners had been giving their teacher vegetable seeds to plant, which could then be transferred to their home gardens as seedlings. However, learners were also advised to plant vegetables in sacks if they lacked space to create garden beds. Teachers should encourage learners to engage in such practices at home, which may further enhance their interest in the subject. Auwal (2013) thus stated that teachers should select and use a wide variety of teaching strategies to enhance the implementation of the subject.

The research findings further showed that when teachers themselves showed interest in the subject, it motivated learners to also engage with Agricultural Science. Moreover, when learners receive the produce from what they had grown, it reinforced their motivation, as they could see the tangible results of their labor. This, in turn, encourages them to continue participating in agricultural practices. One other finding was that teachers had to reassure learners that doing agriculture was not a punishment. In line with this, Mnyone (2022) noted that agricultural activities such as digging, watering, weeding, fallowing, and caring for the school's animals (e.g., goats and cows) were often perceived as punishments, which led to negative perceptions of the subject. Teachers should work to counter this perception by demonstrating through their own actions that agricultural work can be rewarding and enjoyable. Practical agriculture science teaching plays a key role in motivating learners and making the learning process more enjoyable (Collins, 2011). When teachers actively participate in agricultural tasks, it is likely that learners will be more motivated to engage in these practices themselves. Furthermore, learners tend to get bored when most of the lessons involve writing notes about practical issues. Motivation can be boosted by carrying out practical work in the field or lab, as well as organizing field tours. The findings indicated that learners were motivated and enjoyed participating in practical work in the garden. When practical subjects are taught effectively, the objectives of the topics are met, and learning becomes more meaningful. The theory of transforming thought into practice can be achieved when Agricultural Science practicals are properly implemented.

Teachers noted that learners are often demotivated by their peers from other classes, who tell them that Agricultural Science will only result in getting dirty. Hearing such comments from fellow learners can severely affect their motivation to learn the subject. It was found by Chemjor and Gakunga (2018) that the choice of Agricultural Science among boys and girls in public secondary schools was greatly influenced by their peers in school and even back at home. Negative remarks about Agricultural Science within the school should not be taken lightly, as they can have lasting consequences on learners' perceptions of the subject. Camp, Broyles & Skelton (2004) asserted that learner's interest in a subject depended on how the majority of the learners perceived it.

Participants also mentioned that the communities from which the learners come from, played a significant role in demotivating them. Agricultural Science has been stigmatized in various societies, and learners often internalize these societal beliefs. As learners are part of these communities, they inevitably adopt the beliefs and norms dominant in these societies. It is

crucial for parents and other influential individuals to appreciate agriculture and encourage children to develop positive attitudes toward it and its study (Afriyie, Asoma, Bingan, Obeng, & Osei, 2023). Thus, it is clear that learners' perceptions of agriculture are shaped by numerous factors.

Perceptions within society and attitudes toward Agricultural Science are critical to consider, as learners come from these societies. Some parents believe that society views agriculture as a profession for the poor. Peresu and Nhundu (2009) asserted that one of the challenges in making Agricultural Science a core subject in schools was the negative perception parents had toward the subject; many felt it was not beneficial to their children. Participants mentioned that every year, there were complaints about the government's provision of fertilizer, yet people seem unable to explore ways of reducing their dependence on government support. This negative attitude toward agriculture often results in the view that agriculture only leads to struggle, with no tangible or positive outcomes.

However, some participants expressed more positive views, noting that agriculture is increasingly recognized as a source of income and a means of supporting children's education. Others mentioned that agriculture is seen as a key factor in economic growth. Nowadays, many people view agriculture as a way to reduce household costs by maintaining a garden or a small farm for chickens or goats, which can be used for consumption. In this study, most participants felt that society holds mixed views about agriculture. While some view it positively, considering it a respectable profession, others, particularly some youth, perceive it as tedious work meant for the elderly or rural inhabitants. This reflects the complex and multifaceted attitudes that society has towards agriculture. Afriyie, Asoma, Bingan, Obeng, and Osei (2023) noted that many youths, despite the potential of the agriculture sector, show little interest due to poor perceptions and negative attitudes. People need to be educated about the benefits of agriculture. Encouraging a strong work ethic can help individuals understand that agriculture can provide a livelihood. Some people are eager to engage in agriculture, but they are discouraged by challenges such as finding a market for their produce. It would be motivating if the government set up systems to help local farmers sell their goods. This could result in a rise of small farmers across the nation, improving food security and motivating more people to engage in farming, knowing that there was a market for their products.

Most parents expressed the desire for their children to study Agricultural Science, as it would ensure that they were not unemployed after completing tertiary education. Parents see

Agricultural Science as a pathway to self-employment and a productive future, especially considering the scarcity of traditional jobs. Onanuga, Ifamuyiwa, and Alebiosu (2021) pointed out that the introduction of Agricultural Science could help address several Sustainable Development Goals (SDGs), including Goal 1 (No Poverty), Goal 2 (Zero Hunger), and Goal 8 (Decent Work and Economic Growth). By furthering their studies in agriculture, learners could contribute to achieving these SDGs. One participant shared a similar sentiment, stating that learners would acquire entrepreneurial skills and be able to study agriculture at an advanced level. This is a commendable view, as parents generally want to see their children become self-reliant, self-employed, and hardworking individuals who can earn a living. Sensitizing the public about Agricultural Science is a key aspect that requires attention. Participants mentioned that if agriculture was better advertised, society would begin to understand its importance. One participant emphasized that how agriculture is marketed is crucial in shaping people's attitudes. If agricultural work is portrayed negatively, such as showing a farmer in dirty clothes, children may not want to associate themselves with this image. Therefore, how agriculture is advertised plays a significant role in shaping perceptions even about the subject in schools. If properly marketed, agriculture could attract more interest, including among children, who might otherwise be deterred by outdated stereotypes.

5.4 Availability of resources to implement Agricultural Science

Kiguthi, Shiundu, and Wangila (2019) emphasized that teaching and learning resources are the foundation for effective and efficient education, particularly in practical and technical subjects like agriculture science. This study revealed that 98% of the tools required for teaching and learning Agricultural Science were not available in the schools. Essential resources such as chicken runs, animal husbandry implements, milking machines, branding tools, and others were also missing. One participant noted the absence of a fish pond, piggery, or farm at the school, highlighting just a few of the many essential resources that were lacking. Since agriculture science is a practical subject, it requires sufficient equipment, facilities and resources if the subject is to be effectively implemented by teachers.

Put differently, Abubakar (2023) conducted research in Nigeria and the findings of that study showed that apart from standard Agricultural Science laboratory that were not available for teaching Agricultural Science, other Agricultural Science equipment and facilities such as visual aids, charts, posters, pictures and photograph, fishing tools like gill net, basket, hook and line were available and adequate in other schools. In this case, resources for teaching Agricultural Science were available in readiness for its implementation. Similarly, in a separate

study conducted in Ogbomosho, Oyo State, Nigeria, Soetan, Olamnrewaju, Onojah, Abdulrahman, and Onojah (2021) found that, Agricultural Science teaching resources were as well available in secondary schools there. When teaching and learning resources are available for the implementation of Agricultural Science, the subject is effectively implemented. Most schools that were involved in this study, schools did not have sufficient teaching and learning resources which caused the Agricultural Science curriculum not to be effectively implemented. However, this is in tandem with the findings earlier discussed.

In the schools included in this study, human resource was also found to be insufficient just as it was noted earlier in this chapter. For a very long time in Zambia, it was only the Natural Resources Development College (NRDC) that produced teachers of Agricultural Science at diploma level. Agricultural Science was only introduced at the University of Zambia at degree level in the last five years. This shows the neglect that the subject has suffered at the human resource level for teaching this important subject. The theory by Dewey in this case states that reflective though should be transformed into effective practice. In this case the thought of agriculture science to being implemented, there have to be sufficient teachers. Participants indicated that there were not enough teachers to meet the growing interest in agriculture science. Abubakar's (2023) study also noted overcrowded classrooms and insufficient learning facilities, with schools experiencing a shortage of staff and relevant resources. Teachers, who were the implementers of the curriculum, must be adequately staffed to ensure effective teaching. Agricultural Science curriculum specialists play a critical role in curriculum development but do not directly engage in the implementation phase. The study revealed that specialists can only advise the Ministry of Education on what teaching resources are needed for successful implementation. This suggests that curriculum specialists can only make recommendations, but it is ultimately up to the Ministry of Education to ensure that adequate resources are available during curriculum implementation.

