BINDURA UNIVERSITY OF SCIENCE EDUCATION

DISSERTATION REPORT

TEACHING STRATEGY FOR A LARGE CLASS SIZE IN AGRICULTURE PRACTICAL: A CASE OF CHARTSWORTH SECONDARY SCHOOL, GUTU DISTRICT, ZIMBABWE.

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Approval form

The undersigned certify that they have read and recommended to Bindura University of Science Education for acceptance of a project entitled teaching strategy for a large class size in Agriculture practical: A case for Chatsworth secondary school, Gutu district, Zimbabwe submitted by Ruveve Patricia Nyaradzo in partial fulfilment of the requirements of Post graduate diploma in education.
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Dedications

This dissertation is dedicated to my Mom, Dad and my husband. They supported me from the start up to the end of the project. Your motivation helped me finish this work. To my Lord and Saviour, Jesus Christ you are more than enough.
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Abstract

Class size is a main worry to any educational system. Large classes are often perceived as one of the major difficulties to ensuring quality education. The aim of the study was to evaluate teaching strategy for large class size in agriculture practical: A case of Chatsworth secondary school, Gutu district, Zimbabwe. The study consisted of twenty pupils and two agriculture teachers. The stratified and purposive sampling techniques were used in selecting pupils and teachers. Questionnaire and interview were used as research instruments. Data was collected using questionnaire and interview. The study used descriptive statistics such as bar graphs design. The findings of the study revealed that group work is effective in teaching practical concepts in agriculture. Based on the findings of the study teachers must employ group work in the teaching of agriculture practical. Teachers can use different strategies together with group work so as to cater for students with different learning styles. The government, and stakeholders should provide in-service training for teachers to facilitate the teaching and learning of Agriculture.
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ACRONYMS

O' level - Ordinary Level
UNESCO - United Nations Educational, Scientific and Cultural Organization
UNICEF - United Nations Children’s Fund
ZIMSEC - Zimbabwe School Examinations Council
CHAPTER 1

1.0 Introduction

Class size is a main worry to any educational system. Large classes are often perceived as one of the major difficulties to ensuring quality education. This chapter is going to give a brief of background of study. The problem statement, aim and objectives, assumptions, justification and significance of the study are also included in this chapter.

1.1 Background of the study

Many research studies have pointed out disadvantages of large classes and advocate small classes as a factor to ensure quality education. In spite of this, large classes are a reality in many schools and many countries (UNESCO, 2011). Large classes maybe as a result of inadequate funding and the absence of classrooms. A large class is usually measured in terms of the number of students per teacher (students-teacher ratio). In some countries, 25-30 students per one teacher are considered large, while in their other countries this is seen to be normal or even quite small (Benbow et al., 2007). In Western countries, class sizes of 30 are considered large and in need of reduction. A class of more than 50 students can be considered a large class by those who normally teach 25 or fewer, a class can be large and overwhelming (UNESCO, 2006). South and East Asia also have high students-teacher ratios, with Afghanistan and Cambodia exceeding 55:1 (UNESCO 2006). Countries that exceed 40:1, most are in sub-Saharan Africa and Asia. Sub-Saharan Africa has the highest median students-teacher ratio, with the Congo, Ethiopia and Malawi hovering around 70:1. Zimbabwean government continuously review teacher pupil ratio to improve quality of teaching and learning. The present situation stands at Primary ratio is 40:1 and secondary is 35:1 (Zimbabwe, 2005).

Whether the class is big or small, teachers are expected to teach and assess students effectively.
Students in large classes can learn just as well as those in small ones. What counts is not the size of the class, but the quality of the teaching. Evidence shows that teachers place more emphasis on the quality of teaching than class size (Dion, L. 2005). There are different strategies or methods that teachers can do to insure effective learning. These include use of small groups, Pupil-to-pupil support and mentoring, using the most effective teachers in the larger classes and team teaching.

One of the most used strategy is active participation of students through the use of group work. Since agriculture is a practical subject, practical work is a requirement for all students in Agriculture. Students are able to acquire hands on skills during practical and it has been discovered that practical work complements theoretical classroom teaching (Oladele et al., 2011). According to Navarro (2004) students has to take part in practical work and experience their environment to be prepared for competing in dynamic work place typical of agriculture farm.

Previous researches about group work are typical in providing a general programme that applies group work through the curriculum over the school year and when a range of tasks may be undertaken concurrently. One of these researches was the social pedagogy research of 1999 whose main aim was to build on earlier researches and address the wide gap between the potential of group work and its limited use in schools. To overcome this gap, a new approach to conceptualising group work in practical work is needed thus the researcher did this research on group work in order to find out about its effectiveness at Chatsworth Secondary School.

When a classroom is not overcrowded effective teaching s likely to be obtained. Overcrowded classrooms causes hindrance in the teaching-learning process since they have a number of students that exceed optimum level (Dabo, 2015). Quality in education embraces several dimensions that include resources inputs like financial, material and human. It also embraces curriculum relevance, breath, depth and content and influences the output in terms of the number of children who successfully complete various levels of education. Other dimensions of quality include appropriateness of teaching approaches, level of children participation in the system, survival and coverage and performance pupils in public examinations (Zimbabwe, 2005).

Student teacher ratios are a general way to measure teacher workloads and resource allocations in public schools, as well as the amount of individual attention a child is likely to receive from
teachers, they are also used as bread indicators of the overall quality of a school, district, or education system (Education Writers, 2014). Zimbabwean government continues to review teacher pupil ratio to improve quality of teaching and learning. The present situation stands at Primary ratio is 1:40 and secondary is 1:35 (Zimbabwe, 2005). The purpose of this study is to look at the effectiveness of group work in teaching agriculture practical to large class size.

