TITLE:
COMPARATIVE ANALYSIS OF AUTHORITATIVE VERSUS PARTICIPATORY TEACHING APPROACHES IN PROMOTING INNOVATION IN PUPILS. CASE STUDY MAIZELANDS SECONDARY ORDINARY LEVEL AGRICULTURE.

RESEARCH SUBMITTED TO THE FACULTY OF EDUCATION IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DIPLOMA IN SCIENCE EDUCATION.

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The undersigned certify that they have read and recommended Bindura University Of Science education for acceptance of a research project entitled “Comparative analysis of authoritative versus participatory teaching approaches in promoting innovation in pupils. case study Maizelands secondary ordinary level agriculture.” Submitted by Bowora Peter Danisani B0924263 in partial fulfilment of the requirements for Post Graduate Diploma in Education.

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DEDICATION

This paper is dedicated to Gkokwaza family and Velocious Kazimbiri for their support and allowing me ample time to work on this paper when they needed me the most.
ABSTRACT

The research on “Comparative analysis of authoritative versus participatory teaching approaches in promoting innovation in pupils. Case study Maizelands secondary ordinary level agriculture. “was carried out at Maizelands secondary school in Bindura district of Mashonaland Central, were the data was collected from the students and teachers for a period between February 2015 to June 2015. The data was collected from interviews and experiments out of a sample chosen randomly from the population and this data answered the research question that includes:1) How are the ordinary level agriculture pupils learning at Maizelands secondary? 2) How effective are the teaching methods in promoting innovativeness in the teaching and learning of ordinary level agriculture pupils at Maizelands secondary? 3) What are the factors which determine the use of participatory and authoritative teaching methods in the teaching and learning of ordinary level agriculture at Maizelands secondary? 4) What are the recommended teaching approaches that promote innovativeness in the teaching and learning of ordinary level agriculture pupils at Maizelands secondary? From the research findings it is evident that participatory teaching approach and authoritative teaching approach were both used in the teaching and learning of agriculture though there was much dependency on authoritative teaching approach. It also emerged that participatory teaching approach at 0.05 significant level, encourages innovativeness in pupils greater than the extent to which authoritative teaching approach encourages innovativeness in pupils in the teaching and learning of agriculture. However there has been much emphasis on the uses of authoritative approaches due to the factors that includes lack of resources, Large number of pupils in a class, lack of enough time required, lack of financial support, pupils background, lack of teacher experience with some of the equipment, teacher’s age and sex among others. In accordance with these findings it was recommended that Maizelands secondary should fully utilise the participatory teaching approach in the teaching and learning of agriculture to encourage innovativeness in pupils which will enable them to successfully solve agriculture related problems and improve yields in their resettlement areas.
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1.0 CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

The research is aimed at identifying, examining and recommending the teaching methods that are being used in learning of agriculture by ordinary level students at Maizelands secondary which promotes innovativeness in pupils. It will include the background of the study, statement of the problem, objectives of the study, research questions, and significance of the study, delimitations and limitations of the study.

1.2 BACKGROUND OF STUDY

High quality and relevant secondary education is important for youth to obtain the skills, knowledge and competencies needed for employment which will in turn, this will result in economic development of a country. The quality of education depends, to a large extent, on the quality of teachers involved in its development and delivery(Malawi Institute of Education, 2004). Teaching at secondary is mainly based on two major categories namely the teacher- centred which involve authoritative teaching approaches and pupil-centred which involve participatory approaches.

A learning environment that promotes the development of creativity, innovativeness and capability for self-directed lifelong learning in students will have a strong flavour of constructivist learning, rather than one of teacher-dominated declarative learning. Students will be active agents in the construction of their own knowledge, rather than passive recipients of that knowledge from teachers (Moyle, 2010).

On the other hand classical education teaches students facts, provides them with logical tools to use those facts, and perfects the student’s ability to relate those facts to others. This fundamental skill set is more valuable as the process of teaching students to think extends far beyond filling their heads with knowledge because classical education helps students draw original, creative, and accurate conclusions from facts and then formulate those conclusions into logical and persuasive arguments (Harvey & Laurie Bluedorn,2000).

According to Moyle, 2010, her description of the characteristics of the 21st century school reveals the learning situation required to promote the capabilities in students, is not
compatible with the existing traditional school structure because such a learning environment is not tidy and does not follow a present script.

Students involved in self-directed learning make mistakes but in a 21st century school the mistakes are considered a natural and valuable element in learning from a constructivist learning perspective. However wrong answers and the sense of being lost in a problem are not qualities generally welcome in the existing traditional school structure. Those who accept the existing traditional paradigm of school practice would likely see this type of classroom as one that is out of the control of the teacher. They are also likely to be dismayed by a perceived waste of time. Time is a scarce commodity in schools, so from the standpoint of time usage it may seem more efficient ‘to tell’ students the knowledge rather than to have them be participants in achieving the knowledge (Moyle, 2010).

On the other hand taking time to enable students to be active participants in their learning is a requisite if the goal is to foster creativity and self-directed learning. The fostering of creativity and self-directed learning occurs when students are given tasks or problems that challenge them to ‘think outside the box’ and to ‘own the problem’. Constructing such learning tasks also challenges the creativity of curriculum developers and teachers (Moyle, 2010). Since problem solving, individual understanding, and original thinking are not emphasised in most high school curriculums. It is important to emphasise and promote the innovative and creative thinking in order for students to succeed, in problem solving (Loewy, 2008).

In Nigeria It has also been noted that lecture method commonly used for teaching/learning process in Nigerian schools is not so effective because the students are not given the opportunity to interact with the environment and maximally develop their intellectual capabilities (Abdu-raheem, 2011) hence researchers have come up with strategies based on the restructuring of knowledge by the learner from their individual experience and that improves a pupils reasoning level.

In Kenya the focus is to promote experiential learning, innovation and creativity and well-coordinated programmes in education. Efforts will also be made to cultivate and sustain interest in mathematics, science and technology from Early Childhood to Primary and Secondary Education levels. To promote the generation of knowledge and its application in
the strategies will involve introducing innovation and creativity as a major function (Sally and Kosgei 2009).