The findings of the study also found that lack of funding in schools hindered proper implementation of Agricultural Science. Participants highlighted that, funds were often delayed due to bureaucratic procedures and were insufficient to meet the needs of implementing the subject effectively. Ugiagbe (2007) agreed that despite the benefits derived from Agricultural Science education, its study right from the primary school has been hampered by the lack of funding by the government. Agricultural Science, being a resource-intensive subject, requires substantial financial investment if it is to be effectively taught in secondary schools.

Furthermore, the findings indicated that certain topics in the Agricultural Science syllabus were taught without their practical components. This gap in practical learning leaves learners inadequately prepared, as they do not gain the hands-on experience necessary to fully understand the subject matter. These gaps in practical teaching should be addressed by revising the syllabus to ensure that all topics are appropriately paired with practical lessons.

5.5 Summary

In this chapter, the researcher discussed the findings of the study. The findings were discussed according to main themes that have been interpreted in line with the theoretical framework. The findings revealed that Agricultural Science cannot be made compulsory in all schools in Lusaka district due to insufficient teaching and learning materials in schools. Additionally, the perceptions of some learners enjoying the implementation of Agricultural Science and some learners being demotivated by the lack of teaching and learning equipment. Teachers on the other hand felt that the implementation of the subject was not effectively carried out due to teaching and learning materials being insufficient. Most parents regarding the implementation of Agricultural Science were actually interested in their children learning Agricultural Science. Lastly, the lack of teaching and learning resources for the implementation of Agricultural Science in schools has led to challenges in lesson delivery. In the next chapter, conclusions of the study and recommendations based on the research findings have been presented.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 Overview

In this chapter, the researcher has presented a summary of the key research findings on which the conclusions have been made. Additionally, recommendations based on the main findings have been made and suggestions for future research have also been provided. The primary aim of this study was a phenomenological examination of the experiences and perceptions of learners, teachers and other stakeholders about Agricultural Science curriculum in selected secondary schools of Lusaka district. The first research objective was focused on understanding why Agricultural Science was not widely taught in Lusaka's government secondary schools. The second one was to find out perceptions and experiences of learners, teachers, education administrators, and parents regarding the teaching and learning of Agricultural Science while the third one was an assessment of the availability of facilities, human resources, and teaching materials necessary for Agricultural Science's effective implementation.

6.2 Conclusions

Aligned with the research objectives and questions, the following conclusions were drawn:

The findings of the study indicated that Agriculture Science was not widely taught in secondary schools of Lusaka district because some schools lacked sufficient land to conduct practical agriculture activities. Additionally, there was a shortage of qualified teachers of Agricultural Science. Some schools offering Agricultural Science employed science teachers who are not qualified to teach the subject. It was also noted in the findings that Agricultural Science was primarily offered in specific schools that possessed the necessary equipment for its proper implementation. Therefore, it can be concluded that Agricultural Science in most secondary schools of Lusaka district is laddered with a lot of challenges no wonder it was not widely taught in most schools. This was also confirmed by participants. But we can also conclude that Agricultural Science is not widely taught in schools because the challenges are both at the school level, at the Ministry of Education and national levels especially where the issue of human resource, teachers of Agricultural Science, is concerned. It is these challenges which seem to make Agricultural Science not widely taught as the findings revealed.

The findings on perceptions and experiences regarding the teaching and learning of Agricultural Science showed that while agriculture science was being taught and enjoyed by

some learners, its curriculum was not being effectively implemented. This was mainly due to a lack of adequate teaching and learning materials. In some cases, learners taking other subjects mocked their peers who studied Agricultural Science, calling it a “dirty subject,” which led to some learners feeling embarrassed and eventually developing a dislike for the subject. However, it can be concluded that the attitude some learners had towards Agricultural Science was because of the attitude their fellow learners have towards the subject. The attitude learners had towards Agricultural Science is also because of influence from parents and their societies as well. It can also be concluded that agriculture is not well advertised to the society. If it can be advertised well, in light and prestigiously, then learners and everyone surrounding learners may have a positive attitude towards it.

The study also assessed the availability of facilities, human resource and teaching materials for the implementation of Agricultural Science. It was noted that there was a significant shortage of teaching and learning resources. Teachers highlighted the difficulty of teaching certain topics due to the unavailability of essential equipment. In some cases, conducting experiments was nearly impossible because schools lacked proper laboratories for the implementation of Agricultural Science. While some schools had land for agricultural practices, it was often insufficient, and learners were forced to share vegetable beds due to a lack of space. Human resource constraints were prevalent across schools offering Agricultural Science, with a shortage of qualified teachers. Consequently, these challenges need to be addressed for the effective implementation of the Agricultural Science curriculum. It can be concluded thus that Agricultural Science is not effectively implemented in most schools in Lusaka district because of the lack of resources and human resource as well. There are insufficient teaching and learning resources which has made the subject difficult to implement.

6.3 Recommendations

Based on the conclusions drawn from the study’s findings, the following recommendations are proposed:

1. The government of the Republic of Zambia and the Ministry of Education should give serious consideration to the recommendations of curriculum specialists based on the provision of teaching and learning resources to ensure that practical subjects such as Agricultural Science are effectively implemented. This will contribute to the successful delivery and impact of the curriculum on learners and eventually on the society.

2. Career talks in secondary schools about agriculture should be done effectively by Head teachers so that many individuals can enroll for Agricultural Science in secondary school and eventually at tertiary level.
3. The Ministry of Education and schools should workout modalities of procuring and building the needed teaching and learning resources, equipment and facilities for the effective implementation of Agricultural Science in schools.
4. The Zambian government should make sure Agriculture is well advertised to attract individuals in society and encourage them to learn more about its importance to their livelihoods. This could enable members of society to explore various dimensions of agriculture.
5. School administrators should ensure that teachers should be self-motivated to incorporate various initiatives to make Agricultural Science more interesting to learn. This could be achieved by holding Continuing Professional Development in schools to administer various ways to teachers on how best they can incorporate various initiatives to make the subject more interesting.

6.4 Suggestions for Further Research

It is acknowledged that this study did not comprehensively address all issues pertaining to the implementation of agriculture science. Nevertheless, several aspects have emerged from the study that warrant further exploration.

i. This study was confined to Lusaka district; thus, it is essential to replicate the study in other geographical regions not covered in the current research. Additionally, expanding the sample size to include a larger number of participants would provide a broader perspective.
ii. The study primarily focused on secondary school learners, teachers, headteachers, an Agricultural Science curriculum specialist, and parents' viewpoints. It did not explore the perspectives of other relevant stakeholders like the DESO and Education Standards Officers. Future research could examine the views of additional educational stakeholders on the implementation of Agricultural Science.
iii. The scope of this study was limited to secondary schools. Future investigations should extend to university and college lecturers to gain insight into their perspectives on the enrolment of students pursuing Agricultural Science programs.

iv. Other studies can be done in other vocational pathways to find out whether they are being effectively implemented.

REFERENCES

Abubakar, M. B. (2023) Availability and Utilization of Facilities and Equipment for Teaching and Learning of Agricultural Science in Senior Secondary Schools in Nangere Local Government Area Yobe State. *International Journal of Innovative Social & Science Education Research,* 11(3) 113-123.

Adebo, G. M., & Sekumade, A. B. (2013). Determinants of career choice of agricultural profession among the students of the Faculty of Agricultural Sciences in Ekiti State University, Nigeria. *Journal of Agricultural Extension and Rural Development. Academic Journals*, 5(11), 249-255.

Adekinsanmi, O. (1994). *Senior Secondary School Agricultural science*. Longman Ltd. Malaysia.

Adom, D., Hussein, E. K. & Agyem, J. A. (2018). Theoretical and conceptual framework: Mandatory ingredients of a quality research. *International Journal of Scientific Research*, 7(1), 438-441.

Afande, F. O., Maina, W. N., & Maina, F. M. P. (2015). Youth engagement in agriculture in Uganda: challenges and prospects. *Journal of Culture, Society and Development*, 7, 4–20.

Afriyie, J.Y., Asoma, C., Bingan, G.S., Obeng, W.K. & Osei, B. (2023). Perception and Challenges of Students Towards the Learning of Agricultural Science at Public Senior High Schools in Berekum East Municipal. *European Journal of Theoretical and Applied Sciences*, 1(4), 994-1005.

