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CHAPTER 1

BACKGROUND TO THE STUDY

1.1 Introduction

The search for the substantial achievement impact of reducing class size is one of the oldest and most frustrating concepts for educational researchers. Despite the search now approaching the end of its first century; it may rival the search for the Holy Grail in both duration and lack of results. The econometric evidence inherent in the literature examined by the researcher such as the study which was named project STAR, (Student/Teacher Achievement Ratio) and the other which was named SAGE, (Student Achievement Guarantee in Education) referred to in greater detail below seem to point at one conclusion. There is little reason to believe that smaller class sizes systematically yield higher student achievement. While some studies point in that direction, an almost equal number of studies point almost in the opposite direction.

Students themselves tend to have divided opinions. The contending literature reports suggest that students say they get more out of a course when the class size is small yet practical experience in an enrolment survey conducted at Harvard suggests that many students are drawn to and choose large-enrollment courses and that the staggering numbers seem to be a pull factor to students. Given the seemingly tug of war in terms of available literature, the researcher felt the over-powering urge to explore the topic further and delve deeper into issues regarding the link between class size and academic achievement, if at all such a link exists.

According to Chilles, Cam, Nye, Zachariah, and Fulton (1993) random experiments like the (STAR) project have shown the benefits of smaller class sizes. The research was conducted in 79 elementary schools in Tennessee. The STAR was a four-year longitudinal class size study funded by the Tennessee general assembly and conducted by the state department of education. Over 7,000 students in 79 schools were randomly assigned into one of three interventions: small class (13 to 17 students per teacher), regular class (22 to 25 students per teacher), and regular-with-aide class (22 to 25 students with a full-time teacher's aide). Classroom teachers were also

randomly assigned to the classes they would teach. The interventions were initiated as the students entered school. The Tennessee's STAR project and SAGE assigned children to small or regular-size classes, as well as large-scale analyses of small and large classrooms that have occurred naturally. Although researchers may quibble over the exact magnitude of gains associated with smaller classes or the means by which small classes bring about such gains, few of them such as Glass, Cahen and Smith (1982) and Slavin (1989) disagree with the basic fact that smaller classes result in higher average achievement. By reducing elementary school classes from 23 students to 15 in the STAR project, achievement, as measured by standardized exams like the Stanford achievement test increased about 7% on average. This achievement test is a common measure of student performance used in the United States of America in the elementary stages to measure basic literacy and numeracy. It was also noted that the longer students are in smaller classes, the greater their achievement level is. In the STAR report, the authors contend that smaller classes could actually widen the achievement gap between haves and have-nots if properly harnessed. The introduction serves to wet our appetite regarding the issue of class size and achievement and as we delve deeper into the topic, further problems are explored in the next section.

1.2 Statement of the problem

1.2.1 The class size debate

The coming of democracy in South Africa in 1994 ushered in a new era which came with what Luckett and Sutherland (2000) and Biggs (2003) refer to as the '*massification*' of education and the '*diversification'* of the classroom, especially at tertiary level. This means that universities in South Africa have over the years seen an influx in the enrolment of students from all parts of the country and the continent.

It is widely known that South Africa is currently experiencing enormous challenges in institutions of learning due to a plethora of problems. To this end, Gibbs (1992:96) has advocated for what he terms "flexibility, choice and movement around the system", to be put in sharp focus as instability in these centres creates many societal and economic problems. It is important to try and attend to these problems from all possible angles.

A perception exists among parents and teachers that smaller classes are better than larger classes. Some researchers have technical concerns about the research designs of studies that report a link between reduced class size and improved achievement, including the project STAR study. Other studies address concerns that are based on the cost effectiveness or program design of smaller classes. But big surveys like Pascarella and Terenzini's (1991) studies of class size and other educational factors (most of which have been conducted in K-12 schools) tend to show an inverse connection between achievement results and student preparation. In other words, the two educationists concur that class size matters a lot for students who are unprepared and come from disadvantaged backgrounds but matter little for students who bring more in the way of social capital, aptitude, and other resources to the classroom. Pascarella and Terenzini (1991) conclude that the overall evidence suggests that class size plays little or no influence on student achievement. This however has not quelled the debate. Notwithstanding the factors mentioned above, the debate still leaves the question of whether the marginal loss of learning all other students experience as a result of having one more student in class outweighs the marginal benefits that one more student receives.

Though there is debate about the extent of benefits small classes bring, or how much it costs to achieve, there is at least some agreement in the literature that using certain tests, class size does matter in some circumstances. Educationists such as Hoxby (2002) and Hanushek (1989) support this view. No such agreement exists in the literature concerning the effect of class size in higher education. Bowden and Marton (1998) have presented arguments that class size is the primary environmental variable college faculties must contend with when developing effective teaching strategies. They argue that while class size may not be significant in courses best suited for lecture style learning, courses geared toward promoting critical thinking and advanced problem solving are best taught in a smaller classroom environment. Their views are consistent with findings which suggest that students and educators' motivation and attitude towards learning tends to be more negatively affected by larger classes. Becher (1999) agrees that though they may have learned the material, students do not feel as satisfied with the classroom experience as they would have in smaller classes, suggesting that some learning opportunities may have been lost.

Analysts such as Slavin (1989) and Luckett (1996) have raised several fiscal and implementation issues, including questions about whether the benefits of reduced class sizes are sufficient to offset the costs incurred to create them. To this end, therefore, the topic of class size has received a lot of public and professional attention. Organisational interventions in the educational fraternity in this regard are considered to be relatively new phenomena as, before the ushering in of independence in most African states; management in these institutions has always taken on a trial and error fashion. Calls for reduction in class sizes are rallying points for parents, educators, administrators and all stakeholders are trying to find a solution so as to introduce policies aimed at tackling the high class size challenge (Nzimande, 2009).

According to the Minister of Higher Education, Blade Nzimande, there is a need to triple or quadruple the student intake at universities if we are to address the skills shortage challenges in South Africa. The minister also called for the scraping of the matric examination and rather focusing on prior learning and an entrance test (Nzimande, 2009). He reiterated the need to keep the teacher–pupil ratio at what he referred to as “manageable levels”, so as not to turn institutions of higher learning into, “mere award conferring institutions” with no real learning that results in an acquisition of skills, but fosters what he terms “sterile learning” (Nzimande, 2009).

Gibbs (1992) states that the typical class size in many institutions of higher education in the twentieth century are likely to be 80 to 100, with small group work being defined as involving 16 to 20 students. Gibbs (1992) maintains that the danger of the speed of the increase in student numbers is that the system will not be able to adapt fast enough. This, he adds, could result in Higher Education Institutions (HEI`s) responding by modeling themselves on existing systems of mass higher education or by attempting to remain as they are and finding that resources are stretched beyond acceptable limits.

Herbst (2001:69) advances a number of reasons for variations in terms of optimum class sizes in different learning institutions. He believes that systems around the country differ in many respects. Important sources of variation include the examination system, existence of high-stake incentives for students and educators, provision of remedial instruction for lagging students or of

enrichment classes for outstanding achievers, the level of allocation of resources, the quality of educators amongst others. He believes that these are the factors which inform class sizes in many institutions. As a result, naively assumed estimations of educational production functions may be biased by omitted variables among these characteristics of good teaching. These include the ability to communicate challenging content; involving students in hands-on experiences; providing clear and immediate feedback; and supporting family involvement and endogenity of class size with respect to student performance. In this regard, Herbst (2001:69) states that estimating the "true" class size impact, which is the causal outcome of class size on learner performance, requires an identification strategy. He maintains that this should restrict the analysis of exogenous variations in class size, being the factors other than those earlier mentioned. Several of these exogenous features involved classroom management issues such as student discipline and instilling a culture of hard work. Overall, differences were found with regard to student misbehavior, teacher misbehavior reprimands, teacher control, noise levels, student engagement, perceptions of class size and effectiveness, the use of in-depth projects and equipment as well as student assignment choice. After assessing the plethora of factors that Herbst (2001:70) believes also contribute immensely to student achievement, teacher behavior, teacher feedback and student cooperative help were seen as being more prevalent in large classes. He is of the opinion that other variables such as potential grade inflation, student aptitude, lower academic standards and a lack of remediation for ill-prepared and disadvantaged students, teaching styles and student motivation and effort could confound research results in this area and may also account for inconsistent results.

Herbst (2001:71) believes that even though there is now strong evidence that smaller class sizes improve student performance, at least in some circumstances, and using common methodologies to test the data, the debate continues. In particular, economists point out the need to weigh the costs of achieving smaller classes versus the cost of improving student achievement by other means. The investigation concludes that the strategy of class size manipulation should currently be reassessed and a new impetus for educators in HEI's should be encouraged, to look beyond the usual methods and investigate new trends for creating effective classrooms.

1.3. Research aims

This research stems from debates in relation to the link between class size and learning achievement. The aim of this study therefore is to investigate whether there is a connection between the number of students in a class and their resultant performance. The research looks closely at the value and benefits as well as the disadvantages of smaller class sizes and vice versa.

The researcher examines and records any variations in the progress and achievement levels of the two extremes of large and small classes. In addition examples of instances when each size has been put into use are also scrutinized. In the end some form of resolution or recommendation emerges from the findings, to which intervention strategies are then proposed. An open, reflective and critical exploration relating to the issue of whether there is an optimum class size which is ideal for effective instruction also helps shed more light and contribute to teaching practice in tertiary education in south Africa.

1.4 Research objectives

From the aims stated above, several objectives emanate, and lead the research problem to revolve around the following:

1 To explore how lecturers of larger and smaller groups mediate learning in Applied Communicative Skills (ACS).

2 To describe large and small group lecturers' and students teaching and learning experiences.

3 To determine the extent to which the group size affects the manner in which teaching and learning is mediated in ACS.

4 To find out whether reducing the number of students in an ACS class would result in either higher or lower grades in ACS.

5 To establish whether there is some kind of mechanism which can assist in establishing what determines a large, small or even optimum class size which strikes a balance between size and achievement.

1.5 Research questions

According to Mutch (2005) research generally begins with a question to answer, a problem to explore or a situation to change. The initial question for this study states: “is there any connection between the size of the class and the learner performance and achievement in an institution of higher learning?” To keep the research process focused, the study, and especially the data-gathering process, should be informed and guided by the following questions:

1. Is the education, which refers to the teaching, learning and resources, received in a large class the same as that received in a small class?
2. Does most of the evidence presented in the research point towards smaller or larger classes as having a greater propensity to yield better performance and achievement results?
3. Do students in larger classes participate more actively than do those in smaller classes in the mainstream classroom?
4. What are the general attitudes and preferences of students regarding class size in the mainstream classroom?
5. What prompts most learners to adopt the specific attitudes and preferences referred to above?
6. Is there significant scientific evidence to prove and convince legislators, school educators, parents and other major stake holders in the educational fraternity that class size makes a difference in student accomplishment?

These questions were designed to allow and encourage answers beyond the researcher’s own experiences and knowledge. The researcher deliberately makes the research questions open-ended with the intention of allowing for unexpected responses in order to achieve the trustworthiness of the research. Silverman (1993) reiterates that open-ended questions are the most effective method to gather an authentic understanding of what people are going through.

1.6 Motivation

The questions motivating this research can largely be divided into three sub-areas, namely:

1 How does class size affect learner performance and achievement?
2 What motivates the performance of learners other than class size?
3 What do these findings suggest about the nature of learning taking place in institutions of education in as far as class size is a factor?

By answering some of these pertinent questions the researcher discovers more about the how, why, and other implications of the unique but intricate connection between class size and learner performance and achievement. This study analyzes data to give a clearer picture of the connection between class size and student achievement.

During the course of the researcher's teaching experiences at an institution of higher learning, the researcher came to the realization that students need a more interactive method of communication. Concerns pointing to the fact that the large and continuously increasing enrolment numbers tended to make it difficult, if not virtually impossible to provide the hands-on interaction that students undoubtedly need to sharpen their focus in this field of study were raised. This trend has been evident not only at the institution in question, but it's currently a common trend with the majority of HEI's in South Africa as enrolment figures continue to swell in line with the aspirations of education for all espoused by the new, post-apartheid dispensation.

It is also apparent that most students are not proficient in English at the entry point level to tertiary education. This impediment only further complicates the delicate position in which ACS educators find themselves. In terms of the teaching context, the researcher therefore felt that it was important to explore the idea of a class size which offers instruction that can best assist students to enrich their learning experience, grasp concepts well and become fully fledged members of the communities of practice that constitute the world of academia.

The main interest revolves around finding out whether smaller classes could be harnessed for academic purposes. The researcher therefore observes a number of classes in an effort to find out what happens if various group sizes are taught in Applied Communicative Skills given a semblance of similar conditions. An open, reflective, critical exploration relating to the issue of whether there is an optimum class size which is ideal for effective instruction helps shed more light and contribute to teaching practice in tertiary education in South Africa. On the one hand, it is clear that improving the status of the previously disadvantaged masses of mostly black youth can only be achieved through mass education. However on the other end of the scale stands the question of whether much is gained by mass enrolment of students at the expense of quality education. Webb (1999:115) argues that it is not only enrolment that is important, but the whole process that sees the student through to final graduation which should be put into full focus. This is a debate that will rage on for decades to come not only in South Africa but the world over where the quest to address any imbalances of the past exists.

In a report on HEI's performance index survey conducted by the scientific and industrial research council Hlungwane (2007:49) states that, "the standards of education in institutions of higher learning in South Africa continue to deteriorate…" It is such assertions that arouse curiosity in determining whether larger classes are indeed one of the factors that erode levels of achievement.

The argument that the tuition of students must be conducted in a scenario that creates interaction and benefit is put in sharp focus. Institutions of learning should be more meaningful and provide an enriching learning experience which does not disadvantage the learners in their quest to acquire knowledge. This view is shared by among others Scauva (2002) and Heugh (1995: 208). Scauva (2002:10) maintains that "unless the practical assertion of educational rights extends to the positive interaction and change in behavior in all walks of life, the real empowerment of the majority of South Africans will remain in the realm of mere rhetoric". Heugh (1995:331) asserts that the status quo of the dominant high-status versus low-status education impartment has not changed in South Africa. She argues that a *laissez-faire* approach to human rights is adopted, whereby all issues regarding a molding of the "final product" are not put into practice and accorded equal status, as is declared in educational opportunities which are enshrined in the

South African Constitution.

On the other hand it is almost fool-hardy to think that equal education for all can be achieved outside the framework of the "massification of education", given the country's history as well as its population base. Those who have been deprived of education and academic privilege for centuries would have a different story to narrate. The lecture method is thus seen as the best suited medium for learning, instruction and assessment the world over, South Africa included. From this perspective class number is not an avenue of societal domination or a handicap to the acquisition of academic knowledge. The need to satisfy all those who may need to be educated suggests that mass lectures ought to be seen as a tool that is best capable of transmitting academic discourse in a wide range of disciplines to an even wider audience base. Honey (1997) adds that instruction and learning en masse gives students the opportunity to partake in discourses that lead them forward.

1.7 Statement of hypothesis

Anticipated findings may very well confirm the fact that the learners' class size affects achievement and performance. Having fewer learners in the class reduces the level of distractions in the room and gives the teacher more time to devote to the needs of each individual learner.

1.8 Research methodology

Essentially, the researcher chose a qualitative research paradigm because it is appropriate to the aims of this study, which are to investigate whether there is a link between the number of students in a class and their resultant performance. The study is of special significance to me, as I am also facing the challenges associated with larger classes and teaching in the same department as the participants in my research. I fulfill a part of the study as a participant, as well as a researcher hence it becomes easy to immerse and gain entry into the participants' world as I already belong in it. The observations, informal conversations and interviews with the participants/colleagues, no doubt bring us closer as a unit and make us more amenable to sharing our experiences, difficulties and challenges as well as little joys and successes.

A more collaborative climate prevails with all of us understanding and sharing our unique contexts as ACS lecturers. To determine the efficacy of the effect of class size on influencing achievement, two distinct group sizes are observed, a big group and a smaller group under the same conditions and comparisons in the pedagogical challenges and benefits are made.

Qualitative researchers use data collection techniques such as observation and unstructured interviews. These techniques are particularly pertinent to this study, as they enable the researcher to interpret the participants' verbal responses and their style of mediation and interaction in the classroom. The quantitative design for this study would not enable one to uncover the rich information unraveled with the use of the qualitative paradigm. Henning, (2004:102) asserts that, "the human factor" in social research is brought in by being able to communicate with the participants. He believes that, "by studying the participants' words, it is possible to gain deeper insights and understanding of their emotions and experiences: qualitative research places emphasis on understanding, through looking closely at people's words, actions and records" (Henning 2004:102). To this end, interviews are conducted with lecturers and the responses they give provide useful data which is interpreted and subsequently depicted in various graphic ways. The study would otherwise not have been able to uncover the rich information which is desired if the quantitative paradigm were used instead.

1.9 Clarification of key concepts

1.9.1 Performance

The South African Department of Education (DoE, 2002:179) in its educational report defines performance as being based on direct observation of a student's work (a writing sample) or a process, (say an oral presentation). According to the report, the quality of the performance is judged on the basis of clearly specified criteria that define what the given performance looks like at the beginning, developing, and proficiency levels. Sound performance assessment is characterized by clear targets; a well-defined sense of purpose (how will we use results?); sound, thoroughly tested criteria that are known to everyone (including students); and quality tasks that are engaging and challenging. The department further states that teachers could classify students

into four broad performance categories, namely, distinguished, proficient, apprentice and novice. These are semantically replaced by: "exceeds expectations", "meets expectations", "approaches expectations", and "struggles to meet expectations".

1.9.2 Achievement

According to Black and William (1998:219) achievement is past oriented. It is based on a specific body of knowledge and it reveals areas of weakness, which can result in remedial action. Achievement can also reveal competence and such results can be used to predict future performance.

1.9.2.1 Towards a detailed definition of student achievement

Trawler and Knight (2002:317) propose four approaches of defining student achievement:

- The level of student attainment, defined in terms of test score averages or percentages of students at proficiency levels;
- Cross-cohort change in the level of attainment;
- Change in the level of attainment, comparing the same group or cohort of students over time; and
- Value models that try to isolate the school or teacher contribution statistically and that control for factors like poverty and ethnic heritage.

(a) Defining student achievement by level of attainment

According to Trawler and Knight (2002:317) this is defining student performance as the average level of student attainment. However, test scores are highly influenced by student socio-economic characteristics, such as family income, that are outside educators' control, nor does it take into account the level of knowledge students bring with them to the classroom.

(b) Defining student achievement by cross-cohort change in attainment

Trawler and Knight (2002:317) state that defining learner performance in terms of cross-cohort change in attainment is the basic approach used in educational settings. Performance is measured

by comparing test scores for the same subject and grade level across yearly cohorts of students.

(c) Defining student achievement as average change in attainment

Black and William (1998) state that this refers to defining learner performance as the average change in attainment across years for the same group of students. This method requires tests that can measure the progression of student learning from year to year, and data systems that track individual students across grades.

(d) Defining student achievement using value-added methods

Black and William (1998) and Trawler and Knight (2002:317) concur that the value-added approach attempts to isolate the contribution of the teacher or school to student achievement by controlling for student, classroom, or school characteristics that influence learning but are not under teachers' or schools' control.

In summary, performance is defined as the accomplishment of a task in accordance with a set standard of completeness and accuracy while achievement is defined as a measurement of what a person can do after training. Achievement and performance are strongly linked to behavioral results. In this research therefore, the two concepts are used interchangeably.

1.9.3 Formative assessment

Black and William (1998) define assessment broadly to include all activities that teachers and students undertake to get information that can be used diagnostically to alter teaching and learning. Under this definition assessment encompasses teacher observation, classroom discussion, and analysis of student work, including homework and tests. Assessment becomes formative when information is used to adapt teaching and learning to conform to the needs of the students.

1.9.4 Group

Cahen *et al* (1983:164) define a group as, "a subset or unit of individuals with highly interdependent tasks to be completed in limited periods of time. In the context of this study, group also refers to "a distinguishable set of two or more people who interact dynamically, interdependently, and adaptively toward a common and valued goal/objective/mission, and who have each been assigned specific roles or functions to perform, and who have a limited life-span of membership" (Heugh, 1995:178).

1.9.5 Higher education institutions (HEI`s)

Black and William (1998) define HEI`s broadly as universities, technikons, colleges and poly-technical institutions which offer tuition to post matric students for further academic learning.

1.9.6 Mainstream classroom

The South African Department of Education (DoE, 2001) defines a mainstream classroom as a regular classroom where all students are catered for and taught the usual curriculum by teachers with regular teaching qualifications.

1.10 Organization of remaining chapters

- **Chapter 2**

This chapter provides an overview of the literature that was read by the researcher before putting the investigation into perspective. The focus was on the link between class size and the achievement made by the students in either larger or smaller class sizes.

- **Chapter 3**

In this chapter the researcher discusses the methodology, data collection and data analysis. The participants are introduced and entry into the research domain is established. Details of the observation and interviews that were conducted and undertaken are explored. This chapter no doubt analyzes the research questions, as well as outlines the paradigms within which the research is conducted. It also details the variety of qualitative methods brought together to answer all the questions that this research

study raises. In short, all the other elements of the research conducted outside the teaching/classroom process itself are discussed in this chapter.

- **Chapter 4**

The findings that emerge in relation to class size and student competence in performance, pragmatics, challenges and benefits experienced by larger class lecturers and students are explored. The participants' comparisons between smaller and larger group lecturers and suggestions are discussed in this chapter.

- **Chapter 5**

In this chapter the conclusions reached after consideration of the findings are stated and recommendations are proposed.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The findings of the general ineffectiveness of reducing class size tend to be controversial if for no other reason than that it tends to defy common sense, conventional wisdom and highly publicised accounts of the scientific evidence. Unfortunately, in-order to support calls for class size reduction, there has been a tendency to pick and choose from the available studies and evidence. It is therefore useful to review the existing evidence and to reconcile the varying conceptions of what might be expected, gained or lost from class size reduction or increase. In addition, the researcher is interested in finding out whether it is possible to initiate learners at tertiary level into looking beyond the confines of the class and use their cognitive capacities to strengthen learning. While compiling information for the literature review, the broad themes highlighted above were identified.

In light of the rapidly increasing enrolment figures in many HEI's across the nation, administrators are under fire concerning the potential diminish of academic standards related to huge classes. Van Allen (1990:205) asserts that the "quantitative product", in monetary gains afforded by increased enrolment far outweighs the "qualitative product" that of well-educated and knowledgeable college graduates. It is therefore of great importance that research be conducted to provide convincing evidence as to whether or not students, faculty staff and perhaps the nation at large may be suffering negative consequences due to the increase in class size.

According to the Department of Education (2002), the nation has struggled with how to improve its HEI's since the late 1990s and early 2000s. These concerns have risen, prompted largely by threats to the nation's economic dominance and prosperity. Trends on national tests have been broadly stagnant since they were begun in the late 1990, and international comparisons of student performance generally indicate that South African learners, particularly in the upper grades, do not fare well.

Many believe that public HEI's can in fact not be reformed and have turned to solutions that seek to alter the fundamental structure of the education system. School administrators, teachers, and parents have long thought that the number of children in a classroom affects the learning that occurs. However, it has proven difficult to pin down the precise impact of class size on student achievement. Various pivotal dimensions need to be addressed from a policy perspective. The following range of questions helps us to zoom into what the ensuing literature review is attempting to unravel:

- Does class size have an effect (or not affect) student achievement?
- Do students experiencing smaller class sizes learn more, as measured by student results, than otherwise similar students?
- What is the nature of the connection between class size and student achievement?
- Is the link linear, or do class sizes have to be below a certain level for a large impact to occur?
- Does the result of having experienced learning in a large class have long-run consequences?
- Do these consequences persist even after the treatment has ended?
- What things can be done differently in classes of different sizes that are not currently being done?
- Do the benefits of smaller class sizes outweigh the costs associated with the resources required such as extra teachers, and extra facilities?
- How important is class size relative to other factors, including individual student background and the mix of students, school climate, teacher behavior and quality, the nature of physical space occupied, and other resources available in the classroom?

Although we do not know the answers to these questions with any certainty, this research delves into contending literature regarding these questions and attempt to find answers where possible.

2.2 The advent of larger classes

Before immersing ourselves into the class size debate, it is important to consider the reasons that have brought about the ballooned class sizes which confront educators in HEI's to date. This convinces us that numbers have actually grown and that the issue is not just a figment of those

imaginations operating in overdrive mode. To assist us understand the concept, our debate centers around the findings of Trow (1995) among other educationists referred to below.

According to Trow (1995), post-secondary education has expanded since World War Two in virtually every country in the world. The growth of post-secondary education has, in proportional terms, been more dramatic than that of primary and secondary education. Trow (1995) speaks of the transition from elite to mass and then to universal higher education in the industrialized nations. While the United States enrolled some 30 percent of the relevant age cohort (18-21 year olds) in higher education in the immediate post-war period, European nations generally maintained an elite higher education system, with fewer than 5 percent of the population attending post-secondary institutions. While Europe and North America are now relatively stable, Trow (*ibid*) maintains that middle-income countries and countries in the developing world have continued to expand at a rapid rate. Expansion in Africa has also been rapid and has meant that per student expenditure has dropped, contributing to a marked deterioration in academic standards.

There are many reasons for the expansion of higher education. A central cause has been the increasing complexity of modern societies and economies, which have demanded a more highly trained workforce. Almost without exception, post-secondary institutions have been called on to provide the required training. A stark example of the incursion and impact of market forces on the sector was the growth of training in many fields whose skills used to be imparted on-the-job, but have since become formalized in institutions of higher education. Whole new fields of study, such as computer science, have come into existence, and many of these rely on universities as a key source of research and training. Nations now developing scientific and industrial capacity have depended on academic institutions to provide high level training and research expertise to a greater extent than was the case during the first industrial revolution in Europe.

