

**THE EFFECT OF SETTING ACADEMIC AND BEHAVIOURAL GOALS ON THE
MATHEMATICS PERFORMANCE OF THE UNIVERSITY OF NAMIBIA SCIENCE
FOUNDATION PROGRAMME**

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APPROVAL PAGE

This research has been examined and is approved as meeting the required standards for the fulfilment of the requirements of the degree of Master of Education.

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DECLARATION

I Moses Chirimbana, hereby declare that *The Effect Of Setting Academic And Behavioural Goals On The Mathematics Performance Of The University Of Namibia Science Foundation Programme*, and that this work, or part thereof has not been submitted for a degree in any other institution of higher education.

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DEDICATION

This thesis is dedicated to:

My Wife: Hanna Nekulu Chirimbana

My sons Harmony Tawananyasha Chirimbana and Hazel Tadiswanashe Chirimbana.

My Mother: Mrs Marita Mwadaingei Chirimbana

My Late Father: Mr David Chichi Mubango Chirimbana

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ABSTRACT

Since independence, mathematics performance across all levels in Namibia remains a national problem among the parents, teachers, The Ministry of Education, regional, circuit education officers and all educational stakeholders. The Science Foundation Programme at Oshakati Campus of the University of Namibia is also caught up in this universal academic problem.

This study intended to find the effect of setting academic and behavioural goals in the Science Foundation programme of the University of Namibia. In this study Foundation students had to set academic and behavioural goals they intended to maintain in order to improve their mathematics performance but the reference was Test 1 which was written without set goals. The study sort to find out the effects of setting academic and behavioural goals, classroom factors that need to be fulfilled in the setting of goals so as to improve the mathematics performance of the Science Foundation Programme at Oshakati UNAM Campus. Consequently, this study sought to seek answers to the following questions: (1) What effect does the setting of academic goals have on the mathematics performance of the Science Foundation Programme Students of the University of Namibia? (2) What are the classroom factors that affect the setting of academic and behavioural goals? (3) How can the Science Foundation Mathematics lecturers plan and present their lessons to support and promote the setting of academic goals and behavioural goals?

This study used the quantitative research design. In order to assess the students' current academic level in mathematics, all students did not set goals for assessment Test 1, but started from assessment Test 2 until assessment Test 4 for the 2013 academic year. A quasi experimental design was adopted in this study where the control group had 46 participants and the experimental group had 80 participants. At the end of the goals setting process the

experimental group completed a questionnaire with open-ended and close ended questions to add to the information collected from the goal sheets.

Findings of this research study showed that the use of academic and behavioural goals significantly improved the mathematics performance of the students since the test of hypothesis accepted the alternative hypothesis which stated that that the experimental group would perform significantly better than the control group. This study also established that some factors such as students' level of competence should be taken into consideration and that specific teaching methods should be used in order to get maximum results in a goal oriented classroom environment.

It was concluded that the setting of academic and behavioural goals significantly improved the performance of the Science Foundation Programme students at Oshakati UNAM Campus. Therefore it is important for mathematics teachers in the same educational settings to implement the setting of academic and behavioural goals among their students as a way of improving the students' mathematics performance.

ACRONOMYS

CT	Control Theories
DNEA	Directorate of National Examinations and Assessment
FP	Foundation Programme
MAF1100	Mathematics Science Foundation course code 1100
MEC	Ministry of Education and Culture
MoE	Ministry of Education
NPC	National Planning Commission
KR	Kudder-Richardsons
SCT	Social Cognitive Theory
SPSS	Statistical Package for Social Sciences
SRL	Self-Regulated Learning
UNAM	University of Namibia

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CHAPTER ONE: BACKGROUND OF THE STUDY

The overview of the Science Foundation Programme at Oshakati Campus

The Science Foundation Programme was established in 2005 by the senate of the University of Namibia after the realization that there were fewer graduates in science related professions in Namibia. According to Naukushu (2012) before Namibia got its independence the education system was mainly characterized by inequalities brought about by the South African apartheid. Amutenya (2002) also stated that there existed three separate education systems in Namibia, i.e., the education for Blacks, Whites and Coloureds. The Black Namibians were believed to be incompetent in Mathematics and Science related subjects. Segregations in the education system continued to create a deficiency of manpower in science related professions like engineering, mathematics and science teaching, nursing, medicine and pharmacy, thereby imposing pressure on the Namibian Government to depend upon specialist personnel in these fields from other African countries like Zimbabwe, Zambia, Kenya, Tanzania just to mention a few.

After independence, the Namibian education system was reformed and four main goals that entailed accessibility, equity, quality and democracy were set (Ministry of Education and Culture [MEC], 1993). According to Aipanda (2008), more than 75% of Grade 12 learners in Oshana Region scored below a D symbol in Mathematics for the academic year 2007. Furthermore, the Directorate of National Examinations and Assessment (DNEA) (2010) noted that Mathematics performance has been poor in Oshana Region over the 2005-2009 academic years for both Grade 10 and Grade 12 learners. One of Namibia's national goals is the attainment of Vision 2030 which anticipates that the country will be developed and industrialized by the year 2030 (National Planning Commission [NPC], 2003). The realization of this noble national goal is

impossible if Namibia cannot produce its own manpower in mathematics and science related fields. Hence the Namibian government entrusted the University of Namibia to come up with a programme that specializes on equipping students with the relevant scientific skills to study science related degrees. The University of Namibia developed all the necessary materials through curriculum specialists in Mathematics and Science and came up with the Science Foundation programme which has been offered at the Oshakati Campus since 2005 (Ngololo & Kapenda, 2012). According to Ngololo and Kapenda, The Science Foundation Programme aims at increasing access to the science related faculties at the University of Namibia. The programme further aims at broadening access to higher education to previously disadvantaged and marginalized groups and afford them opportunities to enrol in the Science related degree programmes at the University. Many of the few students who gain direct access to the university do so without the critical knowledge and skills required to competently understand the subject matter in Sciences and Mathematics in the first year. This is attributed to the fact that learners graduating from these schools do not attain the same level of understanding and educational achievement as the ones that attend well-resourced schools (Naukushu, 2012).

The Science Foundation Programme offers only five subjects which are English, Mathematics, Physics, Chemistry and Biology. These are the foundation for Science related professions like Nursing, Engineering, Medicine, Pharmacy, Mathematics and Science Education. Students who wish to pursue these professions are required to have at least a C symbol or better in either core or extended mathematics for them to be enrolled in tertiary institutions in Namibia.

According to The University of Namibia (2012), only students with a minimum of an E symbol in Mathematics, E in English, D in Physical Science and a D symbol in any other subject are legible to enrol for The Science Foundation Programme, pursuing the above mentioned five

subjects for them to enrol in Mathematics and Science related fields within the University of Namibia after successfully completing the programme.

In the Science Foundation Programme each student is assigned a lecturer who advises them on their progress. The lecturer also finds out from the student any social challenges which the student may face (University of Namibia, 2012). Despite all these efforts by the University, students in the Foundation Programme do not do well in Mathematics as compared to the other subjects such as Physics, Chemistry, English and Biology (Naukushu & Chirimbana, 2011). The students usually get marks below 60% thus, disqualifying them from proceeding on to their desired programmes and may end up enrolling for diplomas or certificates, since the minimum pass mark for each Science Foundation Programme subject is 60% (Naukushu & Chirimbana, 2011). With regards to the academic year 2009, Naukushu (2012) noted that 30% of the Science Foundation Mathematics students did not pass their Mathematics with 60% or better and in 2010, 32% did not pass their Mathematics with 60% or better. Similarly, Mlohlala (2009) who did a study on the South African students doing Science Foundation Programme at the University of Kwazulu Natal which resembles the one offered at by the University of Namibia, noted that less than 50% of the enrolled students passed with a 60% in Mathematics in the 2007 academic year. Mabila, Maltje, Addo-Bediako, Kazeni, & Mathabatha (2006) noted that less than 50% of the Science Foundation Students at the University of Limpopo passed Mathematics with less than 60% in 2005. Finally, Naukushu & Chirimbana (2011) concluded that Mathematics performance in the UNAM Science Foundation Programme is very low, and still requires a lot of attention hence the justification for this research study.

Theoretical Framework

This research was based on goal oriented and goal setting theoretical frameworks. According to Alkinson (2009) the goal oriented and goal setting theories are commonly known as “Control Theories” (CT) and “Social Cognitive Theory” (SCT) respectively. These theories work on the premise that when individuals exert more effort, they achieve higher performance on a task when their set goals are measurable and specific. Covington (2000) state that the Control Theory forms an interdisciplinary branch of Engineering and Mathematics that deals with the behaviour of dynamical systems (systems that can be changed with time). The external input of a system is called the reference. In this study the reference is the Test 1 which was written without set goals. When one or more output variables of a system need to follow a certain reference over time, a controller manipulates the inputs to a system to obtain the desired effect on the output of the system (Alkinson, 2009). The desired effect is the ability of the student to match their own performances with the goals they set through controlling their own behaviours in such a way that they promote academic and behaviour goal attainment in the Science Foundation Programme.

Control theories operate in five basic stages which are: needs analysis, specifying desired behaviours that include formulating goals and specifying expectations that call for learning, experimentation and practising new behaviours, and generalisation and maintaining the new behaviour (Covington, 2000). Control theories fit well with the notion that students are active recipients of knowledge rather than passive recipients of information. Students contribute actively to their learning goals and exercise control over their goal attainment (Elliot, 1997). The usual objective of control theory is to calculate solutions for the proper corrective action from the controller that results in system stability. That is, the system will hold the set point and not oscillate around it. On this note, students will set academic and behavioural goals which they

keep on manipulating until the set academic goal is stable and a particular student can set a goal for himself that is aligned with minimum variability to his or her own ability, and maintains that over time.