1.2 Statement of the problem

In ideal Secondary set up, the teacher-pupil ratio for practical subjects is 1:35 (Zimbabwe, 2005). This is not currently the case at Chatsworth secondary school as there are large class size with the ratio of 1:50 for agriculture. Large classes are difficult to manage considering time taken to maintain order, discipline and adequate resources for the lesson. This has an effect on the time allocation for the subject, students safety and acquiring enough equipment for practical throughout the year such that a teacher will be forced to use one teaching method which will try and give students all the information necessary for their passing and do away with other teaching methods which involve collaborative learning. It is therefore important to carry out this research.

1.3 Purpose of the study

The purpose of this research is to explore teaching strategy for large class size in agriculture practical at Chatsworth secondary school.

1.4 Objectives of the research

The objective of the study is to assess the teaching strategy for large class size in agriculture practical at Form Three level at Chatsworth Secondary School. Therefore the objectives of the study are specifically to:

1. Identify strategies used in the teaching of large classes at Chatsworth secondary school
2. Evaluate the most effective strategy to use in teaching large classes at Chatsworth secondary school
3. Recommend the most effective strategy to use in teaching of large classes at Chatsworth secondary school
1.5 Research questions

The above research objectives will pursue along the following research questions:

1. What are the strategies used in teaching of large classes at Chatsworth secondary school
2. How are the strategies in teaching of large classes used at Chatsworth secondary school
3. What is the most effective strategy to use in teaching of large classes at Chatsworth secondary school
4. What are the possible justifications for the most effective strategy in teaching of large classes at Chatsworth secondary school

1.6 Statement of the hypothesis

H₀: Teaching strategy have an influence in the teaching of large class size in agriculture.

H₁: Teaching strategy have no influence in the teaching of large class size in agriculture

1.7 Assumptions

The research assumes that:

1. Information from respondents will be accurate
2. Resources needed for the study will be available

1.8 Delimitations of the study

The research will be conducted at Chatsworth Secondary School, District, Gutu. The research will be restricted to 2017 form three pupils. Boys and girls from have mixed abilities .The research focused mainly on reflections of how effective group work is in teaching practical in agriculture.

1.9 Summary
The chapter conveys the present situation in the use of large size groups in the teaching of agriculture practical. The problems faced are highlighted. The background to the problem has been highlighted. Objectives and significance of the study are also given. The next chapter will deal with the literature review of the study.

CHAPTER 2: Review of Related Literature
2.0 Introduction

This chapter is going to explore various strategies used in teaching of large classes.

2.1 Challenges in teaching large classes

This section will review different challenges faced in teaching large classes. Large classes are said to be as difficult and problematic as compared to smaller classes (Cuseo, 2007; Carpenter, 2006). Research pointed out that the majority of schools in Africa share the view that class size plays a crucial part in teaching and learning success among learners and teachers (Papo, 1999).

Large classrooms can negatively affect two aspects of teacher practice which are instructional time and classroom management. Large classes have an impact on the class and time management, thus leaving less time for actual instruction (Wilson 2006; Holloway, 2002; Ehrenberg, et al., 2001). Class size may also have an impact on the teacher motivation and job satisfaction. This creates a situation in which teachers face enormous challenges in producing productive learning environments.

2.2 Effects of teaching large classes

Class size has many effects on students’ engagement, behaviour, and student retention. Researchers have shown that students tend to spend less time on class assignments when in large classes (Blatchford and Mortimore, 1994). Furthermore, it has been shown that in addition to spending more time on school work, students in smaller classes tend to participate more (Cahen in Cooper, 1989). Smaller classes allow teachers to engage their students in a differentiated fashion, that is, teachers can cater their instruction in ways that engage individual students, with smaller numbers of students, teachers are able to pay closer attention to all students, thereby holding them accountable for participation, rather than ignoring those that are passive (Blatchford and Mortimore, 1994; Harder, 1990; Pate-Bain et al, 1992).

Large class size also have a negative impact on the availability of quality and quantity learning resources for each student. Likoko, Mutsotso and Nasongo (2013) reported that effective teaching
cannot take place in the classroom if basic instructional resources are not available. The availability of relevant teaching–learning materials and facilitates in the classroom setting are very important for effective teaching to take place. They further argue that, learner’s performance in a subject is affected by the quality and quantity of teaching and learning resources. However, in the school with adequate facilities, learners tend to perform well in examinations compared to schools with inadequate resources (Likoko \textit{et al.}, 2013). Folashade and Akinbobola (2009) are convinced that the inappropriate use of teaching method in science classrooms, large class size, lack of sufficient funds, improper monitoring, lack of standard equipment among others, are considered to be the main factors affecting the performance of learner’s in sciences. A case study which was carried in school in South Africa by Mbajiorgu \textit{et al} (2014) on the factors impacting learning and teaching agriculture showed that among many factors, lack of resources was one of the factors which have a negative impact on learning and teaching agriculture.

Michaelowa (2001) found that “the availability of good resources appears to be the most important factor in high-achieving, student learning.” It was also found that having appropriate classroom equipment such as benches, blackboard, chalk, and a teacher desk and chair can improve scores by two percent. Having an appropriate level of basic school resources can greatly improve student achievement. Most developing countries including Zimbabwe face challenges on acquiring adequate resources for large classes. Students will have to share few resources which will be inadequate and this can affect the quality of learning (Hanushek, 1995).

\textbf{2.3 Strategies in teaching large classes}

This section will review different teaching strategies based on two approaches which the teacher-centered and the learner-centered approach.

1. Teacher centered approach

In the teacher-centred approach to learning, teachers are the main authority figure in this model. Students are viewed as “empty vessels” whose main role is to passively receive information with an end goal of testing and assessment. The role of teachers is to pass knowledge and information
Onto their students. Student learning is measured through scored tests and assessments (Teach, 2014). In this teaching approach, the teacher does the major part of work and the learner is left with limited work to do.