In Malawi they have noted that learners are different and they learn through different ways. Therefore, there is no single method or technique on its own which can satisfy the learning needs of all the learners. In order to cater for the needs of all the learners, it is necessary for the teacher to vary the methods of teaching. In addition, teaching becomes more effective when an eclectic approach, that is combining several methods of teaching in one lesson, is adopted. As well as catering for the needs of a wider range of learners, the eclectic approach helps to overcome the problem of monotony and boredom which are probably the worst enemies of learning. Above all, teachers are encouraged to be resourceful and creative (Malawi Institute of Education, 2004).

In Zimbabwe the methodology of environmental science is mainly child centred as learners are interacting with the teacher, among themselves and their environment. It is encouraged that for effective learning of pupils there should be a lot of strategies that should be used which include demonstration, experiments, project work, problem solving, games, case study, drama, discussions and field trip (Zvavanhu, 2010).

It is therefore the aim of this paper is to cite methods that have proven to be helpful in the teaching of agriculture to Maizelands secondary students as a catalyst for furthering the development of innovativeness in problem solving with restrictions we encounter so often in authoritative teaching method and without the restrictions we encounter in participatory teaching method.

1.2 AIM

The aim of this paper is to cite methods that have proven to be helpful in teaching of agriculture to Maizelands secondary students as a catalyst for furthering the development of innovativeness in solving agriculture related problems using authoritative teaching approach and using participatory teaching approach.

1.3 OBJECTIVES

By the end of the research the researcher should be able to:
• Identify teaching methods in the teaching and learning of agriculture that promote innovativeness in ordinary level pupils being used at Maizelands secondary.
• Determine the extent to which authoritative teaching approach and participatory teaching approach in the teaching and learning of agriculture promotes innovativeness in ordinary level pupils at Maizelands secondary.
• Determine factors that determine the use of authoritative and participatory teaching methods in the teaching and learning of ordinary level agriculture at Maizelands secondary?
• Recommend teaching approaches in the teaching and learning of ordinary level agriculture that promote innovativeness in pupils at Maizelands secondary.

1.4 RESEARCH QUESTIONS

• How are the ordinary level agriculture pupils learning at Maizelands secondary?
• How effective are the teaching methods in promoting innovativeness in the teaching and learning of ordinary level agriculture pupils at Maizelands secondary?
• What are the factors which determine the use of participatory and authoritative teaching methods in the teaching and learning of ordinary level agriculture at Maizelands secondary?
• What are the recommended teaching approaches that promote innovativeness in the teaching and learning of ordinary level agriculture pupils at Maizelands secondary?

1.5 PROBLEM STATEMENT

Maizelands community is failing to solve agriculture related problems in order to improve their yields due to lack of innovativeness and this has been traced back to school going age before the members have become adults.

1.6 JUSTIFICATION

According to Mazuru et al, (2007) some A1 farmers in Mashonaland Central Province, Zimbabwe could hardly harvest up to half a tonne of maize on their cultivated hectares. Maizelands community is part of this bracket of A1 farmers in Mashonaland Central
Province, Zimbabwe failing to improve their yields due to failure to solve agriculture related problems due to lack of innovativeness and this has been traced back to school going age before members have become adults. Hence the need to look into a comparative analysis of authoritative versus participatory teaching approaches in promoting innovativeness in pupils in the teaching and learning of agriculture so as to cite methods that have proven to be helpful to ordinary level agriculture Maizelands secondary students as a catalyst for furthering the development of innovativeness in solving agriculture related problems.

1.7 ASSUMPTIONS

The researcher assumed that during the data collection phase all the pupils and teachers making up the population will be willing to participate in the research. It is also assumed that the ordinary level teachers at this school are qualified teachers and can teach the students with the Zimbabwe Schools Examination Council (ZIMSEC) syllabi.

1.8 SIGNIFICANCE OF THE STUDY

Research on comparative analysis of authoritative teaching approach versus participatory teaching approach in the promotion of innovation in pupils studying ordinary level agriculture at Maizelands secondary school is set to be of importance to the pupils, teachers and the researcher. Since learning is for life, the innovative skills attained will help them solving different problems in their agricultural activities before and after school.

1.9 DELIMITATIONS

The research was carried out at Maizelands secondary school situated in Bindura district. The school is located fifteen kilometres from Bindura town. The school gets most of its pupils from nearby farms and a few from resettlement areas which are near the farms.

1.10 LIMITATIONS

The student is on teaching practice as a result the researcher will face some challenges such as not having ample time the researcher will also be concentrating on the teaching practice. If given enough time the researcher was going to look at different teaching methods and attitudes of pupils that affect promotion of innovativeness in pupils individually.
1.11 DEFINITION OF TERMS

1.11.1 TEACHING

It means to imparting knowledge, skills and values to others (Collins English Dictionary, 2012)

1.11.2 TEACHING APPROACH

It is “a set of assumptions dealing with the nature of language and the nature of language teaching and learning.” (Ministry of Education ELT General Inspectorate, 2012)

1.11.3 AUTHORITATIVE TEACHING APPROACH

Authoritative teaching approach is described as being based upon a model of an active teacher and a passive student (Mascolo, 2009).

1.11.4 PARTICIPATION TEACHING APPROACH

Participation teaching approach is a teaching method based upon the idea of an active student meaning the teacher does not function as the primary source of knowledge in the classroom (Mascolo, 2009).

1.11.5 INNOVATION

The term innovation can be defined as something original and more effective and, as a consequence, new, that "breaks into" the market or society Frankelius, (2009).

1.12 SUMMARY

The chapter introduced the problem of the research which probed the researcher to carry out the project. The chapter justifies the worthy of the research or the rationale and justification of wanting to carry out the research by showing benefits of the research. The research involved evaluating the different teaching methods in the background of the study. The next chapter will focus on literature review.
2.0 CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

The literature review will focus on the teaching methods used when teaching and learning of agriculture and assess how effective are they in problem solving, innovation encouragement and problems faced basing on other studies done by other researchers. It will further clarify and justify the study by identifying knowledge gaps that will be filled by the study.