Aholi. S. S., Konyango. J. J. J. O. & Kibett. J. (2018). Influence of Instructional Resources in Learning Agriculture in Secondary School on Employment Creation in Vihiga Country, Kenya. *International Journal of Education Administration and Policy Studies*, 10(1) 1-9.

Akintonde, J. O., Akinboye, O. A., Tiamiyu, A. O., Akintaro, O. S., Gbadamosi, S. A., Bamidele, B. S., & Alabi, A. A. (2019). Attitude of senior secondary school students towards Agricultural Sciences and trainings in Ogbomoso North Local Government Area of Oyo State. *International Journal of Research,* 7(3), 130-135.

Amadi, C. (2015). Analysis of ICT usage for the teaching and learning process by the academics. *International Journal of Computer and Information Technology*, 4(5), 803-808.

Auwal, A. (2013). Effects of teaching method on retention of Agricultural Science knowledge in senior secondary schools of Bauchi Local Government Area, Nigeria. *International Journal of Science and Technology Educational Research*, 4(4),

Baliyan, S. P., & Nenty, H. J. (2015). Factors underlying attitude towards agriculture as predictors of willingness to enroll in the subject by senior secondary students in Botswana. *Journal of Educational and Social Research*, 5(1), 377–387.

Bergman, H. (1980.) *Primary School Agriculture; Teachers Manual part one pedagogy* GTZ.

Brand, B., Valent, A. & Browning, A. (2018). *How Career and Technical Education Can Help Students Be College and Career Ready: A Primer*. American Institute of Research, 1-16.

Bernard, H. R. (2002). *Research Methods in Anthropology: Qualitative and quantitative methods*. 3rd edition.Walnut Creek, California: AltaMira Press

Bryman, A. (2001). *Social Research Methods*. New York: Oxford University Press.

Burns, N. & Grove, S. K. (1997). *The practice of Nursing research: Conduct, Critique and Utilization*. Saunders Publisher, Philadelphia.

Camp, W. G. (2001). Formulating and evaluating theoretical frameworks for career and technical education research. *Journal of Vocational Educational Research*, 26(1), 27-39.

Camp, W.G., Broyles,T. & Skelton N.S (2004). *A national study of the supply and demand for teachers of agriculture education in 1999 – 2001*. Blacksburg V.A Virginia polytechnique institute press.

Carver, N. (2013). *Importance of teaching agriculture to the primary schools*. Vanvouver: FAO, Newsroom.

Cerna, L. (2013). *The Nature of Policy Change and Implementation: A Review of Different Theoretical Approaches.* OECD.

Chemjor, E. J. & Gakunga, D. K. (2018). The Impact of Students' Peer Influence on Choice of Agriculture Subject among Boys and Girls in Public Secondary Schools in Kajiado County, Kenya. *International Journal of Science and Research*, 8(8) 567-573.

Ciroma, A. (1994). *Opening Address of the Honourable Minister of Agricultural. 19th National Convention of the Nigeria Association of Agricultural Students (NAAS),* Ogun State University, Ago – Iwoye.

Collins, S. (2011). *What do students think about science? In: R, Toplis. (Ed.), How Science Works: Exploring Effective Pedagogy and Practice*. Oxon: Routledge.

Conroy, C. A. (2000). Reinventing career education and recruitment in agricultural education for the 21st century. *Journal of Agricultural Education*, 41(4)73-84.

Cowen, R. (2007). *Ancient Irrigation (Egypt and Iraq), chapter 17 in Exploiting the Earth* (unpublished book) http://mygeologypage.ucdavis.edu/cowen/~GELI15Iindex.html, accessed August 2010.

Crawford, E. W., Jayne, T. S., & Valerie, A. K., (2006). *Alternative Approaches for Promoting Fertilizer Use in Africa*. Agriculture and Rural Development Discussion Paper 22, Washington D.C. The World Bank.

Creswell, J. W. (2003). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*. London: Sage Publications.

Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative and Mixed Method Approaches (3rd Ed.).* Los Angeles: SAGE Publications.

Creswell, J. W. (2013). *Qualitative inquiry and research design: choosing among five approaches.* California: Sage publications.

Creswell, J. W. (2014). *Qualitative Inquiry & Research Design: Choosing among Five Approaches* (4th Ed.). Thousand Oaks, CA: SAGE.

Darko, R. O., Offei-Ansah, C., Shouqi, Y., & Jun-ping, L. (2015). Challenges in the teaching and learning of agricultural science in selected public senior high schools in the Cape Coast Metropolis. *Agricultural Science*, 3(1), 13-20.

Darko, R. O., Yuan, S., Okyere, D., Ansah, C. O. & Liu, J. (2016). Agriculture science as a component of the curriculum of senior high school integrated science in Ghana. Its effects and the way forward. *Journal of Agriculture and Research*, 2(6) 20-48.

Davis, J. R., & Jayaratne, K. S. U. (2015). In-service training needs of teachers for preparing them to be effective in the 21st century, *Journal of Agricultural Education*, 56(4), 47-58.

Department of Basic Education (DBE), (2011). *Curriculum Statement Policy Statement for Agricultural Sciences.* Government printers, Pretoria.

Dewey, J. (1910). *How we think*. Boston: D. C. Heath.

Diener, E. &Crandall, R. (1978). *Ethics in Social and Behavioral Research,* Chicago University press.

Dunkin, M. J., & Biddle, B. J. (1974). *The study of teaching*. Holt, Rinehart & Winston.

Esters, L. T. & McCulloh, R. E. (2008). Career Exploratory Behaviors of Post-secondary Agriculture Students. *Journal of agricultural education*, 49(1), 6-16.

Fabiyi, E. F., Obaniyi, K. S., Olukosi, J. O. & Oyawoy, E. O. (2015). Assessment of Secondary School Student's Perception and Attitude to the Study of Agriculture, Omu- Aran, Kwara State, Nigeria. *Case Studies Journal,* 4(8), 96-101.

Flemning, J. & Zegwaard, K. E. (2018). Methodologies, methods and ethical considerations for conducting research in work-integrated learning. *International Journal of Work-Integrated Learning*, 19(3), 205-213.

Fouad, N. A., Kim, S., Ghosh, A., Chang, W., & Figueiredo, C. (2016). Family influence on career decision making. *Journal of Career Assessment*, 24(1), 197–212.

Frankfort-Nachmias, C. & Nachmia, D. (1992). *Research Methods in the Social Sciences*. London: Edward Arnold.

Fullan, M. (1991). *The meaning of educational change*. New York: Teacher College Press.

Gibbs, H. J. (2005). It is not just in High School. *Agricultural Education in Middle School. Techniques*, 80 (2), 28-34.

Gopaldas, A. (2016). A Front-to-back Guide to Writing a Qualitative Research Article, Qualitative Market Research: *An International Journal*, 19(1), 115–121.

Grimal, N. (1988). *A History Egypt*, Blackwell Publishers, Malden, MA.

Gule, Z. M., Alademerin, E. A., & Dlamini, M. P. (2023). 21st Century Skills Required in Eswatini's Higher Agricultural Education Curriculum. *Journal of Research in Technical Careers*, 7 (2), 34-56.

Gyeltshen, N. (2021). A Review on Inclusion of Agriculture Subject in the High Schools of Bhutan: Perspective and Challenges. *Journal For Innovative Development in Pharmaceutical and Technical Science*, 4 (9), 21-27.

Hall, T. (2013). *Can agriculture solve youth unemployment?* Compton International Fellow, Clark University, and LIGI´s Head of Communication.

Hallward-Driemeier, M. & Nayyar, G. (2017). *Trouble in the Making? The Future of Manufacturing-Led Development*, Washington DC, World Bank.

Hanf, K., Hjern, B. & Porter, D. (1978). 'Local networks of manpower training in the Federal Republic of Germany and Sweden', *Inter-organisational Policy Making: Limits to Coordination and Central Control*, 303-344.

Ikehi, M. E., Paradang, S. P., & Zimoghen, J. (2014). Utilization of Social Networks for Research by Technical and Vocational Education and Training (TVET) Students in South-Eastern Universities in Nigeria. *Journal of Research & Method in Education*, 4, 25-31.