Lecturing is one of the method under the teacher centered approach which is the most often used as a teaching method for large classes. Lecturing has several strengths, as well as weaknesses. The strength of lectures are that lectures can actively communicate interesting aspects of the subject being taught. The teacher can carry personal interest in a way that no book, media, or activity can. Lectures may be a faster, simpler method of presenting information to students. In a study which was carried out by Sakala (2013) on the factors contributing to excess use of the lecture method of teaching among high schools in Zambia. The study revealed that the lecture method was mostly used in schools due to lack of adequate learning materials, classes being too large and the need to quickly cover the syllabus. Petty (2004) points out that the lecture format allows the teacher to be in control of the pacing of the class and the accuracy and range of material presented and can convey large amounts of factual information in a limited time frame.

However the lecture method have been found to have the following weaknesses. Lectures put students in a passive, rather than an active, role and are less effective than active learning in promoting thinking or changing attitudes. They lack feedback to both the teacher and student about a student’s learning. Lectures require effective speaking skills and use of voice, which are usually not stressed in teacher training curricula. Lectures assume that all students learn in the same way, at the same pace, and at the same level of understanding, which is never true. Most students cannot listen effectively to a long lecture (over 15 minutes in length) (Child, 1988). Taylor et al (2012) carried out an investigation on improving the effectiveness the of large class teaching in law degrees. The lecture method was found to be effective in imparting doctrinal material however it was seen to promote passive learning and not active or deep learning. It was also discovered that it fails to emphasize the importance of practical skills. Exley and Dennick, (2004) and Bligh (2000) established that the lecture based format is mostly used to present lessons when educators are challenged with large classes, rather than engaging themselves in other teaching strategies that promote discussion, critical thinking, change attitudes or behavioral skills.

2. Learner centered approach to learning
In learner-centred approach to learning, teachers are an authority figure in this model, teachers and students play an equally active role in the learning process. The teachers’ primary role is to coach and facilitate student learning and overall comprehension of material. Student learning is measured through both formal and informal forms of assessment, including group projects, student portfolios and class participation. Teaching and assessment are connected; student learning is continuously measured during teacher instruction (Teach, 2014). The learner centred approach promotes learners participation during the learning process and the role of the teacher is to facilitate learning outcome. This approach would make learners to better understand the subject content, because they are involved in the learning activities.

The learner centered approach promote active learning which helps learners in grasping the concepts being taught by the teacher. Active learning involves students doing an activity and thinking about what they are doing, rather than passively listening. In active learning, there is less emphasis on transmitting information from the teacher to the student (such as through lecturing) and greater emphasis on developing students’ analytical and critical thinking skills, as well as on exploring attitudes and values held about course material. Through active learning, both students and teachers participate in the learning process, and they can receive more and faster feedback. Active learning is an effective strategy for increasing student participation because it gives students the opportunity to reflect, analyze, synthesize, and communicate the material they learn during class (Mulryan-Kyne, 2010). The Prince (2004) review provided evidence showing that active learning improved academic achievement, interpersonal relation and self-esteem.

The most important value is that active learning increases student retention and comprehension of the course material. Active learning utilizes student’ data and knowledge base (Hodgson, Kawalski, and Telep, 2000). Students have an opportunity to provide personal insights that is they can develop their own answers. The process allows students to experiment with experiments with ideas to develop concepts and to integrate concepts into systems. The findings from an investigation carried out in United States on the effective teaching method for large classes suggested that teaching large classes should attempt to include constructive, active teaching methods in their courses whenever possible. The results indicated that most students prefer to be active in their learning process. The active and collaborative teaching methods examined in the
study were not only desirable to many students, but they also appeared to produce significant improvement in terms of learning outcomes (Carpenter, 2006).

Active learning develop social experiences between students and between teacher and students. It can build community within the classroom. Active learning concentrates on the teaching function. It helps the teacher select objectives at the correct level of difficult to meet the student needs. The teacher encourages the student to be responsible for their own learning. Active learning brings the student into the organization, thinking and problem solving process of the discipline. Active learning also gives the teacher time to perform the helping teacher functions of coach, listener and advocate.

The following are some of the methods which are used in the learner centered approach, the seminar or discussion method, the demonstration method, the discovery method, the project method, field work method, problem solving method and the discovery method.

Discussions are usable but are rarely used in science lessons. A discussion is where pupils make an open, equal and personal response to a learning situation. Discussions are said to be effective only with small groups. They help to facilitate development of personal skills at the same time change attitudes as well as develop oral and written communication skills. Science requires good reporting skills so discussions would help. Discussions are disadvantaged by consumption of time and they demand a lot of skills and organization from the teacher.

The demonstration method is very suitable for science lessons. It involves showing how something is done while students observe. Good and Brophy (1991) says the demonstration method, helps teachers to demonstrate and coach pupils in translating theory into practice. Demonstrations help to illustrate a concept. Demonstrations guide the learner’s thinking leading them to discovery of new ideas. They are also economic in terms of time and it helps in carrying out those dangerous experiments. Mutasa and Wills (1995) argue that use of demonstrations reduce the learners interest. Visibility can be a limitation if the group is too large. Too quick demonstrations make students to lag behind. Gwarinda (1995) says when students do their own experiments it is important that they use the same equipment used in demonstration to avoid confusion.
The discovery method can also be used in teaching science. Bruner (1977) cited in Gwarinda (1995:71) says ‘… a sense of discovery in children is necessary in learning as it creates confidence in one’s own abilities. The method allows learners to find out knowledge, in their own ways but under the guidance of the teacher. In addition Mutasa and Wills (1995) comment that the method increases learners’ intellectual strength, leads to creation of a positive self-image, promotes essential motivation, helps students to later on apply the same skills and the retention of knowledge. Learners will learn to have self-control, self-discipline and self-direction.