2.2 BACKGROUND

According to Ninkarb, 2009 secondary education is a very important stage in the educational delivery worldwide. This stems from the fact that at the end of the secondary education, the youth generally enters into adulthood where they are expected to be responsible and make decision and contributions to their personal development and that of the society as a whole. Thus, although secondary education is both terminal and promotional many of them enter into the world of work at this stage. Consequently, they require the skill with which they can effectively perform their roles as members of society particularly in the workplace. To deliver these needed employable skills to the youth requires the effective secondary education system to perform such role. People with these employable skills are capable of not only getting employment but also to be self-employed.

In related literature in support of such a background in the United States of America, Adams,(2006) carried out a research entitled “The sources of innovation and creativity.” Werethe following research questions were answered

1. What are the sources of creativity and innovativeness in individuals?
2. What do we know about curricula and pedagogical techniques have proven effective in promoting innovation and creativity?
3. What do we know about techniques that have been proven to stimulate innovation and creativity at work place?
4. What is it about the nature of our culture, society and economy that makes our country creative and innovative?
5. What contribute to the development of successful entrepreneurs?
6. What actions should the United States of America education system take to promote creativity and innovation among students?

7. What are some suggested further research?

Such a background also gave rise to the researches done by Appiah and Anarfi (2012) on innovative secondary education for skills enhancement in Benin, Burkina Faso, Senegal, Ghana, Kenya, Tanzania, and Uganda were they focussed more on innovative models that are being used to impart knowledge to pupils. Thereseach had the core research questions that drove the study including:

1. What is the current situation in the secondary education sector in the region?
2. What innovative models in secondary education currently exist?
3. Which models are effective in delivering high-quality, relevant skills?
4. Which models are best suited to target populations?
5. What is the cost of delivering these models?

This background and research questions provided a gap and helped in developing this paper’s objectives and research questions which includes:

- How are the ordinary level agriculture pupils learning at Maizelands secondary?
- How effective are the teaching methods in promoting innovativeness in the teaching and learning of ordinary level agriculture pupils at Maizelands secondary?
- What are the factors which determine the use of participatory and authoritative teaching methods in the teaching and learning of ordinary level agriculture at Maizelands secondary?
- What are the recommended teaching approaches that promote innovativeness in the teaching and learning ordinary level agriculture pupils at Maizelands secondary?

Teaching at secondary level of the required skills with which pupils can effectively perform their roles as members of society is mainly based on two major categories namely the teacher-centred method which involve authoritative teaching approaches and pupil-centred method which involve participatory approaches.
2.3 AUTHORITATIVE TEACHING APPROACH

According to Mascolo, (2009) traditional or authoritative teaching approach is generally defined as a style in which the teacher assumes primary responsibility for the communication of knowledge to students. Hancock, et al, (2003) define authoritative teaching instruction as teacher dominant leader who establishes a completion. According to Mascolo,( 2009) from this view, because teachers command greater expertise about the subject matter, they are in the best position to decide the structure and content of any given classroom experience. Authoritative teaching approach is usually understood to involve the use of the lecture as a primary means of communication in the classroom. The goal of the classroom involves the dissemination of a relatively fixed body of knowledge that is determined by the teacher. The lecture format is generally assumed to proceed in a unilateral fashion, the teacher elaborates upon a given body of knowledge from his or her own expert perspective rather than building the content of classroom communication around questions that students might have. According to Abdu-raheem, (2011) lecture method allows a great deal of information to be passed to the learner and favours handling of large classes. However in spite of the advantages, the lecture method does not stimulate students’ innovations, inquiry and scientific attitudes. It encourages students to cram facts which are easily forgotten (Okwilagwe, 2002).

2.4 PARTICIPATORY TEACHING APPROACH

Participatory teaching approach has its origins in constructivist developmental theory and Constructivism refers to the idea that individuals construct their understanding of the world as a product of their actions on the world (Fosnot & Perry, 2005). According to Mascolo, (2009), Participatory teaching approach thinking has spawned a burgeoning interest in the use of a variety of different active learning methods in and out of the classroom. These include collaborative learning, experiential learning, problem-based learning, and a variety of other pedagogical methods. The idea that students must be active in the construction of knowledge is often understood to imply a diminishing role for the teacher in the learning process. Teachers are called upon to relinquish singular claims to authority or power in the classroom. As a result, the role of the teacher becomes recast as one of facilitator and all learning is thus viewed as a form of doing. This is also in line with Seweje, (2010) who
explained further that a teacher is expected to be a facilitator whose main function is to help learners to become active participants in their learning and thereby making meaningful connection between prior knowledge, new knowledge and the process involved in learning.

Hancock, *et al.*, (2003) describe participatory teaching approach as follows: (a) teachers are a catalyst or helper to students who establish and enforce their own rules; (b) teachers respond to student work through neutral feedback and encourage students to provide alternative or additional responses, (c) teachers ask mostly divergent questions and few recall questions, (d) students are allowed to select the learning task and the manner and order in which it is completed, (e) students are presented with examples of the content to be learned and are encouraged to identify the rule of behaviour embedded in the content. (f) students are encouraged to summarise and review important lesson objectives throughout the lesson and the conclusion of the activity; (g) students are encouraged to choose new activities in the session and select different topics for study, and (h) students signal their readiness for transition to the next learning set.

Akinleye, (2010) confirmed that if the children are given opportunity to be listened to and guided in a non-threatening atmosphere, they would perform wonders in terms of problem-solving and decision making.

### 2.5 PROBLEM SOLVING AND INNOVATION

Flexible and original thinking is the key to successful problem solving. In order to solve problems effectively students should be offered a framework that is not restrictive and allows them room to develop their own individual design process. Creativity blossoms and a student's creative process is discovered when the individual is immersed in an environment that is conducive to innovative thinking (Loewy, 2008).

Problem solving, individual understanding, and original thinking are not emphasised in most high school curriculums. In order for students to succeed, in problem solving we must emphasise and promote the innovative and creative thinking (Loewy, 2008).