Alkinson (2009) state that SCT-Self regulated learning (SRL) refers to a learning that results from students' self-generated thought and the establishment of behaviours that are systematically oriented towards the attainment of their learning goals. SRL involves goal directed activities that students investigate, modify and sustain for example attending to instruction, processing information, rehearsing and relating new learning to prior knowledge, believing that one is capable of learning and establishing productive social relationships and work environments. SCT theories also predict that individuals will seek to reduce discrepancies between goals and the state of the environment. SCT further predicts that individuals will set new and more difficult goals when goal or environmental discrepancies have been eliminated. The goal or environment discrepancy production is expected to occur only when individuals believe that they will be able to set and accomplish their goals in future, a construct that Alkinson (2009) identifies as self-efficacy.

Goal orientation theory is used as a way of achievement motivation and is used by researchers when they want to explain differences in classroom styles (Covington, 2000). Therefore, goal oriented learning can act as a motivator that can improve students' performance in the learning process. Motivation is an important variable in the learning process and is a construct that explains the start, direction and perseverance of behaviour aimed at a given academic goal focused on learning, achievement, the ego, social value or work avoidance (Fuente, 2009). Pintrich (2000) state that normative models of goal orientations identify the two types of goals as

academic or behavioural. This study adopted two main types of goals: performance goals which fall under academic goals and goals focused on the ego or behavioural goals which fall under the behavioural type of goals. The main purpose was to find out how the Science Foundation students can control or regulate their behaviours through behavioural goals in order to impact positively on academic performance.

Statement of the problem

The studies by Shiweda (2009), Naukushu (2012) and Aipanda (2008) focused on the Mathematics learners number sense capabilities at Grade 12 level. A study by Pintrich (2000), which was undertaken on goal oriented learning, was done on some American High School students and this study mainly focused on small numbers of learners, (less than 15). Pintrich found that goal oriented learning tended to improve the performance of students if the goal tracking protocols are properly followed. Studies by Fuente (2009) on high school mathematics students have shown that specific and ambitious goals lead to a higher level of performance than easy or general goals. As long as the individual accepts the goal, has the ability to attain it, and does not have conflicting goals, there is a positive linear relationship between goal difficulty and task performance. Students have been studying mathematics in the science foundation programme without setting academic and behavioural goals and their performance has been very poor, therefore the setting of academic and behavioural goals is important because it facilitates an individual in focusing their efforts in a specified direction.

The setting of academic and behavioural goals is a new phenomenon in SFP therefore, therefore this study specifically intended to find out the effect of setting academic and behavioural goals

on the Mathematics performance of the Science Foundation students of the University of Namibia at Oshakati Campus where class sizes are above 50.

Research questions

This study tried to seek answers to the following questions:

1. What effect does the setting of academic goals have on the Mathematics performance of the Science Foundation Programme students of the University of Namibia?
2. What are the classroom factors that affect the setting of academic and behavioural goals in the Science Foundation Programme students of the University of Namibia?
3. How can the Science Foundation Mathematics lecturers plan and present their lessons to support and promote the setting of academic goals and behavioural goals by students in the Science Foundation Programme?

Significance of the study

Students who are in the Science Foundation Programme intent to continue their studies with the University of Namibia or any other institution to pursue science related degrees like Engineering, Medicine, Pharmacy and others, if they pass well. Thus, this study was significant in the sense that goal setting in Mathematics might improve Mathematics performance in the Science Foundation Programme, thereby increasing the number of students who might enrol in various institutions of higher learning in Namibia to study mathematics and science related degrees. The findings of this study can be used by Namibian high school teachers who may also want to use the same strategy of goal setting with their learners. This study also provided valuable information on the Science Foundation Programme in that it revealed the short comings that need

to be addressed in order to improve the performance of the students in the Science Foundation Programme.

Limitations

The successful completion of this study might have been affected by time. Goal tracking needed a lot of time and commitment from both the researcher and the students which might have compromised on the completion of the mathematics syllabus of the Science Foundation Programme. Though the researcher tried his level best to keep the setting of goal confidential to the experimental group but reactive effects of the control group (setting goals for themselves after hearing from the experimental group) was minimised in this study.

Delimitations of the study

This study was restricted to registered students in the Science Foundation Programme in the 2013 academic year at the University of Namibia at Oshakati Campus.

Definition of terms

The following terms are defined as below:

Goal: It is a potentially accessible, conscious cognitive representation of a unit of structured knowledge, subjective conception (Fuente, 2009). In this study this is what the student intends to achieve prior to a test item on mathematics.

Academic goals: These are motives of an academic nature that students use for guiding their classroom behaviours. In this study this was a goal a student sets prior to a test item, which he intends to achieve in the next test (Fuente, 2009).

Behavioral goals: These are ideas, judgments and perceptions of ability from a normative and comparative reference with respect to others (Fuente, 2009). In this study these were a set of behaviours a student wished to comply with in order to attain his/her pre-set academic goals.

Academic Performance: This means achievements in education (Fuente, 2009). In this study this referred to the mark obtained by a Science Foundation Programme student after writing a test item.

CHAPTER TWO: LITERATURE REVIEW

Introduction

This chapter provides the review of literature on academic and behavioural goals and learning strategies. Apart from that, the role of academic and behavioural goals as motivators of academic achievement in self-regulated learning will also be discussed in this Chapter. Furthermore, a literature overview of the role of academic and behavioural goal as control and social cognitive learning theories will also be given in this chapter. The chapter will also explore the various relevant classroom factors and planning logistics that need to be complied with during the implementation of goal oriented learning theory based on literature. This section also presents the relationships between academic and behavioural goals as shown by previous studies. Finally it presents the challenges in the implementation of academic and behavioural goals.

Academic and behavioural goals versus strategic learning strategies

Burrows (2000) stated that the goal setting process should be characterized by teacher guidance at the beginning through shared guidance of both the student and the teacher to more student independence at the end. A teacher should orientate his teaching towards the students' learning process. The teacher knows when and how to intervene in the setting of academic and behavioural goals and has the students' learning as his/her top priority. A good teacher should also have the ability to measure students' perceptions of their receptivity to learning new information, their attitudes and interest in class, their diligence, self-discipline, and willingness to put the effort necessary to successfully achieve their pre-set academic and behavioural goals, and the degree to which they worry about their academic performance (Volet, 1997). Fuente (2009) advised during the setting of academic and behavioural goals, that the teacher should be able to

assess the will component of strategic learning by following attributes of a student in the following aspects:

- **Attitude**—the student’s perceived motivation and interest to succeed in their goal attainment, and willingness to perform the tasks necessary for their overall academic success.
- **Motivation**—the extent to which the student accepts responsibility for performing those tasks by using self-discipline and hard work.
- **Anxiety**—the degree of willingness perceived by the student when approaching academic tasks (pp.8-9).

Youngcourt and Beauben (2007) state that the goal setting learning theory explains how a student judges his or her own ability to manage, or self-regulate and control, the whole learning process through using their time effectively, focusing their attention and maintaining their concentration over time, checking to see if they have met the learning demands for a class, an assignment or a test, and using study supports such as review sessions, tutorials or special features of a textbook. According to Fuente (2009) self-regulation component of strategic learning are:

- **Concentration**—the student’s perceived ability to focus his or her attention, and avoid distractions, while working on school-related tasks like studying.
- **Time management**—the student’s perception of the extent to which they create and use schedules to manage their responsibilities effectively.
- **Self-testing**—the student’s awareness of the importance of self-reflecting and reviewing when learning material, and use of those practices.
- **Study aids**—the student’s perceived ability to use or develop materials that assist with

the learning process for the attainment of the pre-set academic and behavioural goals (pp.19-20).

The goal oriented learning strategy is a relatively new concept in the African educational setting but it is quite common in well developed countries like Britain, Australia, and America (Volet, 1997; Fuente, 2009). A study by Eison (2000) on the European pre-university students showed that the setting of academic and behavioural goals can impact positively on academic performance though his study focused on small classes of between 15 and 20 students. The current study investigated the effect of setting academic and behavioural goals to a Namibian classroom where the teacher pupil ratio is 1:55 or greater.

Academic and behavioural goals as self-regulation strategies of motivation

Motivation has been a highly important variable in education, as reflected in the notion that every learning model either explicitly or implicitly incorporates a theory of motivation (Schunk, 1996). From an academic perspective, recent motivational models consider motivation as a hypothetical construct that explains the start, direction and perseverance of behaviours aimed at a given academic goal focused on learning achievement, the ego, social value or work avoidance (Youngcourt & Beauben, 2007). According to (Covington, 2000) four components are involved in this process:

- i. The value the students assign to the goals.
- ii. Perception of their students' competencies.
- iii. Causal attributions.
- iv. Emotional reactions (pp. 29).

Goal orientation theory is used as a way of achievement motivation and is used by researchers when they want to explain differences in classroom styles (Alkinson, 2009). Therefore the setting of academic and behavioural goals can act as a motivator that can improve the students' performance in the learning process. Elliot (1997) stated that the strength of goal oriented learning is its ability to work related outcomes. By this, he meant that goal oriented learning is more relevant in a work environment where one's target is to complete a pre-set task. Wentzel (1998) also emphasized that academic or performance and behavioural goals are important because they function as a mechanism that activates a certain type of information processing that will lead to a strategic-deeper level of understanding, guaranteeing academic success for a student.

Covington (2000) also stated that students with learning goals may use various motivational, affective, and learning strategies over time; when these have resulted in good attainment, it leads them to adopt achievement of goals in the end. Ames (2000) state that in goal oriented learning, learners play an active role in planning, monitoring and evaluating the learning process. Planning implies that a learner starts with considering a variety of ways to approach a task, sets a clear goal, selects strategies for achieving the goal and identifies potential obstacles to successful attainment of the goal. Monitoring implies that the learner is aware of what he or she is doing and anticipates what ought to be done next, by looking back and forward. After completion, evaluation takes place of both the process and the product of the learning process. Reflection plays an important role in the process of self-regulation. It can therefore be argued that self-regulated goal oriented learners plan, monitor and evaluate their own learning and direct or regulate their own learning process (Johnson, 2000). Youngcourt and Beauben (2007) add that goal oriented learning involves not only cognitive self-regulation but also motivational self-

regulation, and both are interwoven aspects of self-regulated learning. Motivation plays an important role in promoting and sustaining self-regulated learning. Therefore students who are motivated by the set goals keep high levels of motivation and maintains higher levels of autonomy in their learning process since they are always in control of the entire learning process (Winnie, 1997). Learners should be stimulated to be aware of their own prior knowledge and should be stimulated to regulate or direct their learning process both from a motivational and a cognitive perspective so that when they set their behavioural and academic goals they align them with their levels of academic competencies (Dweck, 2009).