Ochan (2012) carried out an investigation in Uganda on enhancing better learning of agriculture at secondary level through the project based approach. The results of the investigation showed that education concepts and values rooted in project based learning can be used at secondary level. Project based method was found to be effective if students are engaged in the activities that build on their prior knowledge and allow them to apply that knowledge to new situations.

The findings from a study on strategies for large classes by Van den heever (2000) indicated that as far as classroom teaching in large classes is concerned, whole group instruction as a strategy for large class teaching, cooperative learning, and individualization in the large class is important for effective teaching and learning in large classes.

Pasigna (1997) suggested that the strategic grouping of pupils is fundamental to teaching in large classrooms. The researcher also suggested that when class sizes swell and new or difficult information is being taught, it is best to break the class into groups of 15 to 20 pupils. Teacher-led instruction will occur at the small group-level, during which the other groups are given practice exercises on the previous day’s lesson that they can do themselves without the teacher. In order to familiarize pupils to group work, Pasigna suggests that within these groupings, all pupils should be given opportunities to lead the group, thereby ensuring that there will be any number of pupils that can help the teacher led group-based exercises. The researcher is going to explore the effectiveness of group work in learning of Agriculture practicals.

Working together is important as learners will be able to interact, share ideas and learners develop teamwork skills. According to Cohen (1994) group work has gained increasing acceptance as a
method for producing learning gains, the development of higher order thinking and pro-social behaviour in classes in Zimbabwe and abroad. Cohen (1994) says that “leaner’s learning is supported when they have opportunities to describe their own ideas, hear others explain their thoughts, question and explore various approaches.”

Robinson (1991) said leaners become facilitators, assistants and special friends to help others deal with difficulties presented in agriculture. In groups leaners are taught important skills regarding the nature of helping, confidentiality, acceptance, understanding, trustworthiness and caring. Agriculture peer groups have proved to be effective in preventing pupils from dropping subjects like mathematics. Robinson (1991) said peer groups show a ninety percent pass rate with most of the leaners having been taught through group work becoming successful in their chosen profession.

A study undertaken by UNICEF (2002) with the aim to find out the most effective teaching methods used by teachers in nine Zimbabwean secondary schools which recorded ninety to hundred pass rates in ZIMSEC examinations, group work was rated as number one teaching method. Agriculture teachers in this study were found to be very good facilitators and encouraged group work to solve problems. The same study also revealed that, seventy per cent of the schools sent their students on various organised workshops and seminars. In those workshops and seminars most problems such as calculating number of plants per unit area and amount of fertiliser to be applied were solved in groups.

The effective use of social learning techniques in the classroom can improve learners’ performance by at least a grade and it can also improve learners’ behaviour, self-esteem as well as attitudes to each other in the classroom setting (Petty, 2009). Many studies which have been done on group work show a wide variety of results which include dramatic improvements in student learning and the potential benefits of social interaction on learning are readily apparent (Wieman et al., 2008). Research also suggests that students learn best when they are actively involved in the process (Davis, 1993). According to Wasley (2006), students who take part in collaborative learning and educational activities outside the classroom are more pleased with their education. A collaborative learning environment, as opposed to a passive learning environment, helps students learn more actively and effectively (Murphy, Mahoney, Chen, Mendoza-Diaz and Yang, 2005).
Leaners remember group discussions better. Group learning promotes learning and understanding. Students working in small groups have a tendency to learn more of what is taught and retain it longer than when the same material is presented in other instructional formats (Barkley, Cross and Major, 2005; Davis, 1993). When students spend time meeting in groups, they are able to achieve a deeper learning themes covered in class as well as develop skills, such as writing and communication (Light 2001). Wright and Lawson (2005) found that the bridging of in- and outside-class work encourages students to spend more time preparing for class, and having conversations with team members outside of regular class time.

The teaching of agriculture today involves facts and procedures and being able to apply formal knowledge flexibility. Group work must be employed in agriculture classes because practical skills are best learned as part of a dynamic process with active engagement on the part of the leaners.

During group work, pupils receive considerable encouragement and support in their efforts to learn practical concepts, strategies and processes. Kohn (1986) says that when pupils work together in groups, they tend to like each other, support and encourage each other’s efforts to solve problems successfully. Group work means pupils working together as a group or team. The teacher may be involved at various stages but the particular feature of group work -perhaps its defining characteristic - is that the balance of ownership and control of the work shifts toward the pupils themselves. Group work should involve children as co-learners (Zajac and Hartup, 1997), not just one pupil helping another.

2.4 Evaluation of teaching strategies

According to Scriven (1991), evaluation is defined as the process whose duty is the systematic and objective purpose of merit, worth or value. Evaluation in learning is done mainly to gather information about students' understanding of the content, to motivate students to work towards achieving the goal, or to provide direction for both learners and the teacher on how well learners are learning (Abrami et al 1995).
Student ratings have become identical with faculty evaluation in the United States (Seldin, 1999). Recent estimates indicate 88% of all liberal arts colleges use student ratings for summative decisions (Seldin, 1999a). A survey of 40,000 department chairs (US Department of Education, 1991) indicated that 97% used “student evaluations” to assess teaching performance.

Peer ratings of teaching performance and materials is the most corresponding source of evidence to student ratings. It covers those aspects of teaching that students are not in a position to evaluate. Student and peer ratings, viewed together, furnish a very inclusive picture of teaching effectiveness for teaching improvement. Peer observation of teaching performance requires a rating scale that covers the aspects of teaching that peers are better qualified to evaluate than students. The scale items typically address the instructor’s content knowledge, delivery, teaching methods and learning activities (Berk, Naumann and Appling, 2004).