In order to teach innovation when it is an area of learning that defines itself as non-formulaic or non-prescriptive in nature first and foremost, a project must stay in student's hands. When a teacher takes possession of a project and spoon-feeds students with answers, the students will not learn how to answer their own questions hence good educators teach students how to
teach themselves and with this tool, as hard as it is to master, a student's education will continue to progress indefinitely (Loewy, 2008).

However according to Moyle, (2010), in other countries like Australia were participatory teaching approach was put into practice, it yielded positive results though the major problem within which education sits was shown to be an economic one because participatory teaching approach is expensive.

2.6 FACTORS THAT AFFECT THE USE OF A TEACHING METHOD

The method to be used for effective teaching and learning is a matter of grave concern to teachers and educators (Abdu-raheem, 2011). It is therefore the role of the teacher to choose a method that best suit the mystery of content to be delivered for better pupil understanding and grasping of concepts. However due to other factors that may prevail the teacher may be forced to change the teaching approach hence the need to look into factors that determine the use of a teaching method.

2.6.1 FACTORS THAT CAUSE FOR THE USE OF PARTICIPATORY TEACHING APPROACH

Demands for increased pupil participation have been founded upon pragmatic line of argumentation. According to Mascolo, 2009, Participatory teaching approach thinking has the idea that students must be active in the construction of knowledge and students signal their readiness for transition to the next learning set.

From a pragmatic perspective, participation is considered to improve the quality of decisions because it is better to have as much knowledge, experience and expertise as possible in addressing the complex (and thus uncertain) nature of social issues and problem. Therefore, access must be created for all relevant persons to participate so as to contribute to solutions and planning for the future (Slocum, 2003). Participation is considered to increase student’s interest, increase students acceptance and commitments and utilise students’ knowledge, experience which results in more permanent learning because of high degree of student participation (GTZ, 2015).

This is also supported by Hermann, (2015) who indicated that participation carries with it feelings of ownership, and builds a strong base for the intervention in the community. If
people are integral to the planning of a community intervention, then that intervention will be theirs. They have a stake in it not only as its beneficiaries or staff or sponsors, but as its originators. They will do what they can to see their work succeed which includes facts that it teaches skills which last far beyond the planning process, and can help to improve the community over the long term. People learn to run meetings, to analyse data, to construct strategic plans - in short, to become community resources and leaders. Also bringing a broader range of people to the planning process provides access to a broader range of perspectives and ideas.

2.6.2 FACTORS THAT CAUSE FOR THE USE OF AUTHORITATIVE TEACHING APPROACH

According to Mumtaz, (2000) a number of early studies investigated why teachers do not use participatory approach and discovered factors that includes

- lack of teaching experience
- lack of on-site support for teachers using technology
- lack of help supervising children when using computers and other equipment used in the lesson
- lack of resources availability
- lack of time required to successfully integrate technology into the curriculum
- Lack of financial support.

These factors has on the other hand caused for the use of authoritative teaching approach which saves time, permits flexibility, requires less rigid space requirement, permits adaptability, permits versatility and permits better centre over contact and sequence (GTZ, 2015).

2.7 SUMMARY

The chapter focused on the teaching methods used in the teaching and learning of agriculture and assessed how effective are they in problem solving, innovation encouragement, factors that cause for the use of a teaching method and problems faced basing on studies done by other researchers. It also further clarifies and justifies the study by identifying knowledge gaps that will be filled by the study. The next chapter will focus on research methodology.
3.0 CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter explains how the research was carried out and how the data was analysed focusing on the components that includes research paradigm and design, population and sampling procedure, the research instruments, data collection tools, data presentation and analysis procedures.

3.2 STUDY AREA

The research was carried out at Maizelands secondary school situated in Mashonaland central province, in Bindura district. The school is located fifteen kilometres from Bindura town. The school gets most of its pupils from nearby farms from farm workers and a few from resettlement areas in farms nearby. More than two thirds of the pupils are boys and the remainder are girls with total population of about 370 pupils.

3.3 THE PARTICIPANTS OF THE STUDY CONSENT

Through written application, the researcher obtained administrative consent from competent authorities of the schools and from the participants. The researcher provided the authorities and the participants with detailed information about the study, the purpose of the study, its intended benefits, sampling criteria, the demands on teachers’ time, the timeline of the study, data collection tools and procedure, and assurance of confidentiality and anonymity.

3.4 RESEARCH PARADIGM AND DESIGN

Both the quantitative and the qualitative research paradigms were used in this research were the qualitative method consisted of data collection from in depth open ended interviews and quantitative method consisted of data collection from experimental results.

The qualitative paradigm was chosen for identifying teaching methods and the researcher is the data gathering instrument thus there is personal involvement and good understanding. According to Ali, (2012), this helps the evaluator to see the qualities of social and educational interaction since the researcher gains an inside view on the field.
An experiment was carried out to determine the extent to which the authoritative and participatory teaching approaches promote innovativeness in pupils because according to Chiromo, (2009) it allows the researcher to control the factors to which the subjects are subjected during the period of inquiry.

A case study was used by the researcher because it concentrates research on one site, so it offers one set of boundary of the study which also reduces economic strains on the researcher as it minimises travelling costs.

The targeted population of the ordinary level ZIMSEC agriculture pupils at Maizelands secondary in Bindura district, Mashonaland Central Province. Convenience sampling was used to draw pupils form the unit of analysis. Interviews and experiment were used to collect data, which was presented in tabular form and pie charts.

3.5 POPULATION

The research targeted all pupils doing ZIMSEC agriculture at ordinary level at Maizelands secondary. The total number of students is 50.

3.6 SAMPLING PROCEDURE

The random sampling method was used to select participants. The researcher prepared 50 small pieces of papers. The researcher wrote numbers 1 to 20 on some of the papers and left other 30 blank. The papers were put in a box and pupils picked without looking into the box. Those who picked numbers participated in the research and this was made up of 6 girls and 14 boys.