Learning should be a collaborative process between the teacher and the students and so is the goal setting process. Eison (2000) state that collaboration is a social structure in which two or more people interact with each other, share ideas and negotiate in the knowledge sharing process. Collaboration is not a matter of division of tasks among learners, but involves mutual interaction and a shared understanding of a problem, mutual understanding of a students' performance in the case of a teacher, so that the goal setting process can be a collaborative process. According to Covington (2000) collaborative goal setting and goal tracking takes place when the following conditions are met: participants have a common goal, share responsibilities, are mutually dependent and need to reach agreement through open interaction. Johnson (2000) argue that there are certain factors within the collaborative learning situation which may enhance learning. The factors are; elaborations, verbalizations, co-construction, mutual support and criticism and tuning in cognitively and socially. In other words, learners should be stimulated to interact with each other in the goal setting process because these interactions may positively influence the process of setting meaningful, realistic and achievable goals. In order to stimulate students' learning, students in a goal oriented learning environment set goals with their teacher, agree and

sign on them and then later track on them together and make necessary adjustments. This process will help students to tune them in cognitively and socially as they interact with others students in the goal setting exercise. Goals are the driving force behind students' learning in a goal oriented learning environment and set goals are used to engage students actively and responsibly in their own learning (Pintrich, 2000). Goals are used to stimulate students and to keep them focused all the time. Eison (2000) argue that the goal becomes the purpose and focus for acquiring knowledge and fosters flexible thinking. The use of goals makes learning in a goal oriented learning environment a constructive and contextual process because as each student reflects on the pre-set goal, he/she is forced to think critically, and construct proper knowledge and schemas that enable him or her to achieve the set goal.

Academic and behavioural goals as control and social cognitive theories (SCT)

The Control and Social Cognitive theories fit well with the notion that students are active recipients of knowledge rather than passive recipients of information. Students contribute actively to their learning goals and exercise control over their goal attainment (Elliot, 1997). The usual objective of control theory is to calculate solutions for the proper corrective action from the controller that results in system stability, in this case the stability occurs in the performance the student predict using goals and then control behaviours appropriately in order to meet the set academic goals. That is, the system will hold the set point and not oscillate around it, a phenomenon Covington (2000) identified as self-efficacy. A student who is able to set new behavioural goals that can make him achieve his/her academic goals without being helped to do so by the teacher is said to have reached the self-efficacy attribute.

The combined application of SCT and Control Theories (CT) through the setting of academic and behavioural goals is associated with higher intrinsic motivation among students and leads to greater academic success since students take total responsibility of their own learning outcomes (Ames, 2000). When the goal or environmental disparity production has occurred, the individual will have attained self-efficacy and will be able to set and accomplish new academic and behavioural goals. However, reaching self-efficacy is only possible if the individuals involved are committed to the goal, believe that they can accomplish the goal, and have the requisite skills to achieve the goal.

Covington (2000) state that Control theories are centred on reduction of goals/environmental discrepancies. In control theories, when an individual perceives a discrepancy between current states, some action is taken to reduce the discrepancy. To reduce a goal/environmental disparity, an individual may change behaviour (e.g. exert more effort) or change their goals or their attitudes toward some academic perceptions. Bandura's (1982) research on self-efficacy showed that the more individuals perceive their own actions as effective, the more likely they will persist in the task they are doing in terms of time and effort invested. Bandura further state that self-efficacy can be defined as the judgment one makes on his/her capability to exhibit a series of specific behaviours for the purpose of reaching a certain level of achievement. Fuente (2009) stated that if students are able to improve their academic performance through the setting of academic and behavioural goals, they become motivated and they become more ambitious in setting much higher academic goals and behavioural for themselves even without anyone tracking on the achievement of goals. By that they will become responsible and more

accountable for their own learning because they can identify their own shortcomings in the learning process and rectify them accordingly.

Classroom factors that enhance goal attainment

Fuente (2000) stated that classroom dynamics can moderate goal effects among students. He further argues that classrooms with competitive ability goals or failure avoidance goals encourage students not to pay attention or value the importance of learning or mastery in order to focus attention and effort on doing better than others. Classrooms with learning goals promote a number of gratifications, getting students involved in their learning, recognizing students' efforts in learning, promoting learning from recognizing one's mistakes or clarifying goals. Schunk (1996) established some defining elements of learning situations that promote learning goals:

- a) Possibility of task of choice.
- b) Choice of individual academic and behavioural goals.
- c) Autonomy in the school action (pp.34).

The students' perceptions of the classroom goal structure have been considered more decisive than the classrooms actual structure in determining students' performance when the goal oriented theory is being employed. Pintrich (2000) stated that using learning and achievement contexts, with both implicating and non-implicating self-evaluation, show the effects of these situations on students' expectations of self-efficacy, persistence in effort and tendencies toward self-evaluation. Johnson (2002) also stated that competitive goal environments can e.g. cause damage to low performers in some classroom environments. Therefore, it is important for teachers to understand variations in academic performance among students so that they can make an alignment of student goals with their respective academic performances for them not to set

academic goals which are too high and may end up being discouraged once they fail to attain those goals.

Elliot (1997) advised that behavioural goals which students should set are classroom norms or rules which the students wish to observe, obey and comply with, for them to meet their academic goal target, e.g. coming to the Mathematics class on time or doing all the assigned class work and homework. Covington (2000) also argued that teachers who want their students to give off their best should work together with their students through setting achievable performance or academic goals which the student can improve step by step. Wentzel (1998) also emphasized that teachers should allow students to set goals which are within their ability, and they can improve on them with time so that as students work towards achieving these goals they become motivated to perform even better. According to Elliot (1997) goal oriented theoretical framework is more conducive in classroom environments where the teacher- student ratios are less than 15 for easy goal tracking and follow up. However, Youngcourt & Beauben (2007) indicated that students need to understand their differences in academic performance. Youngcourt and Beauben further indicated that when setting goals students should not compete with each other, but should share some ideas with each other during the goal setting process.

Another important characteristic of goal oriented learning is that learning takes place in relatively small groups (Fuente, 2000). In these small groups, students learn from interacting with each other, e.g. by explaining the concepts to another student and by asking and answering questions and by discussion. In classroom group work, students work together to construct collaborative explanations. In addition, students learn to work together, which may help them to attain their pre-set academic and behavioural goals. Students should also self-reflect on their work and see how much progress they have made at the end of each lesson. Thus, the tutorial

group work session make learning in the goal oriented classroom a rich learning environment and thus stimulates students toward interactions that are intended to have a positive effect on their goal attainment (Winnie, 1997).

Relationship between academic and behavioural goals in performance improvement

Winnie (1997) suggested that the two dimensions of academic and behavioural goals need to be used jointly in order to obtain good academic performance. Dembo (2011) noted that educational interventions directed towards improvement of students' motivation should be multi-dimensional if goals are used. The academic and behavioural goals setting process should be a continuous process done at regular intervals preferably after every two weeks so that students do not set goals and forget about them. Students need to be kept closer to their goals all the time so that they remain motivated, and dedicated towards working hard to achieve their goals. Wenzel (1998) stated that one of the important goals among school students is seeking friendship with each other. This friendship seeking goal is given more emphasis and respect than academic goals. Wenzel further argue that children with greater social or behavioural goals are judged more positively by peers and teachers since attainment of such goals have shown to have a positive correlation with the prediction of academic achievement. Elliot (1997) suggested that a combined, interactive use of academic and behavioural has a positive multiplicative effect on students' academic performance.

Pintrich (2000) advised that students should adopt both behavioural and academic goals at different moments; reaching good academic attainment through a phenomenon he called "journey metaphor" (pp.23). He added that students with learning goals may use various motivational, affective and learning strategies over time; when these have resulted in good attainment, it leads them to adopt achievement goals in the end. Wenzel (2000) also emphasized

on the importance and complimentary role of academic and behavioural goals improve the students' performance if used together. Wentzel further argue that learning goals correlated positively with family cohesion, perception of support from the teacher, interest in academically related activities, social or behavioural goals, goals of social responsibility, and interest in classroom activities. Therefore if goal oriented learning is to be implemented in an educational setting all the stakeholders in the educational fraternity need to collaborate together for maximum results. Parents need to complement the teachers' effort in the goal tracking and help their children in the goal setting and goal tracking process. More so, the teachers classroom activities should also be have be set at the proper cognitive level that will enhance students' goal attainment process at the end.

Challenges in implementing goal oriented theoretical framework

Elliot (1997) argued that the greatest challenge when it comes to conceptualising the types of goals is their diversity of taxonomies. He suggested that goals should be categorised according to what they do for a student. He categorised these goals into two main categories: those goals pertaining to behaviours and those pertaining to academic achievement. Achievement oriented goals are described as a student's wish to achieve highly on external indicators of success, such as grades. The students' sense of satisfaction is highly influenced by their grades, and so it is associated with discouragement in the face of low marks (Fuente, 2009).

In addition, the desire for high marks increases the temptation to cheat or to engage in shallow rote-learning instead of deep understanding of concepts. Pintrich (2000) stated that behavioural goals are accomplished when a student is set to complete a task when he or she is interested in the task for its own qualities. Covington (2000) argued that achievement goals provoke a repetitive, superficial processing, influencing the academic achievement negatively. Eison (2000)

noted that the study of students' goals has been biased towards the study of academic-type goals, to the detriment of social or behavioural goals, thus he advised that teachers should encourage the utilization of both types of goals so that they can complement each other in the improvement of students' performance. Covington (2000) further suggested that provisions must be made during the process of planning to set goals, for parents to sign when their children have set academic or performance goals so that they can also track them and set new goals prior to any assessment test so as to compliment the teacher's effort.