Learning outcome measures teaching strategies from students’ performance that is what they learned in the course. Franklin (2001) noted constantly high correlations between student ratings of “amount learned” and overall ratings. Possibly the most popular way to measure learning achievement is the examination. Examinations can be either objective (such as multiple-choice exams), subjective (such as essay exams), or a combination of both. In some cases, however, they may not really tell if students have truly learned and can apply what they have been. This is especially the case for multiple-choice or true-false exams that rely mainly on memorization rather than application (UNESCO, 2015).

Each teaching strategy need to be evaluated, group work is evaluated so that members will know that they cannot let others do all the work while they sit back. Ways to ensure that pupils are held accountable include giving spot quizzes to be completed individually and calling on individual pupils to present their group's progress said Johnson and Smith (1991). Students can be given the same grade on the group task. Teachers who have used group exams report that groups consistently achieve higher scores than individuals and those pupils enjoy collaborative test taking reports Hendrickson (1990).
2.5 Summary

Large classes have some challenges and various strategies can be used in teaching large classes. The various studies undertaken by other researchers and the views by writers on the use of group work as a teaching method suggests that group work can be achieved along certain lines of boundaries which should be notified and followed by the teacher before they use it as a teaching method. In the next chapter, the researcher looked at data collection, the various instruments used and how data is presented
CHAPTER 3: Research Methodology

3.0 Introduction

This chapter will provide an overview of how the research will be conducted in order to investigate the effectiveness of group work in teaching large class size in doing agriculture practical at Chatsworth secondary school. This section will describe how the research will be done by outlining the research methodology and the data collection techniques. Both qualitative and quantitative research methodologies will be utilized to make the findings. Other components which will be covered under this chapter are sampling size, sampling techniques, study area and target population.

3.1 Research design

Cathy (2001) sees research methodology as a way to systematically solve the research problem. Creswell (2007) defines research methodology as the plan and strategy of investigation conceived with the aim of obtaining answers to research questions and to control variance. The researcher used qualitative and quantitative methodologies as they will cover each other’s weaknesses. The research will make use of the case study research design under the qualitative research methodology. Shuttleworth (2008: 1) views a case study as a detailed study of a particular situation rather than a comprehensive statistical survey. It is a method used to narrow down a very wide field of research into one easy researchable topic. The case study method will be used because it investigates current phenomenon within a real life context using multiple sources, (Cohen, Manion and Morrison, 2005: 18). The intense probing characteristic of the case study usually leads to the discovery of previously unsuspected relationships relating to the matter under investigation (Shuttleworth 2008: 2). Thus, the case study will allow the researcher to get a detailed description of the participants’ lived experiences and their thoughts and feelings regarding the research study. Quantitative research method was used so that it gives the findings a symbolic viewpoint which can then be used to compare with other findings.
3.2 The population

Study population is the whole collection of people or elements which one intent in studying (Cohen, Manion and Morrison, 2011). Mills (1996) viewed population as a group of interest to the researcher. He went on to define population as the population that the researcher would ideally like to generalize to. Thus, population refers to all individuals of a particular time at a particular place that are of interest to the researcher. It covers the site and the geographical area. The population size in this research constitute of all form three pupils aged fifteen to seventeen years who are studying agriculture as a practical subject. These were fifty seven pupils and two agriculture teachers at Chatsworth Secondary School. Together they were fifty nine participants.

3.3 Study sample

3.3.1 Sample size

According to Rubin and Babbie (2007) a sample is as a special subset of a population observed for purposes of making inferences about the nature of the total population itself. Merriam (2009:77) defines a sample as a representative group from the population that serves as respondents. It is a subset of the population from which information is obtained. In respect to this research study, the sample consisted of fifty five form three agriculture students and 2 Agriculture teachers.

3.3.2 Sampling techniques

Probability and non-probability sampling techniques were both used in coming up with the sample size of pupils and teacher from the target population.

Stratified random sampling

According to Babbie (2001), probability sampling is a sampling technique where the samples are gathered in a process that gives all individuals in the target population equal chances of being selected. Stratified random sampling technique will be used under the probability sampling. Cohen et al (2011) defines the stratified random sampling technique as a process which involves the division of the population into two or more relevant and significant strata based on one or a number
of variables. The sampling frame is divided into a number of subsets to ensure that it is representative since the students will be proportionally represented. The sample was divided using two variables notably sex and academic level, this is meant to avoid selecting students from the same sex and academic level. After dividing the sample, random sampling was then be used to draw data from each stratum. This sampling method was used because every student will have a chance of being selected and it ensures proportional representation.

**Purposive sampling**

(Rubin and Babbie, 2007) defines purposive sampling as a non-probability sampling method in which the researcher uses their judgment in the selection of sample members. Purposive sampling will be used to select the agriculture teachers. Rubin and Babbie (2007) go on to state that purposive sampling involves the researcher’s judgment in selecting respondents that will best answer the research questions and meet the research objectives. Therefore, the teachers were selected for their knowledge on the research subject matter emanating from the positions that they occupy.

### 3.4 Research instruments

Cohen, Manion and Morison (2011:34) view research instruments as tools used by the researcher to gather data. There are means or the media used by the researcher to elicit information from the respondents. Toppins (1989) defines research instruments as a testing device for measuring a given phenomenon such as a questionnaire, interview, a research tool or a set of guidelines for observation. In this research, the interview and questionnaire were used to collect data from the participants.

Questionnaires were used for all form three pupils studying agriculture and interviews were conducted for Agriculture teachers.

**Questionnaire**
The researcher used questionnaires to collect data from the actual agriculture pupils. Haralambos and Holborn (2010) view a questionnaire as a systematically prepared document with a set of questions deliberately designed to elicit responses from respondents for the purpose of collecting data. It is a form of inquiry document which contain a systematically complied and well organized questions intended to elicit the information which will provide insight into the nature of the problem under study. The questionnaire will be utilized as an instrument for data collection in order to investigate the effectiveness of group work in teaching large class size in doing agriculture practical at Chatsworth secondary school. The researcher made use of them in order to ask a lot of questions and get answers in a short space of time from numerous respondents. This also helped the respondents who could not verbally express themselves.