3.7 RESEARCH INSTRUMENTS

3.7.1 INTERVIEWS

Interviews have been chosen as they offer an opportunity for probing questions to the researcher and classification of questions where there are misconceptions. The interview also allows stimulation of respondent’s insight into experiences of someone by the researcher (Chiromo, 2009). It also explores areas which were not anticipated in the original plan that
helps to bring out the reliable results (Chiromo, 2009). The interview for both the teachers and the pupils

The interview was mainly focused on identifying current teaching methods and the questions were grouped into different sections such that all the research questions were answered. The teachers and the pupils were given interview guide and they answered every question in the interview guide. This was done through face to face interview with the researcher. Pupils and teachers were interviewed separately so as to avoid teacher’s opinions and views from influencing pupil’s responses.

According to Ali, (2012), the post observation reflective discussion with the teachers and in-depth interview with the research participants helped access the participants’ experiences, beliefs, and values that underpin their teaching and learning practices. To facilitate in-depth interviews with individual participants, open-ended questions were used that allowed further probing. The in-depth interviews with teachers, classroom observations, and post observation reflective discussions with teachers were guided mainly by the following general questions:

- How are the ordinary level agriculture pupils learning at Maizelands secondary?
- How effective are the teaching methods in promoting innovativeness in the teaching and learning of ordinary level agriculture pupils at Maizelands secondary?
- What are the factors which determine the use of participatory and authoritative teaching methods in the teaching and learning of ordinary level agriculture at Maizelands secondary?
- What are the recommended teaching approaches that promote innovativeness in the teaching and learning of ordinary level agriculture pupils at Maizelands secondary?

3.7.2 EXPERIMENT

The researcher did not directly interact with students. However, the researcher observed them learning in the classroom. The researcher observed teaching and learning process in both different classrooms having students in agriculture class ranging from 20 to 25 students were classroom observations helped document activities and processes.
The researcher made sure that the topic was not be too broad and give students enough room for exploration so the class was taught on a topic on soil texture separately were one group was taught using authoritative approaches and the other using participatory approaches. They were both asked to identify user problems that can be associated with the use of sieves in determining soil texture, encouraging problems that are inspired from first-hand experience.

Students were asked to think back over their past experiences with the idea of finding a problem they can identify with, thereby imbuing the problem with meaning. According to Loewy, (2008) for the student this activity starts the process of project ownership which is a very important aspect of a successful project. It can be the fuel that enables a project to go forward or get through a difficult stage. Stating the problem at first has the advantage of getting the students to take initiative and feel ownership, and allows them to find issues that can be used for further brainstorming and research.

The majority of them raised the fact that the sieves are not readily available to all the farmers. According to Loewy, (2008) the identified problem validates the journey in that the future solution, if well executed, will solve a societal problem and therefore have value. The realisation of value is often the fuel that drives the project. Once a student is committed to a tool and user problem he or she becomes involved and half the battle is won. A social or user need has been identified, the other half of the battle is the research journey, the goal of which is to find a beautiful solution for the identified problem. Hence both groups were presented with a field that hand sand soil and clay soil and tasked to come up with a way one can determine soil texture without the use of sieves in the field.

3.8 DATA PRESENTATION PROCEDURE

Objective number one was to identify teaching methods in the teaching and learning of agriculture that promote innovativeness in ordinary level pupils being used at Maizelands secondary. This was accessed by the research question which asks how are the ordinary level agriculture pupils learning at Maizelands secondary? The data was collected by the use of note pad and cell phone recorder using interview as a data collecting instrument from the students were the unit of analysis was the students and the data was analysed by the descriptive method.
On the other hand Objective number two was to determine the extent to which authoritative teaching approach and participatory teaching approach in the teaching and learning of agriculture promote innovativeness in ordinary level pupils at Maizelands secondary. This was accessed by the research question which asks how effective are the teaching methods in promoting innovativeness in the teaching and learning of ordinary level agriculture pupils at Maizelands secondary? The data was collected by the use of note pad to record scores. An experiment was used as data collecting instruments from the students were the unit of analysis was the students and the data was analysed by two sample t-test or t-test for independent means.

Objective three was to determine factors that determine the use of authoritative and participatory teaching methods in the teaching and learning of ordinary level agriculture at Maizelands secondary? This was accessed by the research question which asks what are the factors which determine the use of participatory and authoritative teaching methods in the teaching and learning of ordinary level agriculture at Maizelands secondary? The data was collected by the use of note pad and cell phone recorder using interview as a data collecting instrument from the teacher were the unit of analysis was the teacher and the data was analysed two sample t-test or t-test for independent means.

The fourth objective was to recommend teaching approaches in the teaching and learning of ordinary level agriculture that promote innovativeness in pupils at Maizelands secondary. This was accessed by the research question which asks what are the recommended teaching approaches that promote innovativeness in the teaching and learning of ordinary level agriculture pupils at Maizelands secondary? The recommendations were then made based on the findings of the research.

3.9 SUMMARY

The chapter focused on the research methodology, were the participants of the study consent, research design, population sample, sampling technique, research instruments, data collection procedures and analysis procedures were discussed. The next chapter will focus on data collection.
4.0 CHAPTER 4: DATA COLLECTION

4.1 INTRODUCTION

This chapter presented the data that was gathered from a sample of students and two teachers from Maizelands secondary school. Data was presented in the ways that enable the researcher to answer the entire research questions. Data gathered was presented in the form of tables.

4.2 OBJECTIVE 1: To identify teaching methods in the teaching and learning of agriculture that promote innovativeness in ordinary level pupils being used at Maizelands secondary.

According to the research findings it has been noted that the teachers at Maizelands secondary use both authoritative and participatory approaches in the teaching and learning of agriculture. The results presented below were obtained from the interviews done.

Table 4.1 showing results from the held interviews on how pupils learn.