According to Fuente (2009) some teachers face the problem of aligning students' ability with their academic goals. This may end up forcing students to set goals which are far beyond their reach and may cause discouragement and make them become less committed to work hard or may cause cynicism or student absenteeism. Conversely, if the degree of teacher goal regulation/adjustment is too loose, e.g. a teacher who is too passive or too rigid in the goal setting process, students may be discouraged by this teacher goal rigidity. Dominant teachers in the goal setting process hinder the goal attainment process, but a quiet or passive teacher who can just accept any goal a student sets without aligning it with the students' ability may make the setting of academic and behavioural goals fail to improve performance (Fuente, 2002).

Thus according to Pintrich (2000) goal oriented learning theory should be characterized by more teacher guidance at the beginning through shared guidance of both the student and the teacher to more student guidance (students guiding themselves) at the end if self-efficacy is to be attained. A good teacher should orient students' goals with their performances. He/she should know when and how to intervene in the goal setting process, and should also allow students to self-reflect on their own academic and behavioural goals.

In order to challenge students and stimulate the students towards goal oriented learning, there should be a constructive friction in the goal setting between the student and teacher (Winnie, 1997). Covington (2000) emphasized the need for a transition from teacher regulation, or external guidance through shared guidance in which the student and the teacher together guide the learning process to student regulation or internal guidance in the goal setting process. If students can regulate and adjust their own goals it means they have reached self-efficacy and as such, they can control and regulate their on learning by portraying the positive behavioural traits that supports academic goal attainment.

Summary

This chapter provided the review of literature on the academic and behavioural goals versus self-regulation learning strategies. Furthermore, a presentation on the role of academic and behavioural goals as motivators of academic achievement in goal oriented learning was also made. Apart from that, this chapter gave a literature overview of the role of academic and behavioural goal as control and social cognitive learning theories. In addition to that, various relevant classroom factors and planning logistics that need to be complied with in the setting of academic and behavioural goals were explored based on literature. It also presented the relationships between academic and behavioural goals, how they complement each other in improving students' performance. Literature by Covington (2000), Volet (1997) and others was also reviewed on the effect of setting academic and behavioural goals in small classroom settings.

Finally, this chapter highlighted the challenges in the implementation of the goal oriented theoretical framework in a modern educational setting where class sizes are large.

CHAPTER THREE: METHODOLOGY

Introduction

This chapter presents a description of the methodologies which were used in collecting and analysing the data for this study. It also gives the research design, population and sample, sampling procedure, data collecting procedures, ethics, and data analysis.

Research design

This study adopted a quantitative research approach and the quasi-experimental design. These designs were suitable for the study because the researcher had to make comparisons of the pre-set goal and the attained goal to see if there would be a difference in performance between the two. Christensen, Johnson and Turner (2010) stated that quasi-pre-test control group experimental design is suitable for all topics where the researcher seeks to establish a causal relationship and where it is possible to introduce and control the stimulus (i.e. manipulate the independent variable which is the set goal) at a specific time or to the specific groups of participants. The study applied the quasi-trait goal approach. According to Pintrich (2000), in the quasi-trait goal approach, the goal is deemed a disposition or a personality variable that an individual may possess in such a way that affects that individual's achievement of goals in a goal attainment situation. With the quasi-trait experimental approach the researcher measured goals several times throughout the study. The researcher modified or changed the goals as need arose after every test item, until self-efficacy (i.e. ability for one to set new goals for him / her without supervision) was attained. Academic and behavioural goals were set based on the FP

mathematics test one which was used as a standard until test 4. All the written tests were marked out of 50.

Population

The population for this study comprised of 130 students in the Science Foundation programme of the University of Namibia who were registered in the 2013 academic year.

Sample and sampling procedure

This study employed stratified random sampling. According to Saliby (2005) stratification is the process of dividing members of the population into homogeneous subgroups before sampling. The strata should be mutually exclusive: every element in the population must be assigned to only one stratum. Specifically, this study employed collectively exhaustive stratified random sampling technique since no population element was excluded. There were three Mathematics Classes in the Science Foundation Programme of the University of Namibia with 38 students in Class 1, 44 students in Class 2, and 48 students in Class 3. All the students in the first two Classes formed the experimental group (Strata 1) for the study and all students in the third Class formed the control group (Strata 2). Thus, the experimental group for this study consisted of 80 students because two of the students dropped out of school during the course of this study while the control group consisted of 48 students because one dropped out of the Science Foundation programme and the other student passed away during the course of the study.

Research instruments

This study used the following instruments to collect the data from the sample:

Goal sheets

The researcher used students' goal sheets to collect the data for analysis. These were sheets where students in the experimental group set their academic and behavioural goals to be achieved prior to a test item. The set goals were then compared with the attained mark and an assessment of whether the targeted goals had been attained or not were done and new goals were set thereafter. After Test 1 for 2013 of the Science Foundation Programme Mathematics 80 students forming the experimental group set goals they intended to achieve in assessment Test 2 and this process was repeated until the Test 4. Goals were tracked after every test for the experimental group to see whether they were achieved or not. The researcher discussed with the students any challenges which might have led to the failure to attain their intended goals. For the control group only their attained marks were recorded after each of the above mentioned tests. These tests were adopted after every six weeks covering the following topics: numbers, sets, matrices, arcs and circular measures, percentages, solving equations (linear and non-linear simultaneous equations) which form part of the Science Foundation Mathematics Curriculum.

Assessment tests

The researcher administered assessment Test 2 until Test 4 for the Science Foundation Programme Mathematics for the academic year 2013. These assessment tests were administered to all the three classes, and were departmentally moderated end of topic tests. All tests were two hours 30 minutes long and were marked out of 50. Test one covered different types of numbers, rounding off, LCM and HCF, application of the BODMAS rule and surds. Test 2 covered percentages and fractions, conversions, direct and indirect proportions, sets and Discounts and sales tax. Test 3 covered matrices, circular measure, simultaneous linear equations, and similar

figurers. Test 4 covered logarithms and indices, solving exponential equations and factorisation of algebraic expressions.

Questionnaire

The experimental group was asked to complete a questionnaire with structured open ended and closed ended questions. The questionnaire measured the general students' perceptions of the goal setting exercise and other classroom factors such as rules and classroom norms students thought influenced their goal attainment capacity and other planning technicalities such as the time between setting a goal and tracking it. The questionnaire also explored the students' experiences with the goals exercise and its impact on their performance.

Pilot study

A pilot study was carried out by the researcher prior to the main study to check the feasibility of the study. The pilot study comprised 30 students randomly selected from the three Mathematics classes in the Science Foundation Programme in the academic year 2012. The questionnaire was also piloted with the 2012 Science Foundation Programme group who were recruited using the same entry requirements as the 2013 group since the Foundation Programme entry requirements and the learning environments are also the same. The pilot study helped the researcher to restate some questions on the questionnaire which were double-barrelled. Some questions on the test papers which were ambiguous were also corrected based on the pilot study.

Validity

Validity is the extent to which an instrument measures what it is meant to measure (Christensen, Johnson & Turner, 2010). In this study content validity of the assessment tests and the goal sheet was determined. The content validity of the goal sheets was determined by submitting the goal sheet sample to three colleagues and the two supervisors of the study for them to see if the prepared goal sheet had all the necessary information needed to complete this study. The content validity of the assessment tests was determined by three specialist mathematics lecturers from The University of Namibia.

Reliability

Any measurement tool that is set to perform a task of measuring has to be appropriate for that particular task. Measurement of students' perceptions about goal setting questionnaires must be valid and reliable. Both questionnaire and the sheets must measure with great precision what they are intended to measure. Therefore subjecting to reliability and validity check will ensure the attainment of this academic expectation. Christensen Johnson and Turner (2010) defined the reliability of an instrument as the extent to which consistent measurements would be obtained if the same study was to be repeated.

The questionnaires for this study were self-administered and uniform, and all participants in the experimental group were given the same amount of time to complete them. However, the researcher made clarifications to those students who did not understand what was expected of them. Questions on the questionnaire were coded to enhance data analysis using Statistical Package for Social Sciences (SPSS). In order to ensure consistency in attribute measurement and to be quite sure that every change noted was observable and not due to the measurement process,

the test items, questionnaires and the goal sheets were all tested for their reliability attribute. These were subjected to test- retest technique, based on the assumptions that the measured phenomenon did not change between any two testing times (Covington, 2000). The assessment tests, and the goal sheet were piloted on 30, 2012 Science Foundation students together with the questionnaires and the goal sheets. The Kuder-Richardsons' (KR) coefficient of reliability value of 0.88 was obtained. This value shows that the instruments had a high level of reliability since the value was close to 1.

Data collection procedures

Assessment tests for the Science Foundation Programme Mathematics group for the year 2013 were administered between March and September 2013. Goals were set for Test 2 based on Test 1 mark and the goal setting process continued until Test 4 .The researcher agreed with the students on a particular goal set after Test 1 and the student had to sign in the goal sheet on the agreed goals.

Ethical considerations

Students who participated in this study received full information about the purpose and objectives of the study so that they could make informed decisions about whether to participate. Participants were assured that their information would be treated with the strictest confidentiality and privacy. Data was captured on a personal computer which was password protected. Pseudo names were used for the research participants and they were assured of anonymity when they completed the goal sheets. Participants were also informed that they were free to withdraw should they have wished to do so.

Data analysis

The data were presented in frequency tables and graphs. The results of the students' performance were analysed using descriptive statistics; the influence of goal setting on the academic performance of students in Mathematics was analysed using inferential statistics through the use of the z test. The Statistical Programme for Social Sciences (SPSS) was used to compute the descriptive statistics of the data findings and the z test. There were no notable constraints which might have influenced the results of this study. Goals were set during mathematics lessons after a test item and after making sure that none of the students from the control group were in the classroom vicinity.