A university degree is a prerequisite for an increasing number of occupations in most societies. Indeed, it is fair to say that academic certification is necessary for most positions of privilege, authority, and prestige in modern societies. This tends to place immense power in the hands of

universities, hence the jostle for enrolment. Trow (1995:272) mentions that

> The role of the university as an examining body has grown for a number of reasons. As expansion has taken place, it has been necessary to provide ever more competitive sorting mechanisms to control access to high-mover occupations. The universities are also seen as meritocratic institutions that can be trusted to provide fair and impartial tests to measure accomplishment honestly and, therefore, determine access.

Expansion has also occurred because the growing segments of the population of modern societies demand it. The middle class, seeing that academic qualifications are necessary for success, demand access to higher education. Governments are generally responding by increasing enrollment. When governments do not move quickly enough, private initiatives frequently establish academic institutions in order to meet the demand. According to Ntshoe (2002:7), this long term plan to "increase the participation rate of tertiary students from 15 to 20% in this millennium highlights the need for universities to take a fresher look at things". The debate continues as the three main views held by most educationists regarding class size and achievement and the relevant theories and literature to support those views are discussed in greater detail.

2.3 Class size reduction versus student achievement: An introduction

In light of rapidly increasing enrolment in many HEI's across the nation, administrators are under fire concerning the issue of growing class size and the potential diminishing of academic standards. Van Allen (1990:205) asserts that the "quantitative product", monetary gains afforded by increased enrolment far outweigh the "qualitative product" of well-educated and knowledgeable graduates. This view point shows that there are returns to investing in smaller classes for certain students and it provides some evidence on why past literature has produced such inconsistent findings on the impact of class size. This section discusses the consequences of reducing class size on student achievement and it synthesizes research evidence to demonstrate that 1) class size is strongly related to student achievement; 2) smaller classes are more conducive to improved pupil performance than larger classes; 3) smaller classes provide more opportunities to adapt learning programs to individual needs; 4) pupils in smaller classes have more interest in learning; and 5)

teacher morale in smaller classes is better. The studies indicate smaller classes have more positive consequences than larger ones, no matter how small. While reduced class size may improve school tone and morale, it is not an adequate policy alone for significantly accelerating student achievement. The contending literature from Trow (1995), Krueger (2002) and Glass and Smith (1979) among many other educationists assist in unpacking this debate. Within the educational research literature, there is considerable debate over whether class size has a significant impact on achievement. While there are many other variables which could be responsible for higher or poor achievement, these are largely unimportant for purposes of articulating this debate. These may include the level of initial intelligence and student aptitude, the length of time dedicated to the subject, availability of resources such as public address gadgets and other audio-visual aids, student and teacher attitudes, the culture in the institution and a host of other factors. Trow (1995) adds that reducing class size to increase student achievement is an approach that has been tried, debated, and analyzed for several decades. The premise seems logical: with fewer students to teach, teachers can coax better performance from each of them. But what does the research show?

The first meta-analysis by Glass, Cahen, and Smith (1978) dealt with the impact of class size on student achievement. By combining 77 studies, which yielded 725 comparisons of achievement in classes of different sizes, they were able to spot trends that did not show up clearly in every study. An important outcome of the Glass/Smith meta-analysis was the finding that the greatest gains in achievement occurred among students who were taught in classes of 15 students or less. Glass, Cahen, and Smith (1978) summarized their findings in these words:

> As class size increases, achievement decreases. A learner, who would score at about the 63rd percentile on a national test when taught individually, would score at about the 37th percentile (when taught) in a class of 40 pupils. The difference in being taught in a class of 20 versus a class of 40 is an advantage of ten percentile ranks.

Glass and Smith (1979) on the other hand, suggest that small class sizes in the first four years of schooling can lead to higher attainment by the time the pupil reaches secondary education. According to these researchers, pupils taught in smaller classes during the primary phase of their education were more likely to go on and eventually proceed to higher education.

Some researchers such as Krueger (2002) and Hoxby (2002) have not found a connection between smaller classes and higher student achievement, but most researchers such as West and Woessmann (2003); Cahen, Filby, McCutcheon and Kyle (1983:202) agree that when class size reduction programs are well-designed and implemented in the American primary grades (K-3), student achievement rises as class size drops. In an effort to understand the inconsistent findings of the past, these authors studied and examined classroom conditions that may affect the link between class size and academic achievement, and also consider whether class size has a different impact for different groups of students.

2.3.1 Debate around the inverse connection between class size and student achievement

The aspect of the subject area comes into question; would it perhaps be different depending on whether the subject is content, concept or practical- oriented? Instructional activities offer significant boosts to achievement, but the results of instruction do not seem to differ between small and large classes.

There has however been much need to view the aspect of class size as a holistic factor that does not operate in isolation. For three decades, a belief that public education is wasteful and inefficient has played an important role in debates about its reform. Those who have proposed greater spending programs for educational institutions to improve student achievement have been on the defensive. According to Trow (1995) the presumption has been that changes in structure and governance of schools, standards, accountability, and assessment, to name a few are the only way to improve student outcomes. Traditional interventions, like smaller class size and higher teacher salaries, have been presumed ineffective. Surely class size reductions are beneficial in specific circumstances for specific groups of students, subject matters, and teachers. Secondly, class size reductions invariably involve hiring more teachers yet teacher quality is a more important factor than class size in affecting student outcomes. Third, class size reduction is very expensive, and little or no consideration is given to alternative and more productive uses of those resources.

Similarly, in his study, Krueger (2002) states that the effect of class size found in the STAR experiment, however, is not the only factor in play. The possible benefits of smaller classes must be weighed against the costs, as asserted to by Hoxby (2002). To reduce class size in a meaningful way, school districts might need to hire more teachers, add more classes, and purchase more supplies or all of the above. Questions of class size can feature in decisions from teacher contracts to school construction and other factors.

2.3.2 Counter view: Other factors affecting achievement

West and Woessmann (2003) believe that school districts would do better to hire fewer teachers with better credentials than to hire more teachers without regard to the level of credentials and experience. They argue that the quality of the teacher, rather than the size of the class, drives student achievement. In short, the stakes are high when undertaking these initiatives since endless debates continue to rage about the ability of reduced class size to fuel student achievement, making it critical to approach the issue armed with credible research that helps inform decision-making.

Glass and Smith (1979) performed a meta-analysis on the outcomes of 77 studies that included 725 comparisons between a smaller and a larger class on the measure of achievement. The research involved studying various class sizes to ascertain the extent to which class size affected the performance of learners. The two researchers found that 60% of the comparisons favored the smaller class. First, it should be noted that the effect of class size appeared to grow as size was reduced, for example a reduction from 10 to 5 students yielded better results than a reduction of say from 30 to 25. They also noted that the connection between class size and achievement did not change significantly for students of different ages or different ability levels. Kelly (1979:411) supports this view by Glass and Smith and writes that, "…the Glass study is the first by a nationally recognized researcher to make unequivocal statements about the impact of class size on pupil achievement. It has enormous policy implications".

However, the findings of Glass and Smith (1979) met with stiff criticism from other researchers notably, Webbstock (1999) and Slavin (1989). They argue that these findings were influenced by studies of tutoring, not class size. They add that the report does not make a clear distinction between teaching and tutoring classes. However after much debate and a re-analysis of the works of Hedges and Stock (1983) the following conclusions were arrived at:

- Small classes are important for increased pupil achievement.
- Pupils with lower academic ability tend to benefit from smaller classes more than do pupils of average ability.
- Smaller classes can positively affect the scholastic achievement of economically or socially disadvantaged pupils.

Glass and Smith (1979) found that the benefit of small classes held for students regardless of their intelligence level, as some of them had been graded according to achievement level. They believe that smaller sizes are associated with greater individualization and informality, higher quality of instruction and a more positive school climate. They form three categories into which the broader variables can neatly fit in and these are teacher consequences, students' consequences and classroom instruction. Carter (1994) concurs with Glass and Smith and refers to the three categories as behavior management, individualization and curriculum. Carter (1994:167) hastens to add that smaller classes make discipline easier, summing it up as follows: "you spend more time teaching and less time policing".

The Class Size and Achievement Programme (CSAP) which was conducted by Cahen, Filby, McCutcheon and Kyle (1983:202) provide an in-depth analysis of what happens in a classroom when class size increases. The study also found that there are certain consistent consequences across differing class sizes. Cahen *et al* (1983) identified the same three categories as Carter (1994), namely behavior management, individualization and curriculum. Educators felt that smaller classes make discipline easier. This perception was borne out of observational data indicating that students paid closer attention when class size was reduced. Attention was also enhanced in class discussions because fewer students were lost in the crowd and all students had

frequent opportunities to participate. The educator also had frequent opportunities to maintain eye contact with every one of the learners in a sweeping stare. Cahen, *et al* (1983) speculated that the effect on participation might be more pronounced for low achievers and at risk students because:

> In a small group, where control is perceived to be easier, the educator may feel she can take time to draw all students into the discussion rather than rely on volunteers or high achievers to keep things moving along (Cahen *et al*, 1983:202).

Cahen *et al* (1983) also concluded that although the curriculum was primarily determined by textbooks and remained unchanged by class size, teachers were able to cover it more effectively. A connection between smaller classes and school success is also supported by the following theories of learning: Gagne's conditions of learning, Gibbon's model-centered instruction, and Ryan and Deci's self-determination theories (Tharpe & Gallimore, 1988:35). These theories posit the idea that when the social context supports self-determination, integration tends to occur, whereas when the context does not support self-determination, introjections tend to occur. What this means is that students internalize material which they perceive to be useful regardless of its interest levels.

Results from past research indicate that class size is equally insignificant for students from different race, ethnic, economic, and academic backgrounds. When learners first come to HEI's, they are confronted with many changes and much confusion. They come into this new setting from a variety of homes and circumstances. Many need training in paying attention, carrying out tasks, and interacting with others in a working situation. In other words they need to learn to cooperate with others, to learn to learn, and generally to get oriented to being tertiary students. These observations fit neatly with several current theories of education, including the idea of frames and scripts.

To support this view, research on instruction indicates that smaller class sizes probably realize their positive outcomes on achievement through a variety of mechanisms. Evidently, small class size is not a panacea to all educational woes. Reducing class size is a significant means of

improving student achievement, but it is not the only piece. High academic standards and a challenging curriculum, more student-on-task behavior, and greater individualization and a safe as well as orderly classroom with qualified teachers are no less significant in the arsenal of solid research-proven reforms. When smaller class size is pursued in conjunction with these standards-based reforms, the combined impact on student achievement is far greater than either strategy alone.

2.4 Harnessing numbers to boost achievement

There are some theorists who vehemently disagree with the ideas put forward in the discussion above. These educationists hold the view that larger class sizes can actually be beneficial to greater pedagogical development and will result in higher achievement if properly harnessed. Cummins (1992:148) argues that initially learning should be contextualized and therefore emanate from familiar ground. Cummins (1992) believes that it is possible to initiate learners at tertiary level into looking beyond the confines of the class and use their cognitive capacities to strengthen learning. In this regard Cummins (1992:149) introduces the notion of "context-embedded" and "cognitively-demanding" performance tasks in promoting learning at HEI`s. This means as facilitators in higher education we must, as part of our pedagogy, start from prior knowledge, which gives our students access to disciplinary discourse.

2.4.1 The zone of proximal development

Cummins (1992) also emphasizes the importance of scaffolding through an understanding of the zone of proximal development (ZPD). Vygotsky (1978:90) describes this (ZPD) as being "the distance between the actual development level of achievement as determined through problem solving under adult guidance or in collaboration with more capable peers". It is within this realm that educators, tutors and more capable peers can exert some influence on the learners' future. Cummins (1992) defines and explains learning and achievement through development of concepts as highly relevant to students, further arguing that there are two recognizable levels of achievement. The first is the level of achievement that has already been attained and could be demonstrated independently by the learner in question, which is referred to as the "actual development level". The second is the "potential level of achievement" that an individual is able to attain when working with either guidance from a facilitator, a parent or by working together

with more capable peers. It is the difference between these two levels that he terms the ZPD. Cummins (1992) argues that learning is a matter of extending one's current abilities through interacting with others to achieve what one could not when working alone. This theory therefore stresses the undisputed fact that significant others actually enhance learning by providing collegiality and companionship. Examples have been cited of children from the royal and other rich families opting for conventional learning rather than private tutors as they are equally in search of the collegiality that comes with numbers. However, determining the optimal student number to ensure that this process is fruitful is the key to the conundrum of this research.

In the same breath and within social constructivist conceptions, Shepard (2005) believes that formative assessment can be seen as a dynamic process in which educators or peers help learners move from what they already know to what they are able to do next, using their zone of proximal development. Shepard (2005) concurs that the ZPD is the range or propensity of potential each person has for learning, with that learning being shaped by the social environment in which the learning takes place. Therefore whether the class is large or small, the zone of proximal development should still kick in as it is an intrinsic endowment .This potential ability is greater than the actual ability of the individual when the learning is facilitated by someone with greater expertise. According to Shepard (2005) scaffolding and formative assessments are strategies that educators use to move learning forward in the zone of proximal development. This process of scaffolding renders the number of students in a class inconsequential as students engage with the learning material individually so learners can change and do change as they enter the different zones.

Cummins (1992:151) goes on to state that through the process of interaction we can scaffold students from "where they are" cognitively to "where we want them to be". Learning is achieved through the support that we give through feedback and positive reinforcement and also the support that students receive from their peers if they work within the framework of a larger group. Hence scaffolding helps learners to move from one zone of development into the next. Such scaffolding would be difficult to accomplish in an environment where the sheer numbers make it virtually impossible to work in groups but only allows for mass one-sided lectures. This could be for example in a scenario where the groups remain a challenge in terms of their

numbers. According to Shepard (2005) the learning process should also be teacher-structured as well as student based since this allows for scaffolding. It is also the purpose of this study to establish whether this is possible when lecturers are dealing with large numbers of students.

Gibbons (2002) adds that scaffolding refers to the support that educators provide to the learners during problem-solving in the form of reminders, hints and encouragement to ensure successful completion of a task. From a socio-cultural perspective formative assessment, like scaffolding, is a collaborative process which involves negotiation of meaning between teacher and learner about expectations and how best to improve performance.

2.4.2 Blooms taxonomy

According to Jonassen, Hannum, and Tessmer (1998), Blooms' taxonomy concurs with the above theorists and espouses that in order to create an enabling environment for deep learning, it is vital to structure and scaffold the tasks in line with a ranking which identifies and acknowledges three learning domains. The major domain, the cognitive one is based on intellectual skills and is rarely influenced by external factors such as class size. The cognitive domain is further divided into six distinct levels that encourage the learner to develop increasingly critical abilities so that they progress. Fowler (2002:12) concurs with Blooms in this regard and states that these levels as ranked by Blooms are loosely packaged as knowledge, comprehension, application, analysis, synthesis and evaluation. Fowler believes that by structuring the tasks so that they start with the focus exclusively on knowledge and through a progressive process include questions from the upper parts and students are given the aptitude to learn effectively. Thus students can easily identify and then consult the lecturer, tutors or peers in order to revise those areas where they have not performed well, further reducing the focus on class size numbers but bringing the problem down to the individual level.

2.4.3 Cooperative learning and scaffolding

Vygotsky (1978:90) holds that "mental functioning is the internalized and transformed version of the accomplishments of a group". The work of social psychological theorists such as Vygotsky (1978) and Johnson and Johnson (1999) has influenced cooperative learning more than any other theoretical orientation. Their contribution comes in the form of the social interdependence

theory. The social dependency theory is based on the work of Koffa in Vygotsky (1978) who is credited as being the first researcher to propose that groups should be viewed as dynamic wholes in which interdependence among group members could vary. Social constructivism, pioneered by theorists such as Vygotsky (1986) highlights the notion that learning is an inward process of forming understanding. In relation to what he refers to as "internal pedagogical engagement", he adds that learning is not a purely internal process, nor is it a passive shaping of behaviors but describes learning as being shaped by the unique environment prevailing at any given time and embedded within social events in the environment (Vygotsky, 1978:90). He suggested that learning environments should involve guided interactions where appropriate and should always reflect on the inconsistency of basic environments .This aspect of adaptability is important as he believes it is such flexibility that allows all the stakeholders in HEI's the opportunity to conform to the specific demands of different class sizes and to change their conceptions accordingly.

In the same vein, David and Roger Johnson, quoted in Moll (2002:147) extended the work into the social interdependence theory. The theory proposes that the way in which social interaction is structured within learning groups determines how individuals interact with one another, which in turn determines achievement. This theory further categorizes interdependence as positive interdependence where an emphasis is placed upon cooperation which results in *promotive interaction* and negative interdependence where an emphasis is placed upon competition. This may result in *oppositional interaction* and the absence of interdependence where an emphasis is placed upon individualistic efforts, which according to Johnson and Johnson (1999) results in no interaction. All of the aforementioned theorists are heralded as foundational theorists for cooperative and large-group focused learning. According to Sherman (2000) their work is more than adequate to support the adoption of large group interaction as a valid instructional practice to facilitate wide based learning. Sherman (2002:113) asserts that the sheer numbers present in a large and extended group are enough motivation to the other learners as they feel that "so many people would not be wrong by seeking an education".

Cooperative learning is distinguishable from other forms of group interaction in a number of ways. The work of Johnson and Johnson (2002) discussed some of the defining aspects of cooperative learning groups which include the following: the structure of group learning

activities should promote individual accountability, group-processing, teach social skills, and facilitate group processing. The theories come into sharp focus when dealing with class size and achievement because ultimately the size of the class determines the learning style to be employed at any given instance.

2.4.4 Phenomenography

Some educationists such as Kennedy and Siegfried (1979:189) understand learning to be transformative, for example Escrow's theory of perspective transformation suggests that learning occurs as a result of 'critical reflection' on prior assumptions whilst Freire's critical pedagogy uses 'conscientisation' to change the way learners see the world and act on it. Ramsden (2001:74) believes that "phenomenography" has contributed an additional perspective on learning in higher education, namely that how students perceive particular learning task demands largely determines whether their approach to learning will be 'deep', 'strategic' or 'surface'. It is only the deep approach to learning that results in transformative learning and achievement. This is because it is characterized by a focus on underlying meaning, the use of a well-structured knowledge base, relating new knowledge to old knowledge, working conceptually and relationally as opposed to learning isolated facts, which is dubbed (the surface approach). These processes occur within the cognitive capacity of the individual concerned therefore suggesting that class size would not be of any consequence when dealing with the mind. In the midst of an audience of one or one thousand your cognitive faculties should still operate on the same level.

Biggs (1987) solidly agrees with this concept and concurs with the same three approaches to learning which are: surface, deep and strategic, each differing according to motivations and strategies. In each scenario he believes students need to be able to apply their new knowledge and understanding to actual real-life situations and are assessed on their abilities to do this. Surface learning is when a student attempts to learn subject matter word for word. While students can get away with this learning method in some areas, it is virtually impossible to use it in Applied Communication as it requires students to apply the subject matter to the theory and case studies. This often results in poor academic performance as lecturers would have expected students to do extra reading and research, which can be done outside the confines of the lecture halls. They are expected to show extra knowledge beyond the content of actual lectures. This

throws away the class situation factor as learning is not confined to the four walls.

According to the findings of Chilles *et al* (1993) reducing class size does not necessarily reduce the teacher's workload, or even the number of students they teach each day. If a teacher is assigned to teach more classes because the number of students in each class is reduced, the teacher spends more time teaching and has no fewer students. Such problems might be resolved by strategies such as year-round schooling, but this still implies either that teachers teach all year or that more teachers get hired. The common assumption is that smaller classes allow teachers to increase the time devoted to each student, either individually or in smaller groups, and thereby improve the quality of the students' education. If this assumption is true, successful class size reduction programs will therefore have to attend to the impact on teachers' workloads. School arrangements that reduce class size only for particular students or subjects may achieve greater results with lower costs, depending on how they are organized and what exactly makes the smaller class experience better. It may be more important to reduce class size for one section or task, and the research suggests that minority and economically disadvantaged students benefit most from smaller classes. Educators and policymakers should not blindly assume that an across-the-board, across-the-school-day approach to class size reduction is best. Mitchell (1989) concluded that:

> For all student populations, class size research, while difficult to synthesize offers convincing evidence of an important link between lowered student/teacher ratios and higher achievement (Mitchell et al, 1989:169).

School officials and policymakers also have to face the problem of the effect of class size reduction on the supply of teachers. If the supply of teachers remains the same and class size reduction increases the demand, then it would seem that class size reduction policies will result in the hiring of less qualified teachers. Right now many schools are having trouble finding qualified teachers to hire. With the current concerns about teacher quality in general, and the call for professional development focusing on teaching in smaller classes, policymakers want to strengthen teacher quality, not weaken it. It may be, however that class size reduction policies will not have such a detrimental effect on teacher quality. Currently, many teachers leave the

classroom after only a few years to pursue some other profession. Class size reduction might lessen this problem of teacher attrition, because of its popularity. If teachers find teaching in a smaller class more personally rewarding, they may stay in the profession longer, decreasing the frequency of the need to hire and train new teachers. Only the future will tell if this potential benefit of class size reduction will come to pass.

2.4.5 Class size and achievement

Providing an international or even a national profile of achievement is not an easy task as it is a complex phenomenon. There is little consensus on what it is or how to measure it. For example, definitions range from those that focus on what should be taught and how knowledge should be imparted, to the kinds of knowledge and training teachers should possess as well as what fully constitutes achievement. Various meanings of achievement were briefly discussed in the section on clarification of concepts, none-the-less, the debate is taken a step further.

An achievement test is the most common method used to gauge one's level of achievement. This is a test of developed skill or knowledge. The most common type of achievement test is a standardized test developed to measure skills and knowledge learned in a given grade level, usually through planned instruction, such as training or classroom instruction. Black and William (1998:274) state that achievement tests are often contrasted with tests that measure aptitude, which is a more general and stable cognitive trait. They contend that achievement test scores are often used in an educational system to determine the level of instruction for which a student is prepared. High achievement scores usually indicate a mastery of grade-level material, and the readiness for advanced instruction. Low achievement scores can indicate the need for remediation or repeating a course grade. Achievement tests have taken on an additional role of assessing proficiency of students. Proficiency is defined in the Department of Education (2001) report as the amount of grade-appropriate knowledge and skills a student has acquired up to the point of testing. Better teaching practices are expected to increase the amount learned in a school year, and therefore to increase achievement scores, and yield more "proficient" students than before.

When writing achievement test items, writers usually begin with a list of content standards, (either written by content specialists or based on state-created content standards) which specify exactly what students are expected to learn in a given school year. The goal of item writers is to create test items that measure the most important skills and knowledge attained in a given grade-level. The number and type of test items written is determined by the grade-level content standards. Content validity is determined by the representativeness of the items included on the final test.

The connection between class size and achievement is a quick rallying point for most people in the educational fraternity advocating smaller classes for better achievement. Class size reduction initiatives have to be accompanied by willingness and a capability to teach if at all achievement is to be realized. Pupil-teacher ratio is important in the learning environment, but it is secondary to the quality of the environment. Sometimes the ability to deal with disruptive students or disruptive issues in the classroom and failure to have administrative backup at the school level puts the teacher in the position, notwithstanding how many kids are or aren't in the class, of having an almost intolerable situation in which to teach and the students to learn. The largest contribution to the quality of learning of anything that we do is determined by the environment in the classroom.

According to Biggs (1999) achievement can be realized when you get students to engage in learning-related activities which are aimed at fulfilling a certain objective, such as, theorizing, problem solving, coming up with ideas of their own and reflection. In this way, knowledge is constructed by the student's learning activities or approaches to learning. The deeper approach encourages the student's active engagement in the work which creates meaning and thus learning takes place since the focus is the student. The idea is to try to encourage students to actively engage with tasks and thus go 'deep' into learning. The main question of my research project comes into full effect when trying to determine whether it would be possible to achieve such intense interaction with large groups. Would the same level of students' active engagement in learning-related collaborative dialogue in academic pedagogy be fulfilled given a scenario where there are larger class sizes?

But educationists and researchers also say that you just can't look at class size reduction alone as the panacea or silver bullet for positive change. Size researcher, Howard Blake's 1954 inquiry quoted in Biggs (1999:164) analyzed the literature on class size prior to 1950. From the 267 reports located, he chose 85 of those based on original research that dealt with elementary and secondary school students. Of these 85 studies, 35 indicated that small classes were better, 18 indicated that large classes were better, and 32 did not support either conclusion. In further analyzing these studies, Blake established criteria to test their scientific acceptability (adequacy of sample, adequacy of measurement of the independent variable, adequacy of criterion variable measurement, rigorousness of data examined and appropriateness of the conclusions). Only 22 of the 85 previously acceptable studies met these minimum requirements. Of these, 16 favored small classes, 3 favored large classes, and 3 were inconclusive.

Blake, in Biggs (1999:165) believes there is only one way to improve student achievement. His studies have shown that the only factor that can create student achievement is a knowledgeable, skillful teacher. A large scale study he conducted found that every additional dollar spent on raising teacher quality netted greater student achievement gains than did any other use of school resources. Researchers such as Blake have shown that having a less effective teacher can significantly lower a student’s performance over time, even if the student gets more competent teachers later on.