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Activities done in teaching and learning of agriculture</th>
<th>Most used activities in teaching and learning of agriculture</th>
<th>Most effective activity in understanding and mastering concepts</th>
<th>Activity that promote innovativeness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,2,3,5</td>
<td>2,3,5</td>
<td>2,3,5</td>
<td>3,5</td>
</tr>
<tr>
<td>2</td>
<td>1,2,3,5</td>
<td>3,5</td>
<td>2,5</td>
<td>2,5</td>
</tr>
<tr>
<td>3</td>
<td>1,2,3,4,5,6</td>
<td>1,2,3,5</td>
<td>2,4,5,6</td>
<td>4,5</td>
</tr>
<tr>
<td>4</td>
<td>1,2,3,5</td>
<td>1,3,5</td>
<td>1,2,5</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>1,2,3,5,6,7</td>
<td>2,3,5</td>
<td>2,4,5,6,7</td>
<td>2,4,5</td>
</tr>
<tr>
<td>6</td>
<td>1,2,3,4,5</td>
<td>1,2,3,5</td>
<td>2,3,4,5</td>
<td>4,5</td>
</tr>
<tr>
<td>7</td>
<td>1,2,3,4,5</td>
<td>2,3,5</td>
<td>2,3,5</td>
<td>2,4,5</td>
</tr>
<tr>
<td>8</td>
<td>1,2,3,4,5,6</td>
<td>1,2,3,5</td>
<td>1,2,4,5,6</td>
<td>2,4,5</td>
</tr>
<tr>
<td>9</td>
<td>1,2,3,4,5,7</td>
<td>2,3,5</td>
<td>2,4,5</td>
<td>2,4,5</td>
</tr>
<tr>
<td>10</td>
<td>1,2,3,5</td>
<td>3,5</td>
<td>2,3,5</td>
<td>2,5</td>
</tr>
</tbody>
</table>

Data presenting format adapted from (University of Wisconsin-Madison, 2003)
### Key

<table>
<thead>
<tr>
<th>Activity</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group work</td>
<td>1</td>
</tr>
<tr>
<td>presentations</td>
<td>2</td>
</tr>
<tr>
<td>Lecture method</td>
<td>3</td>
</tr>
<tr>
<td>Experiment</td>
<td>4</td>
</tr>
<tr>
<td>Practical</td>
<td>5</td>
</tr>
<tr>
<td>Role play</td>
<td>6</td>
</tr>
<tr>
<td>Debate</td>
<td>7</td>
</tr>
</tbody>
</table>

**figure 4.1 A pie chart showing mostly employed teaching methods**
4.3 OBJECTIVE 2: To determine the extent to which authoritative teaching approach and participatory teaching approach in the teaching and learning of agriculture promote innovativeness in ordinary level pupils at Maizelands secondary.

After the pupils were grouped and taught using authoritative method and participatory method in different camps on soil texture, they were given a practical exam to assess the extent these approaches promote innovativeness in problem solving and the following scores were obtained from ten best students in each camp.

Table 4.2 showing Scores for the test of pupils taught using authoritative method and taught using participatory method

<table>
<thead>
<tr>
<th>Percentage scores of participatory approach</th>
<th>100</th>
<th>100</th>
<th>70</th>
<th>90</th>
<th>80</th>
<th>80</th>
<th>70</th>
<th>80</th>
<th>80</th>
<th>90</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage scores of authoritative approach</td>
<td>50</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>50</td>
<td>40</td>
<td>50</td>
<td>50</td>
<td>40</td>
<td>50</td>
</tr>
</tbody>
</table>
The data was analysed by two sample t-test or t-test for independent means and provided the following results.

- \( T_{\text{cut}} = 9.125 \) and \( T_{\text{stat}} = 2.262 \) therefore the value of test statistic \( T_{\text{cut}} = 9.125 \) at 0.05 significant level falls in the rejection region, so \( H_0 \) is rejected.

4.4 OBJECTIVE 3: To determine factors that determine the use of authoritative and participatory teaching methods in the teaching and learning of ordinary level agriculture at Maizelands secondary?

According to the research findings the teachers at Maizelands secondary use both authoritative and participatory approaches in the teaching and learning of agriculture. However there has been much emphasis on the use of authoritative approach due to the following major factors obtained from the interview with the teacher.

Table 4.3 showing factors that determine a teaching method to be used.

<table>
<thead>
<tr>
<th>factor</th>
<th>Teaching method determined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of resources</td>
<td>1,1,2</td>
</tr>
<tr>
<td>Large number of pupils in a class</td>
<td>1,1,2</td>
</tr>
<tr>
<td>lack of enough time required</td>
<td>1,2,1</td>
</tr>
<tr>
<td>Lack of financial support</td>
<td>1,2,1</td>
</tr>
<tr>
<td>Pupils background</td>
<td>1,1,1</td>
</tr>
<tr>
<td>Lack of teacher experience with some of the</td>
<td>1,1,1</td>
</tr>
<tr>
<td>equipment</td>
<td></td>
</tr>
<tr>
<td>Age of teacher</td>
<td>2,2,1</td>
</tr>
<tr>
<td>gender</td>
<td>1,2,2</td>
</tr>
<tr>
<td>qualification</td>
<td>2,2,2</td>
</tr>
</tbody>
</table>

Data presenting format adapted from (University of Wisconsin-Madison, 2003)

Key

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>authoritative</td>
<td>1</td>
</tr>
<tr>
<td>participatory</td>
<td>2</td>
</tr>
</tbody>
</table>
Key

<table>
<thead>
<tr>
<th>Authoritative</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participatory</td>
<td>2</td>
</tr>
</tbody>
</table>

### 4.5 SUMMARY
This chapter focused on presentation of research findings where most of the data obtained was presented in tabular form. The next chapter will focus on data analysis.
5.0 CHAPTER 5: DATA ANALYSIS

5.1 INTRODUCTION

This chapter is set to analyse the data gathered from the research findings so as to bring out the significance of the research and answer the research questions.

5.2 OBJECTIVE 1: To identify teaching methods in the teaching and learning of agriculture that promotes innovativeness in ordinary level pupils being used at Maizelands secondary.