CHAPTER FOUR: PRESENTATION AND DISCUSSION OF RESULTS

Introduction

This chapter presents the findings, interpretations and discussions of the research findings. Findings from both the quantitative and qualitative data will be presented in this chapter. The chapter is divided into six sections namely:

1. Bibliographical information.
2. Establishing the general Foundation Programme (FP) students' performance.
3. Analysis and evaluation of academic and behavioural goals.
4. Establishing the classroom factors that support the goal oriented theoretical framework.
5. Establishing students' experiences with the goal setting exercise.
6. Determining the effect of setting academic and behavioural goals on the mathematics performance of the Science Foundation Programme students.

Bibliographical information

Results for this study were collected from 130 registered students in the Science Foundation Programme of the University of Namibia in Oshakati for the 2013 academic year. The experimental group for this study comprised 80 students whereas the Control group comprised 46 students. The experimental group consisted of: 26 (32.5%) males and 54 (67.5%) were females, while the control group comprised 16 (34.8%) males and 30 (65.2%) females.

Figure 1 gives the age distribution of the respondents.

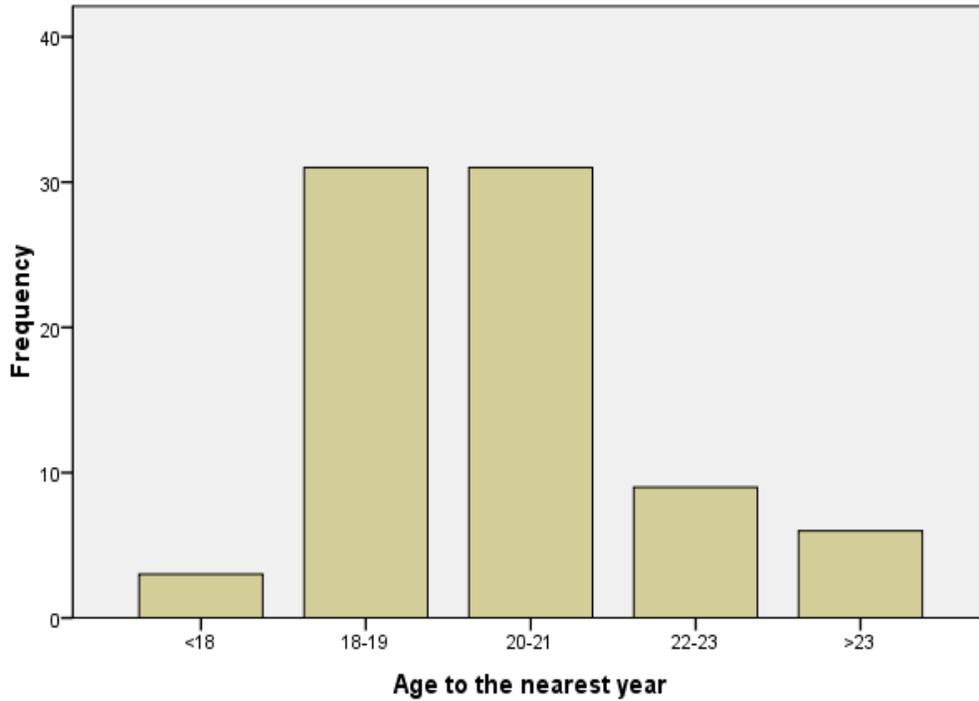


Figure 1: Age distribution of the experimental group

Figure 1 shows that the age distribution of the participants in the experimental group was approximately normal with age groups 18-19 and 20-21 years having a frequency of 31 and younger than 18 years had 3 participants.

Table 1 shows that 2 participants in the control group were less than 18 years while 16 participants were between 18 and 19 years, 17 participants were aged between 20 and 21 years, 6 participants were aged 22-23 and finally 5 participants were older than 23 years.

Table 1: Age distribution of the Control group

Age Interval	Frequency	Percentage
<18	2	4.1
18-19	16	40.0
20-21	17	36.0
22-23	6	13.0
>23	5	10.9
	46	100.0

Foundation Programme students' performance in Test 1

The Foundation programme takes students who have a minimum of 17 points and a maximum of 24 points and the minimum symbol in specific subjects are: Mathematics E, English E, Biology E, Physical Science D, and any other subject D. These students are randomly slotted into the three classes without a specific criterion. This study established the general performance of the students between the control group and experimental group in order to see if the performances in the two groups were the same prior to the treatment which was the setting of goals. Table 4 shows the performances of the two groups after writing the mathematics Test 1 of the Science Foundation programme which was marked out of 50.

Foundation Programme students' performance in Test 1

Table 2: Comparison of the performance of the experimental and control group in Test 1

Test 1	Number (N)	Range	Mean	Std. Deviation
Experimental Group	80	26	34.85	5.408
Control Group	46	28	34.28	6.292
Total	126			

Table 2 shows that the mean performance for the experimental group which had 80 participants was 34.85 with a standard deviation of 5.408, while that of the control group which had 46 participants was 34.28 with a standard deviation of 6.292. The experimental group had a range mark of 26 while that of the control group was 28.

From Table 2 it can be seen that the experimental group had a 0.57 points slightly higher mean than that of the control group. However, a z test for the differences of two population means gave ($z=1.289$ at $\alpha=0.05$). Since the calculated z value of 1.289 is less than the standard value of 1.645 we accept the null hypothesis that states that ($\mu_E=\mu_C$) i.e. there is no significant difference in the performances of the two groups before the goal setting exercise was undertaken. This is further confirmed by the 95% confidence interval of the mean differences (-0.0338; 1.181) that includes zero, showing that there was no significant difference in performances between the experimental and control groups before goals were set.

Students behavioural goal achievement levels in Test 1

After establishing that the initial performance between the two groups was the same, the experimental were asked to set academic and behavioural goals which they intended to achieve in Test 2. Table 3 shows the achievement of academic goals by the experimental group.

Table 3: Summary of academic goal achievement after Test 2

	Frequency	Per cent
Achieved	19	23.8
Not Achieved	61	76.2
Total	80	100.0

In is evident from Table 3 that out of the 80 students who set different academic goals which they intended to achieve on Test 2, only 19 (23.8%) of the students managed to achieve their set academic goals and 61 (76.2%) of the students did not achieve their set academic goals whereas

This finding seems to suggest that those students who did not manage to achieve their set academic goals, their goals might have been too high and needed to be moderated downwards for them to be achievable. This finding conforms with what Wentzel (1998) indicated when he said that teachers should allow students to set goals which are within their ability, and they can improve on them with time so that as students work towards achieving these goals they become motivated to perform even better. These results further suggest the possibility that those students who did not achieve their academic goals might not have aligned them properly with the necessary behavioural goals for the two to complement each other. This finding further suggests that the students might not have conformed to Fuentes' (2009) components for self-regulation which are concentration, time management and self-testing for them to achieve their pre-set

academic goals. Even though the greater percentage of students did not manage to achieve their academic goals, their performances improved (see Table 4).

Students' performance after Test 2

Table 4: The test results of the experimental and control groups after Test 2

Group	SCORES				
	N	Range	Mean	Std. Deviation	Variance
Control Group	46	34	28.96	7.444	55.420
Experimental group	80	38	32.46	7.916	62.657
Total	126				

From Table 4 it can be seen that the achieved maximum marks out of 50 for the two groups were the same 47. The range for the experimental group was therefore 34 and 38 for the control group. The means of the two groups differed by 3.5 percent points with the experimental group having a higher mean of 32.46 with a standard deviation of 7.916, while the control group had a mean of 28.96 with a standard deviation of 7.444.

A z test of the differences between the two groups based on the results in Table 4 gave ($z=2.837$, $\alpha=0.05$) with a z standard value of 1.645 which resulted in the rejection of the null hypothesis in favour of the alternative confirming that ($\mu_E > \mu_C$) i.e. the experimental group performed significantly better than the control group though generally it can be seen that the control group also improved as compared to Test 1.

Goal tracking was done and followed by proper goal adjustments for Test 3. The findings above tally with the findings of Wentzel (1998) who stated that academic and behavioural goals are important because they function as a mechanism that activates a certain type of information processing that will lead to a strategic-deeper level of understanding, guaranteeing academic success for a student.

The students' academic goal achievement on Test 3

The experimental group students continued to set their academic and behavioural goals for test three and the necessary goal adjustments and moderation was done based on whether the student had achieved the previous goal or not. Table 5 shows the level of academic goal achievement made by the experimental group.

Table 5: Academic goal achievement on Test 3

	Frequency	Percent
Achieved	31	38.8
Not Achieved	49	61.2
Total	80	100.0

Table 5 shows that 31 (38.8%) of the students who set academic goals after Test 3 managed to achieve them, whereas 49 (61.2%) of the students did not achieve their goals. Though these results show an improvement in terms of numbers of students who managed to achieve their academic goals as compared to the level of goal achievement for Test 3, still more needed to be done to have the number of students who achieved their goals to out-number those who did not.

Students' academic goal achievement inn Test 3

These results reflect that there might still be some behavioural attributes that needed to be amended in order to have a large number of students achieving their academic goal targets. It can be seen in Table 5 that less than 50% of the students managed to achieve their set academic goals. These results further suggest that the students might have failed to orient their performance with their behaviours. These findings concur with what Fuente (2009) who stated that students' attitudes, motivation and anxiety levels determine the extent to which they attain their academic and behavioural goals. The students' attitudes might have been negative during the setting of goals and they failed to achieve them or they might have failed to get the motivational aspect of the goals they set and resulted in them not achieving the academic goal.

Students performance for Test 3

After test two students continued to set academic and behavioural goals. Table 6 below show a summary of students' performances.

Table 6: The results of the experimental and control groups for Test 3

	SCORES						
Test 3	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Experimental group	80	48	0	48	28.95	9.553	91.263
Control Group	46	42	8	50	27.54	9.779	95.631
Total	126						

Table 6 shows that the experimental group had a minimum score of 0 out of 50 and a maximum score of 48 out of 50, while the control group had a minimum test score of 8 out of 50 and a

maximum of 50 out of 50. The experimental group had the minimum test mark of 0 while the control group had a maximum test score of 8 out of 50. Although more students achieved their academic goals than in Test 2, but the means for both groups decreased although the experimental group had a higher mean mark of 28.95 with a standard deviation of 9.553 and the control group had a mean mark of 27.54 and a standard deviation of 9.779.