Blake’s study compared low and high achieving elementary school students in New York City and found that teacher qualifications accounted for 90 percent of the variation between the best and the worst students. Schools with more experienced and more highly educated teachers tended to have higher achieving students. Even in very poor schools, students fared well if they had a well-prepared teacher. The most important factor, bar none, is the teacher. An ineffective teacher can affect student learning for years, but having two ineffective teachers in subsequent years can damage a student’s academic career. As teacher effectiveness increases, lower achieving students are the first to benefit. Other educationists such as Biggs (2003) also agree that there is only one way to obtain student achievement and the research is very specific. It is

the teacher and what the teacher knows and can do that is the determining factor with student achievement. The number one factor governing student learning is classroom management. It is teacher practices such as what the teacher does in the classroom to structure and organize a learning environment that govern student learning. Biggs (2003) adds that the teacher is the most important factor that increases student achievement. It is time to organize our schools based on what we want students to achieve, not on what is currently in vogue. The classroom must be organized for learning if student achievement is to increase. Unfortunately, what typically happens in a classroom is that the teacher does activities and then disciplines when problems occur and no time is spent organizing or managing the classroom. Gordon Cawelti (1999) in a journal on approaches to improving student achievement looked at six very successful but diverse schools, all structured differently yet they all had five factors in common. They all had prominent features of schools that produce student achievement and they are:

- Clear and high standards
- Multiple changes
- Strong leadership
- Collaborative teams
- Committed educators

Motivated by this summary of how achievement is realized in education, Calweti (1999:298) defines educators as:

> The most effective men and women in every area are those who can quite competently organize the cooperation and assistance of other people toward the accomplishment of important goals and objectives.

Calweti's views are supported by those of Biggs (2003:342) who concurs that:

> There is only one way to improve student achievement. The teacher is the only factor that can improve student achievement. How schools produce student and learning achievement has nothing to do with literacy results and mere class size dynamics Education is a profession currently marked by an absence of goals. We must become goal-oriented and results-driven. Just implementing promising practices like site-based management, cooperative learning, or interdisciplinary teaching is not enough. We need to implement and obtain solid, purposeful, enduring goals.

It is apparent therefore that class size is only a piece of the jigsaw puzzle and can't be a fix all solution to the issues related to learner achievement. There is hence the need to adopt a more holistic approach to the situation if a solution is to be found.

2.5 Teaching and learning theories in Applied Communicative Skills (ACS)

A brief description of ACS helps put the debate into clearer perspective. ACS is a continuous assessment subject and a compulsory credit-bearing service subject offered primarily in the first year to students in the Faculty of Management. This course consists of one module, extending over six months, either during the first or second semester for some courses or a full year for others. Some programmes even proceed into the second year. The different student needs for different faculties are determined by the department based on the expertise they hold in the subject. The module provides learners with theoretical knowledge of the theory and process of communication and develops practical competencies needed in the workplace.

2.5.1 Applied Communicative Skills

The module includes: communication theory, interpersonal and intercultural communication, non-verbal communication and listening skills. Language structure (grammar) and application of language skills in preparation for the world of work are emphasized. Effective communication in business requires competence in sentence construction, paragraph writing, summary writing, memorandum writing, business letter writing, writing for meetings, report writing and e-mail and fax writing. In addition, oral presentation skills and graphic communication skills are taught to increase practical competencies needed in the workplace. The communication skills course gives

students the competence to write in a variety of management subject areas. Guidance is given in writing cohesive and coherent paragraphs substantiated by evidence. The department therefore promotes generic competence. According to Fielding (2006:184) the ACS department in a way services all the management faculties at the campus through a communicative skills course.

The communicative skills course is designed not only to equip students with interpersonal communication skills necessary in the academy but also in the working and social environments. The main emphasis is on effective communication and the ability of students to communicate their meaning in the form of academic writing, verbal and non-verbal communication and business communication. Communicating in front of others (either as a formal presentation, a debate or an oral exposition as an individual, and writing more business oriented documents is emphasized. They should also be sensitive to and avoid barriers to effective multicultural communication which include internal barriers such as perceptions, stereotypes and attitudes. For this reason part of the course includes an introduction to communication theory. At the end of the course the students are given a summative assessment task which tests their knowledge and grasp of concepts in theory and how to apply these in real life communicative contexts.

2.5.2 Communication and cognition

From the cognitive science view, cooperative learning involves modeling, coaching, and scaffolding as conceptual frameworks for what is to be learned. A considerable portion of the cognitive developmental theoretical orientation to cooperative learning also rests heavily on the work of Piaget (1950) and Vygotsky (1978) as cited in Johnson and Johnson (1999). Piaget viewed cooperation as, “striving to attain common goals while coordinating one’s own feelings and perspective with a consciousness of others’ feelings and perspectives” (Johnson & Johnson, 1999: 187).

These theories are most applicable to this case study as ACS allows students to solve problems through active research and application, discussion and possibly debating; which are useful skills at the entry level of tertiary institutions. Rhem (1986) describes this method as an instructional strategy in which students confront contextualised, ill-structured problems and strive to find meaningful solutions. Mayo (1993) states that it is a pedagogical structure for posing significant,

contextualised real-life situations and providing problem-solving skills. Its appeal to educators lies in the fact that it moves away from the traditional teaching environment where students are merely asked to recall, so-called "facts", through simple comprehension tasks but requires students to think critically and apply problem-solving skills. Alden (2005:178) expands on this argument and concurs that the ACS programme also "stimulates students' curiosity, deepens their understanding and enhances their critical, social and communicative skills. This aspect of engaging with the individual mind renders class size almost inconsequential.

Jones (1996) argues that the ability to solve problems goes beyond just the ability to accumulate knowledge and rules; it is the development of flexible, cognitive strategies that help analyse unanticipated, ill-structured situations to produce solutions. It is in these important skills that Applied Communication course students are frequently deficient, as some of these skills are not necessarily taught at high school level. Jones (1996) also points out that communication at tertiary level differs from the problem-solving taught at secondary school level which is usually a specific situation with well-defined parameters that lead to predetermined outcomes with one correct answer. In a school scenario, the procedures required to solve the problem form the focus of the instruction. However this does not help the students in situations where they are required to transfer and apply their learning to new domains. One could argue that if well-scaffolded, this new method could provide an excellent platform for imparting valuable higher order skills to students, in that it requires them to go beyond what they know to predict the outcome of events, attach values to ideas and make use of principles and skills to create new meanings. Thus, if well harnessed, Applied Communication has the potential to produce a higher quality of learning since it does not expect students to merely engage with the material on a superficial and regurgitatory level.

Applied Communication usually deviates from the traditional structure of how lectures occur within small groups facilitated by the lecturer. Fielding (2006:185) clarifies this point and believes that:

> Applied Communicative Skills is a group-based teaching technique. Groups are ideally made of 4-6 students who work through the problem together, while using the facilitator to guide the learners without teaching them in the traditional manner. Having someone well equipped to look to for guidance results in a holistic and richer level of learning. The role of the lecturer therefore mutates to one of subject matter expert, resource guide and task consultant.

Lave and Wenger (1991) contend that the role of the lecturer in this context is to encourage and foster student participation, provide appropriate information to keep students on track, avoid negative feedback and assume the role of fellow learner. However, due to the poorer linguistic skills of the students, a hybrid combination of formal lectures with small group discussions has had to be created. The students still need to be provided with a good knowledge base at this level while simultaneously being required to develop and display the skills encompassed in the course.

2.5.3 Applied Communication and constructive alignment

ACS also incorporates the principle of constructive alignment, a very important pedagogical feature of the course. Fundamental to the notion of constructive alignment is that all components of the teaching system, namely the curriculum and its intended outcomes, the teaching methods employed and the assessment tasks adopted are all aligned to each other, tilting the scale in such a way that the learners will no doubt benefit from the course. The ethos behind constructive alignment is that the learners construct their own learning environment through relevant learning activities. The role of the lecturer is to create an enabling environment which is conducive to learning and supports the activities which are appropriate to achieving the desired learning outcomes. It is imperative that lectures are designed to ensure the course is aligned in a pedagogically sound method. According to Biggs (2003:182) the use of case studies as part of the learning process is compatible with constructive alignment, which creates a high degree of consistency between the lecture material, the learning activities and the assessment. It allows students to actively engage with the material in line with the learning outcomes, and results in a positive learning experience. However, teaching is more than a craft, it is also a profession. This means that it should be knowledge or theory-based depending on the unique requirements of the individuals being targeted, thus:

> The professional authority of the academic-as-scholar rests on a body of knowledge. The professional authority of the academic-as-teacher should rest on a body of didactic knowledge. This comprises knowledge of how the subject he/she professes is best learned and taught (Ramsden, 1992:9).

There now exists an extensive body of knowledge not only on theories of learning and cognition, but also on learning in higher education and specifically on the teaching and learning of particular disciplines in higher education. We turn briefly to some of these theories of learning in order to understand how learning, and in particular, transformative learning has been defined and explained. The importance of learning is captured by Bowden and Marton (1998:16) who state that:

> The most important thing we can do in order to develop, raise or assure the quality of the learning produced in higher education is to reveal the kind of learning we should bring about, the ways of seeing we think it is important for students to develop.

Learning is a qualitative change in a person's view of reality; it involves conceptual change on the part of the learner (Ramsden, 1992). This statement is closely supported by Tharp and Gallimore (1988:143) who concur that:

> Learning is the internalization and transformation of social tools of thought which are communicated to the learner through social interaction and instructional conversation.

They put it across in different ways but it can be deduced from their ideas that they all agree that learning is the reconstruction of elements of one's meaning and production systems which are collective as well as socially and culturally constructed. Given that teaching is not an end in itself, but exists to bring about learning, one tends to teach (implicitly or explicitly) according to how one thinks learning happens. Traditional approaches to teaching in higher education have assumed that the presentation of content (usually via lectures) is sufficient for learning to occur. But increasingly, this assumption is being questioned. Ramsden (1992) reflects on the connection between teaching and learning and brings in the following ideas:

> The best way to improve teaching and reach a stage of achievement is to inquire into the effects of one's teaching on student learning … the nature of teaching is context-related, uncertain and always improvable. Effective teaching refuses to take its effect on students for granted. It sees the relation between teaching and learning as problematic, uncertain and relative. Good teaching is open to change; it involves constantly trying to find out what the effects of instruction are on learning, and modifying that instruction in the light of evidence collected (Ramsden, 1992:102).

This statement brings to the forefront the pivotal role played by the learning facilitator regardless of the size of the target audience. Historically, the primary function of universities has evolved from being institutions for teaching in the middle ages, to institutions for research (post Humboldt) to currently being institutions for learning (which includes both teaching and research). The idea that HEI's should be places of learning is not new, but what is increasingly of concern in the 'knowledge society', is what kind of learning is taking place? In keeping with a conceptualization of quality as transformation, the expert group suggests that one of the central concerns of HEI's in South Africa should be the enhancement of 'transformative learning'.

2.6 Higher education and change

Having discussed at length the information regarding class size and learner achievement, the challenge then is how should leaders of higher education institutions go about implementing changes that will, for example, create the conditions for transformative learning to occur? One means of attempting to do so is the development and implementation of institutional 'teaching and learning strategies'. This practice is common in Holland, the USA, Australia and the UK and is government funded in the last two countries. According to the Higher Education Quality Committee (2001), the idea is also being implemented in a number of South African HEI's. A teaching and learning strategy is essentially a set of specific goals, priorities and targets set at institutional level within a specified timeframe for the management and improvement of teaching and learning. It includes setting out responsibilities, resources, indicators and review and evaluation mechanisms. It should be aligned to the institutional mission, strategic plans and quality management system. In the UK the format for enhancing funded learning and teaching strategies includes the following categories: context (what already exists and what needs

changing), process of creation (how 'buy-in' by academics was achieved), goals, targets, strategies to address institutional culture, curriculum development, learning-teaching-assessment practice, quality assurance, quality enhancement, infra-structural changes, implementation, monitoring and evaluation.

However, according to Trawler and Knight (2002), the conceptualization of institutional change in HEI's is usually carried out simplistically and is often based on wrong assumptions about the nature of the organizations and about the process of change. For example, it is often assumed that higher education institutions are culturally homogeneous and well-coordinated organizations. They propose a rational-purposive model of policy implementation which assumes that strong leadership, tough top-down management and the effective use of techniques of control and measurement will effect change. Given the nature of higher education institutions characterized above, this approach to change management is clearly inappropriate.

In an analysis of the weaknesses of institutional learning and teaching strategies in higher education institutions in the UK, Gibbs (1992:189) makes the following summarizing observations:

> Some strategies have remained policies on paper and are unlikely to change everyday teaching practices because of lack of attention to change mechanisms and processes. Initially many higher education institutions focused on simply doing 'more with less' but retained traditional teaching and learning approaches. Others realized the need to change teaching and learning approaches, but focused on changing the practices of individual lecturers. This approach has failed to develop critical mass and to change institutional teaching and learning conditions and cultures and therefore has had minimal impact.

Institutional factors that constrain teaching innovations on the ground and that typically are not addressed include time-tabling and the allocation of teaching time for contact hours but not for curriculum development. Others also include assessment regulations and practices, the layout and design of classrooms and lack of support and incentive for innovators such as a lack of funding for research in teaching. Many teaching and learning strategies are not based on explicit theories of learning. Many fail to link directly into the 'quality gaps' identified in evaluation findings.

According to Kells (1999) and Trawler and Knight (2002), the following approaches to implementing change strategies in higher education institutions are put forward. Given that power in HEI's is distributed and that change gets reinterpreted and socially constituted in locally contingent ways in particular 'communities of practice', it is recommended that the academic department of program teams be the focus of strategies for change. Managers should expect diverse results from change processes because those who carry out the change need to develop psychological ownership of the process, usually through collective exploration, negotiation and bargaining. This means that successful change strategies need to be closely aligned to the norms and values of those who must implement them. Change strategies need to be supported by leadership, a sustainable resource base and good infrastructure. They also need adequate levels of internal motivation and leaders who attend to people's feelings as well as persuade them to change by rational means. According to Kells (1999), the quality of support for the implementation process and the degree of discretion granted to those implementing change on the ground appear to markedly affect the outcome. He warns that:

> Unless the institution is ready, unless a significant number of formal and informal leaders are interested in using the proposed scheme to accomplish high priority items on their agendas, one should not proceed with the intervention. Unless the key working professionals are comfortable with the method because they have helped to design its local implementation, and unless one takes the time to accomplish these things in a way that is attuned to local needs and rhythms, very little will happen, or that which is introduced will fail in such complex institutions (Kells, 1999: 305).

It is apparent therefore, that only home grown solutions that are initiated by both learners and educators can provide a solution to the issue of class size and achievement. The problem should be considered in a holistic fashion as there are many factors at play.

2.7 Summary

Several themes of importance to the current study have emerged through the review of the literature. It is evident therefore that the question of class size is not simply a matter of less is more. The pattern of research evidence only favors class size reduction if it is substantial and brings the class size below a certain threshold. Reducing class size from 30 to 25, for example,

may well have no effect whatsoever. The research evidence from *Project STAR* showed that students in smaller classes with fewer than 18 students did better when compared with students in larger classes. Given the variations among individual students and teachers and the way they interact, it is unlikely that there is a single "magic number" below which class size suddenly produces a beneficial effect. But it is fairly clear that class size had to get somewhere below 20 in order to make a real difference. The first point established is the set of learning theories to be applied to enhance students' learning. Vygotsky's (1978) constructivist theory of learning and development is based on the concept that human activities take place in cultural contexts, are mediated by language and other symbol systems, and can be understood when investigated in their historical development. This emphasis on numbers has resulted in the broad use of approaches which examine the ways in which teaching and learning take place under differing group size circumstances. Although studies by Natriello (1987), Black and William (1998), Klecker (2002), Mcdonald and Boud (2003) suggest that larger groups can enhance students' learning if it is used appropriately, there are other analysts such as McMillan (2003) who believe that learning is more meaningful and effective if carried out in smaller groups. This has created a great challenge for educators to develop an optimum class size that yields positive results in order to enhance students' learning.

Constructivist theorists assert that students construct their own knowledge or "truth", and that they therefore have an active role to play in the classroom learning program. The experiences of other students in the larger group can give others insight into tackling their own individual problems, though this source of information may not be widely recognized. This helped the researcher to establish the concept of asking students directly for their experiences and attitudes towards class sizes in mainstream classes. The literature review has identified the need for a study on the effect of class size in Applied Communication from both the learner and the educator's point of views, and with learners from varying group sizes. Research design elements for this study were carefully considered and decisions were made based on the research questions, as well as being related to the findings of the literature review. The design and methodology of the study are discussed in the following chapter.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter describes and discusses the qualitative and quantitative methodology used to conduct this study and the methods used in the research process. The chapter also consists of the development of the research design. A sequential exploratory mixed methods research design was used. Procedures by which the data were generated and analyzed are described.

3.2 Research paradigm

This study is essentially qualitative in its nature. The decision to adopt a qualitative methodology to this study has been informed by several reasons. Firstly, the aim of qualitative research is to illuminate an experience or understanding for others, but, unlike quantitative research, not to generalize from it (Mutch, 2005:229). Although the study is essentially qualitative, some elements of quantitative analysis are used in the questionnaire that was circulated to the students. This action was informed by various reasons, chief among them being the fact that qualitative and quantitative enquiry can support and inform each other. Narratives and variable-driven analyses need to interpenetrate and complement each other to create what Mutch (2005:229) terms a “hybrid vigor”. To this end, most of the content is more inclined toward the qualitative research components.

3.2.1 The Qualitative strand

Bogdan and Biklen (2003:127) define five features of qualitative research which help put this debate into perspective. The features are as follows:

- Qualitative research has actual setting as the direct source of data and the researcher is the key instrument.
- Qualitative research is descriptive. The written results of the research contain quotations from the data to illustrate and substantiate the presentation.
- Qualitative researchers are concerned with process rather than simply with outcome or

products.

- Qualitative researchers tend to analyze their data inductively. They do not search out data or evidence to prove or disprove hypotheses they hold before entering the study, rather through emergent data collection, they are constructing a picture that takes a particular shape.
- Qualitative researchers are concerned with what are called participant perspectives. How different people make sense of their lives is their major interest.

Brennan, Frazer and Burns (2000) suggest that qualitative reports are not presented as statistical summations, but rather in a more descriptive style. They also suggest that the close connection between qualitative research and teaching might inspire educators to become involved in research so that the results of studies might lead more expediently into new decisions for action. This adds further weight to my decision to use a qualitative methodology.

Using the qualitative approach together with elements of the quantitative methods research approach provided the researcher with the opportunity to capture the details of a situation and add depth and context to the quantitative results. This mixed methods approach proved beneficial because it allowed the researcher to draw from the strengths of the quantitative approaches (that is to say the larger sample sizes, prediction, and generalizability) and qualitative approaches (that is description, depth, and conceptualized findings), and it "minimizes the weakness of doing one-method studies" (Johnson & Onweugbuzie, 2004). Mixed method approaches are needed to extend and deepen understandings. Gardner (2009:142) notes several strengths of mixed methods research which state as follows:

> They help to clarify and explain relationships between variables, they allow researchers to explore the relationships in depth, and they can help to confirm or cross-validate relationships discovered between variables. A quantitative study can identify if relationships exist between variables, but doing a mixed methods study adds the qualitative piece to help the researcher understand why the relationships exist (Gardner, 2009:142).

Creswell and Clark (2007) also agree that through the use of the mixed method approach, researchers can test theoretical models and modify them based on participant feedback. They outline five rationales for the convenience of conducting mixed methods research as follows:

- Triangulation
- Complementarity
- Initiation, which is discovering paradoxes and contradictions that can lead to a reframing of the research questions.
- Development, which is using the findings from one method to assist in informing the other method.
- Expansion, which is seeking to expand the breadth and length of research by using different methods for different enquiry components.

Incumbents were observed unawares so as to catch them in their natural habitat where reactions were not stage-managed or influenced as it is important to be opportunistic and use the best-fit method. According to Mutch (2005:58) it is a known factor that the "Hawthorne effect" may set in. This is a phenomenon which presents itself when participants know and are aware that they are being evaluated and may respond by increasing their effort or altering their behavior. While it was important for me to become a participatory observer there was the danger of losing objectivity in interpretation of data as bias is likely to set in.

3.2.2 The exploratory nature of qualitative research

In the study, an exploratory sequential design was utilized. This is a two-phase design which starts with the collection and analysis of quantitative data. This first phase is then followed by the collection and analysis of qualitative data. The second phase of the study is designed in such a way that it follows from or connects to the results from the first phase. The strengths of the exploratory study are that it is considered the most straightforward of the mixed methods designs. The exploratory method also offered a number of advantages to this research. The structure, according to Creswell and Clark (2007:69) allows for one kind of data collection at a time. The final report can then be written in two phases, making it both straightforward to write and easy for readers to follow.

While there are many advantages to implementing an exploratory study, there are challenges to be aware of as well. The design does require time to implement, the qualitative phase often requiring more time than the quantitative phase. The researcher also needs to decide whether or not to use the same individuals for both phases, to draw individuals from the same population for the two phases, or to use individuals from the same sample for both phases. The existing study used individuals drawn from the same setting but belonging to different sections of the population community for the two phases. While students were used for the quantitative phase, the qualitative phase comprised of lecturers' perceptions.

3.2.3 The interpretive nature of qualitative research

This study is largely interpretive in character. This, according to Maykut & Morehouse, (1994:178) means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret phenomena in terms of the meanings people bring to them. Meaning is tied to a specific setting and population and therefore changes over time. Qualitative analysis can also be defined as iterative in that theories emerge as data is collected and they should therefore be tested, refined, and retested against new information until explanations are repetitive (Maykut & Morehouse, 1994:178)

Data analysis of a qualitative study is "a ‘non-mathematical analytical procedure” in which the researcher examines the meanings of people’s words and actions (Maykut & Morehouse, 1994:178). The approach that best suited my study was one which the two authors describe as:

> …an ‘interpretive-descriptive’ approach. Here, the researcher selects and interprets the data and weaves descriptions, participants’ words, raw data from the observation notes and the recordings, and his/her own interpretations into a rich and believable descriptive narrative (Maykut & Morehouse, 1994:178).

The data would be used to generate and evaluate theories and generalizations. At the same time I assumed that beneath the outer surface of reality lie social deeper structures or links. The surface reality only partially reflects what goes on unseen beneath the surface.

As Holliday (2001:249) succinctly puts it:

> …events on the surface are "outcroppings". We cannot observe a loving relationship for example we can only see its outward manifestation through a kiss, specific deeds and acts of kindness. Likewise we cannot directly observe a social trait like enhanced performance. We can see its outward signs in differences in how people conduct themselves, their chore enthusiasm and career assumptions and so forth. Qualitative data analysis will ensure that we are not misled by outward observation but that we reflect the deeper structures and forces that lie unseen beneath the surface.

In the data reduction process, the researcher balanced the presentation of data and analysis so as to avoid an excessive separation of data from analysis referred to in research terminology as the "error of segregation" (Holliday, 2001:97). According to Holliday (2001) this happens when the data is separated from analysis so much that the link is lost and it becomes difficult for the readers to see the connection. Collecting data more than once offered the opportunity of refining the developing theories as well as testing any hypothesis that grew from the data.

Qualitative methodology also fits the theoretical grounding of my research in constructivism. In this study, the researcher's interpretation is just one of many possibilities and throughout the data collecting phase, the researcher and the participants jointly construct knowledge. Denzin and Lincoln (2000:164) point out that there is no single interpretive truth that qualitative interpretations of research data are constructed. They also comment on the multi-method focus of qualitative research by stressing that "the use of multiple methods, or triangulation, reflects an attempt to secure an in-depth understanding of the phenomenon in question" (Denzin & Lincoln, 2000:164).

3.2.4 The phenomenological approach

Thomas (1998) suggests that the choice of an investigative method depends on the nature of the particular question the investigator hopes to answer. In this study, the aim to ascertain the extent to which class size impacts on achievement in the mainstream classroom determines that the most appropriate methodology is one from the interpretive paradigm.

Achieving the aims of this study required the ability to access the experience of the participants. To accomplish this, a phenomenological approach was chosen. Patton (1990), states that phenomenological studies have become an important research method, especially in instances when one needs to understand specific phenomena in depth. Bogdan and Biklen (2003:23) concur with this assertion by Patton (1990) and add that:

> Researchers in the phenomenological approach do not assume they know what things mean to the people they are studying but attempt to gain entry into the conceptual world of their subjects in order to understand how and what meaning they construct around events in their daily lives .

They believe that multiple ways of interpreting experiences are available to each of us through interacting with others.

Although this section is normally referred to as “analysis”, the tools used in this phase could be seen as tools of interpretation and condensation and specifically as a process of synthesizing as Holliday (2001:98) refers to it. Researchers such as Holliday (2001) believe that the true test of a competent qualitative researcher comes in the analysis of the data, a process that requires analytical craftsmanship and the ability to capture an understanding of the data in writing. In showing the workings of the data it is also vital to display an understanding of design logic. This entails fitting the analysis procedures with the methodological position of the study, then consistently and coherently managing the analysis according to the principles of study design.

In this section I assumed a holistic perspective and searched for themes shedding light on the case which may also include cross-case analysis. The whole phenomenon under study could only be understood as a complex system that is more than the sum of its parts. This meant placing

focus and emphasis on complex interdependencies that could not be meaningfully reduced to a few discrete variables. Being true to, respecting and capturing the details of the individual cases that were studied was vital as cross-case analysis would only be dependent on the quality of individual case studies. Immersing myself in the details and specifics of the data to discover important patterns, themes and inter-connections would prove beneficial as I came to a creative synthesis of all the data that was gathered. The findings would be placed in a social, historic, and temporal context and this means being sensitive to links between and across time and space. Complete objectivity was paramount as subjectivity would undermine credibility. According to Holliday (2001) once my focus was balanced, understanding and depicting the world authentically in all its complexity ensured that I was self-analytical, politically aware and reflexive in consciousness.