Ikeoji, C. N., Agwubike, C. C., & Disi, J. O. (2007). Perceptions of head agricultural science teachers regarding problems and challenges of vocational agriculture delivery in secondary schools in Delta State, Nigeria. *The Electronic Journal for Research in Science & Mathematics Education*, 11(2), 6-17.

Ilesanmi, J. O., Owoseni, K. P. & Fasanmi, I. T. (2022). Determinants of effective teaching and learning of agriculture science in secondary schools of Ekiti State, Nigeria. *Journal of Economic, Social and Educational Issues*, 2(2), 83-94.

Inusa, B. M., Daniel, P.C., Dayagal, D. F., & Nyamdu S. C. (2018). Nigerian economic growth and recovery: Role of agriculture. *International Journal of Economics and Management Sciences*. 7, 5-12.

Iowa State University, (1987). *Zambia Agricultural Training, Planning, and Institutional Development Project*. Ames, Iowa State University.

James, O. J., & Denis, O. (2015). Factors influencing career choice among undergraduate Students in an African university context: The case of agriculture students at Makerere. *Journal of Dynamics in Agricultural Research*, 2, 12-20.

Kasonde-Ng'andu, S. (2013). *Writing a research proposal in educational research*. Lusaka: UNZA Press.

Kiguthi, E. N., Shiundu, J. O. & Wangila, E. (2019). Teaching/Learning Resources and the Implementation of Agriculture Curriculum in Kakamega Central Sub-County, Kenya. *Journal of Education and Practice*, 19(10) 10-12.

Kombo, D. K. & Tromp, D. L. A. (2006). *Proposal and Thesis Writing: An Introduction.* Nairobi: Paulines Publication Africa.

Konadu, V. (2016). *Students' Perceptions on the Learning of Agriculture Science in Senior High Schools in the Akuapem North District in the Eastern Region of Ghana*. Med Thesis. University for Development Studies.

Kotrlik, J. W. (1987). Factors related to the career decisions of seniors who have taken vocational agriculture. *The Journal of American Association of Teacher Educators in Agriculture*, 4, 250-256.

Kyule, M. N., Ochieng' Konyango, J. J. J. & Nkurumwa, A. O. (2016). Challenges in the implementation of secondary school Agriculture curriculum in Kenya's Arid and Semi- Arid Counties: The Students Perspective. *International Journal of Innovation and Applied Studies*, 15(4) 768-778.

Liehr, P. & Smith, M. J. (1999). Middle range theory: Spinning research and practice to create knowledge for the new millennium. *Advances in Nursing Science*, 21(4), 81-91.

Lincoln, Y.S., & Guba, E.G. (1985). *Naturalistic inquiry*. California: Sage Publications.

Lubasi, I. M. (2019). *Utilization of time by teachers in implementing the curriculum in selected secondary schools in Mongu district, Zambia.* MEd Dissertation, The University of Zambia.

Lusaka Times, (2017). *Make Agriculture Science a compulsory subject to boost diversification, 23rd January, 2017.*

Lusaka times, (2023). *Government urged to consider making Agricultural science a compulsory subject in schools*, 28th November, 2023.

Manyasi, A. N., Chesambu, A. N., Odebero, S. O. & Ouda, J. B. (2023). Trends in Selection of Agriculture Subject among Students in Secondary Schools in Bungoma and Kakamega Counties, Kenya. *African Journal of Empirical Research*. 4 (2), 952-963.

Masha, F. M. & Maphutha, K. (2022). Exploration of teachers' experiences in teaching Agricultural Sciences with limited resources in the Mankweng Circuit, Limpopo Province. *African Perspectives of Research in Teaching & Learning*, 6(1), 95-104.

Mason, J. (2003). *Sustainable agriculture*. London: Landlinks Press.

Mbajiorgu, C. A., Oguttu, J. W., Maake, S. M., Heeralal, P. J. H., Ngoepe, M. G., Masafu, M. M. & L.M. Kaino, L. M. (2014). Factors that Impact on the Teaching and Learning of Agriculture Science in FET Schools in Mpumalanga, South Africa: A Case of Mandlethu FET School. *J Hum Ecol,* 45(2): 137-145.

Miller, A. J. (2023). Investigating parents' value of children learning about agriculture. PhD Thesis. Utah State University.

Ministry of Education, (1996). *Educating Our Future,* Lusaka, Zambia Educational Publishing House.

Ministry of Education, (2023). *Zambia Education Curriculum Framework*. Lusaka: Curriculum Development Centre.

Ministry of Finance, (1966). *First National Development Plan*. Lusaka: Government Printer.

Ministry of Finance and National Planning, (2022). *Eighth National Development Plan*. Lusaka: Government Printer.

Ministry of National Development Planning, (2022). *Eighth National Development Plan*. Lusaka: Government Printer.

Mnyone. J. N. (2022 Perspectives of Educational Stakeholders on Establishing Agriculture Science Subject in Public Secondary Schools: A Case Study of Kongwa District. *International Journal of Science and Research*, 12(10) 407-411.

Morse, J. M. (2000). Determining Sample Size. *Qualitative health research, 10, 3-5.*

Msabila, D. T and Nalaila, S. G. (2013). *Research Proposal and Dissertation Writing Principles and Practice*. Dares salaam: Nyambari Nyangwine Publishers.

Mugenda, O. M & Mugenda, A. G. (1999). *Research methods-Quantitative and Qualitative Approaches.* Nairobi: Acts Press.

Mulenga, I. M. (2015). *English language teacher education curriculum designing: A mixed methods analysis of the programme at The University of Zambia*. PhD Thesis. Lusaka: The University of Zambia.

Mulungu, K. & Ng'ombe, J. N. (2017). Sources of economic growth in Zambia, 1970-2013: A growth accounting approach. *Economies*, 5(15), 12-18.

Mutambara, J., Zvinavashe, A. & Mwakiwa, E. (2013). *A critical review of the wheat industry in Zimbabwe.* Michigan: Michigan State University press.

Mwanakatwe, J. M. (1974). *The growth of education in Zambia since independence*. New York: Oxford University Press.

Mwangi, O. O. & Mwai, U. E, (2012). Planning Effective Secondary Professional Development Programs. *American Secondary Education*, 32(1), 49-56.

Myer, B. E., Dyer, J. E. and Washburn, S. G. (2005). Problems facing beginning agriculture teachers. *Journal of Agricultural Education*, 46(3):47-55.

Nawiko, M., Chomba, C., Mambwe, M., Nkanyani, S., Mwamakamba, S., Jacobs-Mata, I., Ires, I. (2022). *Zambia agricultural policy profile*. Colombo: Sri Lanka.

Ngesa, F. U. (2006). *Demand profiles & supply Responses for Agriculture Education Training (AET) at the post–primary Education level case study of Kenya Final*

Report unpublished report prepared for the world Agroforestry center [ICRAF). Nairobi: Kenya.

Njobe, M. W. (1983). *Effects of the agriculture science curriculum, the school environment and the students home socio-economic status on attitudes toward careers in agricultural production.* Masters Dissertation. The University of Zambia.

Nova, T. (1996). *An Aggri-Tourism Strategy for Nova Scotia*. Scotia Department of Agriculture Marketing.

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic Analysis: Striving to Meet the Trustworthiness Criteria. *International Journal of Qualitative Methods*, 16, 1 – 13.

Nzama, N. M. (2021). *Teachers' experiences of teaching Agricultural Economics to grade 12 learners: A case study of two high schools in Ugu District, KwaZulu-Natal*. Master of Education in Curriculum Studies, University of KwaZulu-Natal.

Obede, P. (2017). "Problems Influencing Low Enrolment of Students is Vocational Technical Education at Senior Secondary School Level in Oyo Local Government of Ekiti State". *Unpolished MEd Thesis*.

Obue, A. (2019). Leadership Strategies for enhancing practical agriculture in Secondary Schools of Oshimili South LGA for Sustainable development in Delta State. *Journal of Agricultural Education Teachers Association of Nigeria*, 3(2), 113-121.

Ochu, A. O. & Umunnagbu, M. I. (2005). An Assessment of the Effectiveness of the Senior Secondary School Agricultural Education Program in Manpower Development in Nigeria. *Journal of Teacher Education*, 3(2), 45-52.

Oduh. J. O. (2018). *Cost and Maintenance of Equipment in Vocational Business Education Implication for Self-Reliance Vocational Technical Education and Self-reliance.* Nsukka: Nigeria Vocational Association.