At a glance the results in Table 6 seems to show a slight effectiveness of goal setting. A z-test of the differences between the two groups based on the results in Table 6 gave ($z = 0.353$, $\alpha = 0.05$) which resulted in the acceptance of the null hypothesis disregarding the claim that the experimental group performed better than the control group i.e. ($\mu_E < \mu_C$). The general decline in performance between the groups suggests the possibility that the test items were slightly harder than before. These findings concur with what Covington (2000) called the four components of goal setting. He stated that the value a student assigns to a set goal, the perceptions the student has on the competencies, some casual attributions and emotional reactions or cognitive change in behaviour are important components that determine the level of goal achievement by a student. The students might not have assigned a great value to the goals they were setting and might have had negative perceptions during the time of studying to achieve these goals and this ended up affecting their emotional attributes i.e. change in behaviour towards the negative direction.

Students performance in Test 4

Table 7 shows the general performance of the two groups after Test 4.

Table 7: The results of the experimental and control groups for Test 4

Test 4	SCORES						
	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Control Group	46	28	18	46	31.93	7.154	51.173
Experimental Group	80	34	15	49	32.96	6.874	47.252
Total	126						

The results in Table 7 show that the highest mark of 49 out of 50 was recorded in the experimental group whereas 46 out of 50 were recorded in the control group. The lowest mark of 15 out of 50 was recorded on the experimental group. It can be seen that the mean for the experimental group, of 32.96 with a standard deviation of 6.874, was higher than that of the control group of 31.93 with a standard deviation of 7.154. A mean difference of 1.03 was recorded between the experimental group and the control group.

These results suggest the possibility of students setting higher goals which did not tally with their performance and as such ended up failing to achieve them. Another explanation is that probably students failed to adhere to their behavioural goals which have a positive impact on performance if maintained. Table 7 gives of Test 4 results for the two groups. These results concur with what Fuente (2009) alluded to, when he stated that some teachers face the problem of aligning students' ability with their academic goals. This may end up forcing students to set goals which

are far beyond their reach and may cause discouragement and make them become less committed to work hard.

A z test of the differences between the two groups based on the results in Table 6 gave ($z = 0.789$; $\alpha = 0.05$) which resulted in the acceptance of the null hypothesis disregarding the claim that the experimental group performed better than the control group at Test 4 i.e. ($\mu_E < \mu_C$).

The students' performance on Test 4

The academic and behavioural goals setting exercise continued after Test 3, setting for Test 4.

Table 8 below shows the achievement levels of the academic goals by students after Test 4.

Table 8: Achievement levels of the set academic goals after Test 4

	Frequency	Percent
Achieved	15	18.2
Not Achieved	65	81.8
Total	80	100.0

The results of the level of achievement of the academic goals after Test 4 for the experimental group showed that out of the 80 students who set academic goals, 65 (81.8%) did not manage to achieve their goals for Test 4 while 15 (18.2%) managed to achieve their academic goals.

The results in Table 8 above suggest that students might have set goals which were far beyond their reach and ended up being discouraged in the process. These results further suggest that the

test items might have been too difficult for the students to achieve their set academic goals or the teacher might have failed to align students' performance to their goal.

Students achievement levels of behavioural goals during the four tests.

One of the objectives of this study was to find out how students could control certain non-academic behaviours that have a negative effect on academic performance. After the first test, students set behavioural goals which they felt were important for them to improve their academic performance. The students evaluated their own level of goal attainment at the end of Test 2, and the process continued until Test 4 as was done for academic goals. Table 9 shows the results of the goals attainment level by the 80 students in the experimental group.

Table 9: Students' performance on behavioural goals (N = 80)

Behavioural Goal	Test 2		Test 3		Test 4		Test (2-4)
	Achieved	Not Achieved	Achieved	Not Achieved	Achieved	Not Achieved	Overall Achievement
To complete homework and hand in on time	23(28.8%)	57(72.2%)	21(26.3%)	59(73.8%)	19(23.8%)	61(76.3%)	63(26.3%)
To listen Carefully and respond to questions	31(38.8%)	49(61.2%)	34(42.3%)	46(57.5%)	23(28.8%)	57(71.3%)	88(36.7%)
Write neatly and legibly	35(43.3%)	45(56.3%)	32(40.0%)	48(60.0%)	32(40.0%)	48(60.0%)	99(41.3%)
Asking for help when something is not understood	21(26.3%)	59(73.7%)	23(28.8%)	57(71.3%)	43(58.8%)	37(46.3%)	87(36.3%)
To be punctual for all mathematics lessons	33(41.3%)	47(58.7%)	35(43.8%)	45(56.3%)	34(42.5%)	46(57.5%)	102(42.5%)
Avoidance of noise	32(40.0%)	48(60.0%)	21(26.3%)	59(53.8%)	34(42.5%)	46(57.5%)	87(36.3%)

According to Table 9 after writing Test 1, all the 80 students felt that completing homework and handing them in on time was an important behavioural goal which could improve their academic performance. However, only 23 (28.8%) of the students managed to achieve this goal and the other 67 (71.3%) of the students failed to achieve this goal. For Test 3, only 21 (26.3%) of the students managed to achieve this behavioural goal whereas 59 (73.8%) of the students failed to achieve the goal of completing and submitting work on time for marking. After Test 4 it can be seen that only 19 (23.8%) of the students managed to achieve this goal and the other 59 (76.3%) of the students did not manage to achieve this goal. Dembo (2011) emphasized that educational

interventions directed towards improvement of students' motivation if goals are used, should be multi-dimensional and the academic and behavioural goals setting process should be a continuous process done at regular intervals. The failure by most students to achieve their behavioural goals might be the reason for their failure to attain their pre-set academic goal target since behavioural and academic goals complement each other in learning.

The other behavioural goal which students had to adhere to in order to help them meet their academic targets was the goal of listening carefully and responding to questions during the mathematics classes. With regards to this goal Table 9 shows that 31 (38.8%) of the students managed to achieve this behavioural goal but after Test 2, 49 (61.2%) of the students did not manage to achieve this goal. After Test 3, 34 (42.5%) of the students managed to achieve this goal and 46 (57.5%) of the students did not achieve this goal. After Test 4 only 19 (23.2%) of the students managed to achieve this goal but 61 (76.8%) of the students did not achieve this goal. It can be seen that the trend of this behavioural goal achievement fluctuated between 38.8% and 42.5%. This suggests that students found it hard to listen carefully and respond to questions and as a result their academic goal achievement was also affected negatively.

Another behavioural goal which the students had to achieve was the goal of writing neatly and legibly all the time. After Test 2, 35 (43.8%) of the students managed to achieve this goal but 45 (56.2%) of the students did not achieve it. After Test 3, 32 (40.0%) of the students managed to maintain the goal of writing neatly and legibly but 48 (60.0%) of the students did not manage to achieve it and maintain the goal of writing neatly and legibly. In the results for Test 4, the behavioural goal of writing neatly and legibly remained the same as Test 3 (see Table 9).

Students are not readily willing to ask questions when they do not understand when something has been taught. Therefore, one of the behavioural goals which the researcher felt was important to improve on the students' attainment of academic goals was the failure to ask whenever something was not clear during the lessons. From Table 9 it can be seen that this goal was achieved by 23 (28.8%) of the students whereas 57 (71.2%) did not manage to achieve it after Test 2. After Test 3, 23 (26.3%) of the students managed to achieve it whereas 59 (73.7%) did not manage to achieve. The same behavioural goal was set again prior to Test 4. After Test 4 it can be seen from Table 9 that 43 (53.8%) of the students managed to achieve it whereas 37 (46.2%) of the students did not. The attainment of this behavioural goal by more than 50% of the students might have been the one that lead to the experimental group performing significantly better than the control group (see table 4).

High levels of academic excellence come as a result of one's ability to know what to do at the right time. In most cases students mix up activities and may end up ranking low what has to be issues of first priority. Coming to class on time is an important behavioural attribute that has to be observed by all students who are hoping to be successful in their academic endeavours. The researcher made students assess their own punctuality by setting it as one of the behavioural goal target to be achieved (see Table 9). It can be seen that 33 (41.3%) of the students managed to achieve this goal whereas 47 (57.7%) of the students did not achieve it after Test 2. Then after Test 3, 35 (43.8%) of the students managed to achieve this goal but 45 (56.3%) of the students did not manage to achieve it. After Test 4 Table 9 shows that only 23 (28.8%) of the students managed to achieve it whereas 57 (71.2%) did not. Poor attainment of this goal by most students might have been the reason for poor students' academic goal attainment at Test 4 (see table 9).

This study included the students' ability to maintain low noise levels in the learning environment through using it as a behavioural goal to be maintained at all times by the students. It can be seen from Table 9 that after Test 2, 32 (40.0%) of the students managed to achieve this goal whereas 48 (60.0%) of the students not achieve. The same goal was set again to be achieved after Test 3. It can be seen that after Test 3 only 21 (26.3%) of the students managed to achieve this goal whereas 59 (73.7%) of not manage to achieve it. After Test 4, 32 (40.0%) of the students managed to achieve it, whereas 48 (60.0%) of the students did not. These results show that there was a fluctuation in terms of attainment of this behavioural goal among the three tests (i.e. between 26.3% and 40.0%).

In overall, it can be concluded that from Test 2 to Test 4 the attainment of the pre-set behavioural goals was very low with the behavioural goal completion of homework being ranked the lowest with an overall achievement rate of 26.3% by the 80 students and the goal of being punctual for all mathematics lessons being the highest achievement rate with 42.5% overall. These results show the inability of students to control their own academically oriented behaviours

Questionnaire responses to the question: Goal setting motivated me on the questionnaire

One of the purposes of this research was to find out the extent to which students were motivated by the goal setting exercise. Figure 4 shows the responses of the students.