The Interview

The researcher conducted interviews with the Agriculture teachers. Brown (1991) said that interviews are a systematic way of talking and listening to people and are a way of collecting data from individuals through conversations. Schumck (1997) regarded interviews as an interchange between two or more people on a topic of mutual interest. Interviews are particularly useful in getting the story behind participant’s experiences. Clough and Nutbrown (2012) state that interviews becomes necessary when the researcher feel the need to meet face to face with individuals, to interact and generate ideas in a discourse that borders on mutual interest. It is an interaction in which oral questions are posed by the interviewer to elicit oral response from the interviewee. Apart from face to face, interviews can also be conducted over the phone.

The researcher can get information even from the illiterate. This is why the researcher decided to use this kind of instrument to obtain data. Wimmer and Dominick (1997) said that the main advantage of an interview is that it clarifies ambiguities and incomplete answers can be followed up. Interviews usually achieve a high response rate and more detailed questions can be asked. Some interviewees may be less self-conscious in a one-to-one situation. The researcher planed the questions to be asked and make sure they are relevant for the research so as to avoid
misunderstanding during the interview process. The researcher came up with a suitable venue and notify authorities so as to avoid disturbances and to ensure that the informants are comfortable.

**Pilot study**
Marshall and Rossman (2011:95) assert that a pilot study is small scale preliminary study conducted before the main study. It is a systematic way of tasting various features of the study with the sample of the population displaying almost similar characteristics with the target population. The pilot study can be viewed as a preliminary study used to test questions to make sure that they make sense to the respondents. In this research, the pilot study was carried out at the school within the population to assess the feasibility of the research instruments. It guided the researcher to assess the suitability of the instrument questions so that accurate and valid data will be collected in the main study. It assisted the researcher to establish the appropriateness, simplicity, reliability and validity of the instrument questions to address the research sub questions. It also assisted the researcher to establish and develop a cooperative attitude of the sample’s characteristics and alterations were made well before main study.

3.5 Data collection procedures
Burns and Grove (1997) said that data collection is the precise, systematic gathering of information relevant to the research sub-problems, using methods such as interview, participant observation, focus group discussions, narratives and case history. William (1998) states that data collection begins with the researcher deciding from where and from whom data will be collected. The researcher implemented the pre-interview exercises suggested by Kerlinger (1998). First the researcher chose a setting with little distraction, explain the purpose of the interview to the respondents and the format. The researcher will indicate on how long the interview will take and thank the participants for their willingness. The researcher carried out plot test in order to know the flaws, limitations and other weaknesses within the interview design. The researcher made appointments for the pilot test and let the participants know that they are free to ignore and stop the interview questions if they get uncomfortable. Data was for data analysis.
3.6 Data Presentation and Analysis

An Anne (2002) state that data analysis categorises, orders, manipulates and summarises data. Burns and Grove (2003) added that data analysis is a mechanism of reducing and organising data to produce findings that require interpretation by the researcher. The researcher presented and analyse the data collected using questionnaire and interview instruments. Data presentation according to responses from interviews and questionnaires will be done through the use of statistical tools such as tables and pie charts. The researcher used the collected data which is in the form of verbal description, tables and figures to draw conclusions and recommendations from the collected data.

3.7 Summary

This chapter discussed the research methodology for the purpose of the research. The research design will be combined with the qualitative and quantitative methods. The chapter outlined the population of forty five pupils and two agriculture teachers. Stratified random and purposive sampling will be used because of its many advantages which were discussed in the chapter. Data collection instruments used will be interviews and questionnaires. The next chapter will consists of the analysis, interpretations and discussions on study findings.
CHAPTER 4: Data Presentation, Analysis and Interpretation

4.0 Introduction

This chapter presents data gathered using the questionnaire and interview methods. The researcher used bar graphs to represent the data.

4.1 Teaching strategy used in Agriculture practical

The bar graph Fig 1 shows the results of teaching strategies used in Agriculture practical lessons. The graph above shows that 60% of the students indicated that group work is the mostly used teaching strategy in Agriculture practical lessons. 20% of the students indicated that practical demonstration is mostly used while 10% of the students indicated that lecture is mostly used in agricultural practical lessons. This indicates more time is spend in interactive learning. This concurs with findings by (Bennett 1992:4) who indicated that cooperative learning has the potential to help group members to accomplish certain determined goals.

Figure 1: Teaching strategy is used in teaching agriculture practical

The graph above shows that 60% of the students indicated that group work is the mostly used teaching strategy in Agriculture practical lessons. 20% of the students indicated that practical demonstration is mostly used while 10% of the students indicated that lecture is mostly used in agricultural practical lessons. This indicates more time is spend in interactive learning. This concurs with findings by (Bennett 1992:4) who indicated that cooperative learning has the potential to help group members to accomplish certain determined goals.
The findings are also similar to studies by Khoboli and O’Toole (2011) who reported that the use of different teaching methods such as group work, problem-based learning and practical work is likely to accommodate different individual learning styles of the learners further submit that, the teachers’ commitment to learner-centered methods does not mean that all the designed activities are suitably covered with such methods.