Ogbuoka, O. M. & Odinaka, A. (2023). The Strategies for Enhancing Effective Teaching and Learning of Agricultural Science in Senior Secondary Schools in Osisioma Ngwa Lga of Abia State. *International Journal of Education*, Research and Scientific Development, 2(1), 1-10.

Ogunleye, B. O. (2002). *Towards the optimal utilization and management of resources for the effective teaching and learning of physics in schools*. Proceedings of the 41st Annual Conference of the Science Teachers' Association of Nigeria, University of Lagos, Nigeria, 215-220.

Okesina, M. (2020). A critical review of the relationship between paradigm, methodology, design and method in research. *IORS Journal Handbook of qualitative research of Research & Method in Education*, 10(1), 57-68.

Onanuga, P. A., Ifamuyiwa, S. A. & Alebiosu, K. A. (2021). Learning By Doing Instructional Strategy and Parents' Education in Determining Secondary Students' Attitude in Agricultural Science. *Journal of Turkish Science Education*, 18(2), 305-319.

Onete, O. U. (2002). Appraisal of factors that militate against the effective teaching and learning of agricultural science in JSS. *Akamkpa Journal of Science and Mathematics Education*, 3 (1&2), 76-87.

Onu, F. M., & Ikehi, M. E. (2013). Factors Influencing Students' Choice to Study Agricultural Science in South-South Nigeria. *Journal of Agriculture and Biodiversity Research*, 2, 80-86.

Oso, W. Y & Onen, D. (2009). *Writing Research Proposal and Report*. Nairobi: The Jomo Kenyatta Foundation.

Otekunrin, O. A., Otekunrin, O. A., & Oni, L. O. (2019). Attitude and Academic Success in Practical Agriculture: Evidence from Public Single Sex High Schools Students in Ibadan, Nigeria. *Asian Journal of Advanced Research and Reports*, 4(3), 1-18.

Ouma, P. Toromo, A. Wanami, S. Waswa, P. Kabesa, S. & Mubichakani, J. (2020) Learning Competencies among Students of Agriculture in Secondary Schools in Uasin-Gishu County, Kenya: A Value Chain Approach. *African Journal of Education, Science and Technology*, 6(1) 82-92.

Parker, R., Thomsen, B. S., & Berry, A. (2022). Learning through play at school–A framework for policy and practice. *In Frontiers in Education* 7, 751-801.

Patton, M. (1990). *Qualitative Research and Methods (2nd ed.)*. Newbury Park: Longman.

Patton, M. Q. (2002). *Qualitative Evaluation and Research Methods (3rd Ed)*. Thousand Oaks: Sage Publications.

Peresu, B. & Nundu, R. (2009). *Agriculture before independence in Zimbabwe*. Harare: College Press Publishers.

Republic of Kenya, (1964/65). *Kenya Education Commission Report* (Ominde Report). Nairobi: Government Printers.

Ritchie, J. & Lewis, J. (2003). *Qualitative Research Practice: A Guide for Social Science Students and Researchers*. London: SAGE Publications Ltd.

Sapsford, R. & Jupp, V. (2006). (eds). *Data Collection and Analysis*. (2nd.ed). London: SAGE Publications.

Sharma, R. L., Bidari, S., Bidari, D., Neupane, S., & Sapkota, R. (2023). Exploring the Mixed Methods Research Design: Types, Purposes, Strengths, Challenges, and Criticisms. *Global Academic Journal of Linguists Literature*, 5(1), 3-12.

Soetan, A. K., Olamnrewaju, O. O., Onojah, A. O., Abdulrahman, M. R., & Onojah, A. A. (2021). Assessment of instructional resources for teaching Agricultural science in secondary schools in Oyo State. *The Online Journal of Distance Education and e-Learning*, 9(3) 362-371.

Stahl, N. A. & King, J. R. (2020) Expanding Approaches for Research: Understanding and Using Trustworthiness in Qualitative *Research. Journal of Developmental Education*, 44(1), 26-28.

Temisan, A. I., Lukman, A. B. & Ayodeji, T. O. (2016). Agricultural Experiences as Correlates of Secondary School Students' Achievement and Career Decisions in Agricultural Science. *An International Multi-Disciplinary Journal*, 10(3), 21-38.

Tenha, J., Ndlovu, F. & Mhlanga, M. (2021). Hurdles Faced by Primary School Heads and Teachers in the Implementation of the Agriculture Curriculum in Seke District of Zimbabwe. *International Journal of Humanities Social Sciences and Education*, 8(7), 103-110.

Thiel, B. L. & Marx, A. A. (2019). The Influence of Agriscience Research SAEs on Perceived Self-Efficacy of 21st Century Skill Attainment. *Journal of Agricultural Education*, 60(1), 80-95.

Thomas, D. R. (2017). Feedback from research participants: Are member checks useful in qualitative research? *Qualitative Research in Psychology*, 14, 23–41.

Thoron, A. C., Myers, B. E. & Barrick, R. K. (2016). Efficient and effective agricultural education programs. In T. G. Roberts, A. Harder, & M. T. Brashears. (Eds.), *American Association for Agricultural Education national research agenda*: 2016-2020. Gainesville, FL: Department of Agricultural Education and Communication.

Tschirley, W. M., Young, R. Brent, A, (2015). Sustainability of professional development to enhance student achievement: A shift in the professional development paradigm. *Journal of Agricultural Education*, 54(4), 13-30.

Ugiagbe, F. E. S. (2007). *Fundamentals of vocational and technical education in Nigeria*. Benin City: Ambik press limited.

USAID, (2016). *Zambia: Country Development Cooperation Strategy 2011–2015*. Available at: https://www.usaid.gov/sites/default/files/documents/1860/USAIDZambiaCDCS30Sept2011.pdf [12 July 2016].

Uvia, S. A. (2017). "Problems of Maintenance in Secondary School". *Unpublished Research Project*. Department of V.T.E UNN.

Vandenbosch, C. H, (2006). Secondary School Students' Views on the medium of Instruction in Tanzania. Paper presented at the LOITASA (Language of instruction in Tanzania and South Africa) workshop, 26-28 January 2006, Arusha: Tanzania.

Waithera, K. S. (2013). *Challenges to Teaching and learning of Agriculture in secondary schools in Kakuyuni division, Kangundo District, Machakos County, Kenya*. Masters Thesis. Kenyatta University.

Zaki, A., Abdul Rahman, A. R., & Kushairi, A. (2015). Generation Y perceptions of employment in the plantation sector. *International Journal of Recent Advances in Organizational Behaviour and Decision Sciences*, 1(4), 605-616.

Zulu, J. (2019) An Analysis of O-Level Physics Curriculum design and teacher pedagogical content knowledge in selected secondary schools in Lusaka district, Zambia. MEd Dissertation. The University of Zambia.

Letter of Consent for participants

Dear Participant,

I am currently pursuing a Master of Education in Curriculum Studies at the University of Zambia. I am conducting this research as a major requirement for the completion of my programme.

The focus of this study is to examine the implementation of agriculture science at secondary schools of Lusaka district.

All data collected during this research will be kept confidential, and your rights will be fully respected and protected.

Please sign this form to indicate your voluntary participation in this study.

I have read and understood this document, and I agree to participate in this discussion.

Signature: _____

Title: _____

Appendix 1: Interview guide for Teachers at schools offering Agricultural Science

Good morning/afternoon, my name is Mulenga Muchindu Munsaka from the University of Zambia. I am here to collect data for my research on your perceptions based on Agricultural Science in secondary schools in Lusaka district. I have come to you because you are more knowledgeable on what is obtaining in the school. Kindly share with me your opinions, experiences and views about the topic. The information you will give me will be treated with utmost confidentiality and will only be used for study purposes. In addition to taking notes, I will ask your permission to use a voice recorder so that I can capture all the important information that you share with me.

Bio Data

1. What is your highest Teacher education qualification?
2. For how long have you been teaching Agricultural science?

Why Agricultural science is only taught to some learners

3. How important is agriculture to the Zambian social economic situation?
4. How many streams or classes are taking Agricultural Science in this school? (Find out how many streams each grade has in the school)
5. How many learners are taking Agricultural Science per stream?
6. How are learners allocated to the Agricultural Science class? (Probe if learners have a say in choosing Agricultural Science as their subject of choice)
7. Why is it that Agricultural Science is set as an optional subject in the Zambian educational system?
8. Was Agricultural Science supposed to be an optional subject or there are reasons that led to it being optional?
9. If response is yes, why is it an optional subject if it is taken to be important?