During the analysis it was vital not to lose sight of "the case" under study therefore I made every attempt to reconstruct the participants' realities and portray the multiple viewpoints existing in the case, for example, noting the varying viewpoints from different educators in the same institution. Other units that are imbedded in the case were also examined for example the students, the classrooms and the resources. These multiple cases were first examined in total as independent entities before being compared in a cross case analysis to search for similarities and differences and draw inferences from these findings. Through data analysis I used the validity strategies such as triangulation to help increase the validity or trustworthiness of the case study findings. Data and method triangulation, which refers to coming from various points and angles towards a "measured point" to find the true position, was used. This use of multiple approaches would increase validity hence boosting credibility (Bogdan & Biklen, 2003:23).

3.2.5 Qualitative research and constructivism

The term constructivism references the acknowledgement of the social construct of knowledge. As constructivists we begin with a great deal of skepticism that bias can truly be eliminated from scientific enquiry. Constructive researchers are interested in the construction of knowledge between the researcher and the researched and thus discuss bias in relation to the situatedness of all interviewer/interviewees situations. Constructivists assume that there are many possible interpretations of the same data, all of which are potentially meaningful. Constructions are

therefore not separate from those who make them. They are not, "…part of some objective world that exists apart from their constructors" (Lincoln & Guba, 1989:143). In this regard a "mal-construction" according to the two educationists, would be an analysis that is, "incomplete, simplistic, uninformed, internally inconsistent, or derived by an inadequate methodology" (Lincoln & Guba, 1989:143).

3.3 Research Methodology

Bbier and Mouton (2007) describe methodology as the methods, techniques and procedures that one uses in the process of implementing the research design. Thomas (1998:172) in his book on classical methodology defines research design in the following manner:

> …the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. It refers to the outline, plan or strategy to be used in seeking an answer to the research question(s)…

3.3.1 Sampling

There are many sampling strategies used in qualitative research. Qualitative samples tend to be purposely selected rather than randomly selected. According to Denzin and Lincoln (2000), “purposeful sampling is used as a strategy when one wants to understand something about certain select cases without needing to generalize to all such cases”. In a sample survey, data is collected from a sample of a population to determine the incident distribution, and connectedness of events and conditions. This is a non-representative subset of some larger population and is constructed to serve a specific need and purpose.

Regarding the size of the sample, Patton (1990:184) suggests that “there are no hard and fast rules for sample size in qualitative researches, it all depends on what you want to know, the purpose of the inquiry, and what can be done with the available time and resources”. The sample strategy in this study was designed to complement the larger number of participants in the questionnaire with the more in-depth interview of a smaller group of participants. This way I could both gauge the diverse range of views from the larger group and gain insights of a selected smaller group with the time and resources available. It was vital to avoid getting grid-locked into rigid designs that eliminate responsiveness and pursue new parts of discovery as they emerge. To

this end I selected purposeful sampling and use of the case study or bounded system because it is "information rich" and illuminative, that is, it offers useful manifestations of the issue at hand. Homogenous sampling in this case is aimed at unraveling insights about the phenomenon, not imperial generalization from a sample to a population. It focuses, reduces variation, simplifies analysis and facilitates group interviewing and observation. At the same time it is stratified, thus allowing for purposeful sampling which illustrates characteristics of particular sub-groups of interest, making it easier to draw comparisons.

The population for this study was first year ACS students belonging to two distinct groups under study, the small and the large class size group of three different lecturers. For logistical and cost reasons, the gathering of data for this study was restricted to three lecturers. The participants were specifically selected from the two extremes of each of the three lecturers groups. Despite this change, a large number of students were involved in this study. The end head of the Communication department gave me the consent to conduct this research. A total number of 147 students who were in class on the day of observation were invited to participate. One hundred and twenty one students returned the signed consent form indicating they were willing to participate. One hundred and four students participated in the research questionnaire. I discarded four questionnaires because the responses were inappropriate for the question. In the end, the questionnaire data were collected from 100 participants. Details of the interview selection are discussed in section 4.2.3.

3.3.2 Data collection

Data Collection is a term used to describe a process of preparing and collecting data. According to Cohen, Manion and Morrison (2000:179) data collection is

> …a method in which information related to the study is gathered by suitable mediums. The type of data is basically classified on the basis of its collection method and its characteristics.

Primary data is that which is collected first-hand by the researcher without relying on any kind of pre-researched information, for example interviews and questionnaires. Data classification is also made on the basis of attributes of the data; namely qualitative and quantitative which have already been described at length in this study.

Ellis (1993:364) states that the use of different methods of data generation in this research enabled various responses about students' experiences and attitudes to be presented in a useful and pragmatic way, which strengthens the trustworthiness of the study and reinforces the notion that multiple sources of data could lead to a deeper understanding of the phenomena being studied. Brannen (1992) also suggests that qualitative investigation gives as much attention to internal as to external factors that influence a person's actions or responses.

This study makes use of questionnaires, observations and semi-structured interviews to gather data. The interaction between the researcher and the participants was unpredictable during the interviews. Group semi-structured interviews can also, according to Cohen, Manion and Morrison (2000) bring together also provide more opportunities to understand the participants' responses. Questionnaires comprising open-ended and close-ended questions enabled me to focus on a particular class of respondents to be questioned. The questionnaire was geared to illicit responses with varied opinions. There was an interaction between the participants and the researcher on the specific data the researcher wanted answers to. This mixed method approach combined with my own reflections as a researcher enabled me to ascertain the trustworthiness of the data collected as "authenticity" rather than reliability, which is often the issue in qualitative research (Silverman, 1993).

3.3.3 Questionnaire

Questionnaires and surveys have long played a role in research as a means of gathering (typically quantitative) background information in order to examine the connection of particular variables to outcomes (Lumley & Brown, 2005:198). Questionnaires that enable the researcher to quantify pre or post categorized answers to questions are an example of quantitative research techniques. The answers to such questions can then be counted and expressed numerically. Such responses can help to quantify the size, distribution and association of certain variables in a study population. Questions such as how many, how significant and how often can be answered by using such data collection techniques.

Depending on the degree of freedom permitted for responses, questionnaires may also contribute qualitative data when open-ended questions allow respondents to give a clear picture of their experiences. Lumley and Brown (2005) concur with Cohen *et al* (2000) in suggesting that attention needs to be given to the questionnaire itself, the approaches that are made to the respondents and the explanations that are given to the respondents, the data analysis and the data reporting. Factors which might impact on every stage of the use of a questionnaire were carefully considered and the details are encapsulated in the following information:

The questionnaire could be completed anonymously and it allowed participants to take as much time as they needed to complete it. It was also an efficient way of gathering data from a large number of participants at times that were convenient for their timetables.

Ten students were invited from my own group to complete the questionnaire first. This initial sample group acted as a pilot study to check clarity of the questions, the language used in the questionnaire and the appropriateness of the data gathering procedures. They provided useful feedback which led me to edit and amend some sections for clarity. The pilot data was not included in the research. I introduced myself briefly and gave each participant a code; simply the number on the page from one to ten before they started answering the questions to ensure confidentiality. I also explained the instructions and some of the terminology used in the questionnaire. The participants were encouraged to ask questions.

Neuman (1997) suggests that questions should be sequenced to minimize the discomfort and confusion of respondents. After an introduction explaining the survey, it is best to start with easy-to-answer questions in order to help the respondents to feel comfortable about the questionnaire (Neuman, 1997). This questionnaire consisted of three parts: the first part had questions on general information followed by questions on experience and the last part had questions on attitudes. The responses required in the questionnaire were straightforward and brief. Most questions only required a tick, a yes/no or a number to respond. The participants were reminded about the purpose of the research and confidentiality in a paragraph at the beginning of the questionnaire. It was also made clear that participation was voluntary and their opinions were valued. The questions were designed to reflect the self-reported nature of the data.

The questions were also designed to enable participants to report on their experiences of class size on mediation of learning and achievement in mainstream classrooms. The questionnaire ended with some open-ended questions which could provide useful data. This led to the next section on data analysis where all the material was interpreted, condensed and analyzed.

3.3.4. Observation

"What is observed is the researcher's version of what is there" (Neville *et al*, 1994:81). The information is transcribed and subsequent follow ups are made. Maximum variation which is the largest amount or highest value that something variable can reach at a given point enabled me to strike a homogenous balance as I gathered varying opinions from a wide spectrum of respondents such as old staff, new staff, males, females and so forth. While gathering data, observations such as hesitation in answering or facial expressions reflecting various unspoken emotions, fears, aspirations, hopes and so on were noted. Observation was also made in multiple but disparate settings to observe the everyday actions and reactions of the participants. The observation method was based on the understanding of the inner perspectives of factors which could only be achieved by actively participating in the subjects' world and gaining insight by means of introspection.

I assumed the role of a naturalistic observer, meaning that my objectives were known to those I was observing as opposed to concealing my scientific role. This allowed me to move and engage in casual observation of participants. Descriptive details and direct quotes were also included when they arose, but these were no doubt kept separate from the descriptions and verbatims or word for word responses. However, it was necessary to observe candidates unawares so as to catch them in their natural habitat where reactions were not stage-managed or influenced. While it is good to become a participatory observer there is the danger of losing objectivity in interpretation of data as bias may set in. The key is to provide readers with enough evidence so that they believe the recounted events and accept your interpretations as plausible. The critical issue is whether other observers could reach the same conclusions if they examined the same data.

I used direct observations because I needed to observe and record the events and interaction between the ACS lecturer and students as it occurred in the two different sized lecture rooms. I sat and watched the interaction and listened to the lesson content and the exchanges that took place between the lecturer and students for the whole period of one hour. I sat right at the back of the classroom and made a written record of everything that went on in the classroom as I saw it unfold, since I wanted to provide the "clearest and most complete narrative of what went on in the field" (Thomas, 1998:76). During the observation, I had to take into account that what I was observing would be my version of what was "there" (Thomas, 1998:77). "What is observed (seen and heard) is the researcher's version of what is 'there'.

Good field researchers are intrigued about details that reveal the aspect of 'what's going on here?' through careful listening and watching". It is also necessary for a researcher to observe people and their actions, pay heed to observable physical characteristics, as well as what they do (Neuman, 1997:361). To uncover the meanings attached to participants' responses and discussions, I had to read through the transcriptions, and search for the meanings inherent in their interactions. I attempted to progress from the narrative description of an event, an opinion or viewpoint to a general interpretation of its meaning. During the process I had to consciously remain aware of my own biases and preconceptions, and how these may impact on what I was trying to understand (Maykut & Morehouse, 1994: 18). It was therefore possible to identify the major themes that emerged from the analyzed data. This procedure enabled me to conduct the final "pass through" the analyzed data. At this point I was ready for the selection of the main themes to be discussed in the findings. My overall analysis was organized "around core generalizations or major themes which emerged from the open coding and the axial coding" (Neuman, 2000:423).

3.3.5 Interviews

Following the questionnaire, semi-structured interviews were also administered to the rich respondents. An interview is a method in which the researcher or interviewer asks questions of the interviewee or participant while aiming at entering the inner world of the respondent and gaining an understanding of that person's perspectives. I chose face-to-face interviews to collect rich data, as an interview is one of the most essential sources of information (Neuman, 1997).

Information obtained from open-ended interviews was reported and interpreted through the eyes of specific, well-informed participants who could provide important insights into the situation under investigation. Although the interviews in qualitative research may take many forms, open ended is the most commonly used method in case studies (Neuman, 1997). A semi-structured interview is a method of research used in the social sciences. While a structured interview has a formalized, limited set of questions, a semi-structured interview is flexible, allowing new questions to be brought up during the interview as a result of what the interviewee says. The interviewer in a semi-structured interview generally has a framework of themes to be explored and the interview progress in a way which tackles them.

The qualitative data gathered in this study was particularly useful in providing a record of the spoken words of the participants. The instrumentation approach is in place when the human person is the primary data collection instrument. Silverman (1993) suggests that interviews offer an apparently 'deeper' picture than the variable-based correlations of quantitative studies. As the research progressed it was necessary to adapt the design to the circumstances. In this study the focus is on the semi-structured interview.

Interviews are an important data collection strategy as they can facilitate rich descriptions and detailed accounts of the participants' experiences and perspectives on a phenomenon. A semi-structured interview involves a set of open-ended questions that allow for spontaneous and in-depth responses (Silverman, 1993). Guiding questions are supported by prompts or probes which are sub-questions that encourage participants to expand upon, restructure or redirect them back to the main topic if they get side-tracked. Structured interviews are often used when the evaluation strategy calls for a sample survey. Structured interviews can also be used, however, in field experiments where information must be obtained from program participants or members of comparison group. Similarly, when essentially the same information must be obtained from numerous people for a multiple case-study evaluation or a single case-study evaluation, it may be beneficial to use semi-structured interviews. Semi-structured interviews are often used in conjunction with a design that employs statistical sampling. This combination provides data that can be used to make projections about the entire population from which the sample was drawn.

Analysis of interviews is not to put ideas into a person's mind but rather to gain access to that interviewee's point of view. In order to uncover what cannot be directly observed such as thoughts, intentions and emotions, interviews were highly necessary. A researcher can never observe and interpret all the meanings that participants attach to events and situations in the world, therefore it is necessary to enquire by questioning how the individual 'feels' and what he/she 'thinks'. It is necessary to probe beneath the surface or assumed meaning (Patton, 1990). These interviews conducted with the lecturers granted me the opportunity to explore the feelings and views of ACS lecturers about issues that affect them when they mediate learning to varying class sizes, including their backgrounds and the challenges, benefits and difficulties that they face. The questions that I asked were a guiding light leading me to a clearer understanding of the issues that I raised in my research questions. These issues dealt firstly with the methodological and pedagogical experiences of the educators. To this end, a sample of the interview questions which offers the questions in greater detail is provided in the appendix.

The use of semi-structured interviews also enabled the participants to describe their experiences and attitudes in greater detail. Interviews were used as a way of finding out what respondents feel and think about their world. This was achieved by encouraging participants to describe their worlds in their own terms. Rubin and Rubin (2005) agree that the strength of this method is that it enables the researcher to use probes. These are standard prompts used to obtain response clarity or additional information. Since this is an interpersonal encounter it helped to establish rapport by being friendly yet impartial so as not to influence the respondent's answering pattern. Reassuring the respondent of anonymity and other ethical issues stressed the fact that an honest response is important for the integrity of the research. A background research on the interviewees equipped me with the knowledge that helped to formulate guiding questions. It was vital to let the interviewees do most of the talking while the researcher acted as the repository of that information. The questions were no doubt sensitive to gender, age and cultural differences that may exist between interviewees and the researcher.

Lastly, the standardized open- ended interview was also used. This technique entails asking a set of questions in exactly the same structured order. Repeated measurement may be required and the researcher avoided yes or no questions as they simply stifle rapport.

Rubin and Rubin (2005:17) agree that there are a number of stages of the actual interview process that the researcher must consider which are as follows:

- Introducing the research topic.
- Beginning interview questions with a factual focus.
- Shifting into more in-depth questions that may solicit an emotional response.
- Moving back into factual, less emotional questions.
- Ending the formal interview, possibly chatting casually for a bit.
- Expressing gratitude to the participant for their time.

Bias in information collection is a distortion in the data collected so that it does not represent reality. This can occur as a result of, for example, "leading questions that cause the interviewee to believe one answer would be preferred over another or questions posed in an unsystematic fashion" (Rubin & Rubin, 2005:17). Trustworthiness ethics is a principle in which an individual both deserves the trust of others and does not violate that trust. It encompasses issues such as credibility, dependability, transferability and conformability. The basic issue in relation to trustworthiness is simple," write Lincoln and Guba (1989:290). "How can an inquirer persuade his or her audience (including himself) that the findings of an inquiry are worth paying attention to and worth taking account of?" They contend that the model of trustworthiness of qualitative research identifies four primary components that are relevant to such an inquiry:

- truth value
- applicability
- consistency
- neutrality

The aim of trustworthiness in qualitative research is to support the argument that the inquiry's findings are "…worth paying attention to" (Lincoln & Guba, 1989:290). The information should be feasible. However, according to Wolcott (1990) this approach can also lead to difficulty in establishing the reliability and validity of the approaches and information. It is very difficult, for

example to prevent or detect researcher-induced bias. The details above explain the qualitative and quantitative methodology used to conduct this study.

3.4 Summary

The instruments used in this investigation comprised a questionnaire in six groups and semi-structured interviews with 3 lecturers. The population under study consisted of first year Applied Communicative Skills students who were systematically selected because they belonged to the designated groups. The lecturers who participated in the interviews were selected based on the nature of the top largest group and bottom smallest group in the 6 mainstream classes. Data from the questionnaires was analyzed for overall trends and possible differences. The interview themes were also carefully studied to identify possible trends and reasons that might explain participants' attitudes. Ethical issues were also carefully considered and strict rules governing this aspect of research were observed throughout the whole process of the study. The results of this research are presented in the next chapter.

CHAPTER 4

DATA ANALYSIS, INTEPRETATION AND FINDINGS

4.1 Introduction

The purpose of this chapter is to establish whether the mixed method survey data collected answered the research questions that were posed at the beginning of the research. During the quantitative phase a questionnaire was circulated among the students to which about 150 of the 200 were responded to. The empirical component of my research was meant to ascertain the impact of class size on learner achievement in ACS. Statistical analysis was used in the presentation and interpretation of the responses derived from the questionnaires. Class observation was also conducted to get a first-hand experience of how learners in the two distinct class size groups interact and how the educator mediates learning. In the qualitative phase of the study participants were interviewed and observed to ascertain the instructional strategies, challenges and general pedagogical impact of class size on learner performance and achievement. The following information provides more insight into the information from the respondents as well as the conclusions derived from the observations conducted.

Data analysis is the interplay between researchers and the information at hand. It is the balance between science and creativity that one strives for in doing qualitative research. Data analysis is a widely used qualitative research technique. Gardner (2009:260) states that it refers to the process of inspecting, cleaning, transforming and modelling data with the goal of highlighting useful information, suggesting conclusions and supporting decision-making. Rather than being a single-method, current content data analysis data focuses on three distinct approaches: conventional, directed and summative. All three approaches are used to interpret meaning from the content of text data and, hence, adhere to the naturalistic paradigm. The major differences among the approaches are coding schemes, origins of codes and threats to trustworthiness. Gardner (2009) divides data analysis into descriptive statistics, exploratory and confirmatory

data analysis. While exploratory data analysis focuses on discovering new features in the data, confirmatory places emphasis on confirming or falsifying existing hypotheses.

Exploratory design is the two-phase design structure starting with the collection and analysis of quantitative data, followed by the collection and analysis of qualitative data. The results of the sequential exploratory study allowed the researcher to discover if any links exist among the variables (Gardner, 2009:260). In this study, the researcher examined the connection between student achievement and several classroom climate variables. The qualitative piece of the study allowed the researcher to add depth to this variable by asking specific interview questions about teacher practices and their effect on student achievement. The researcher also added context to the study by having the opportunity to ask lecturers how they are able to increase student achievement if that is what the quantitative data showed, or what challenges they face in their classrooms on a day to day basis that may be reflected in the data, that the researcher would not otherwise be knowledgeable about. The researcher was able to gather information about what happens in the classrooms of effective lecturers. Therefore, the mixed methods design added more depth and conceptualized the findings more than a qualitative design alone could have. It assisted the researcher in confirming or falsifying existing hypotheses, which is the main thrust of what exploratory analysis sets out to achieve.

Rubin and Rubin (2005:16) suggest three broad reasons why it is necessary to link qualitative and quantitative analysis:

- To enable confirmation or corroboration of each other via triangulation.
- To elaborate or develop analysis, thus providing richer detail.
- To initiate new lines of thinking through attention to surprises or paradoxes, turning new ideas around and providing fresh insights.

It should however be borne in mind that data analysis has facets and approaches encompassing diverse techniques under a variety of names in different business, science and social sciences domains.

4.2 The nature of qualitative data analysis

Qualitative data analysis is essentially about detection and the task of defining, categorizing and theorizing and ultimately explaining, exploring and mapping are fundamental to the analyst's role. The methods used for qualitative analysis need to facilitate such detection and to be of a form which allows certain functions to be performed. These functions vary depending on the research questions being addressed but certainly the following are frequently included although these are designed not to be followed dogmatically, but rather to be used creatively and flexibly by the researcher as she deems appropriate.

4.2.1 Familiarization and immersion

Before beginning the process of sifting and sorting data the researcher must become familiar with its range and diversity and gain an overview of the body of material gathered. Essentially, familiarization entails immersion in the data such as reading and studying observational notes, studying survey reports and listening to any recordings. During this stage it is vital to list ideas and recurrent themes. According to Rubin and Rubin (2005:18):

> …familiarization is akin to building the foundation of a structure. If that foundation is ill-conceived or incomplete, then at best it could jeopardize the integrity of the construction or at worst bring the whole structure crushing down.

In this research although I was involved in the gathering of data and already had hunches about key issues and emergent themes, it was important at this stage to set these firmly in context by

taking stock and gaining a feel for the material as a whole. I also made note of the general atmosphere of the interview and the ease or difficulty of exploring particular themes.

4.2.2 Inducing themes

During the familiarization phase the researcher is not only gaining an overview of the richness, depth and diversity of the data but also beginning the process of absorption and conceptualization. In the process of reviewing the material it is vital to make notes. The researcher returns to these selected notes and attempts to identify the key issues, concepts and themes according to which the material can be examined and referenced. This entails setting up a framework within which the material can be sifted and sorted. In the process of identifying and constructing this framework or index, the researcher draws upon a set of priority issues. This includes those issues informed by the original research aims introduced into the interviews via the topic guide as well as the emergent issues raised by the respondents themselves and analytical issues arising from the recurrence or patterning of particular views and experiences. Rubin and Rubin (2005:19) agree that:

> …devising and refining a thematic framework involves making judgments about meaning, about the relevance and importance of issues and about implicit and subtle connections between ideas. It also ensures that the original research questions are being fully addressed.

The empirical component of this research was meant to ascertain the impact of class size on learner achievement in ACS. Statistical analysis was used in the presentation and interpretation of the responses derived from the questionnaires. Class observation was also conducted to get a first-hand experience of how learners in the two distinct class size groups interact and how the educator mediates learning. In the qualitative phase of the study participants were interviewed and observed to ascertain the instructional strategies, challenges and the general pedagogical impact of class size on learner performance and achievement. The following information provides more insight into the response from the participants as well as the conclusions derived

from the observation conducted. In this text it emerged that there are three main viewpoints towards studying the effect of class size on performance. By unpacking these viewpoints it was possible to determine some kind of mid-point which held the most.

To achieve a sense of refinement in analysing the data at hand, the researcher has to look for conceptualizations which encapsulate and represent diversity of experiences, attitudes, circumstances and opinions.

4.2.3 Coding

Coding refers to the process of highlighting ideas, categories or themes that help to answer predetermined research questions and/or the more general query of, "what is going on here?" Gardner (2009:265) emphasizes the necessity of developing a code to label research findings during data analysis. He suggests five elements to a good code including labels, definitions of what the theme concerns, descriptions of how to know when each theme occurs, descriptions of any qualifications or exclusions to identifying themes and examples, both positive and negative to eliminate possible confusion when looking for themes. Gardner (2009:266) states the following four major functions of coding in data analysis:

1. It reduces large amounts of data into a smaller number of analytic units.
2. It gets the researcher into the analysis mode during data collection so that later, field work can be more focused.
3. It helps the researcher elaborate a cognitive map, an evolving, more integrated schema for understanding local incidents and interactions.
4. For multi-case studies, it lays the ground work for cross-case analysis, by surfacing common themes and directional processes.

In conventional content analysis, coding categories are derived directly from the text data. When using a directed approach, analysis starts with a theory or relevant research findings as guidance for initial codes. A summative content analysis on the other hand involves counting and comparisons, usually of key words or content, followed by the interpretation of the underlying context.

In this study, a rigorous and systematic reading and coding of the transcripts allowed major themes to emerge. Segments of interview text were coded enabling an analysis of interview segments on a particular theme, the documentation of connection between themes and the identification of themes important to participants. Similarities and differences across sub-groups such as lecturers and students, small groups and large groups were also explored.

4.2.4 Elaboration, mapping and interpretation

When all the data has been sifted and sorted according to core themes the analyst begins to pull together key characteristics of the data at hand. It is necessary to map and interpret the data set as a whole. Just as a map gives a clear pointer as to which direction to take so too should the data that is now at the researcher's disposal. Although emerging categories, associations and patterns have been noted and recorded during the indexing and charting phases, the serious and systematic process of detection really deepens at this juncture. It is here that the researcher returns to the key objectives and features of qualitative analysis outlined at the earlier stages of the chapter. The researcher draws from the original research questions to ascertain which of these she chooses to address. The themes and associations which have emerged from the data itself also play a pivotal role in making a decision. According to Rubin and Rubin (2005:18):

> Piercing together the overall picture is not simply a question of aggregating patterns but of weighing up the salience and dynamics of issues and searching for a structure, rather than a multiplicity of evidence…and each step requires leaps of intuition and imagination.

The whole process of immersion in the data triggers associations the origins of which at times the researcher can scarcely recognize. Rossman and Wilson (1985) add that:

> The methodological quagmires, mazes and dead-ends are not necessarily the products of researcher incapacity but rather they stem from the qualitative data itself.

4.2.5 Checking and cleaning

The purpose of checking and cleaning data is to establish whether the mixed-method survey data collected answered the research questions that were paused at the beginning of the research. Data checking and cleaning is an important procedure during which the data are inspected, and erroneous data is, if necessary, preferable, and possible corrected. Data cleaning can be conducted during the stage of data entry. If this is done, it is important that no subjective decisions are made. The guiding principle provided by Rubin and Rubin (2005:18) is that:

> …during subsequent manipulations of the data, information should always be cumulatively retrievable. In other words, it should always be possible to undo any data set alterations.