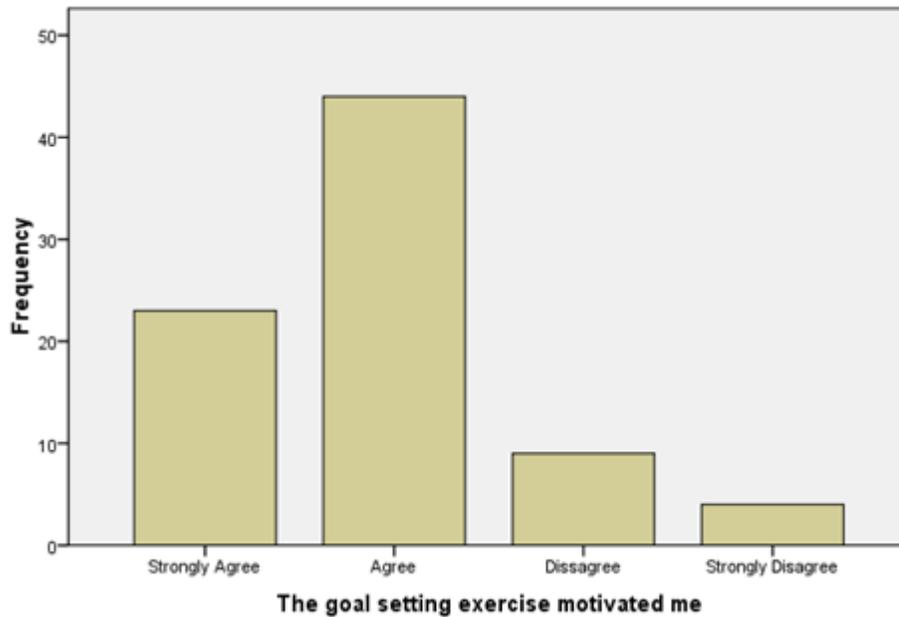


Figure 2: Level of motivation by the goal setting exercise

From Figure 2 it can be seen that 23 (28.8%) of the students strongly agreed that they were motivated by the goal setting exercise, while 44 (55.0%) agreed, nine (11.2%) disagreed and four (5.0%) strongly disagreed with the statement.

The researcher combined “strongly agree” and “agree” to form one new category “AGREE”, and “Strongly disagree” and “disagree” to form the category “DISAGREE”. It can be concluded that 67 (83.8%) of the students agreed that the setting of academic and behavioural goals motivated them, whereas 13 (16.2%) of the students DISAGREED with the statement.

These results concur with the findings of Alkinson (2009) who noted that the setting of academic and behavioural goals could act as a motivator that could improve the students’ performance in the learning process.

The students understanding of the goal setting exercise

The researcher also intended to find out whether students understood the entire goal setting exercise. Table 10 shows the results.

Table 10: Goal setting exercise understood by students (N = 80)

Response	Frequency	Percent
Yes	62	77.5
No	18	22.5
Total	80	100.0

From Table 10 it can be seen that 62 (77.5%) of the students understood the goal setting exercise while 18 (22.5%) did not. It seems the majority of the students (77.5%) understood what they were doing when they were setting their goals even if they might not have achieved them.

Table 10 shows that more than 50% of the students were motivated by the setting of academic and behavioural goals. These results tally with the findings of Wentzel (1998) who also emphasized that academic or performance and behavioural goals are important because they function as a mechanism that activates a certain type of information processing that will lead to a strategic-deeper level of understanding, guaranteeing academic success for a student. Basing on these findings it can be concluded that students understood the goal setting exercise and it also helped them to improve on their performance.

This study also intended to find out the various reasons which might have affected students' to understanding of the goal setting exercise. The students were asked to indicate what might have influenced their understanding of the goal setting exercise. The various reasons which students

indicated as having impacted positively to their goal attainment levels were as follow; lack of clarity from the teacher, my attitude was negative, my attitude was positive, clear explanations from the teacher. Figure 3 shows the various reasons which influenced students' understanding of the goal setting exercise.

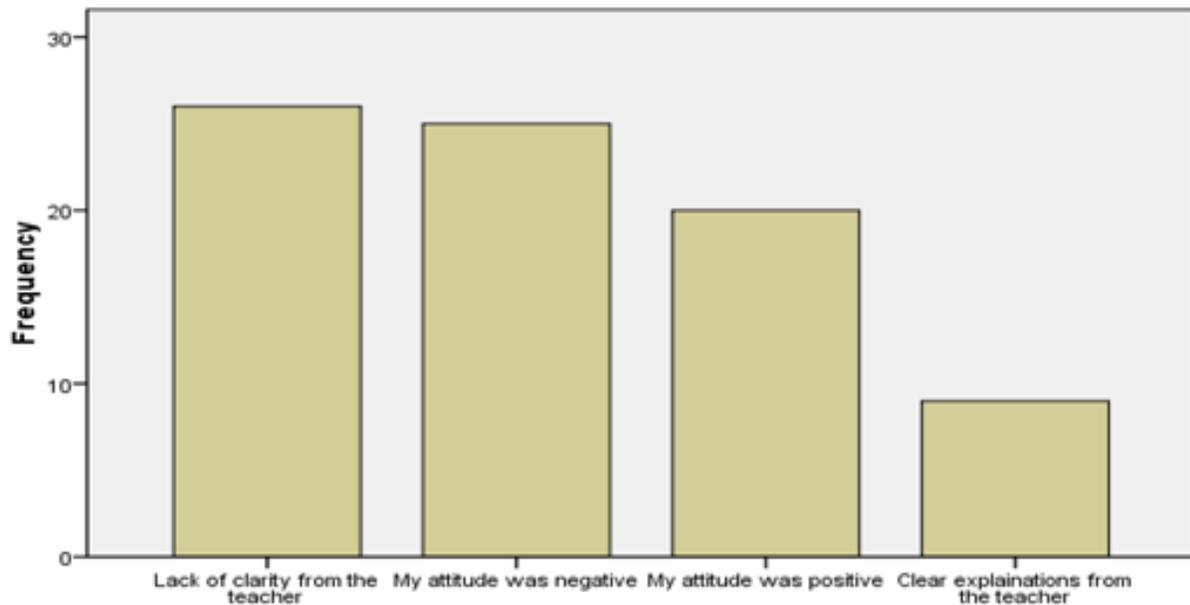


Figure 3: Reasons for student failure to understand the goal setting exercise

From Figure 3 it can be seen that 26 (32.5%) of the students did not understand the goal setting exercise because there was lack of clarity on the side of the lecturer, 25 (31.5%) of the students failed to understand the goal setting exercise because of their attitudes which were negative, 20 (25%) of the students understood the goal setting exercise because their own attitudes which were positive whereas 10 (12.5%) of the students understood goal setting because the lecturers explanations were clear.

The results presented above suggest that as much as the students may want to understand some new things it is important for the lecturer to vividly explain to the students, their role and what and how they should do things. The researcher found it exciting to note that some students admitted that their own attitude towards the goal setting exercise was negative. Therefore it is always important for the lecturer to make sure that the students are well motivated in the goal setting exercise so that once the aspect of motivation prevails they will work with the proper

attitude to achieve their goals. Covington (2000) state that when students have understood the goal setting exercise they will be able to set even higher goals for themselves until they have reached an attribute called self-efficacy. However, reaching self-efficacy is only possible if the individuals involved are committed to the goal, believe that they can accomplish the goal, and have the requisite skills to achieve the goal. Basing on the fact that most FP students had many factors that influenced their understanding of the goal setting exercise there was a possibility of the FP students to reach self-efficacy of the goal setting had continued.

Aspects of the goal setting exercise which the students enjoyed most

In order for the researcher to know what aspects of the goal setting exercise the students enjoyed so that more improvements can be done to make the exercise more enjoyable, the researcher asked the students to indicate the aspects of goal setting they enjoyed most. Figure 4 shows the results.

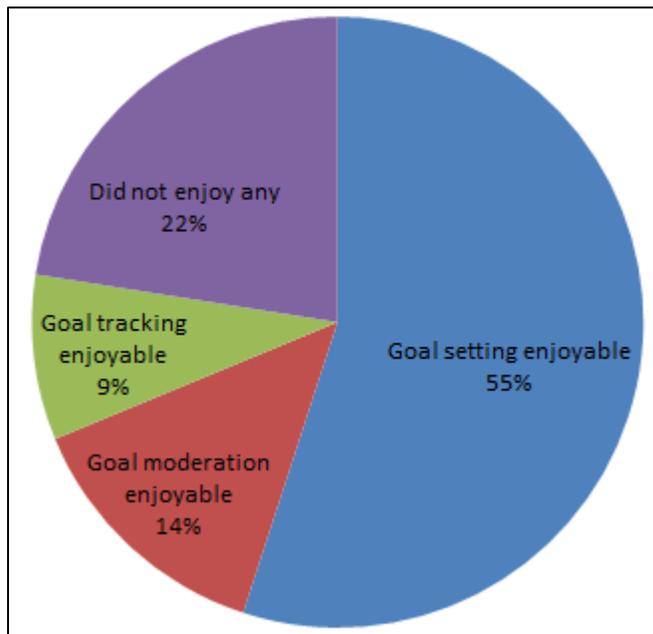


Figure 4: Aspects of the goal setting exercise the student enjoyed most

From Figure 4 it can be seen that goal setting was enjoyed by 44 (55.0%) of the students whereas goal moderation was enjoyed by 11 (14%) and goal tracking was enjoyed by 7 (9%) and 18 (22%) students did not enjoy anything about the exercise. It can be concluded that the majority of the students 62 (77.5%) enjoyed at least one aspect of goal setting and 18 (22.5%) did not enjoy anything.

For students to benefit more from the goal setting exercise they have to find some form of enjoyment in the whole exercise. They must not feel that goal setting is something that is being done to them to benefit the teacher but is something that they have to do to benefit them-they have to feel a sense of ownership of the whole exercise and should enjoy it. The results above indicate that the students enjoyed the entire exercise and had ownership over it. According to Covington (2000) this enjoyment aspect is in line with principles of control theories whose desired effect on a student is the students 'ability to match their own performances with the goals they set through controlling their own behaviours in such a way that they promote academic and behaviour goal attainment. Covington further state that these theories operate in five basic stages which are: needs analysis, specifying desired behaviours that include formulating goals and specifying expectations that call for learning, experimentation and practising new behaviours, and generalisation and maintaining the new behaviour.