Perceptions and Experiences

10. How important do you think it is for learners to learn Agricultural Science?
11. What is the attitude of other teachers, the school administration and learners towards Agricultural Science?
12. What is the relationship between what learners learn in Agricultural Science in school and the activities that they do at home?

13. What competencies are learners using at home that they are learning in Agricultural Science here at school?
14. From your experience in teaching this subject, what do you think motivates learners to learn the subject?
15. What do you think learners should learn in Agricultural Science which they are not learning in schools today?
16. What is it that demotivates them to study the subject?

Availability of Resources

17. What teaching and learning resources and facilities relating to Agricultural Science are not available in your school?
18. What do you think hinders you and most teachers from properly implementing Agricultural Science?
19. Do you think your school, Lusaka and the country has enough teachers of Agricultural Science?
20. Explain your answer in the previous question.
21. What topics are taught without the practical part due to unavailability of resources in the school?
22. Are there any other challenges that you face in the implementation of the subject?
23. What needs to be done in order for more learners to take Agricultural Science and how can more schools in Lusaka and in the country offer Agricultural Science to learners than is the case today?

Appendix 2: Interview guide for teachers at schools not offering Agricultural Science

Good morning/afternoon, my name is Mulenga Muchindu Munsaka from the University of Zambia. I am here to collect data for my research on your perceptions based on Agricultural Science in secondary schools in Lusaka district. I have come to you because you are more knowledgeable on what is obtaining in the school. Kindly share with me your opinions, experiences and views about the topic. The information you will give me will be treated with utmost confidentiality and will only be used for study purposes. In addition to taking notes, I will ask your permission to use a voice recorder so that I can capture all the important information that you share with me.

Bio Data

1. What is your highest Teacher education qualification?

Why Agricultural Science is only taught to some learners

2. How important is agriculture to the Zambian social economic situation?
3. Why is it that Agricultural Science is set as an optional subject in the Zambian educational system?
4. Was agriculture science supposed to be an optional subject or there were reasons that led to it being optional?
5. If response is yes, why is it an optional subject if it is taken to be important?

Perceptions and Experiences

6. How important do you think it is for learners to learn Agricultural Science? (Probe further to find out if they would like their learners to learn Agricultural Science)
7. What is the attitude of other teachers, the school administration and learners towards Agricultural Science?
8. Why is it that your school does not offer Agricultural Science?
9. Why is it that agriculture science is offered by very few schools in Lusaka province?

Availability of Resources

10. If this school offered Agricultural Science, how many teachers would teach the subject?
11. What teaching and learning resources and facilities (space for doing poultry, animals, fields for cultivating) relating to Agricultural Science are available if your school was to offer Agricultural Science?

12. What needs to be done in order for more learners to take Agricultural Science and how can more schools in Lusaka and in the country offer Agricultural Science to learners than is the case today?

Appendix 3: Interview guide for Parents having children at schools offering Agricultural Science

Good morning/afternoon, my name is Mulenga Muchindu Munsaka from the University of Zambia. I am here to collect data for my research on your perceptions based on Agricultural Science in secondary schools in Lusaka district. I have come to you because you are more knowledgeable on what is obtaining in the school. Kindly share with me your opinions, experiences and views about the topic. The information you will give me will be treated with utmost confidentiality and will only be used for study purposes. In addition to taking notes, I will ask your permission to use a voice recorder so that I can capture all the important information that you share with me.

Perceptions and Experiences

1. How important is agriculture to the Zambian society?
2. What is the attitude of your society towards agriculture?
3. How important is it for learners to learn Agricultural Science?
4. Agriculture science is not taught to most learners in secondary schools in Lusaka district, what would you recommend about this scenario?
5. Would you want your child to enroll for an agriculture related program post-secondary education?
6. If no, why wouldn't you want your child you child to enroll for an agriculture related program post-secondary education?
7. How did you truly feel about your child learning Agricultural Science?
8. Do you engage in agriculture practices?
9. If yes, how beneficial is it for your livelihood?
10. If no, why don't you engage in agricultural practices? (Probe further and find out if why they do not engage in it is because they view it as a laborer's activity)
11. What competencies are you seeing your children using at home that they are learning in Agricultural Science in school?
12. How beneficial is it for learners to have agricultural skills?
13. Ever since your child started learning Agricultural Science, are there any issues they have shared with you that affect the implementation of the subject in school?
14. If yes, what issues has your child or children been talking about that affect the implementation of the subject?

15. What else do you think learners should learn in Agricultural Science which they are not learning today?
16. What needs to be done in order for more learners to take Agricultural Science and how can more schools in Lusaka and in the country offer Agricultural Science to learners than is the case today?

Appendix 4: Interview guide for Parents having children at schools not offering Agricultural Science.

Good morning/afternoon, my name is Mulenga Muchindu Munsaka from the University of Zambia. I am here to collect data for my research on your perceptions based on Agricultural Science in secondary schools in Lusaka district. I have come to you because you are more knowledgeable on what is obtaining in the school. Kindly share with me your opinions, experiences and views about the topic. The information you will give me will be treated with utmost confidentiality and will only be used for study purposes. In addition to taking notes, I will ask your permission to use a voice recorder so that I can capture all the important information that you share with me.

Perceptions and Experiences

1. How important is agriculture to the Zambian society?
2. Do you engage in agricultural practices?
3. If yes, how beneficial is it for your livelihood? (If no, why don't you engage in agriculture practices? Probe further and find out if why they do not engage in it and if they view it as a laborer's activity)
4. What is the attitude of your society towards agriculture?
5. How important do you think it is for learners to learn Agricultural Science?
6. Would you want your child to learn Agricultural Science in secondary school? (Explain your answer by providing reasons)
7. Would you want your child to enroll for an agriculture related program in college or university?
8. If no or yes, why would you want your child to enroll for an agriculture related program post-secondary education?
9. What needs to be done in order for more learners to take Agricultural Science and how can more schools in Lusaka and in the country offer Agricultural Science to learners than is the case today?

Appendix 5: Interview guide for Head Teachers at schools offering Agricultural Science

Good morning/afternoon, my name is Mulenga Muchindu Munsaka from the University of Zambia. I am here to collect data for my research on your perceptions based on Agricultural Science in secondary schools in Lusaka district. I have come to you because you are more knowledgeable on what is obtaining in the school. Kindly share with me your opinions, experiences and views about the topic. The information you will give me will be treated with utmost confidentiality and will only be used for study purposes. In addition to taking notes, I will ask your permission to use a voice recorder so that I can capture all the important information that you share with me.

Bio Data

1. What is your highest Teacher education qualification?
2. For how long has this school been offering Agricultural Science?
3. For how long have you served as Head Teacher at this school?

Why Agricultural Science is only taught to some learners

4. How important is agriculture to the social economic situation in Zambia?
5. How many streams are taking Agricultural Science in this school? (Find out how many streams or classes each grade has in the school)
6. How many learners are taking Agricultural Science per stream?
7. How are learners allocated to the Agricultural Science class? (Probe if learners have a say in choosing Agricultural Science as their subject of choose)
8. Why is it that Agricultural Science is set as an optional subject in the Zambian educational system?
9. Was Agricultural Science supposed to be an optional subject or there were reasons that led to it being optional?
10. If response is yes, why is it an optional subject if it is taken to be important?

Perceptions and Experiences

11. How important do you think it is for learners to learn Agricultural Science?
12. What is the attitude of teachers and learners towards Agricultural Science?
13. What competencies are learners using at home that they are learning in Agricultural Science here at school?

14. From your experience as the school administrator, is it worth for learners to learn this subject in schools? (Probe if they view Agricultural Science as a subject for laborers)

Availability of Resources

15. What teaching and learning resources and facilities relating to Agricultural Science are not available in your school?
16. Do you think your school and other schools in Lusaka district have enough teachers of Agricultural Science?
17. Explain your answer in the previous question.
18. What do you think hinders teachers from properly implementing Agricultural Science in this school?
19. Does the school have facilities for teaching animal husbandry (pigs, cattle, goats etc, farming of crops, poultry? (Probe the responses given)
20. Are there any challenges faced in the implementation of the subject?
21. What needs to be done in order for more learners to take Agricultural Science and how can more schools in Lusaka and in the country offer Agricultural Science to learners than is the case today?