According to the research findings it has been noted that the teachers at Maizelands secondary use both authoritative and participatory approaches in the teaching and learning of agriculture. However it has been noted that most of the times the teachers use the authoritative teaching approach though sometimes it is not the best method that would help the pupils to understand and grasp the concepts better. This is due to some factors such as lack of resources and very large classes mostly among some other factors which is also supported by Abdu-raheem, (2011) who states that lecture method allows a great deal of information to be passed to the learner and favours handling of large classes. It is believed that the use of this method has greatly affected negatively the pupil’s level of innovativeness in solving agriculture related problems as evidenced by the research findings and this is accordance with Okwilagwe, (2002) who stated that in spite of the advantages, the lecture method does not stimulate students’ innovations, inquiry and scientific attitudes. Instead it encourages students to cram facts which are easily forgotten.

5.3 OBJECTIVE 2: To determine the extent to which authoritative teaching approach and participatory teaching approach in the teaching and learning of agriculture promote innovativeness in ordinary level pupils at Maizelands secondary.

At 0.05 significant level, the data provide sufficient evidence to conclude that the extent to which participatory teaching approach encourages innovativeness in pupils is greater than the extent to which authoritative teaching approach encourages innovativeness in pupils in the teaching and learning of agriculture. This is in line with findings of Obebe, (1981) who discovered that lecture method had negative effects on students such as low achievement total and lack of motivation. This is also supported by Okwilagwe, (2002) who stated that in spite of the advantages, the lecture method does not stimulate students’ innovations, inquiry and
scientific attitudes. This is also accordance with Akinleye, (2010) who confirmed that if the children are given opportunity to be listened to and guided in a non-threatening atmosphere, they would perform wonders in terms of problem-solving and decision making. Discussion is a method in which the teacher leads or guides the students in expressing their opinions and ideas with a view to identifying and solving problems collectively. This therefore means the persistent use of the authoritative method due to causing factors such as lack of financial support, shortage of equipment and large numbers of a class has greatly negatively affected pupil’s level of innovativeness in solving agriculture related problems.

5.4 OBJECTIVE 3: To determine factors that determine the use of authoritative and participatory teaching methods in the teaching and learning of ordinary level agriculture at Maizelands secondary?

At 0.05 significant level, the data provide sufficient evidence to conclude that the teachers at Maizelands secondary use both authoritative and participatory approaches in the teaching and learning of agriculture. However there has been much emphasis on the uses of authoritative approaches due to the factors that includes lack of resources, for example cases were there would be not enough resources to conduct an experiment by pupils instead the teacher will theoretically tackle the experiment while pupils listen to the teacher.

Another factor is lack of teacher experience with some of the equipment, were the teacher would be forced to neglect the experiment or the practical because he or she do not know how to use the equipment to be used in the activity hence the teacher will again theoretically tackle the experiment or practical while pupils listen to the teacher.

large numbers of pupils in class rooms, also calls for the use of authoritative teaching method as this would result in teacher failing to monitor the large group as it conducts its practical or experiment, on the other hand large numbers of pupils in class rooms also means that there is need for more resources and equipment and this would be expensive for the school to run hence persistent use of authoritative teaching approach. This is also supported by Abdu-raheem, (2011) who stated that lecture method allows a great deal of information to be passed to the learner and favours handling of large classes.

Another important factor is lack of enough time required to satisfy the objectives, this means that the teachers will resort to authoritative teaching approach which saves time and run away from time consuming participatory approach in trying to satisfy the set objectives.
Due to lack of financial support at the school the teachers have turned their back from participatory teaching approach that require more resources hence more money as compared to authoritative teaching approach because there is no enough funding to meet the demands of participatory teaching approach at the school.

Lastly the pupil’s background also contributed to the use of authoritative teaching approach at Maizelands secondary which has its sphere of influence extending to all surrounding farms and resettlement areas at a radius of 20km which are poverty stricken areas. As evidenced by the background of most pupils it is very difficult to employ most of the participatory teaching approaches effectively as this would call for more time and more teaching man power as these pupils need intensive hence persistent use of authoritative teaching approach.

This is in line with Mumtaz, (2000) who identified lack of teaching experience lack of on-site support for teachers using technology, lack of help supervising children when using computers and other equipment used in the lesson, lack of resources availability, lack of time required to successfully integrate technology into the curriculum and lack of financial support as barriers to the use of participatory approach in most cases in the teaching and learning.

Age is also another factor that was identified by the research findings as it has been noted that most teachers above 30 years prefer the use of authoritative teaching approach while most of those bellow 30 years prefer the use of participatory teaching approach. This had a bearing in the type of teaching method most likely to be employed by a teacher.

Like age of a teacher, sex of the teacher have also proven to have a bearing in the type of teaching method most likely to be employed by a teacher as it has been noted by the research findings that most male teachers prefer to employ participatory teaching approach while most females prefer authoritative teaching approach.

5.5 SUMMARY

This chapter analysed the data gathered from the research findings so as to bring out the significance of the research and answer the research questions. The next chapter will focus on conclusion and recommendations.
6.0 CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSION

In accordance to the research findings the researcher therefore conclude that the inability of Maizelands community to solve agricultural related problems which results in reduced yields due to lack of innovativeness which was traced back to school going age is greatly influenced by the persistent use of authoritative teaching approach which does not fully utilise and encourage their innovativeness ability.

6.2 RECOMMENDATIONS

Basing on the research findings the researcher recommends that teachers at Maizelands secondary should fully utilise the participatory teaching approach in the teaching and learning of agriculture to encourage innovativeness in pupils. On the other hand the administrators of the school should provide the resources required by all means necessary for full utilisation of the participatory teaching approach in the teaching and learning of agriculture to encourage innovativeness in pupils. For future researches it is suggested that larger sample size be used when doing related research. it is also suggested to conduct more research into the methods of instruction that can be used to promote innovativeness and creativity in agriculture students and identify and understand barriers to entry.
APPENDIX 1

INTERVIEW GUIDE FOR OBJECTIVE ONE

This interview guide has been developed by the researcher Peter Danaisani Bowora in order to use it as a tool for collecting data for a project titled A comparative analysis of authoritative teaching approach versus participatory teaching approach in the promotion of innovation in pupils. Case study of Maizelands secondary.

With this interview guide the researcher wishes to identify the current teaching methods being employed in teaching and learning of agriculture of ‘O’ level students at Maizelands secondary school which will help in fulfilling the following objectives of the project.