Therefore, it is important not to throw information away at any stage in the data cleaning phase. All information should be saved, and all alterations to the data set should be carefully and clearly documented, for instance in a syntax or a log.

4.2.6 Ethical considerations

To conform to ethical standards that govern researchers, I received permission from the Dean of the Faculty to allow me to conduct this research. Permission was then sought from the Head of Department. Participants were assured that they could withdraw from the study at any point if they so desired. They were assured of anonymity and confidentiality through the use of pseudonyms for lecturers and the code for students.

Nowhere would a lecturer's name be revealed in the study. I attempted to adhere to the requirements of confidentiality by ensuring that responses were not divulged to anybody else and were not used for anything else but for purposes of this research study. Once the dissertation has been finalized and accepted the findings would be shared with the participants who will be given the opportunity to examine the findings and recommendations and to make suggestions based on these results to improve mediation of learning in the Department. Careful attention was given to ethical issues in this study. A key ethical requirement was the reassurance of confidentiality where necessary. "The obligation to protect the anonymity of research participants and to keep research data confidential is all-inclusive" (Cohen *et al*, 2000:61). Participants were assured of confidentiality and they were assured that names would not be used during the group interview. Statements from the interview reported in this research cannot be traced back to individual students. However, a total anonymity was not possible in the group interviews as the participants knew each other.

Another key requirement for ethical research is that 'subjects agree voluntarily to participate' and that their agreement is based on 'full and open information' (Christians, 2005:154). Therefore, effort was made to ensure that exploratory information and a general consent form was sent to and signed by all the participants (Christians, 2005).

A danger in any research is that the researcher imposes her own view on the research results. Webb (1997:124) questions the ability of the researcher to "… have pristine perception, make neutral observations, build objective categories and give neutral interpretations". Each of these activities is informed by the researcher's theory and prejudice. I acknowledged this and I was aware of such biases and therefore, I endeavoured to present data in such a way as to enable the reader to draw his/her own conclusions. Some open-ended questions and semi-structured interviews were used in this research in order to minimize this bias. The interviews also provided the opportunity to hear the respondents' own voices, which could provide richer data with more details of self-reflections than the questionnaire could provide are other concerns in the study.

In the study, some of the data is presented in figures so that the trends can be depicted more easily. Some of the data are presented in a table or graph for easy comparison. Finally I had to engage in the process of "epoch", which is administered to remove or at least identify and become aware of prejudices, entrenched viewpoints or assumptions regarding the phenomenon under investigation (Maykut & Morehouse, 1994: 123).

4.3 Description of data analysis

Ballard and Bates (2008), state that the most important difference between the most and the least effective classroom is the educator. However, they stress that the most important variable is not what they know but rather, what they do. With this in mind, observation was conducted in the two groups taught by one lecturer, namely the large group and the small group classes where focus was placed on the role played by class size in the mediation of learning. The purpose of this chapter is to establish whether the mixed method survey data collected answered the research questions that were paused at the beginning of the research. During the quantitative phase a questionnaire was circulated among the students to which about 150 of the 200 were responded to. The empirical component of my research was meant to ascertain the impact of class size on learner achievement in ACS. Statistical analysis was used in the presentation and interpretation of the responses derived from the questionnaires. Class observation was also conducted to get a first-hand experience of how learners in the two distinct class size groups

interact and how the educator mediates learning. In the qualitative phase of the study participants were, interviewed and observed to ascertain the instructional strategies, challenges and general pedagogical upshots of class size on learner performance and achievement. The following information provides more insight into the response from the respondents as well as the conclusions derived from the observation conducted. Areas of scrutiny included interaction, sharing aims, principles of constructivism, application and reflective thinking, positivity, optimism and encouragement, feedback and response, among others. The two groups were observed and a checklist of the areas of focus was used to assess both the small and the large group using the same observation criteria, hence the categories are exactly the same but yielding different results.

4.3.1 Observation of the small group

Report on ACS class observations held with the Public Relations students.

Lecturer A

Number of students in class **31**

Students registered for the course **54**

4.3.1.1 Summary: Small group

This class was conducted by Lecturer A and they were set up as a result of collaboration between myself and the lecturer concerned. The aim was simply to observe the students in a class environment. The participants had an ACS class for one hour. They have 3 one hour periods per week. The course runs for two semesters, A and B.

(a) The Students:

The course is compulsory to all diploma students whose faculties feel a need to improve their students' communicative skills. There are ten different management groups, and the learners are predominantly second language speakers of English, which is the medium of instruction. The majority of students are South African but there is a mix from across the continent, Francophone and Portuguese speaking alike. There is also the odd number from European or Middle Eastern countries.

(b) The course:

The course is run under the Diploma in Management. This is a competency-based accredited qualification covering four literacies: self-expression, knowledge, practical purposes and public debate. Each participant is enrolled in the reading and writing stream and the oracy stream. The students were assessed for their reading, writing and oracy abilities.

(c) Course Content:

The lecturer introduced the topic which was, "The various channels of communication". The first few minutes of the session centred upon recapping the last section and linking it to the topic of the day by talking and asking the students to also participate. This was later supplemented with a variety of reading, writing and PowerPoint presentation tasks addressing the channels of communication.

(d) Resources:

Resources used included PowerPoint presentation, textbooks and the white board.

(e) Problems:

The following issues were either raised by the lecturers and discussed or observed through the course of the lecture.

- Erratic Attendance:

Attendance is erratic as indicated by the number of students in class on the day compared to those actually enrolled for the course. This most likely causes some problems in planning and implementing a structured, integrated course. This was overcome to a large extent by repeating the same point for three weeks or putting information on *Edulink* for students to catch up.

- Disparate Levels:

There is a large disparity between language levels of the participants which caused some on-going problems. Where possible the many levels were catered for at one time but this was often not possible. Those students who were faster and articulate soon got restless and despondent. General reading, writing and debating activities did not cause problems because they could easily be adapted for different levels and interests. The atmosphere was relaxed and conducive to small group interaction. Students posed questions where they did not understand and stop the lecturer at regular intervals to discuss or reiterate certain points, to which he obligingly responded. The room was not very large and all students could read the information that was projected from all angles of the lecture room. However, the need to continuously monitor and improve the 'mix' was an on-going requirement of a class like this and the lecturer could pace up and down more.

- Conclusion:

At the beginning, most students were nervous and unsure of what was expected of them. They thought of their literacy in terms of a deficit. However, it took only a few minutes for them to feel comfortable and with the lecturer using a lot of humour in the classroom, much progress was made. In terms of actual learning levels achieved, it was hard to tell but the lecturer gave a nod of approval or a “yes” to some of the participants’ comments and responses to questions. The

concerted efforts of both the students and the lecturer helped to make this particular lecture successful according to my observation.

4.3.2 Report on large group observation

Report on ACS class observations held with the Marketing and Retailing students.

Lecturer A

Number of students present on the day of observation was: **96**

Students registered for the course: **125**

4.3.2.1 Summary: Large group

These classes were conducted by Lecturer A and they were set up as a result of collaboration between me and the lecturer to observe the students in a large class environment. The participants were engaged in an ACS class for one hour. They have 3 one hour periods per week. The course runs for two semesters.

(a) The Students:

The course is compulsory to all diploma students whose faculties feel a need to improve their students' communicative skills. There are ten different management groups, and predominantly second language speakers of English which is the medium of instruction. The majority of students are South African but there is a mix from across the continent Francophone and Portuguese speaking alike. There is also the odd number from European or Middle Eastern countries.

(b) Course content:

The lecturer introduced the topic which was “The various channels of communication”. The first few minutes of the session centred upon recapping the last section and linking it to the topic of the day by talking and asking the students to also participate. This was later supplemented with a variety of reading, writing and power-point presentation tasks addressing the channels of communication.

(c) Resources:

Resources used included power point presentation, textbooks and the white board.

(d) Problems:

- Erratic Attendance:

Attendance is erratic and this causes some problems in planning and implementing a structured, integrated course. This was overcome to a large extent by repeating the same language point for three weeks or putting information on *Edulink* for students to catch up. Different material was used on each occasion which hopefully prevented boredom. For those at a lower level this reinforcement has been beneficial, but it has kept those at a higher level from accelerating. This was not such a problem for general reading and writing because continuity is not critical.

- Disparate Levels:

There is a large disparity between language levels of the participants which caused some on-going problems. Where possible the many levels were catered for at one time but this was often not possible. Those students who were faster and articulate soon got restless and despondent. General reading and discussion activities did not take place at all because they could easily have degenerated into another chaotic situation. The emphasis was made that students should do a lot

of work on their own, in the library and as homework. Given the size of the class, it was a constant battle to maintain class cohesion and encourage student interaction; or to work on a mix of the above. Clearly, the class size aspect acted as an impediment to progress. However, the need to continuously monitor and improve the 'mix' is an on-going requirement of a class like this.

- Outcomes:

At the beginning, most students were rowdy and made such a noise that the lecturer took quite some time to get them to settle down and get into the stream of things. About five minutes into the lecture more students kept streaming in with furniture, desks, chairs which had been taken from one venue to supplement the fixed chairs and desks in this particular lecture hall which were evidently not enough for the class size. Others streamed in and soon sat in the corridors on the carpeted floor as it was too late for them to go hunting for furniture. The lecture progressed and some students in the back stated that they could not see what was on the projectile as it was just too far. Sitting in the back of the lecture hall, I also had to croon my neck and squint my eyes to get a full view of the information. There was a constant hubbub of voices coming from the far end corner of the room and the lecturer had to constantly remind this lot to be quiet. There was no time to ask any questions as the lecturer wanted to make sure that all areas were covered by the time the one hour was up. The visibly flustered lecturer did not explain concepts in as much detail because of the constant bouts of noise and he did not engage in any humour at all. Not much progress was made as this lecture only managed to cover four of the seven channels introduced at the beginning of the lecture. There was no supplementary reading from the textbook as the room was just too large for any meaningful audible progress.

- Conclusion

To sum up, the classes have been extremely less productive with most participants looking at their watches to see when they would escape from this “torture chamber”. For most it seemed to be just fulfilling an obligatory ritual rather than deriving satisfaction out of the whole exercise.

The feeling seemed mutual for the students and lecturer alike. I guess I was also relieved that it was over for the day.

4.4 Analysis of the responses from student questionnaires

The purpose of the quantitative portion of this study was to examine the connection between class size and student achievement. The chapter contains information of the sample relative to the descriptive statistics, results of the connection in analysis. The students from lecturer B were given questionnaires to which they had to respond. The responses were then analysed and the findings are presented in the two distinct groups. Group 1 comprises the small group and group two comprises the larger group size. Lecturer B was selected because his smaller class size would present the smallest class size of all the lecturers' classes. This smaller class size therefore offered the perfect opportunity to make the best comparison in terms of class sizes. The findings are presented in the graphs and figures below.

4.4.1 Small group survey analysis

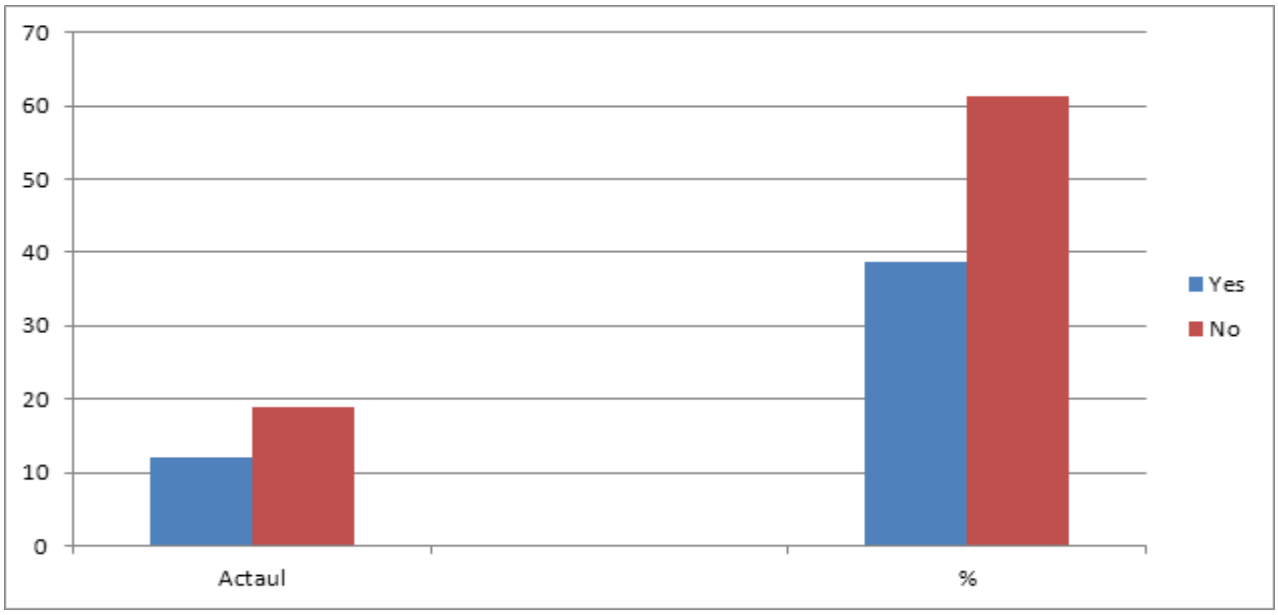
The number of students in class was 31. The number of students registered for the course is 54. According to the lecturer, it is not uncommon for students to miss lectures for a number of reasons, with time-table clashes for repeating students rating as the major reason. The researcher focused on the questions provided in the questionnaire and analysed the responses given by the students. The various trends that emerged from the responses are presented in tabular and graphic form.

Q.1. Are you happy with the size of your class?

Table 1a Students' feelings regarding class size

Answer	**Actual**	**%**
Yes	12	39
No	19	61

Fig. 1a: Responses from Table 1a



In Fig.1a, the blue graph represents the actual number of students whose response was a "yes" on the left hand side, while that figure is indicated as a percentage on the right hand side. The same format is used for red, representing the number of students whose response was a "no".

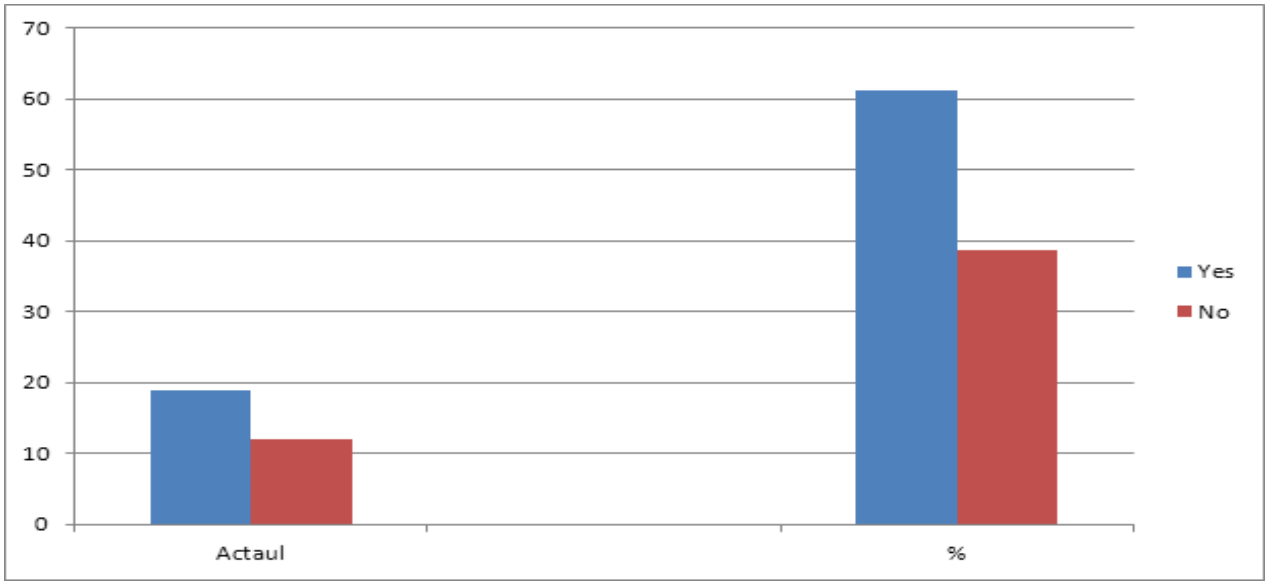
Q.4. *Do you think class size has any bearing on your performance?*

Table 2a: Response to link between class size and performance

Answer	Actual responses	%
yes	19	61
no	12	39

The graph below depicts the information derived from responses to question 4, which is provided in table format. It is evident that 61 percent of the class felt that class size plays a significant role in learner performance and achievement.

Fig. 2a: Link between class size and performance



If yes, rank 5 reasons according to the strongest one.

The information below gives the general reasons given by those students who responded "yes" to question 4.

1. The lecturer becomes overwhelmed resulting in lack of personal attention to students.
2. Difficulty in keeping attentive because of noise, interruptions and general disruptiveness by unruly elements.
3. Hearing the lecturer from the back is difficult thus raising issues with him/her is also difficult.
4. When the class is big it gets stuffy and hot thus concentration is adversely affected.
5. Sometimes information hand-outs are insufficient and students have to either share or simply just do without, space constraints also disrupt attention.

If no, rank 5 reasons according to the strongest reason

The following responses ranked top and were most frequently provided by the students.

1. Students should exercise self-discipline and focus on studying.
2. Self-reliance and individual performance does not depend on the presence or absence of others.
3. Sitting nearer to the front or closer to the lecturer will help.
4. Doing what is expected of you in class will positively affect your performance.
5. Students must pay more attention during lectures.

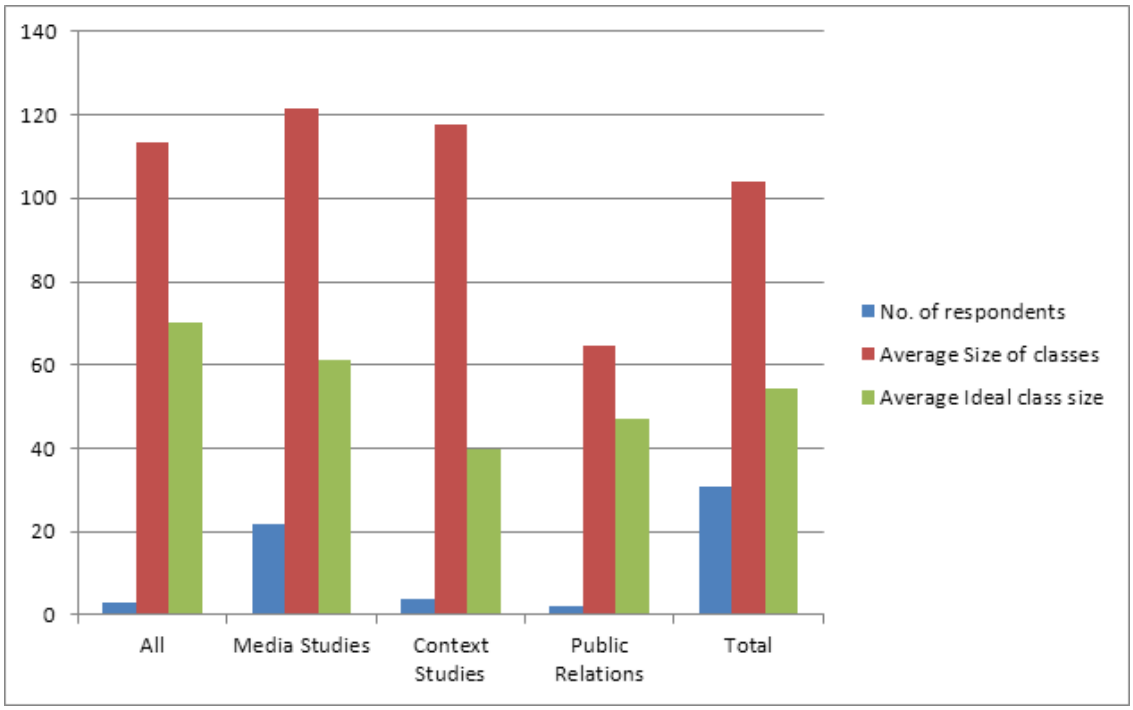
Q.5. *In which other subject do you have the highest number of students per class?*

In this group 2 respondents answered "no", but went on to fill in the box for those who answered "yes". It should also be noted that these responses were not in any particular order; however, they have been ranked according to the frequency of appearance. Answers to the following two questions are also provided in the table and graph below.

Table 3a: Average versus ideal or preferred class size

Subjects Studied	No. of respondents	Average Size of classes	Average Ideal class size
All Stats	3	113.3	70
Media Studies	22	121.4	61
Context Studies	4	117.5	40
Public Relations	2	64.5	47
Total	**31**	**104.2**	**54.5**

Figure 3a: The responses provided in Table 3: Average vs. ideal classes



The highest figure given is 200 students in a class while the lowest is 50 students per class. There were 2 respondents who did not submit any responses to question 9.

Q10.Why students do not like large class size:

Ranking according to the strongest reason on a scale of 1 to 10.

Students provided responses which indicated to the following rankings:

A Difficulty understanding the concept in a sea of students.

B Unpleasant comments made by other learners.

C Poor sound levels.

D Less individual interaction with facilitator.

E Less time to cover tasks intensely.

F Difficulty of group task execution.

G Facilitator can't observe all students written tasks.

H Fewer revision/preparation exercise tasks are corrected before a test or assignment.

I Negative peer pressure due to feeling of oblivion.

J Higher absenteeism rate due to feelings of oblivion.

Generally, the majority of students felt that understanding the concept was a challenge when there are more students in the class.

Table 4a: Large size versus least preference (Total sample = 31 students.)

	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
	10	9	6	8	7	1	2	3	2	5
	9	2	9	4	2	2	2	2	2	2
	10	8	7	8	1	7	8	1	1	2
	6	2	7	8	7	8	10	9	7	9
	9	7	8	7	7	9	8	8	4	2
	10	7	10	9	6	5	4	2	2	2
	8	6	7	7	6	5	8	8	5	4
	10	5	10	10	8	1	8	10	5	10
	6	10	10	10	9	8	10	10	5	5
Average	6.3	5.4	6.4	5.7	6.2	6.1	5.8	5.3	5.2	5.8
Median	8.0	6.5	7.0	6.0	6.0	7.0	6.0	5.0	5.0	6.0
Mode	10.0	1.0	10.0	10.0	6.0	10.0	8.0	1.0	5.0	10.0
Std Dev	3.8	3.4	2.9	3.2	2.8	3.1	3.4	3.5	2.9	3.4
Variance	14.2	11.8	8.6	10.4	8.0	9.9	11.4	12.1	8.7	11.6
Skews	-0.5	-0.1	-0.2	-0.1	-0.5	-0.3	-0.2	0.0	0.2	-0.2

The letters A to J represent the reasons why students dislike larger classes. The reasons occur in order, with the worst reason ranked highest. The modal and median values of this data confirm that most respondents ranked the reasons A to J, with the exception of B and H, as strong reasons for disliking large classes.

Table 5a: Strongest reason for dislike of larger classes.

Frequency									
A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
6	6	1	4	3	3	4	6	4	4
1	3	2	2	1	1	4	3	3	4
1	1	3	2	1	4	1	2	0	0
0	0	3	4	2	0	1	1	4	2
1	1	2	0	1	4	2	2	5	3
2	2	1	2	6	1	2	0	2	1
1	5	4	3	4	3	1	2	3	2
3	2	3	4	1	2	5	5	2	3
3	3	2	1	5	4	2	2	0	2
9	4	6	5	3	5	5	4	4	6
27	**27**	**27**	**27**	**27**	**27**	***7***	**27**	**27**	**27**

The table above shows results of the ranking exercise which was question 10 of the survey organised to demonstrate the frequency with which the population selected their rankings according to the strongest reason why students dislike large classes.