Appendix 6: Interview guide for Head Teachers at schools not offering Agricultural Science

Good morning/afternoon, my name is Mulenga Muchindu Munsaka from the University of Zambia. I am here to collect data for my research on your perceptions based on Agricultural Science in secondary schools in Lusaka district. I have come to you because you are more knowledgeable on what is obtaining in the school. Kindly share with me your opinions, experiences and views about the topic. The information you will give me will be treated with utmost confidentiality and will only be used for study purposes. In addition to taking notes, I will ask your permission to use a voice recorder so that I can capture all the important information that you share with me.

Bio Data

1. How long have you served as Head Teacher in this school?
2. What is your highest Teacher education qualification?

Why Agricultural Science is only taught to some learners

3. How important is agriculture to the social economic situation in Zambia?
4. Why is it that your school does not offer Agricultural Science as one of the science subjects?
5. Why is it that Agricultural Science is set as an optional subject in the Zambian educational system and not taken as a compulsory science?
6. Was Agricultural Science supposed to be an optional subject or there were reasons that led to it being optional?
7. If response is yes, why is it an optional subject if it is taken to be important?

Perceptions and Experiences

8. How important would it be for your learners to learn Agricultural Science? (Probe further to find out if they find Agricultural Science as a subject for laborers)
9. What is the attitude of your society towards Agriculture Science?

Availability of Resources

10. If you were to introduce Agricultural Science in this school, what teaching and learning resources and facilities relating to agriculture science can the school manage to provide? Which ones can you not manage to provide and why?

11. Do you think your school and other schools in Lusaka district have enough teachers of Agricultural Science?
12. Explain your answer in the previous question.
13. What do you think hinders teachers from properly implementing Agricultural Science in schools in Lusaka?
14. What needs to be done in order for more learners to take Agricultural Science and how can more schools in Lusaka and in the country offer Agricultural Science to learners than is the case today?

Appendix 7: Interview guide for Curriculum specialists of Agricultural Science

Good morning/afternoon, my name is Mulenga Muchindu Munsaka from the University of Zambia. I am here to collect data for my research on your perceptions based on Agricultural Science in secondary schools in Lusaka district. I have come to you because you are more knowledgeable on what is obtaining in the school. Kindly share with me your opinions, experiences and views about the topic. The information you will give me will be treated with utmost confidentiality and will only be used for study purposes. In addition to taking notes, I will ask your permission to use a voice recorder so that I can capture all the important information that you share with me.

Bio Data

1. How long have you been working as a Curriculum Specialist for Agricultural Science?

Why Agricultural Science is only taught to some learners

2. How important is agriculture to the social economic situation in Zambia?
3. Why is it that Agricultural Science is restricted to one career pathway in the Zambian educational system and is not a compulsory science?
4. Was Agricultural Science supposed to be an optional subject or there were reasons that led to it being optional?
5. If response is yes, why is it an optional subject if it is taken to be important?

Perceptions and Experiences

6. How worth is it for learners to learn Agricultural Science?
7. What competencies are taught in schools that learners can practically use at home?
8. Why is it that Agricultural Science is only offered by very few schools in Lusaka province?
9. From your experience as a curriculum specialist, how well is the Agricultural Science curriculum being implemented at senior secondary school?
10. Are there any barriers hindering the Agricultural Science curriculum from being well implemented? (If yes, probe further and find out the barriers hindering the Agricultural Science curriculum from being well implemented)

Availability of Resources

11. When developing the Agricultural Science curriculum, was it considered that schools had the required human resources, various facilities (labs, lab instruments, chemicals, text books e.t.c) and other teaching and learning materials before it was introduced?
12. If no, why was it not considered that schools had those various facilities?
13. According to the situation now how good is the availability of various facilities for the proper implementation of Agricultural Science in secondary schools?
14. What needs to be done in order for more learners to take Agricultural Science and how can more schools in Lusaka and in the country offer Agricultural Science to learners than is the case today?

Appendix 8: Focus Group Guide for pupils at schools offering Agricultural Science

Good morning/afternoon, my name is Mulenga Muchindu Munsaka from the University of Zambia. I am here to collect data for my research on your perceptions based on Agricultural Science in secondary schools in Lusaka district. I have come to you because you are more knowledgeable on what is obtaining in the school. Kindly share with me your opinions, experiences and views about the topic. The information you will give me will be treated with utmost confidentiality and will only be used for study purposes. In addition to taking notes, I will ask your permission to use a voice recorder so that I can capture all the important information that you share with me.

Bio Data

Male: Female:

Why Agricultural Science is taught to some learners

1. What is the importance of agriculture in Zambia's economy?

Perceptions and Experiences

2. Would you choose to learn more about agriculture at tertiary education?
3. How do you benefit from agriculture?
4. Why it is important to learn Agricultural Science?
5. How do you view Agricultural Science? (Probe if it is viewed as a subject for laborers)
6. What motivates you to learn Agricultural Science?
7. How practical is what you learn in class? (Are you able to practice what you learn at home?)
8. What teaching and learning materials does your school have to aid the teaching and learning of Agricultural Science?

Availability of Resources

9. What topics have you learned with the aid of experiments?
10. If there are insufficient instruments to carry out an experiment during an assessment, how does the assessment take place?
11. What needs to be done in order for more learners to take Agricultural Science and how can more schools in Lusaka and in the country offer Agricultural Science to learners than is the case today?

Appendix 9: Focus Group Guide for pupils at schools not offering Agricultural Science

Good morning/afternoon, my name is Mulenga Muchindu Munsaka from the University of Zambia. I am here to collect data for my research on your perceptions based on Agricultural Science in secondary schools in Lusaka district. I have come to you because you are more knowledgeable on what is obtaining in the school. Kindly share with me your opinions, experiences and views about the topic. The information you will give me will be treated with utmost confidentiality and will only be used for study purposes. In addition to taking notes, I will ask your permission to use a voice recorder so that I can capture all the important information that you share with me.

Bio Data

Male: Female:

Why Agricultural Science is only taught to some learners

1. What is the importance of agriculture in Zambia's economy?

Perception and Experiences

2. How do you perceive Agricultural Science? (Probe if it viewed as a subject that is for laborers)
3. What are the reasons as to why you would have liked to learn Agricultural Science if it was offered at your school?
4. What do you think is the attitude of your society towards Agricultural Science?
5. How do you benefit from agriculture?
6. Inasmuch as you do not learn Agricultural Science would you like to take an agricultural related program post-secondary education? (If yes, why would they like to learn agriculture post-secondary education)
7. If your family owns a farm, what challenges do you face in farming that you think you would have knowledge on if you used to learn Agricultural Science?
8. What needs to be done in order for more learners to take Agricultural Science and how can more schools in Lusaka and in the country offer Agricultural Science to learners than is the case today?

Appendix 10: Appendix 10: Ethical Clearance and Approval of the Study

THE UNIVERSITY OF ZAMBIA
DIRECTORATE OF RESEARCH AND GRADUATE STUDIES

Great East Road Campus | P.O. Box 32379 | Lusaka10101 | Tel: +260-211-290 258/291 777 **Fax**: (+260)-211-290 258/253 952 | E-**mail**: director.drgs@unza.zm | Website: www.unza.zm

APPROVAL OF STUDY

IORG No. 0005376
HSSREC IRB No. 00006464
REF NO. HSSREC-2023-AUG-068

11th October, 2024

Ms Mulenga M. Munsaka
The University of Zambia
P.O. Box 32379
LUSAKA

Dear Ms Munsaka

RE: "THE IMPLEMENTATION OF AGRICULTURE SCIENCE CURRICULUM IN SECONDARY SCHOOLS IN LUSAKA DISTRICT: A PHENOMENOLOGICAL EXAMINATION"

Reference is made to your submission of the protocol captioned above. The HSSREC resolved to approve this study and your participation as Principal Investigator for a period of one year.

REVIEW TYPE	ORDINARY REVIEW	APPROVAL NO. HSSREC:2023-AUG-068
Approval and Expiry Date	Approval Date: 11th October, 2024	Expiry Date: 10th October, 2025
Protocol Version and Date	Version - Nil.	10th October, 2025

Information Sheet, Consent Forms and Dates	□ English.	To be provided
Consent form ID and Date	Version - Nil	To be provided
Recruitment Materials	Nil	Nil
Other Study Documents	Questionnaire.	
Number of Participants Approved for Study		

Specific conditions will apply to this approval. As Principal Investigator it is your responsibility to ensure that the contents of this letter are adhered to. If these are not adhered to, the approval may be suspended. Should the study be suspended, study sponsors and other regulatory authorities will be informed.