4.2: Evaluation of the most effective strategy to use in teaching large classes at Chatsworth secondary school

The bar graph Fig 2 shows the results of the most effective teaching strategy used in teaching large classes at Chatsworth secondary school

![Bar Graph]

**Figure 2: Effective teaching strategy to the learning of agriculture**

The graph above exhibits that 70% of the students indicated that group work is effective in the learning of agriculture practical. The students gave the reasons that they have the opportunity to learn from and to teach each other. The findings concurs with findings of Wright and Lawson (2005) who found that group work helped students feel that the class is smaller and encourage them to come to class more often.
They feel more invested in the course and in the class material, which promote active learning in a large class environment. The results are also in line with the results from a study undertaken by UNICEF (2002) with the aim to find out the most effective teaching methods used by teachers in nine Zimbabwean secondary schools which recorded ninety to hundred pass rates in ZIMSEC examinations, group work was rated as number one teaching method. In contrast, research by Qualters (2001) who carried a study students’ preferences for teaching methods suggests that students do not favor active learning methods because of the in-class time taken by the activities and fear of not covering all of the material in the course. 10% of the students indicated that lecture method is effective with the reasons that they understand better. 20% indicated that practical demonstration is effective giving reasons that it is easy to understand and follow. This finding is consistent with similar findings of Shadrack and Isaac (2012) state that one way teachers can promote effective teaching in their classroom is by teaching using different methods in interesting ways and applying practical activities in their lessons.

Figure 3: Percentage pass rate of pupils for each of the teaching practice used in agriculture practical.

Students performed well after group work has been administered. The above graph indicate that 80% of the students passed their exercise after group work was administered. When lecture was used as a teaching strategy 50% of the leaners passed their exercises. 65% of the students passed
their exercise when practical demonstration was used as teaching strategy. The above information shows that group work is effective in teaching practical activities. The findings are similar to the findings stated by Johnson and Johnson (1989 in Smialek and Boburka, 2006) which indicated that cooperative learning resulted in better achievement than individualistic learning. Students gained higher-level reasoning, ability to solve problems and the ability to use what they learned from one situation to the other.

Figure 4: Bar Chart Showing the Pass Rate of Pupils in Exercises after Group Work

After the use group work as a teaching method the teachers compliment that the pupils perform very well in their exercises and seem to understand the taught concepts as many will be eager to participate. The findings are in line with the findings by Carpenter (2006) which indicated that active and collaborative teaching methods are not only desirable to many students, but they also appeared to produce significant improvement in terms of learning outcomes. The researcher noted that all the teachers interviewed believed that group work was an effective teaching method and they believed that if it is used often the pupils will understand better and improve in agriculture. They also have the view that pupils share information and work, tackle the same problem together continuously within their groups and learn from each other so their combined collaborative achievement surpasses the simple sum of individual contributions.
4.3 Recommended teaching practice effective for the learning of agriculture practical.

The bar graph Fig 5 shows the results of the most recommended teaching practice effective for the learning of agriculture practical.

![Bar Graph](image)

**Figure 5: Recommend teaching practice effective for the learning of agriculture practical.**

The graph above indicates that 70% of the students recommend group work as the effective teaching practice for learning agriculture practical. The students gave the reasons that they benefit more from group work as compared to any other teaching methods. This is agrees with findings by Frederick, P.J, 1987 which shows that active learning is important in improving student learning, increasing retention and application, as well as promoting continuous learning. 20% of the respondents recommended practical demonstration while 10% recommended lecture as the effective teaching practice for learning agriculture practical. The respondents who recommended practical demonstrations gave the reasons that they demonstrations are easy to follow and they understand better through demonstrations. The respondents who recommended the lecture method gave reasons that the method encourage learning by listening and it is an advantage for the students.
as they are able to learn well this way. This is in line with findings from UNESCO 2015 which indicated that lectures emphasize learning by listening.

The teachers recommended group work as an effective teaching strategy giving reasons that pupils are able to grasp concepts and perform better in terms of grades. The findings are in line with the findings by Vander Horst and McDonald (1997:128) who indicated that cooperative learning has the potential to help teachers cope with the teaching of large classes. Davis, (1993) also have the same view that students working in small groups have a tendency to learn more of what is taught and retain it longer than when the same material is presented in other instructional formats.

4.4 Summary

The chapter has given an analysis of the respondents by both teachers and students. From the data presentation, analysis and interpretation it has been indicated that group work as a teaching strategy is very effective and many pupils seem to enjoy it. The teachers claimed students’ performance greatly improve through group work as shown by students’ performance in written exercises. Students view group work as helpful in learning agriculture practical. The researcher is now able to state with evidence that group work is effective as a teaching method in the teaching of agriculture the pupils added that they enjoyed group work when they were being taught practical concepts.
CHAPTER 5: Summary, Conclusions and Recommendations

5.0 Summary

The research was carried out at Chatsworth Secondary School in Gutu district. The researcher investigated teaching strategy for large class size in agriculture practical at Ordinary level. The researcher looked into previous researches and planning research effectively in order to avoid hindrance. Random sampling was used by the researcher to come up with a sample of twenty pupils and two agriculture teachers. The research design used in the research was a combination of qualitative and quantitative analysis. Questionnaire and interview were the data collection instruments used because of their advantages which discussed in the research. The research aimed at finding out if group work could be used as an effective teaching strategy in teaching large classes in agriculture with special attention to practical concepts.

The researcher interviewed agriculture teachers. All the teachers interviewed agreed that group work should be used often when teaching agriculture. Students’ responses to the questions from the questionnaires indicated that more than half of the students enjoyed group work and claimed they benefited a lot and got better marks after a group work. The data collected was then presented on bar graphs. This data was then analysed to obtain the results and recommendations.

The results obtained from the research proved that group work is indeed an effective teaching strategy to use when teaching agriculture practical lessons. The researcher found out that the use of group work assisted group members to be cooperative, to encourage others and raise their performance status. Major findings at the study were that group work can be used successfully in the teaching of agriculture in general. The use of group work as a teaching strategy helps in raising the performance status of the students. It also emerged that group work builds the relationship between students and teachers. Teachers added that group work is effective in large classes even if resources are limiting students may use the available resources as they work in groups.
5.1 Conclusions

The large class sizes at Chatsworth secondary school had been a major concern in the teaching and learning of Agriculture. Much success could be attained, if such, large classes are split into more manageable units.