Table 6a: Ranking or reasons A, J, B and H

A	**Rank**	**J**	Rank	**B**	Rank	**H**
6	**1**	4	**1**	6	**1**	6
1	**2**	4	**2**	3	**2**	3
1	**3**	0	**3**	1	**3**	2
0	**4**	2	**4**	0	**4**	1
1	**5**	3	**5**	1	**5**	2
2	**6**	1	**6**	2	**6**	0
1	**7**	2	**7**	5	**7**	2
3	**8**	3	**8**	2	**8**	5
3	**9**	2	**9**	3	**9**	2
9	**10**	6	**10**	4	**10**	4

Figure 4a: Structure of frequency of Ranking of Reason A

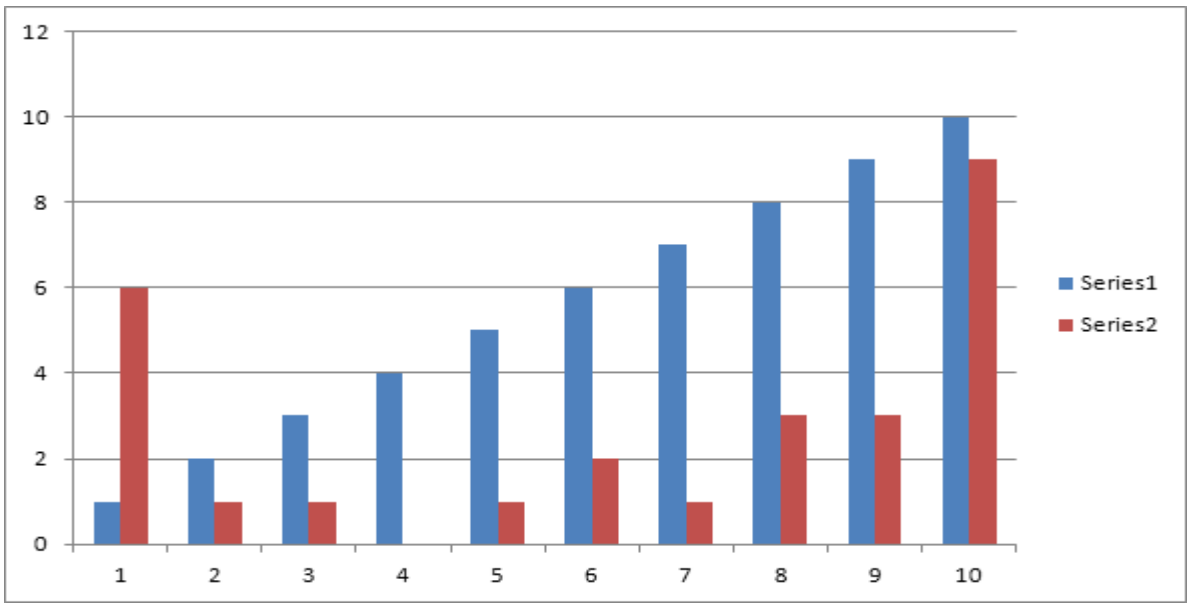
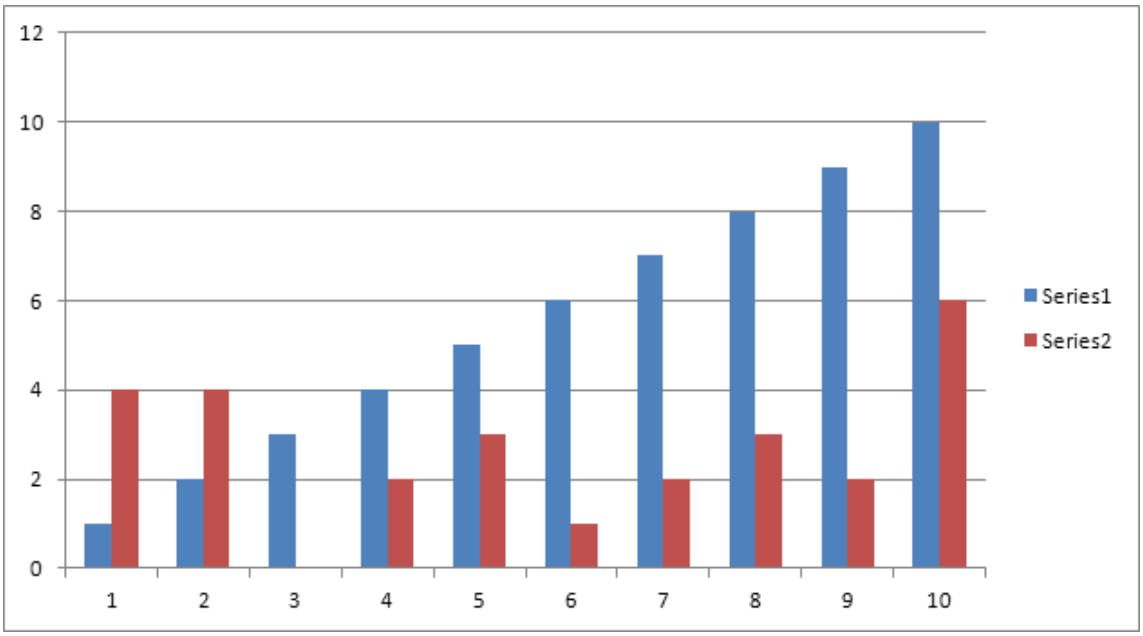
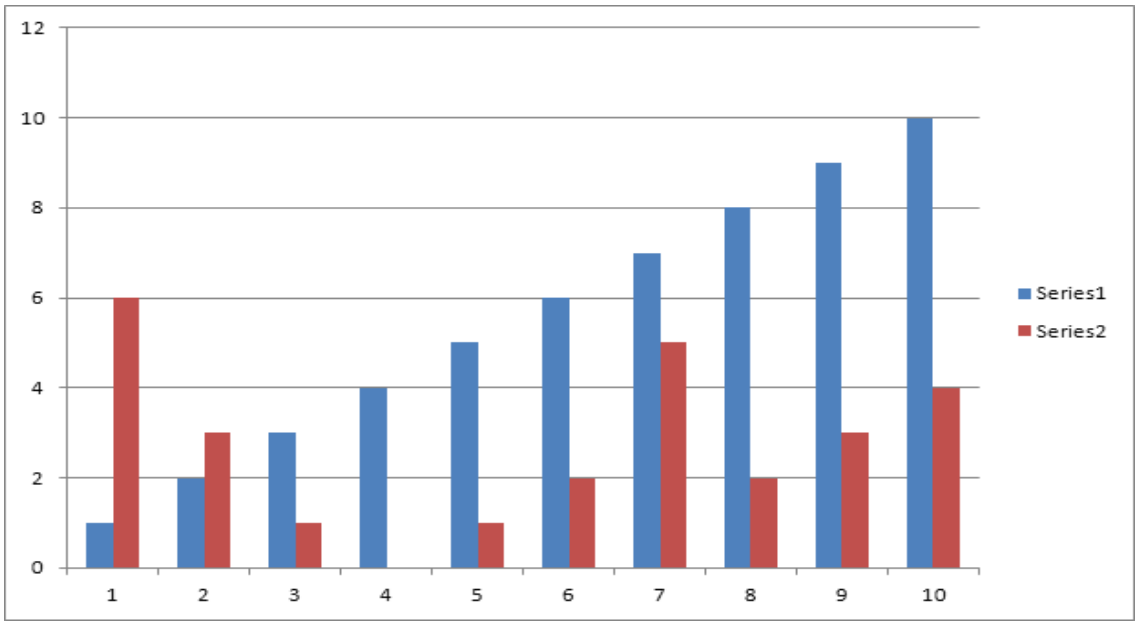


Figure 5a: Structure of frequency of Ranking of Reason J



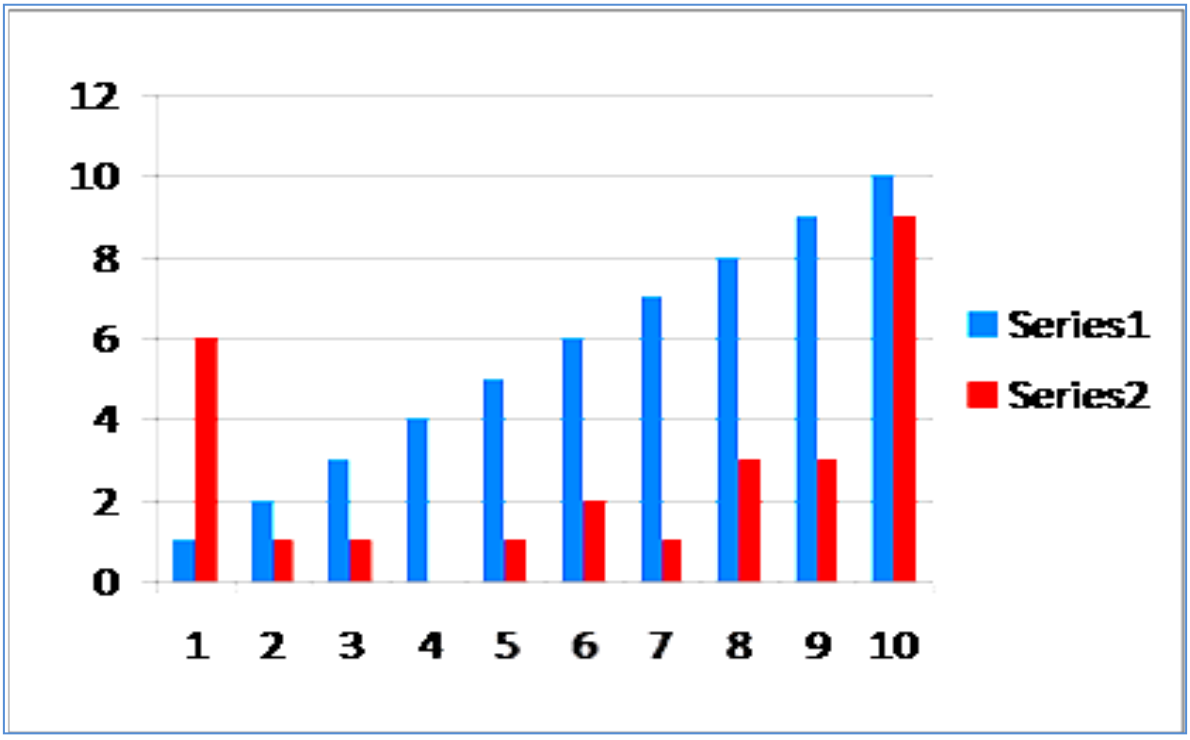
(NB. Series 1 = Ranking, Series 2 = Frequency)

Figure 6a: Structure of frequency of Ranking of Reason B



(Series 1 = Ranking, Series 2 = Frequency)

Figure 7a: Structure of frequency of Ranking of Reason H



NB. Series 1 = Ranking, Series 2 = Frequency)

The majority of the population selected their rankings according to the strongest reason why students dislike large classes. For most respondents surveyed, high noise levels ranked top with 33% giving this reason as ranking the highest. The results seem to suggest that reasons B, H and I are not very influential when deciding which reasons are strongest in relation to the respondents' opinion on class size. It would also appear that most consistently strong reasons for the dislike of large class size are shown in answers to reason H.

Q.11 State any other reasons why students do not like larger classes.

Table 7a: Other reasons for dislike of larger classes

Students who responded	%	Students who did not respond	%
20	62.5	12	37.5

Respondents were requested to provide any other reasons besides those included in the ranking table in the questionnaire on why they disliked larger classes. The table below shows the number of respondents who provided information pertaining to this question. The majority of students provide one or two other reasons though these were long term in nature, for example, students will not be confident enough to tackle challenging tasks. The students' various responses are captured in the table below.

Table 8a: Frequency of other responses from students

Respondents Comments	**Frequency**	**%**
Don't feel comfortable with large number of students in class	2	5.3
Too many interruptions and distractions	2	5.3
Noise levels too high	4	10.5
Hard to concentrate in crowded room	6	15.8
Lecturer cannot pay more attention to weaker students	3	7.9
Lecturer cannot control students effectively	2	5.3
Poor ventilation and high temperatures	4	10.5
Bad influence of some of the classmates	3	7.9
Short class and not enough time to tackle issues	3	7.9
No possibility of productive group work	2	5.3
Some learners are rude to classmates and the lecturer	1	2.6
Some learners exude unpleasant odours, unhygienic	2	5.3
Overcrowding and lack of space	3	7.9
Too many different characters and attitudes	1	2.6
Total responses recorded	**38**	**100**

The majority of students gave the response that it is generally difficult to concentrate in what they referred to as a "crowded class", according to the preferred class sizes which they indicated in question 2 above. The information which follows gathers data from the large class size.

4.4.2 Large Group Analysis

The same procedure that was administered for the small group was conducted with the large group class size to analyse any obvious differences between the responses from the two distinct group sizes. The sample size was 96 students. The sample was based on those students present in class on the day of observation. This is not necessarily a true reflection of the actual class size. The graphic representations in this part of the survey are referred to as set b. Some of the questions that were responded to by the larger group suggested the idea that the larger class size affected them more than it did the smaller group. This was observed in the rather more detailed explanations and examples given as compared to the smaller group which in some cases was not speaking from experience regarding their feelings of larger classes.

Q1. Does class size affect student performance?

Table 1b Effect of class size on performance

Response	Actual number	Percentage
yes	34	35
no	62	65

Most students, 65 % of the respondents felt that class size does not affect student performance. However, there emerged some contradictions in the responses provided by the students in different sections of the questionnaire. For instance, they would indicate that class size has no bearing on performance but then go on to list various reasons that suggest that in a way, progress is indeed impeded by larger classes. However, such comments are not entirely out of place as the

majority of students indicated that they do experience larger classes in some subject areas other than ACS.

Figure 1b: Response to effect of class size on performance.

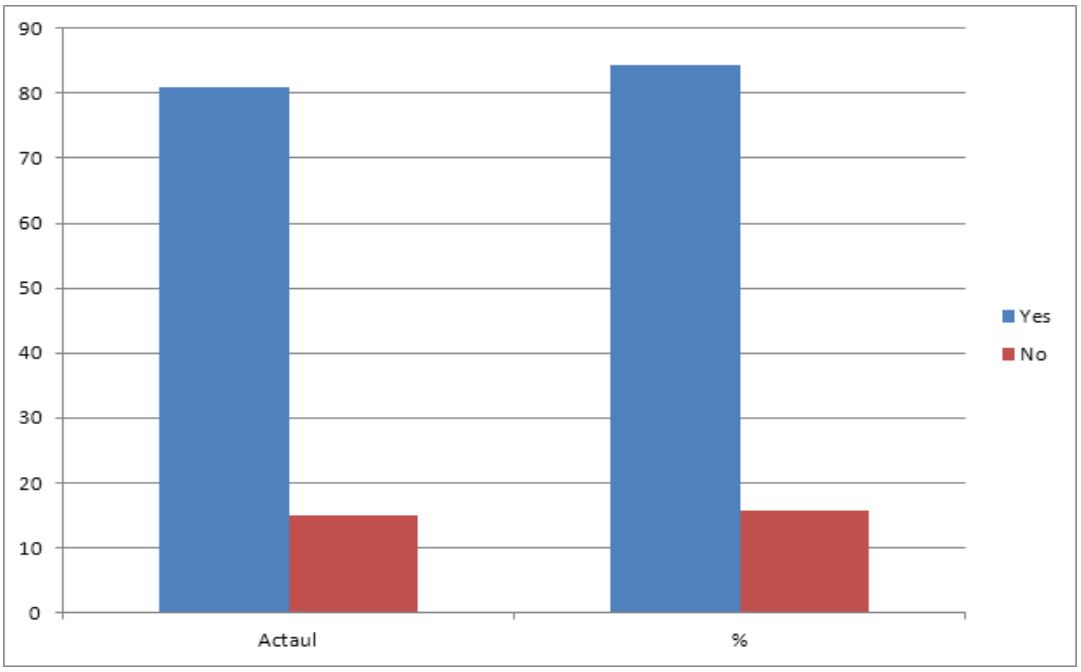
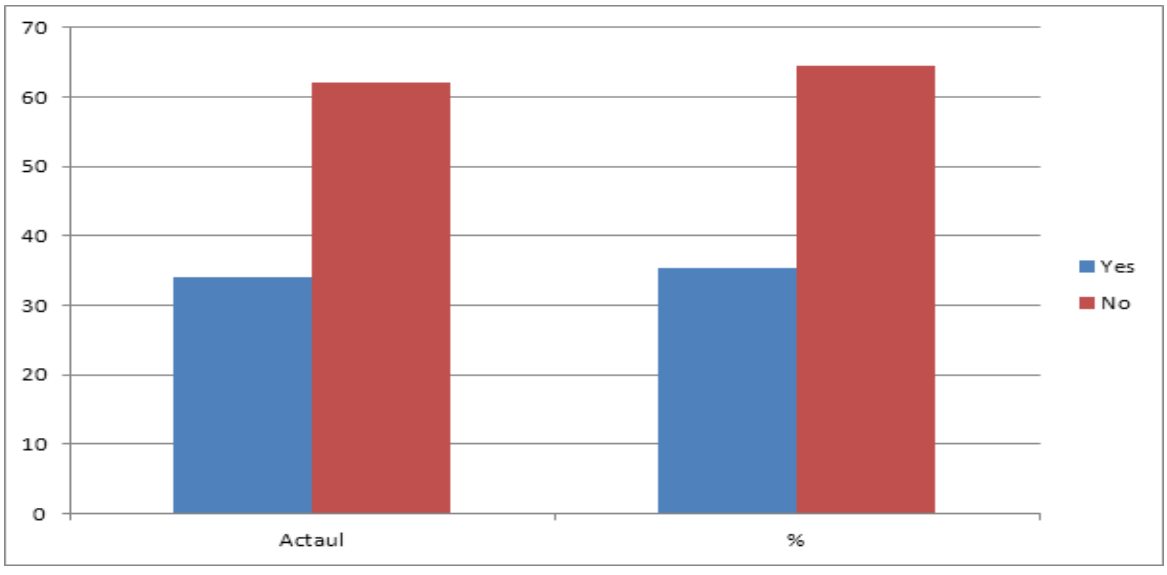


Fig. 2b: Preference of large classes.



Q3. Are you happy with the size of your class?

Table 2b: Responses to question 3

Answer	Actual	%
Yes	81	84
No	15	16

If yes, rank 5 reasons according to the best reason.

Readers should note that of those who marked "yes" to the question, "are you happy with the size of your class?", some students went on to give contrary reasons i.e. gave reasons why they are not happy with the size of the class. This included all respondents. Their reasons coincided with those of the smaller group, hence some similarities here and there. Another issue to note is that twenty (20) of the respondents did not provide reasons to either of the questions posed. This amounts to just over 20% of the sample surveyed for the larger group. This, in the analyst's view, would distort survey results.

1. The lecturer becomes overwhelmed, resulting in a lack of personal attention to students.
2. Difficulty in keeping attentive because of noise, interruptions and the generally disruptive nature of un-ruly elements.
3. Hearing the lecturer from the back is difficult thus raising issues with him/her is also difficult.
4. When the class is big it gets stuffy and hot thus concentration is adversely affected.

If no, rank 5 reasons according to the strongest reason

1. Self-discipline, focus on studying, students should be clear on the reason why they are in class.
2. Self-reliance, individual performance does not depend on others presence or absence.

3. Gives the opportunity to network and discuss varying ideas.
4. Doing what is expected of you in class will not affect your performance.
5. Students must pay more attention during lectures.

It is therefore prudent for the analyst to include the general theme of the different responses. It should also be note that these responses were not in any particular order, however, they have been ranked according to the frequency of appearance.

Q5. In which other subject do you have the highest number of students per class? State the approximate number?

Q6. What would you consider to be the ideal class size for effective communication?

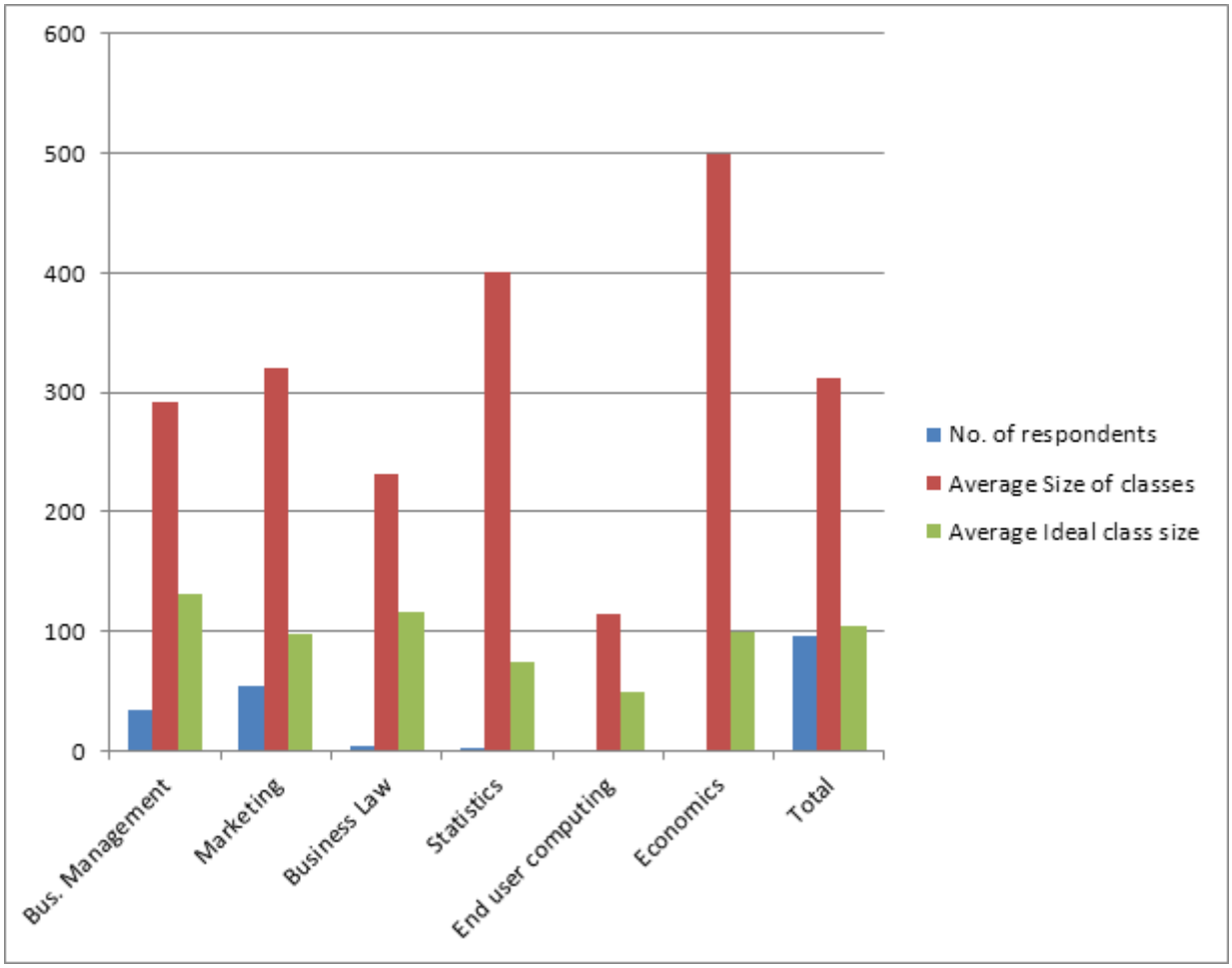
Table 3b: Average vs. ideal class size

Subjects Studied	Number of respondents	Average Size of classes	Ideal class size
Bus. Management	34	292.8	132
Marketing	54	320.9	98
Business Law	4	231.5	117
Statistics	2	400	75
End user computing	1	115	50
Economics	1	500	100
Total	96	311.3	105.5

The following are the figures for other subjects provided by the students who major in those classes but were studying ACS together on the day the survey was conducted. From the

statistical information provided by the students it emerges that the average ideal class size for an efficient class interaction according to them is 100 students per class. This takes into consideration the sitting arrangement and the holding capacity of the lecture venues as well as the access to audio-visual technology.

Fig. 3b: Analysis of actual and preferred classes



Students provided information regarding the highest class sizes for subjects other than ACS. This was so the researcher could determine whether huge class size was a common feature of the majority of subjects taken by the students. The highest figure provided is 600 students while the lowest is 87. It would appear that some content subjects such as statistics and economics have very high class sizes.

It is evident that the average ideal size of the class is much smaller than current class size. This apparent preference for smaller classes, should not, however, distract the reader from the fact that almost half of the respondents clearly stated that the size of their class does not have a significant end product on their overall performance.

Table 4b: Ranking of responses, A to J

	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
Standard Deviation	4.37	3.59	3.87	3.57	3.46	3.49	3.74	3.54	3.44	3.65
Variance	19.06	12.89	15.01	12.77	11.99	12.16	13.96	12.54	11.84	13.3
Average ranking	5.9	5.5	5.1	5.3	5.7	5.9	6.1	5.6	5.8	5.6
Median	8	5	4	5	5	6	6	5	5	5
Mode	1	5	2	1	5	1	6	1	1	1
Skews	0.2	0.4	0.6	0.3	0.2	0.1	0.2	0.4	0.2	0.2

The average ranking results seem to suggest that G (see graphical representation below), facilitator cannot observe all students' written tasks, is the highest ranking reason. Reasons A (see graphical representation below), F, I and E in descending order follow strongly. The median and modal values confirm the above statement.

It should also be observed that C, (see graphical representation below), poor sound levels, was ranked lowest according to the average, median and modal results. The modal results for A, D, F, H, I, J suggest that a large number of students did not consider these reasons as high ranking.

The Standard deviation assesses the reliability of the average ranking data; in this case the standard deviation shows the average ranking as reliable. The median is considered because in the case of these rankings it is deemed most representative a value for comparison with the average ranking. Also, the mode, which is the value that occurs most often, is considered in this analysis because it gives a fair view of the symmetry of the ranking.