PROJECT OBJECTIVES

By the end of the research the researcher should be able to:

- Identify teaching methods in the teaching and learning of agriculture that promote innovativeness in ordinary level pupils being used at Maizelands secondary.
- Determine the extent to which authoritative teaching approach and participatory teaching approach in the teaching and learning of agriculture promote innovativeness in ordinary level pupils at Maizelands secondary.
- Determine factors that determine the use of authoritative and participatory teaching methods in the teaching and learning of ordinary level agriculture at Maizelands secondary?
- Recommend teaching approaches in the teaching and learning of ordinary level agriculture that promote innovativeness in pupils at Maizelands secondary.

Since it is difficult to rely on the mind when recording data, the researcher is also asking for permission to use the recording machine and write notes while the interviewee responds to the following set of questions.

QUESTIONS

What activities do you do when teaching and learning of agriculture?

What activities do you do more often in teaching and learning of agriculture?
How effective are those activities in understanding and mastering the concepts learnt?

How are these activities effective in promoting innovation in you as pupils?
APPENDIX TWO

2 SAMPLE T-TEST FOR OBJECTIVE 2

Scores for the test of pupils taught using authoritative method and taught using participatory method

<table>
<thead>
<tr>
<th>Percentage scores of participatory approach</th>
<th>100</th>
<th>100</th>
<th>70</th>
<th>90</th>
<th>80</th>
<th>80</th>
<th>70</th>
<th>80</th>
<th>80</th>
<th>90</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage scores of authoritative approach</td>
<td>50</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>50</td>
<td>40</td>
<td>50</td>
<td>50</td>
<td>40</td>
<td>50</td>
</tr>
</tbody>
</table>

$H_0 = \mu_1 = \mu_2$

$H_1 = \mu_1 \neq \mu_2$

OR

$H_0$ there is no significant difference between the extent to which participatory teaching approach encourage innovativeness in pupils and the extent to which authoritative teaching approach encourage innovativeness in pupils.

$H_1$ there is a significant difference between the extent to which participatory teaching approach encourage innovativeness in pupils and the extent to which authoritative teaching approach encourage innovativeness in pupils.

Test statistic = 2 sample T-test

0.005 Significance level = $t \alpha/2$
COMPUTATIONS

STEP 1
Mean A = 84
Mean B = 48

STEP 2
Variance A = 115.6
Variance B = 40

STEP 3
Degrees of freedom = 9

STEP 4
$T_{cul} = 9.125$

STEP 5
$T_{stat} = 2.262$

DECISION

The value of test statistic $t_{cul} = 9.125$ at 0.05 significant level and does fall in the rejection region, so $H_0$ is rejected.

INTERPRETATION

At 0.05 significant level, the data provide sufficient evidence to conclude that the extent to which participatory teaching approach encourages innovativeness in pupils is greater than the extent to which authoritative teaching approach encourages innovativeness in pupils.
APPENDIX THREE

2 SAMPLE T-TEST FOR OBJECTIVE 3

Table showing responses on factors that determine a teaching method to be used as percentages

<table>
<thead>
<tr>
<th>participatory approach</th>
<th>67</th>
<th>67</th>
<th>67</th>
<th>67</th>
<th>100</th>
<th>100</th>
<th>33</th>
<th>33</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>authoritative approach</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>0</td>
<td>0</td>
<td>67</td>
<td>67</td>
<td>100</td>
</tr>
</tbody>
</table>

H₀ = µ₁ = µ₂

H₁ = µ₁ ≠ µ₂

OR

H₀ the extent to which the identified factors cause for participatory teaching approach use is not different from the extent to which the same factors cause for authoritative teaching approach use.

H₁ that the extent to which the identified factors cause for participatory teaching approach use is different from the extent to which the same factors cause for authoritative teaching approach use.

Test statistic = 2 sample T- test

0.005 Significance level = t α/2

COMPUTATIONS

STEP 1

Mean A = 59.3

Mean B = 40.7

STEP 2
Variance A=10450.01
Variance B=10450.01
STEP 3
Degrees of freedom = 8
STEP 4
$T_{cul} = 17.1$
STEP 5
$T_{stat} = 15.507$
DECISION
The value of test statistic $t_{cul} = 17.1$ at 0.05 significant level falls in the rejection region, so $H_0$ is rejected.
INTERPRETATION
At 0.05 significant level, the data provide sufficient evidence to conclude that the extent to which the identified factors cause for participatory teaching approach use is different from the extent to which the same factors cause for authoritative teaching approach use.
APPENDIX FOUR

INTERVIEW GUIDE FOR OBJECTIVE 3

This interview guide has been developed by the researcher Peter Danaisani Bowora in order to use it as a tool for collecting data for a project titled a comparative analysis of authoritative teaching approach versus participatory teaching approach in the promotion of innovation in pupils. Case study of Maizelands secondary.

With this interview guide the researcher wishes to identify the factors that determine the teaching methods being employed in teaching and learning of agriculture of ‘O’ level students at Maizelands secondary school which will help in fulfilling the following objectives of the project.

PROJECT OBJECTIVES

By the end of the research the researcher should be able to:

- Identify teaching methods in the teaching and learning of agriculture that promote innovativeness in ordinary level pupils being used at Maizelands secondary.
- Determine the extent to which authoritative teaching approach and participatory teaching approach in the teaching and learning of agriculture promote innovativeness in ordinary level pupils at Maizelands secondary.
- Determine factors that determine the use of authoritative and participatory teaching methods in the teaching and learning of ordinary level agriculture at Maizelands secondary?
- Recommend teaching approaches in the teaching and learning of ordinary level agriculture that promote innovativeness in pupils at Maizelands secondary.

Since it is difficult to rely on the mind when recording data, the researcher is also asking for permission to use the recording machine and write notes while the interviewee responds to the following set of questions.
QUESTIONS

What activities do you do when teaching and learning of agriculture?

What activities do you do more often in teaching and learning of agriculture?

Why do you use those activities more often?
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Loewy Andy F., (2008). National Collegiate Inventors and Innovators Alliance (NCIIA)