From the study it can be concluded that the most effective strategy of teaching and learning of agriculture is through group work as students learn from each other. In the research it was revealed that teachers agreed to the effectiveness of group work and the relevance of its frequent use in teaching agriculture. The students showed much interest in working as a group although some indicated that they prefer learning through practical demonstration.

The researcher found that through group work friendship is encouraged as students interact when carrying out practical work. In addition it was noted that students were able to obtain better marks in their revision exercise. This showed that they were gaining knowledge and skills to solve problems individually. Group work enables pupils to share resources and this takes off the burden from the teacher if there are few resources available. The researcher noticed that better marks were obtained by the students after the use of group work as compared to the results obtained by pupils after practical demonstration and lecture method. The students agreed that group work is helpful in learning of agriculture practical lessons and also claimed that in group work there is a wide sharing of ideas and different methods of tackling problems.

At Chatsworth Secondary School teachers faced the problem of large class sizes. However, the use of group work seems to somehow breakdown the large class into smaller manageable units. Although group work can be used as a teaching method teachers have to be able to manage the lessons effectively. In order for group work to be an effective method pupils have to be cooperative and participative. The teacher has to be a good planner and manager.

The researcher noticed that group work is best used when it is combined with other strategies such as question and answer, demonstration and discovery methods. Caruso and Woodley (2002)
stressed that group work should be heterogeneous so the teacher has to take note of this when formulating group members.

5.2 Recommendations

Since the study established that group work is effective in teaching practical concepts in agriculture concepts, it is recommended that:

1. Teachers should make use of methods that increase pupil’s interest in learning so that they understand the concepts better. The teacher should use different strategies together with group work in order to cater for all pupils with different learning styles.

2. Team building activities should be conducted before actual lessons are to help pupils get acquainted with each other because they need to feel comfortable working with other members of the group because if they are not comfortable there would not be good communication.

3. The agriculture teachers should get in-service training so that they learn how to deliver lessons properly according to the requirements of the Curriculum development unit in Zimbabwe. Teachers also have to up-grade and up-date their knowledge in the organisation of practical lessons.

The researcher proposes that further research be carried out on:-

1. Finding out whether the Qualifications and Area of Specialization of the teacher has any influence on teaching of Agriculture so that an appropriate decision could be taken.

2. More work need to be done to find out whether student and teacher motivation could have influence on the teaching and learning of agriculture practical at the Ordinary Level
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APPENDIXES

Appendix A

QUESTIONNAIRE FOR STUDENTS

This study is for academic purposes. Kindly read through each of these items carefully and indicate the opinion that is the nearest expression of your views on each of the issues raised. Your anonymity is assured.

GENERAL INSTRUCTION

Please tick the box [✓] to the answer you have chosen fill in the blank space where necessary.

SECTION A: Identify teaching strategies used in the teaching of large classes at Chatsworth secondary school

1. Which teaching practice is used by your teacher to teach you agriculture practical?

   (a) Group work
       Most [ ] Always [ ] Sometimes [ ] Never [ ]
   (b) Lecture
       Most [ ] Always [ ] Sometimes [ ] Never [ ]
   (c) Practical demonstration
       Most [ ] Always [ ] Sometimes [ ] Never [ ]

2. How often does your teacher use the following methods during practical lessons?

   (a) Group work
       Most [ ] Always [ ] Sometimes [ ] Never [ ]
   (b) Lecture
       Most [ ] Always [ ] Sometimes [ ] Never [ ]
   (c) Practical demonstration
       Most [ ] Always [ ] Sometimes [ ] Never [ ]

SECTION B: Evaluate the most effective strategy to use in teaching large classes at Chatsworth secondary school

3. How many times in a week do you have group work in agriculture practical work?
(a) Always [   ] (b) sometimes [   ] (c) never [   ]

4. Is the time allocated for agriculture group work sufficient?
(a) Sufficient [   ]
(b) Quite sufficient [   ]
(c) Very sufficient [   ]
(d) Not sufficient [   ]

5. Does group work help you in the learning of agriculture practical work
   (a) Yes [   ] (b) No [   ]

6. Which of these teaching practice would you consider effective to the learning of agriculture?
(a) Group work [   ]
(b) Lecture [   ]
(c) Practical demonstration [   ]

SECTION C: Recommend the most effective strategy to use in teaching of large classes at Chatsworth secondary school

7. Which teaching practice would you recommend as most effective for the learning of agriculture practical.
(a) Group work [   ]
(b) Lecture [   ]
(c) Practical demonstration [   ]

8. In a short sentence give reason for your answer above

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Appendix B

Interview guide for Agriculture teachers

This study is for academic purposes. Your responses will be kept confidential.

SECTION A: Identify teaching strategies used in the teaching of large classes at Chatsworth secondary school

1a. Which teaching methods do you usually use in teaching large classes?
b. Which teaching method do you mostly use in teaching large classes?
c. Are skills properly imparted to pupils when using the method you mentioned above?

SECTION B: Evaluate the most effective strategy to use in teaching large classes at Chatsworth secondary school

2a. What teaching strategies do you mostly use in teaching practical concepts in agriculture?
b. How do you evaluate the effectiveness of each teaching strategy?
c. What is the most effective teaching strategy in teaching practical work?

SECTION C: Recommend the most effective strategy to use in teaching of large classes at Chatsworth secondary school

3a. Which teaching method improve pupil’s performance in agriculture?
b. Which teaching practice would you recommend as the most effective for the learning of agriculture practical?
c. What reasons can you give for the teaching strategy you have recommended above?