Table 5b: Rank and frequency for A to J

Rank					**Frequency**					
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
10	11	9	8	4	8	8	9	6	6	9
9	3	0	3	4	9	6	4	2	7	8
8	3	6	2	6	5	9	3	8	5	3
7	2	5	3	6	5	5	3	6	6	7
6	1	5	1	7	4	5	12	4	5	2
5	7	13	8	11	13	10	7	10	9	6
4	4	1	5	2	7	1	4	7	5	7
3	4	10	7	4	5	5	6	4	8	3
2	4	13	17	8	5	9	6	8	6	11
1	25	9	15	17	14	11	12	13	11	13
Total No. of respondents	**81**	**80**	**80**	**77**	**81**	**76**	**78**	**76**	**75**	**75**

The average ranking results seem to suggest that G (see graphical representation Graph 4 and 6 above and below), the facilitator cannot observe all the students' written tasks is the highest ranking reason. Reasons A, F, I and E, follow strongly in descending order. The median and

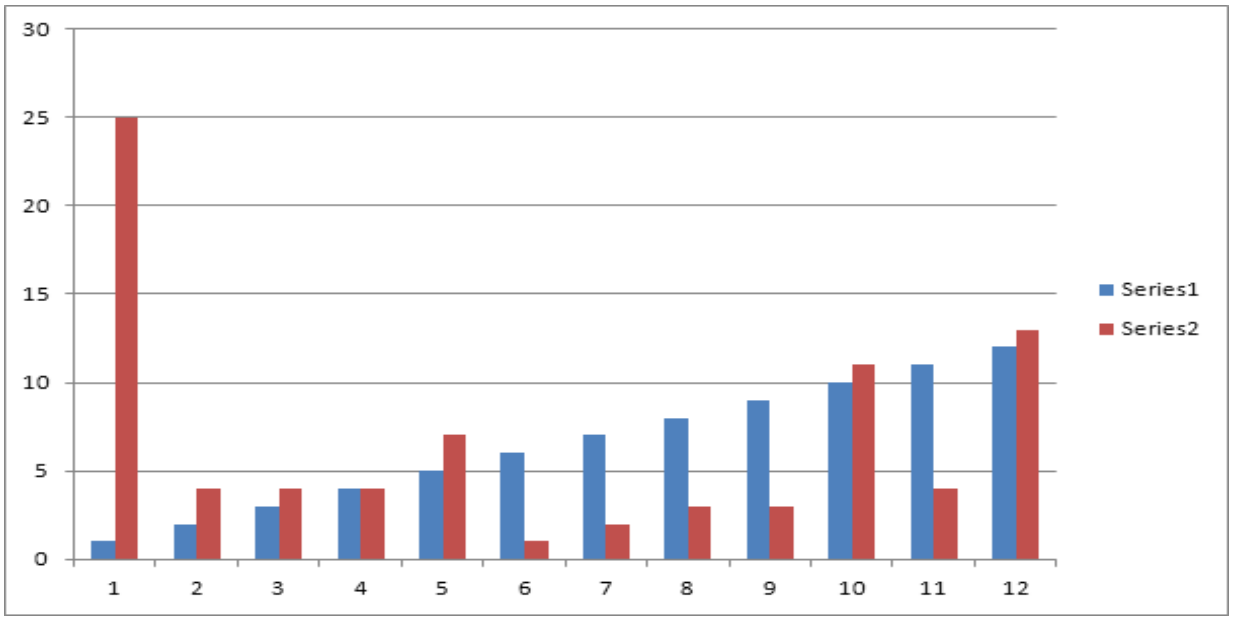
modal values confirm the above statement. It should also be noted that reason C, poor sound levels was ranked lowest according to the average median and modal results. The modal results for A, D, F, H, I, J suggest that a large number of students did not consider these as high ranking reasons. The Standard deviation assesses the reliability of the average ranking data; in this case the standard deviation shows the reliability of the average ranking data to be reliable. The median is considered because in the case of these particular rankings, it is deemed to be most representative a value for comparison with the average ranking. Also, the mode, which represents the value that occurs most often, is considered in this analysis as it provides a fair view of the symmetry of the ranking.

Table 6b: Rankings for A, G and C

Rank	**A**	**Rank**	**G**	**Rank**	**C**
1	25	**1**	12	**1**	15
2	4	**2**	6	**2**	17
3	4	**3**	6	**3**	7
4	4	**4**	4	**4**	5
5	7	**5**	7	**5**	8
6	1	**6**	12	**6**	1
7	2	**7**	3	**7**	3
8	3	**8**	3	**8**	2
9	3	**9**	4	**9**	3
10	11	**10**	9	**10**	8

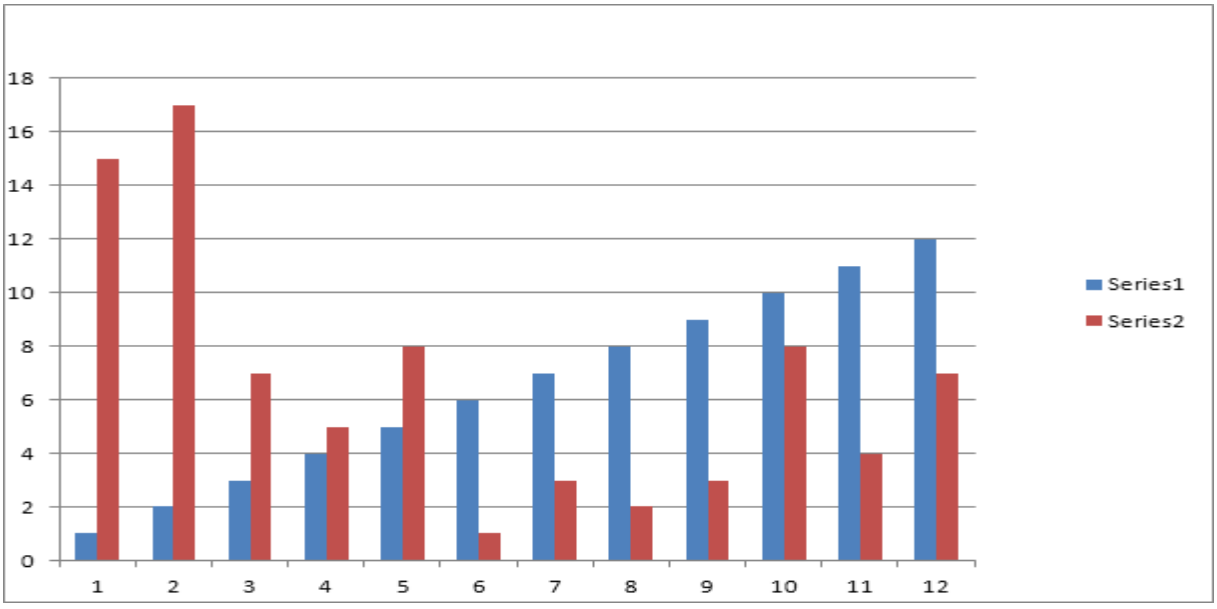
The figures above depict the number of students and how they ranked the information according to the least preferred reason for dislike of larger classes.

Figure 4b: Structure of frequency of ranking Reason A



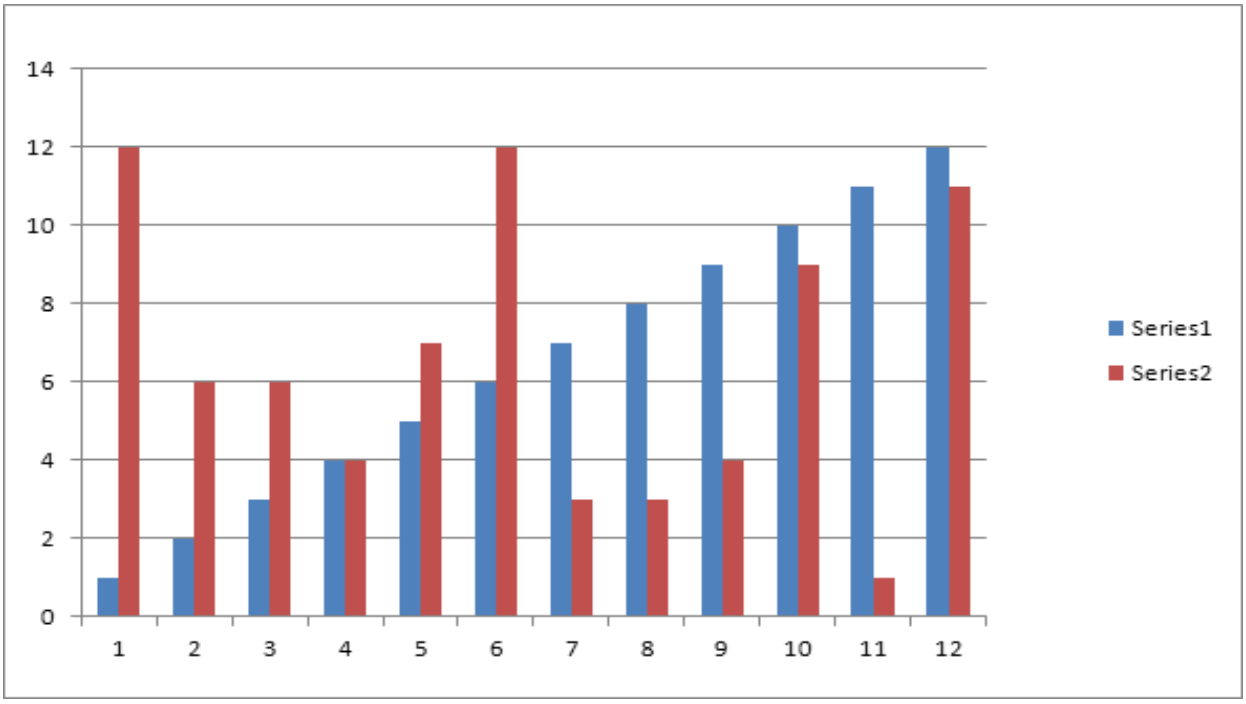
NB: Series 1=Ranking, Series 2=Frequency

Figure 5b: Structure of frequency of ranking Reason C



NB. Series 1 = Ranking, Series 2 = Frequency

Figure 6b: Structure of frequency of ranking Reason G



NB. Series 1 = Ranking, Series 2 = Frequency

The graphs above show results of the ranking exercise which was question 10 of the survey organised to demonstrate the frequency with which the population selected their rankings according to the strongest reason why students do not like large class sizes. High noise levels ranked lowly for most respondents surveyed with about 30% giving this reason as ranking lowest. It must be noted, however that 16% of respondents ranked A very highly. About 14% ranked G highest with a further 15% ranking G, as moderately strong thus confirming the conclusions of the average ranking results.

Q11 State any other reasons why students do not like larger classes.

Table 7b: Other reasons for disliking larger classes

Students who responded	%	Students who did not respond	%
46	47.9	50	51.2

Respondents in the larger group size were once again requested to provide other reasons why students dislike larger classes. The table above captures the responses which provide the general trend of answers given. The majority of students did not respond to this question. It could be they felt that most of the alternatives had been captured in the ranking list.

Table 8b Frequency of other responses

Respondents Comments	**Frequency**	**%**
Don't feel comfortable with large number of students in class	19	19.6
Too many interruptions and distractions	15	15.5
Noise levels too high	12	12.4
Hard to concentrate in crowded room	9	9.3
Lecturer cannot pay more attention to weaker students	7	7.2
Lecturer cannot control students effectively	7	7.2
Find it difficult to face large class due to shyness	6	6.2
Bad influence of some of the classmates	5	5.2
Too much negative competition amongst learners	4	4.1
Some learners are rude to classmates and the lecturer	2	2.1
Some learners exude unpleasant odours, unhygienic	2	2.1
Overcrowding and lack of space	2	2.1
No possibility of productive group work	3	3.1
You don't develop sound relationships with majority of classmates	1	1.0
Discrimination	1	1.0
Difficulty of finding space nearer to the lecturer or source of information	1	1.0
Too many different characters and attitudes	1	1.0
Total responses recorded	**97**	**100**

Students from the large group provided a variety of other different reasons on why they dislike larger class sizes. This group of students seems to be experiencing the negative impact of larger class sizes, if the number of alternatives they provided is anything to go by. High noise levels ranked lowly for most respondents surveyed with about 30% giving this reason as ranking lowest. It must be noted however, that 16% of the respondents ranked reason A very highly whilst 14% ranked G highly with a further 15 % ranking it as moderately strong. This information therefore confirms the conclusion of the average ranking results.

4.4.3 Summary of ideas emerging from questionnaires

In the overall conclusion it is safe to comment that the vast majority of the respondents from the large group support smaller classes. This conclusion is based on the results of Table 5. It must be noted that supporting evidence is given in the answers to questions 3 and 4. In this section although the respondents agreed to liking their current group size and also acknowledging that group size does not affect their performance, the answers to question 5 and 6 totally contradict these assertions (please take note of the summary under question 5). Also, after a thorough observation of the information in Table 3, it becomes clear that the average ideal class size preferred by the majority of students is patently smaller than current class size in many cases by half or less the obtaining size. It is the analyst's view that the respondents did not take enough time to understand what was required of them in responding to this part of the questionnaire.

4.5 Responses from interviews with lecturers and overall discussion.

The other main tool for data collection was face-to-face in-depth interviews with 3 lecturers who are referred to as L1, L2 and L3 respectively. The purpose of the qualitative phase of the study was to explore classroom level and institutional level factors of student achievement in depth. Specifically, the researcher investigated the instructional techniques effective teachers use to engage students and facilitate student achievement. The researcher investigated how each teacher exhibited his or her effectiveness by examining his or her use of best-fit practices in the classroom. Interviews were conducted to probe whether different class sizes require different strategies for mediation of learning. During the course of the interviews, lecturers were requested to do the following: identify the specific difficulties that they encountered; list the problems which they felt hindered their work in mediating learning to smaller and larger groups respectively, describe their experiences regarding issues of class size; identify their preferences and finally offer their views concerning the role that class size plays in the style of teaching and mediation of learning. The researcher grouped the various themes that emerged from the interview data into five main themes that reflected issues that have been identified in the research on small group class size, large group composition, task management, assessment and feedback as well as task management and learning. The information contained in the groupings have a lot of bearing on group work as most students and all lecturers felt that it is a viable solution to countering the outcome of large classes.

4.5.1 Small group class size

When the 3 lecturers were asked to talk about the impact of smaller class sizes on student performance, all concurred that they had had positive experiences, both for the learners and themselves. These included comments about the learners getting to know each other better, accepting their group roles, learning to interact with each other, being willing to take some risks with their learning, and managing their time more effectively. Comments such as the following are typical of the responses the educators made: “They've really gotten to know each other much better than they did when I first met them”.

> One of the best things for me would be the way the learners get to know one another and relax a bit more … I like smaller class sizes because it gives a nice feel in the classroom and you can cover much ground". The lecturers also felt that the learners are more willing to take some risks and they are happier to make a mistake. You can see them learning off each other and they are quite responsive in that they now know that they've got a task, this amount of time, and they've got to knock it on the head and get it done.

The benefits the lecturers stated that they derived from smaller classes included the fact that it helped them to better manage and structure their lectures and make them more challenging: "I really find the most positive aspect of it is my management side of things. The classroom tends to be a far happier and more enjoyable place for the students to be"; "I do lots of group work anyway, I can structure it very well and I feel that I've got a much better idea of how to get a grip on issues…"; and, "you've got your learning skills up to more challenging learning ideas in a group… and that's been successful, there's no doubt about that" (L2).

As a consequence of these positive experiences, the educators observed that not only did the learners respond well in smaller classes but that the standard of the work generated was quite high. Certainly, research indicates that when smaller classes are well structured so that students understand how they are to work together to achieve their group's goal, students benefit socially and academically from their small-group experience (Johnson & Johnson, 2002; Slavin, 1996).

However, while many of the lecturers' comments about smaller classes were positive, the researcher thought it was also important to explore the difficulties they had encountered with smaller class sizes because their perceptions may help us to understand why the idea is not implemented widely or consistently. When asked specifically about the difficulties, the lecturers' comments covered points such as socializing; "There's usually more socializing than working…" (L1). "The time involved is reasonably difficult" and there is more organization required" (L3); "There's a lot of input from the educator and there's a lot of work in finding suitable tasks, printing up roles, and finding good resources…,well, with smaller groups there is always the need to stretch the activities as these go much quicker than the large group. It becomes a task of

trying to keep the two groups running on par" (L2). Additionally, two lecturers commented on the difficulties learners have in adjusting to group work: "Well, I think with any group task the difficulty is getting them to listen to the lecturer…" (L1) and, "just a few difficulties in the beginning, because you've got to change their whole way of thinking and how they've done things in larger groups, It's a whole new mind-set for them" (L1).

Consistent with existing research such as that of Glass and Smith (1979), a positive connection between student achievement and class size was found to exist. More recently, the Tennessee STAR project found student achievement and improved student behaviour to be linked to decreased class size as well. The STAR project defined a *small* class size as 13-17 students and a *regular* class as 22-25 students. However, Hanushek (1989) concluded that class size alone does not lead to an increase in student achievement. The three participants in the qualitative portion of this study had mean class sizes of around 150. The smallest class observed had thirty six students in it on the day of observation.

It is clear that smaller classes require careful preparation and implementation because educators need to ensure that the key elements for successful group work are established. These include ensuring that tasks are constructed so that students understand that they are not only required to complete their part of the work but to ensure others do likewise. The technical term for this dual responsibility is "positive interdependence" and it is according to Johnson and Johnson (1990) the most important element in smaller groups. Other key elements that are critical to the effective implementation of smaller class size management include: promoting each other's learning, accepting responsibility for contributing to the group's efforts or task, demonstrating the interpersonal and small-group skills needed to resolve conflicts, and monitoring and reviewing the group's progress (Johnson & Johnson 1990). When groups are structured so these key elements are in place, students are more likely to work cooperatively to help and promote each other's learning. Moreover, students in structured groups are more task focused, provide more detailed explanations to each other to assist each other's understanding, use language that is more cognitively challenging and attain higher learning outcomes (Webb *et al*, 2009).

4 5.2 Large Group Composition

Anyone who has taught a large class is aware of the physical and emotional constraints upon both lecturer and students. For students the dominant problems are anonymity, passivity and a frustration of not being able to say what is happening to them. For lecturers the dominant problems are not being able to relate to students as individuals, a feeling of being driven back to traditional teaching, being overwhelmed by assessment demands, and a sense of not being in control of the class. An increase in class size requires lecturers radically to reconsider how they deliver their courses. One such strategy proposed in this study is that of active learning facilitation, getting students to work and think in the classroom about what and why they are doing what they are doing.

One of the ways of getting around the issue of larger class sizes is to ensure that students learn to work in small groups. These can be set at the beginning and will only be done away with when all tasks are done, unless the group dynamics are not in place. Such a group can, according to Johnson and Johnson (1990) soon become dysfunctional and most members may choose to disband and team up with more committed students.

As a way of mitigating some of the negative result of large groups which have already been discussed in detail, the lecturers reported that they used a variety of strategies to form small groups within those larger groups. These included: mixed gender; "…I tried for a balance of girls and boys… but we use a variety of groupings including random, alphabetical and mixed capabilities" (L1). "We had some that were random, some that were boys/girls, and others that were based on ability or, friendship-based so as to capitalize on the effect of collegiality. Sometimes they're friendship groups and they go with whoever they want to while others used a combination of strategies" (L3). Constructing groups so that students work well together can be difficult, however, the research does provide some insights on group composition and group size with gender composition being an issue that warrants consideration. Webb (1991) in a study on student interactions during small-group mathematics lessons found that when boys outnumbered the girls, they tended to interact with each other more and ignore the girl. In contrast, in groups

where there were more girls than boys, the girls spent more time trying to involve the boy in the discussions to the detriment of their own interactions. In both these groups, the boys outperformed the girls even though the boys and girls did not differ in initial ability. However, when groups were gender-balanced, boys and girls were equally interactive and there were no differences in achievement outcomes. In short, the gender composition of the group appears to be an issue that warrants attention.

Another issue to consider in group composition is the role friendship plays in promoting group interactions. Certainly there is evidence that students who know and like each other benefit most from working together as they tend to accept more responsibility for their learning and are more motivated to achieve their goals than students who are not friends. Similarly, Strough, Swenson and Cheng (2001) found that students who worked in same-gender dyads on a creative writing task reported a greater sense of affiliation, influence, and enjoyment than students in mixed gender ones. Furthermore, the more students perceived they were able to influence each other, the better their task performance. Interestingly, although friendship was beneficial for performance earlier in the task, it was detrimental later in terms of the errors the students made as they worked collaboratively together. In short, the evidence on the role of friendship groupings is equivocal and needs further investigation.

Moreover, contrary to previous findings that medium-ability students may participate less, Webb (1999) found that medium-ability students who actively participated in the group discussions learned more and it was this participation and in particular, the explanations that students provided that contributed to their enhanced performance.

4.5.2.1 Educators perceptions of task management

The lecturers raised issues about the task the students undertook and they commented on the importance of having tasks that were motivating, "…if they like the subject they are doing you don't have a problem. Everybody gets enthused" (L3).

“l think students work well in groups when the task is enquiry-based” (L1); “These sort of enquiry tasks work well in group work…. and then in their groups they have to put forward their solutions and then they do a group presentation and so on, they also get to choose what the preferred project is” (L2). Additionally, the lecturers mentioned that the learners needed to share the task and accept different roles, and engage in democratic decision making: “Once they are together in that group,… they decide who gets to speak and when, and how to respond to another student's comment without being offensive, accepting positive criticism and constructive feedback. And then they democratically choose what is going to be the preferred project and then the large task is looked at and broken into sub-tasks, thus giving them different roles in the groups” (L2).

There is no doubt that group tasks have the potential to affect the way group members interact with each other. Cohen (1994) found that when students are required to work on tasks where there are set answers or procedures to follow for example, simple assignments or those requiring basic recall of information, student interactions are minimal. This is because as they are only required to provide answers, exchange information, or request assistance. In contrast, when students work on tasks that are open and discovery-based, where there are no set or correct answers, they learn that they must share ideas and information if they are to solve the problem at hand. In fact, Cohen (1994) has consistently found that it is the frequency of task-related interactions that is related to follow-up gains on content-referenced tests and conceptual development in ACS tasks. Similarly, Cohen (1994) reported that task-related interactions facilitated learning among learners who worked in cooperative groups on discovery-based tasks. In short, the type of task appears to determine how group members interact and it is the interaction that occurs that is positively correlated with achievement gains.

All the lecturers concurred that students need to be prepared or taught to work cooperatively. For some educators, this involved explicitly teaching the skills that facilitate cooperation. These included skills such as identifying the characteristics of successful groups: “The first things that we did was look at successful groups and talk about what they constitute, and what ingredients

give them a sense of viability and how to encourage others to participate and have a voice; teaching specific interpersonal skills and dealing with conflict" (L2).

Teaching learners the interpersonal and small-group skills that facilitate cooperation in groups is critical to the success of these groups. Johnson and Johnson (1990) found that when students worked in groups where they were trained to cooperate they demonstrate more on-task behaviour, give more detailed explanations and assistance to each other and obtain higher learning outcomes than their untrained peers. In fact, many of the skills the educators taught the students as part of the preparation for group work were similar to those advocated by Webb (1997) who proposes that social interaction and reasoning is enhanced during small-group work when:

- All relevant information is shared;
- The group seeks to reach agreement;
- The group takes responsibility for its decisions;
- Reasons are expected;
- Challenges are expected;
- Alternatives are discussed before decisions are made; and,
- Group members are encouraged to speak.

According to Fielding (2006) group work is the hallmark of Outcome Based Education (OBE). When students work in a group, three main objectives are achieved. They include completion of the task, enhanced social interactions and the process of the group work itself. Roles and procedures are necessary to regulate the group so that the task can be completed successfully. It is therefore evident that the more complex the task, the greater the need for structured procedures and designated roles.

The range of skills provided by the group members enhance the likely-hood that more ideas will be generated. If you work alone, you may not be able to come up with so many ideas. By working in a group, you can participate in the achievements of the group beyond your own individual potential.

In fact, training students in those social skills that facilitate group communication is accepted as a basic tenet of cooperative learning. However, because of the time and planning educators need to invest in teaching these skills, they are according to Webb *et al* (2009) often neglected or taught on an ad hoc basis.

4.5.2.2 Assessment and feedback

All the educators concurred that assessing the outcomes of group learning were important but they differed in the way they managed the assessments. In the response to the questionnaire enquiry regarding the students dislike for larger classes, one of the issues of concern was that there is not enough time devoted to feedback on tasks due to the seemingly debilitating numbers. Two of the lecturers reported that they conducted informal assessments. For example, (L3) commented that: “I have been looking at things like assessing how they are doing in the group but that's not really formal assessment”, while (L1) reported: “I know that I have anecdotal evidence just by wandering around and seeing who is on task and who is progressing correctly and if they are reporting back to the class, and if what they have done satisfies me”.

Other forms of assessment that they reported using included group presentations of work: “…our assessment can also include the presentation on the quality or the amount they researched” (L2) and group discussion with an individual assessment. “What we did this last time was that there was an individual assessment piece. There might have been an initial component, like when we did the practical work, the first task of designing the experiments was group discussion, but the actual report had to be individual at the end. … So students engage in group sharing of ideas but totally individual writing up is essential” (L3).

“Group work is essential as it offers the students an opportunity to work on different tasks in different ways, that is individual, pair and small group, thus enhancing all different skills such as interpersonal and team-play” (L3).

On the other hand, one lecturer reported that he had difficulties with assessing students' group work and noted: “I have done group assessment in the past … It's always a problem because there's always someone who says they've done more work than the others. I have been looking at things like assessing how they're going in the group but that's not really formal assessment” (L2). (L2) also commented: “I think I can improve a lot. I've done no formal assessment as yet so maybe that could be one of my goals … so maybe in the future I could start doing them as assessment but more of a project, a long term thing rather than short lessons because that's all I've really done so far”.

The lecturers' approaches to assessing group learning varied widely with some acknowledging that they were experiencing challenges brought about by varying class sizes. Certainly, assessing students' achievement during their cooperative learning activities can be difficult but research indicates that there are many ways in which this task can be undertaken. For example, the types of assessments can include both formative and summative assessment which may include: curriculum-based assessments, criterion-references assessments, authentic assessments (based on real-life tasks), case studies, portfolios (collections of exemplars of work), exhibitions of performance (group or individual presentations), and problem-based inquiries. However, the educators mentioned that while these different types of assessments are often relevant to the group task (i.e. they are authentic tasks), concerns are raised about their contributions to students overall achievement.

Lecturer one added the following regarding the ambiguity of identifying group task contributors:

> The task of ascertaining exactly who contributed what can be quite daunting. As a result, some students get away with contributing very little yet capitalizing on the strength of others. However, these shortcomings are incorporated into the challenge that is involved in getting the small group on its feet (L1).