CONDITIONS OF APPROVAL

- No participant may be involved in any study procedure prior to the study approval or after the expiration date.
- All unanticipated or Serious Adverse Events (SAEs) must be reported to HSSREC within 5 days.
- All protocol modifications must be approved by HSSREC prior to implementation unless they are intended to reduce risk (but must still be reported for approval). Modifications will include any change of investigator/s or site address.
- All protocol deviations must be reported to HSSREC within 5 working days.
- All recruitment materials must be approved by HSSREC prior to being used.
- Principal investigators are responsible for initiating Continuing Review proceedings. HSSREC will only approve a study for a period of 12 months.
- It is the responsibility of the PI to renew his/her ethics approval through a renewal application to HSSREC.
- Where the PI desires to extend the study after expiry of the study period, documents for study extension must be received by HSSREC at least 30 days before the expiry date. This is for the purpose of facilitating the review process. Documents received within 30 days after expiry will be labelled "late submissions" and will incur a penalty fee of K500.00. No study shall be renewed whose documents are submitted for renewal 30 days after expiry of the certificate.
- Every 6 (six) months a progress report form supplied by The University of Zambia Humanities and Social Sciences Research Ethics Committee as an IRB must be filled in and submitted to us. There is a penalty of K500.00 for failure to submit the report.
- When closing a project, the PI is responsible for notifying, in writing or using the Research Ethics and Management Online (REMO), both HSSREC and the National

Health Research Authority (NHRA) when ethics certification is no longer required for a project.

- In order to close an approved study, a Closing Report must be submitted in writing or through the REMO system. A Closing Report should be filed when data collection has ended and the study team will no longer be using human participants or animals or secondary data or have any direct or indirect contact with the research participants or animals for the study.

- Filing a closing report (rather than just letting your approval lapse) is important as it assists HSSREC in efficiently tracking and reporting on projects. Note that some funding agencies and sponsors require a notice of closure from the IRB which had approved the study and can only be generated after the Closing Report has been filed.

- A reprint of this letter shall be done at a fee.

- All protocol modifications must be approved by HSSREC by way of an application for an amendment prior to implementation unless they are intended to reduce risk (but must still be reported for approval). Modifications will include any change of investigator/s or site address or methodology and methods. Many modifications entail minimal risk adjustments to a protocol and/or consent form and can be made on an Expedited basis (via the IRB Chair). Some examples are: format changes, correcting spelling errors, adding key personnel, minor changes to questionnaires, recruiting and changes, and so forth. Other, more substantive changes, especially those that may alter the risk-benefit ratio, may require Full Board review. In all cases, except where noted above regarding subject safety, any changes to any protocol document or procedure must first be approved by HSSREC before they can be implemented.

Should you have any questions regarding anything indicated in this letter, please do not hesitate to get in touch with us at the above indicated address.

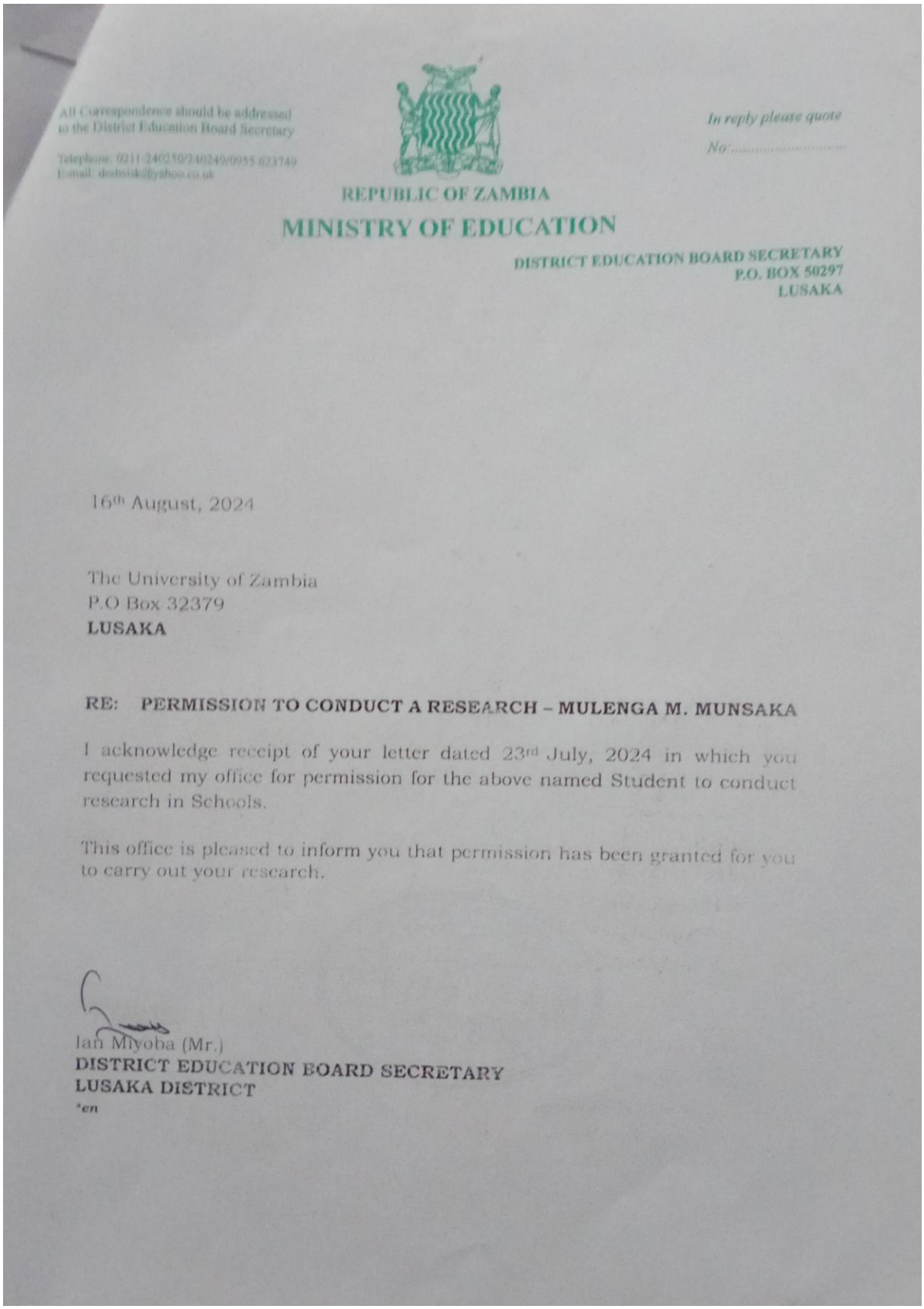
On behalf of HSSREC, we would like to wish you all the success as you carry out your study.

Yours faithfully,

DR. ELIJAH M. BWALYA
ACTING CHAIRPERSON
THE UNIVERSITY OF ZAMBIA HUMANITIES AND
SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE - IRB

cc: Director, Directorate of Research and Graduate Studies
Assistant Director (Research), Directorate of Research and Graduate Studies
Assistant Registrar (Research), Directorate of Research and Graduate Studies

Appendix 11: Permission to Collect Data from Secondary School in Lusaka



All Correspondence should be addressed to the District Education Board Secretary

Telephone: 0211-240250/240249/0955 623749
E-mail: deobsisk@yahoo.co.uk

In reply please quote

No:.....

REPUBLIC OF ZAMBIA

MINISTRY OF EDUCATION

DISTRICT EDUCATION BOARD SECRETARY
P.O. BOX 50297
LUSAKA

16th August, 2024

The University of Zambia
P.O Box 32379
LUSAKA

RE: PERMISSION TO CONDUCT A RESEARCH – MULENGA M. MUNSAKA

I acknowledge receipt of your letter dated 23rd July, 2024 in which you requested my office for permission for the above named Student to conduct research in Schools.

This office is pleased to inform you that permission has been granted for you to carry out your research.

Ian Miyoba (Mr.)
DISTRICT EDUCATION BOARD SECRETARY
LUSAKA DISTRICT
cc