In order to answer these concerns Black and William (1998), in a synthesis of the results of evidence on formative assessments concluded unequivocally that formative assessments do raise students' overall achievement across different ages and programs, and at varying levels of study including the achievement of low-achieving and at-risk students. This improvement is attributed to the frequent use of feedback which helps students to understand what they need to do to successfully complete a task. Furthermore, when students are involved in the assessment process, they learn to monitor what they must do and learn and this enhances their own cognitive and meta-cognitive thinking about the issue at hand (Black &William, 1998).

Assessing students' work in small groups seems to present a challenge for educators with some making informal assessments of students' progress while others encourage students to self-evaluate and reflect on their progress. Group presentations are also used as a way of assessing students' work. However, two of the lecturers acknowledged that they experienced difficulties with assessing students' achievement. Assessment also proved to be a daunting task as they had to ensure they did not over-assess the smaller group at the expense of the larger group. Maintaining a balance between the tasks covered for the two distinct groups is always a challenge as you tend to go much faster and cover more with the small group" (L3).

All the educators agreed that feedback on students' performance is very important for student learning. Kluger and DeNisi (1996), in a comprehensive review of studies on feedback to students, found that feedback improved performance in the majority of these studies. Moreover, feedback that focuses on what needs to be done can encourage students to believe that they can

improve if they are willing to invest in the effort required (Black & William, 1998:8). Interestingly, the lecturers found that when they took time to develop and use formative assessments, there was strong evidence of tangible benefits in terms of students' achievement on mandated standardized tests. Similarly, educators found that the use of authentic assessment activities also helped students to do well on standardized tests. In short, while the educators may express concern about the difficulties involved in developing and implementing assessment tasks that are authentic, there is evidence that they help to improve learners' performances in both formative and summative assessment tasks.

4.5.2.3 Class management and learning

Classroom management is equally important in ensuring students achieve the desired goal, regardless of the class size. Students raised serious concerns regarding a laissez-faire approach to classroom management and the resultant negative repercussions. In particular, and also of concern is the fact that research on classroom management had been neglected in favour of teacher subject matter knowledge and the instructional aspects of teaching. As a result, knowledge of classroom management has not developed concurrently with changing ideas of more active and socially interactive teaching and learning. Trow (1999:142) notes this discrepancy between our understandings of the different aspects of teaching. There is a feeling that ideas of effective classroom management have remained typically unchanged and attempts to create progressive curriculum reform have "created an oxymoron; a curriculum that urges problem solving and critical thinking and a management system that requires compliance and narrow obedience".

The lecturers raised the issue that gaps and different interpretations in discontinuities in their understandings within the area of classroom management may contribute to this discrepancy as well. Discontinuities refers to the tendency to focus only on the bits and pieces, certain segments of our knowledge, without considering the whole of either what is known or what is entailed in management of the classroom as complex social and learning settings. Trow (1999:143) first noted this lack of attention to the "sum of what educators do", in an extensive review of the

management literature. He noted that classroom management texts for teacher education placed almost no focus on fostering positive peer interactions and effective collaboration. Recently some educationists have urged educators to move toward broader and more comprehensive positions on issues of management. As Trow (1999) advocates:

> At its best, classroom management is not only a means to effective instruction; it also becomes a vehicle for providing students with a sense of community and with increased skills in interpersonal communication, conflict management and self-control.

Nevertheless, lack of recent empirical evidence has left educators without clear direction and understandings of what knowledge and practices educators utilize in creating and managing socially complex learning environments in HEI's that are in a constant state of transition.

Investigation of these three lecturers' conceptions of classroom management and their roles as classroom managers revealed that all held complex views about their roles in managing positive learning environments, whether dealing with a large or small class. Some of these conceptions were unique and individual while at times all three lecturers shared common understandings, as well. Their responses to the issues revealed unique conceptions of their roles as classroom managers in both the observed encounters as well as in the interviews that were held with the respondents. These understandings appear linked to their prior knowledge, beliefs, and experiences. Individual differences as well as different beliefs in terms of what works and what does not work also influenced the establishment of unique learning environments which were clearly discernible to the observer.

L1 perceived her role in the classroom as that of "motivating student-centred learning". To this end she established a physical environment that appeared appealing to the students with a tinge of humour to compliment the mood. Students were free to work wherever they wanted around the room during certain activity times. She utilized student-directed instructional approaches, and

was especially vested in setting up an individualized environment. Differences among the teachers put an individual stamp on each classroom, but did not explain either success or failure to establish a positive learning environment. The three respondents' lectures were as distinct from each other's as they were unique. In fact, from my observations it appeared that in many ways (L2) and (L3)'s lectures were more similar for the larger group size. The two educators shared common understandings about the importance of the organizational aspects of classroom management. For example, each entered into lessons with teacher/student materials well organized and prepared. Additionally, they share common conceptions regarding social management. To this end, such activities as: interacting with students in respectful ways, the importance of establishing caring relationships with students, and the importance of acknowledging and encouraging the diversities of their students was of paramount importance.

The importance of the role played by classroom management in ensuring students achieve the desired goal, regardless of the class size can't be emphasized any further. All the lecturers expressed the view that whether they are confronted with tens or hundreds of learners, it boils down to the fundamental issue of how to manage the situation that one is confronted with. In particular, research on classroom management had been neglected in favour of teacher subject matter knowledge and the instructional aspects of teaching. As a result, knowledge of classroom management has not developed concurrently with changing ideas of more active and socially interactive teaching and learning. Borko and Putnam (1996:12) note this discrepancy between our understandings of the different aspects of teaching. They feel that ideas of effective classroom management have remained typically unchanged and attempts to create progressive curriculum reform have "created an oxymoron: a curriculum that urges problem solving and critical thinking and a management system that requires compliance and narrow obedience".

Finally, while the lecturers reflected positively on their experiences of classroom management and made the comment that it should be discussed more widely, they also indicated that it is a challenge and requires commitment on the part of the lecturers, the students and all the other stakeholders if it is to be implemented effectively.

4.6. Summary

The instruments used in this research were a questionnaire in two distinct groups, one large and one small and semi-structured interviews with three lecturers. Observations were also conducted in two target student groups, one large and one small. Data from the questionnaires, interview themes and interpretations of what was observed were analysed for overall emerging trends. The findings of this study as a result of data analysis were reflected upon. The final conclusions and proposed recommendations will be presented in the next chapter.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The aim of this chapter is to demonstrate whether the investigation has provided answers to the problems that were initially stated at the beginning. A summary of the most significant results and findings of the research are discussed. The chapter also proposes recommendations on what needs to be done as a result of the findings. The conclusions and recommendations for enhancing academic achievement are discussed in detail in the paragraphs that follow and are listed in order of priority.

5.2 Conclusions

Based on the information from the empirical study, it can be concluded that most students and lecturers alike, rather prefer smaller classes to larger ones. Consistent with existing research (Glass & Smith, 1979), a positive link between student achievement and class size was found to exist. Most lecturers believed that student achievement and improved student behaviour was linked to decreased class size. The STAR project defined a *small* class size as 13-17 students and a *regular* class as 22-25 students. While the majority of classes under investigation in this study constitute more than 100 students, the majority of students felt that a class size of 50 students would result in effective communication. However, Hanushek (1989) concluded that class size alone does not lead to an increase in student achievement. The three lecturers who participated in the interviews had mean class sizes of around 80 students, which falls way out of the regular class size as defined in the STAR project.

The smallest class observed was lecturer A's class, which had thirty one students present on the day of observation. The lecturer admitted that this small group was a joy to teach as all resources were enough to go round. There was also an opportunity for interactive facilitation, which is not possible with the much bigger classes. The lecturer however was quick to add that her larger

classes did not necessarily perform any worse than the smaller one, but that it was rather a matter of creating a conducive and enabling environment in the classroom. The sentiment of being able to interact with the students on a more personal basis was indeed echoed by all the three lecturers interviewed.

While most of the research conducted by several educationists is conflicting on whether class size alone can influence student achievement (Glass & Smith, 1979; Hanushek, 1989), the current study did find that class size has a connection with student achievement. The questionnaires administered to students examined qualitative data to investigate how effective educators engaged smaller and larger class sizes to facilitate learning and increase achievement. The core academic content area was different in each class as was the student body, but the lecturer's delivery of the content was the main focus of the observations and interviews. It was important to look for the instructional techniques effective lecturers used to engage different class sizes of students in learning and hence improve achievement.

The majority of students identified an effective environment as one in which lecturers created diverse learning environments and teaching modes for their students. These teaching modes include face-to-face contact between lecturers and students, the utilisation of print materials, PowerPoint and document readers. If the different modes are used in an integrated manner and in a way that is appropriate to the students' needs as well as module and learning outcomes, the issue of class size will not play such a significant role. If the contact component of the course makes provision for a variety of learning opportunities such as lectures, group and individual tutorials as well as small-group discussions, all of which may make use of a variety of learning material, the students will be able to develop their skills in different areas such as reliance on the individual but also being a team player.

Student engagement refers to “active, goal-directed, flexible, constructive, persistent, focused interactions within the social and physical environments”. Student-centred learning, while not necessarily a research-based practice, is parallel to the idea of contextualized instruction as lecturers tap into students’ interests to make learning more meaningful. This method was used by most lecturers and also helped to mitigate the negative impact of large classes. However, most lecturers expressed the feeling that students aren’t used to open-ended learning, but rather they are used to being told instead of discovering.

To sum it up, regardless of the class size, students and educators both agree that it is vital that they use the best-fit methods to mediate learning so as to ensure maximum student achievement.

5.3 Recommendations

Critical thinking, collaboration and teamwork, intercultural and overall competence, is appropriate, in all general education courses in the domain-knowledge areas. The researcher is aware that an obvious way to promote a more active learning environment is by reducing the class size. Large classes not only discourage discussion and student or group-centred activities, but the evaluation of writing assignments and non-objective forms of evaluation become difficult and time-consuming. However, since it is not within the educators means to deliver all of the ACS lectures in smaller classes, we should take advantage of the many good mechanisms for introducing active learning into large classes as well. The researcher, through this recommendation hopes to raise the expectations and challenge the status quo for what currently transpires in many classrooms, large and small. The emphasis on integration, application and active collaborative learning should be focused in all the following competencies:

- Active use of writing, speaking and other forms of self-expression;
- Opportunity for information gathering, synthesis and analysis in solving problems, including the use of library and computer/electronic resources and the application of quantitative reasoning and interpretation;
- Engagement in collaborative learning and teamwork;
- Application of intercultural and international competence;
- Dialogue pertaining to social behaviour, community and scholarly conduct.
- A proactive stance that surpasses the conventional and rather limited role students seem to play needs to be taken.
- A large university can be overwhelming to incoming students. An introduction of seminars should endeavor to orient students to the academic experience at a large research university. Such seminars can also help demystify academic life by discussing the roles and responsibilities of faculty and academic advisers, cooperative education and internships or in-service learning, all in the context of the teaching, research, and service functions of the University.
- Establishing a first-year seminar experience for incoming, first-year students, provided by each of the colleges and campuses as part of the general education program can go a long way towards putting the freshmen at ease. It is necessary to do a better job of engaging our incoming students, quickly and deliberately, in the educational enterprise. The "survey" courses in the knowledge areas such as natural sciences, arts, humanities and social and behavioural sciences are taught primarily in a large class, lecture format. Thus, entry-level students might not necessarily have the much-needed access to either the "regular" faculty or discussion-oriented classes in their intended disciplines of study.

- The first-year experience seminar should be extensively introduced to prepare learners for tertiary life. Learners need to appreciate that universities are communities

of scholars. Students entering the University have been invited to become members of that community. It is important that they be apprised of the intellectual opportunities and responsibilities that await them when they accept that invitation. At this point in their academic careers students are making a significant transition from secondary to higher education. At the university they will encounter a less structured educational experience than previously experienced. They will be asked to accept a greater degree of responsibility for their education and will be accorded a greater degree of independence in this pursuit. They will be challenged intellectually and will be expected to achieve high levels of proficiencies in certain academic skill areas. First-year seminars should therefore undertake to inform students of these expectations and of the resources available to help them meet these expectations.

- Acquainting students with the learning tools and resources available at the institutional seminar should provide an opportunity for students to become acquainted with the learning tools and resources available to them. Among those tools are the university libraries; remote access and external sources of information; the university computer system and internet-based resources, including academic assistance and counselling programs. These hygiene factors can play a major role towards stability within an institution of learning. Students will appreciate the fact that as individuals they have such resources at their disposal and they do not have to wait for a mass lecture to access these resources such as the Learning Centres, Centre for Excellence in Writing, Student Activities, Counselling and Psychological Assistance Programs.

- Classroom space is one concern that colleagues raised in their feedback to interview discussions. Space issues should take into consideration the enrolment figures of students across the campus. Other creative approaches such as offering the seminars in residence halls “on the students' own turf”, so to speak or in other spaces not normally scheduled as classrooms, would alleviate space problems and could actually offer pedagogical advantages. There is also a need to fine-tune the guidelines used in

approving courses intended to develop intercultural and international competence, to emphasize student engagement and active learning.

- While a lot of emphasis is placed on educators efforts of ensuring achievement is maintained there does not seem to be enough emphasis and expectation placed on students who are the most important component in this whole jigsaw-puzzle. Based on the responses from lecturers as well as observation in class, it is clear that absenteeism is a huge challenge facing most HEI's today. However, there does not seem to be a solution to tackling this problem from the relevant authorities. The figures analysed in the data also reflected high levels of absenteeism. While educators can attend a lot of conferences and workshops but for as long as they are dealing with absentee students, all their efforts will not bear much fruit. Mechanisms have to be put in place to ensure that students are held to account for the rampant absenteeism which no doubt impedes progress in learning and achievement.

- Professional development is still as important today as it was back then, despite the budgetary constraints faced by most HEI's due to enlarged enrolments. Very often educators are thrust in the deep-end and are left to their own devices to sort out the problems confronting them on a trial and error basis (Doyle, 1986:154). Professional development would help by sharing some common elements for educators to use effectively behind their closed doors. Such development should no doubt have a link to student achievement gains but very often educators do not transfer what they have learnt in professional development to the learning environment. Such development may focus on research-based practices and provide opportunities to adapt practices to their own unique learning environments.

Knowledge about what defines an effective educator is equally necessary because the teacher is one of the most important factors influencing student achievement. However, the literature

agrees that effectiveness is a difficult characteristic to define (Lewis, 2006). The findings of the present study open up the possibility of exploring teacher effectiveness in different settings and from different perspectives in the hopes of defining the ever elusive effective teacher. The data from this study can be used to involve teachers, administrators, and parents into conversations about what educators need to be doing in classrooms to engage student learners to increase student achievement. The main objective is to foster an understanding and appreciation of the importance of the communication process within the larger context of a student's undergraduate educational experience. It is vital therefore to engage students in learning and orient them to the scholarly community from the onset of their undergraduate studies in a way that will link to later experiences in their chosen majors. Facilitating students' adjustment to the high expectations, demanding workload, increased liberties and other aspects of the transition to college life therefore remains important. It is further suggested that future research in this area investigate the possibility that other variables such as potential grade inflation, lower academic standards, student aptitude and readiness for college work, lack of remediation for ill-prepared and disadvantaged students, student learning styles and student motivation could further confound research results in this area.

Clearly, a number of alternative strategies exist for accomplishing these goals, individually and collectively. The recommendations offered above are simply my best effort at putting together a plan that is responsible and affordable and, I hope, will represent a significant improvement in the general education of our students. General education is idiosyncratic, tailored to particular institutions and their needs. Good general education is associated with a culture that values high expectations, recognizes diverse talents and learning styles and emphasizes early engagement. Good general education promotes coherence and wholeness, interdisciplinary and continuity, integration and synthesis (of instruction, practice and experience). It encourages active learning and collaboration and a commitment to inquiry beyond the curriculum. Educators and all stake-holders in HEI’s need to keep in mind that effective educators are not made to order and are as individual as the students they teach. According to Lewis (2006:197) it is therefore vital to make a connection between student achievement, educator accountability and classroom instruction.

Finally, good general education builds dynamic assessment and improvement into curricular processes.

5.4 Closing remarks

It was clear from the literature and the responses received in this research that there is real polarity of opinion on the issue of class size and achievement. The debate boiled down, more than anything, to an issue of strategy, in other words, how best to deliver the curriculum and what models for teaching and learning will best accomplish those goals. On the one hand, it is argued that in a world where the knowledge base is expanding rapidly and has an ever increasing demand for education, we need to develop in students the key competencies and proficiencies that will allow them to discover and synthesize knowledge, both collaboratively and on their own initiative, using all the new and powerful tools that they now have, quite literally, right at their fingertips. Others argue that the knowledge base which all students need should be transmitted directly and presented to them coherently in order that they will be well prepared and informed, ready to think critically, deal with ambiguity, and be able to solve complex problems. Proponents of the latter approach towards education claim that learning method, without sufficient attention to content, may diminish, weaken or dilute the academic experience. Proponents of the former approach argue that an attempt to simply inoculate students with information in mass lectures will not and cannot produce real scholars or prepare students to be lifelong learners.

There is no perfect compromise between these two views that will lead to any real consensus in the democratic arena in which curricular decisions are made. Attempts to reconcile them run the risk of highly charged politicking that but ultimately does little to challenge or improve the status quo. Some correspondents did, in fact, argue that either there was little to be "fixed" or that the risks of effecting any change could well outweigh the potential benefits. The researcher does, however, conclude that specific strategies could be identified that would embrace both the learner-centred and transmission models and compromise neither, help to address the shortcomings identified through our consultation with stakeholders, and both preserve and build

on the strengths of the current general education curriculum. Inevitably, we must confront the paradox that, even when we strive for a more leaner, learner-centred approach, we need to speak in terms of what we as educators can do to achieve it.

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APPENDIX A: Consent to conduct research

HEAD OF DEPARTMENT

ACS

FACULTY OF HUMATIES

REQUEST for CONSENT to CONDUCT RESEARCH

Dear Madam/Sir

I am a Masters student in the Educational Studies department at the University of South Africa and I am conducting research for my thesis. The topic of my research is: ***The effect of class size on academic achievement at a selected institution of higher learning***. I am requesting your permission to conduct this research study within the department of Applied Communicative Skills.

The study is conducted only for educational purposes and to fulfil the requirements of my studies. The research will also help to gain a better understanding of how lecturers and the department can help increase student achievement.

If you agree to this study, I will be circulating questionnaires to students. Moreover, I will be interviewing three lecturers from this department. The interview will last approximately 45 minutes and will be scheduled to avoid the loss of instructional time. I will also be observing the participants during the course of a lecture.

I have outlined the terms of the study below:

1. The information obtained during the project will be used to write a Masters dissertation and to assist education practitioners in developing professional development designed to increase student achievement.

2. Real names will not be used during the data collection process or in the writing of the dissertation. Every attempt will be made to disguise the identity of the participants.

3. A questionnaire will be circulated to students to respond to during their free time.

4. In the interview phase of the study, notes will be made while the respondents will fill in a structured interview page to ease data collection.

5. Participation in the study is voluntary and participants are free to withdraw from the study at any time.

7. Direct quotations from the interviews and observations may be used in the thesis; however real names will not be used.

8. Signing this letter will indicate that you have granted me permission to conduct research in this department.

I will take the following measures to ensure that specific statements made by participants may not be traced back to their source:

- All personally identifiable demographic data will be eliminated from the final report.
- Only fictitious names will be used. I will remove any information that might disclose your identity, except references made to respondents as lecturer/educator or student.

- There will be an opportunity to review information you have provided, or references that have been made to you, for the purpose of checking disclosure. You retain the right to have any or all data removed from the final report.

If you have any questions with respect to the research participants, their rights, or any other aspect of the data collection/dissertation process, please feel free to contact me or my supervisor.

I grant you permission to conduct research in this department.

_____

Head of Department‘s Signature

_____

Researcher’s Signature

_____

Supervisor’s Signature

If you have any questions, please contact the researcher:

Ms. LEAH BAKASA

UNISA STUDENT

APPENDIX B

QUESTIONNAIRE FOR STUDENTS

I would appreciate it if you would take a few minutes to fill in the questionnaire Read carefully before you start:

- This survey is part of my study for a Master of Education. The results of the survey will be used to complete my Master's thesis.
- There are no right or wrong answers and you only need to put down what you think is the best answer.
- Your answers should be based on your experiences in Applied Communicative Skills.
- Your input will be very valuable.
- All your answers are completely confidential; therefore do not write your real name on this form.
- Please ask me to explain any of the questions you are not clear about and return the questionnaire when you have completed the questions. Thank you very much.

1. State the diploma/degree you are studying.

2. What is the approximate size of your Communication class?

3. Are you happy with the size of your class

   Yes No

4. Do you think class size has any bearing on your performance?

   Yes No

5. If yes, rank your 5 reasons according to the best reason (be brief).

1.	
2.	
3.	
4.	
5.	

6. If no, rank your 5 reasons according to the strongest reason.

1.	
2.	
3.	
4.	
5.	

7. In which other subject do you have the highest number of students?

8. State the approximate number.

9. What would you consider to be the ideal class size for effective communication?

10. The following were provided as reasons why students do not like large class sizes.

(Rank these factors according to the strongest reason on a scale of 1 to 10 e.g. A=1, D=2)

A	High noise levels	
B	Unpleasant comments passed by other learners	
C	Poor sound levels	
D	Less individual interaction with facilitator	
E	Less time to cover tasks intensely	
F	Difficulty of group task execution	
G	Facilitator cannot observe all students written tasks	
H	Fewer revision/preparation exercise tasks are corrected before a test or assignment.	
I	Negative peer pressure due to feelings of oblivion	
J	Higher absenteeism rate due to feelings of oblivion	

11. State any **other** reason/s why students do not like larger classes.

1	
2	
3	
4	
5	

APPENDIX C

OBSERVATION CHECKLIST

Describe situation in the classroom.

What is the lecturer doing?

What are the students doing?

What is the estimated class size?

Lecturer is facilitating or directing lesson? How can I tell?

Does class size play any role in lecturer's teaching style?

How do I tell?

Are there any visible challenges and constraints directly linked to class size?

Are there any clear benefits and advantages resulting from class size?

What resources are utilized by the lecturer during lesson delivery?

Are the resources taking into consideration the class size?

Is there evidence of data being used to drive instruction anywhere in the classroom? If so, what data?

Is it beneficial or hindering progress, considering the class size?

APPENDIX D

SEMI-STRUCTURED INTERVIEW WITH LECTURERS

1. Please state your name (use alias) 

2. How long have you been an educator at tertiary level?

(Please place a tick in the appropriate box)

1-4 years  5-9 years  10 or more years. 

3. What is your largest class size? 

4. What is your smallest class size? 

5 Has there been an increase in the number of students enrolled through the years?

a) Strongly agree  b) Agree  c) Undecided  d) Disagree 

e) Strongly disagree 

6 Are there noticeable differences in performance between your largest and smallest classes?

Yes ☐ No ☐

7 Apart from the logistical and administrative factors such as more marking, which class size do you prefer and why?

Small ☐ large ☐

Reasons

……..

……..

……..

8. Taking the subject content into consideration what, in your opinion, is the optimum size for an effective Applied Communicative Skills class?

9 Based on your vast experience in this course, which of the two extreme class sizes do most students prefer?

Small ☐ large ☐

Any reason/s why?

……

……

……

10 What in your opinion are the 5 greatest advantages of larger classes?

(Please briefly rank them according to the strongest factor)

1.	
2.	
3.	
4.	
5.	

11 What in your opinion are the 5 greatest disadvantages of larger classes?

(Please briefly rank them according to the strongest factor)

1.	
2.	
3.	
4.	
5.	

12 Do you think class size has a significant bearing on performance?

Yes ☐ No ☐

13 Is there any need to approach the two groups differently? No ☐

If yes, state some of the different methods used:

Small Group Techniques	Large group Techniques

14 Is there any other issue you want to point out regarding the topic of class size and achievement? No 

1.	
2.	

APPENDIX E

INTERVIEWS WITH LECTURERS AFTER CLASS OBSERVATION

(Please place a tick in the relevant box)

1. The class size (small or large) enabled students to achieve its learning objectives

Response Scale	**Responses**	
(1) Strongly disagree		
(2) Disagree		
(3) Neutral		
(4) Agree		
(5) Strongly agree		
(6) Not applicable		
(7) Don't know		
Total (N)		

2. I found the unit to be intellectually stimulating as a result of the class size (large /small)

Response Scale	Responses	
(1) Strongly disagree		
(2) Disagree		
(3) Neutral		
(4) Agree		
(5) Strongly agree		
(6) Not applicable		
(7) Don't know		
Total (N)		

3. The class size (large/small) in this unit supported the students' studies

Response Scale	Responses	
(1) Strongly disagree		
(2) Disagree		
(3) Neutral		

(4) Agree		
(5) Strongly agree		
(6) Not applicable		
(7) Don't know		
Total (N)		

4. The feedback I received in this part of the course was useful (ask the large and small class) did class size affect feedback

Response Scale	**Responses**	
(1) Strongly disagree		
(2) Disagree		
(3) Neutral		
(4) Agree		
(5) Strongly agree		
(6) Not applicable		
(7) Don't know		
Total (N)		

5. Overall I was satisfied with the quality of this unit (link to class size)

Response Scale	Responses	
(1) Strongly disagree		
(2) Disagree		
(3) Neutral		
(4) Agree		
(5) Strongly agree		
(6) Not applicable		
(7) Don't know		
Total (N)		

6. Feedback I received in this course was negatively / positively affected by large / small class size

Response Scale	Responses	
(1) Strongly disagree		
(2) Disagree		
(3) Neutral		
(4) Agree		
(5) Strongly agree		
(6) Not applicable		
(7) Don't know		
Total (N)		