The study also intended to make an analysis of the students' perspectives on the usefulness of the goal setting exercise in the teaching and learning of the Science Foundation Programme Mathematics. The students were asked to give their perception with regards to the usefulness of the goal setting exercise. Table 11 below gives the results of the students' perspectives.

Table 11: Students' perceptions of the usefulness of the goal setting exercise

Perception	Frequency	Percent
Goals were useful	54	67.5
Goals were not useful	26	32.5
Total	80	100.0

Table 11 shows that 54 (67.5%) of the students found setting goals to be useful in their learning even though not all of them managed to achieve the goals as they anticipated. The remaining 26 (32.5%) students did not find goal setting to be meaningful in their learning.

Whatever is action is done in the classroom is done for a specific purpose therefore both the students and the teachers should be able to acknowledge the usefulness of the action for the two to be able to work for a common goal. These results concur with what Fuente (2006) stated when he said that students become more ambitious in setting much higher academic goals and behavioural for themselves even without anyone tracking on the goals. By that they will become responsible and more accountable for their own learning because they can identify their own shortcomings in the learning process and rectify them accordingly.

The extent to which goal setting influenced the students' academic performance

In order to have a clear understanding of the usefulness of the setting of academic and behavioural goals the researcher asked the students to make an evaluation of the extent they felt their performance was influenced by goal setting. The results are given in Figure 5.

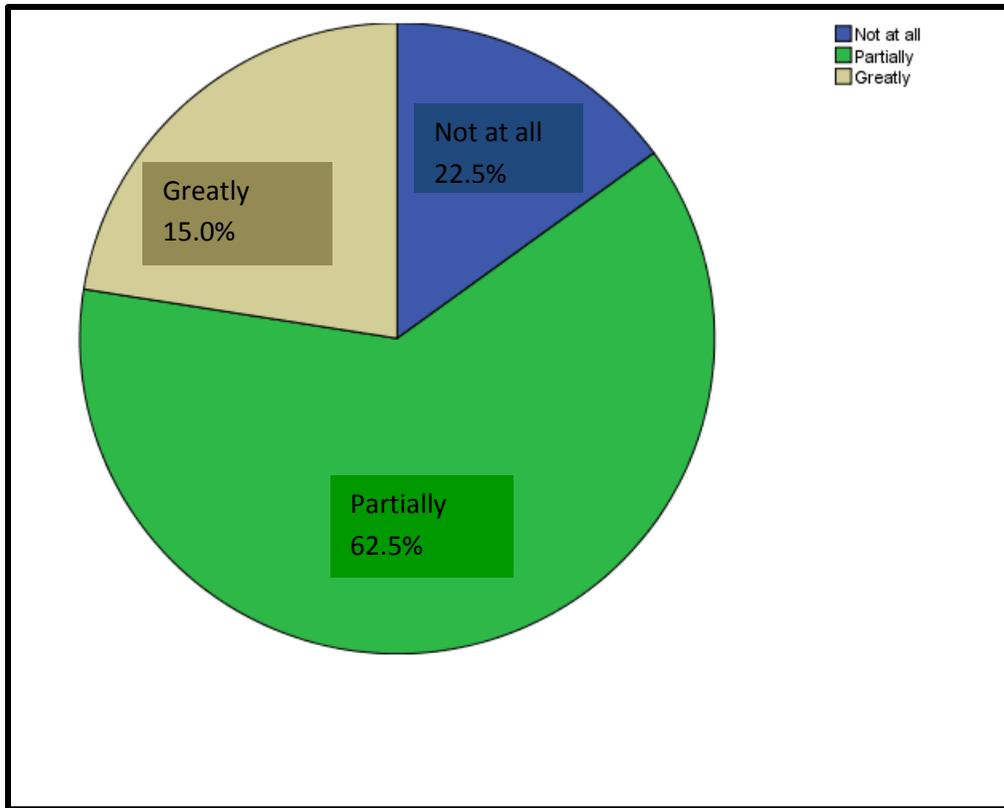


Figure 5: Extent to which students felt goal setting influenced their performance

Figure 5 shows that 22.5% of the students felt that the setting of goals was very influential in their performance, while 62.5% of them felt that goal-setting partially influenced their performance and 15% of the students felt that goals setting did not influence their performance at all.

In the responses to the question above, the researcher combined the responses of those whose performance was greatly and partially influenced by the goal setting exercise to have been “INFLUENCED” and those who felt that their performance was not at all influenced by the goal setting exercise to “NOT INFLUENCED”. It can be seen that 85% confirmed that the setting of behavioural and academic goals positively influenced their performance whereas 15% did not have their performance influenced by the goal setting exercise. These findings concur with what

Pintrich (2000) observed when he stated that behavioural goals are accomplished when a student is set to complete a task when he or she is interested in the task for its own qualities, and that student should also see the usefulness of the completing the pre-set task.

Type of goals setting students felt impacted more positively on their performance

Since the students were setting two different types of goals- academic and behavioural goals, the researcher tried to find out from them which type of goals setting was more important to them. Table 12 shows the results.

Table 12: The type of goals which impacted more on academic performance among Foundation Programme students

Type of goal setting	Frequency	Percent
Academic Goals	49	61.2
Behavioural Goals	31	38.8
Total	80	100.0

Table 12 shows that 49 (61.2%) of the students felt that academic goals setting were more influential to their academic performance whereas 31 (38.8%) of the students felt that behavioural goals were more influential to their performance.

These results suggest that students might not have been focusing more on controlling behaviours that would have a positive effect on performance but instead they have been focussing only on the academic goals forgetting that behaviours that are positive towards academic achievements might make them succeed in their academic endeavours. Students need to be taught to understand that both types of goals are equally important and complement each other to help students to

improve their performances. Students who focused only on academic goals did not follow what Wentzel (2000) advised on the importance and complimentary role of academic and behavioural goals if they are used together that they can improve the students' performance.

The relevance of class size and goal setting

In institutions where students have employed the setting of goals class sizes were always small i.e. (less than 15) students per class for easy tracking (Pintrich, 2000). This study intended to employ goals setting in a large class size setting with more than 40 students. Figure 6 shows the results of what students felt about goal setting in large class sizes at the University of Namibia Science Foundation Programme at Oshakati.

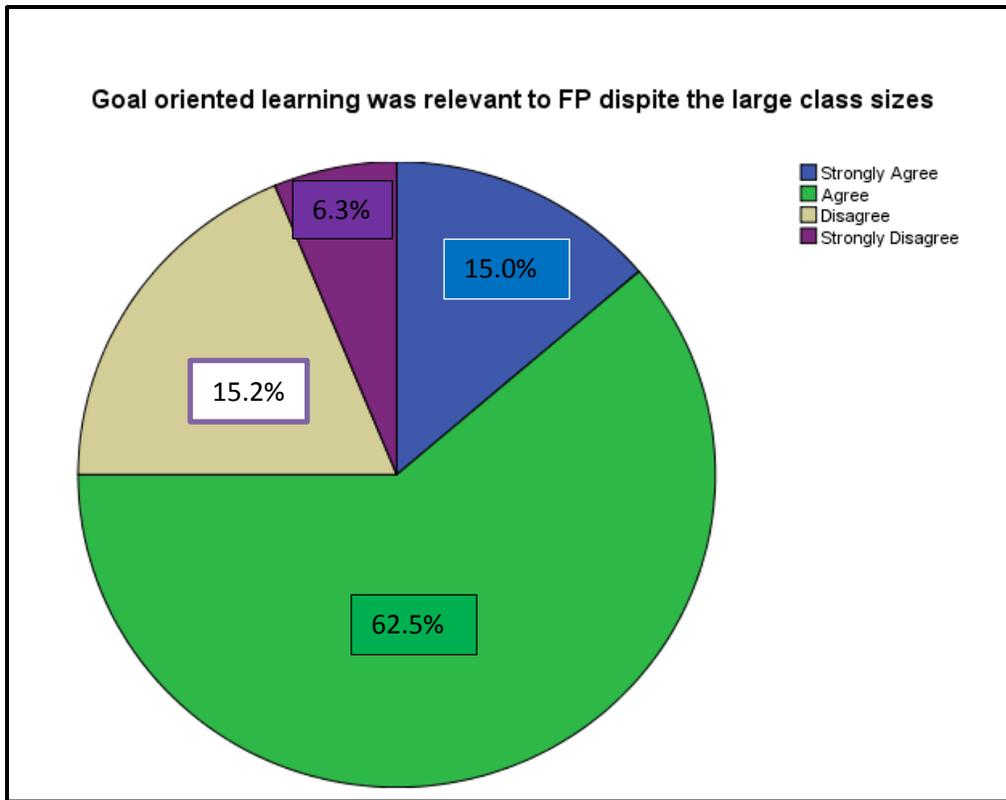


Figure 6: The students' whether goal setting is relevant in large class sizes (>40)

Figure 6 shows that 12 (15.5%) of the students strongly agreed with the statement that goal setting was relevant despite large sizes whereas 50 (62.5%) of the students agreed with the statement. However, 13 (15.2%) of the students disagreed with the assertion. Five (6.3%) of the students strongly disagreed with the statement that goals were relevant despite large class sizes.

The researcher combined those who agreed and those who strongly agreed to "AGREED" and those who Disagreed and Strongly Disagreed to "DISAGREED". It can be noted that 62(77.0%) Agreed with the assertion that the setting of academic and behavioural goals was relevant despite class sizes, whereas 18 (23%) Disagreed and felt that class size was a factor worth considering when setting academic and behavioural goals.

Classroom factors that need to be considered in a goal setting classroom

The also researcher also intended to determine the relevant classroom factors to be considered when setting academic and behavioural goals and asked the question. Figure 7 shows the results.

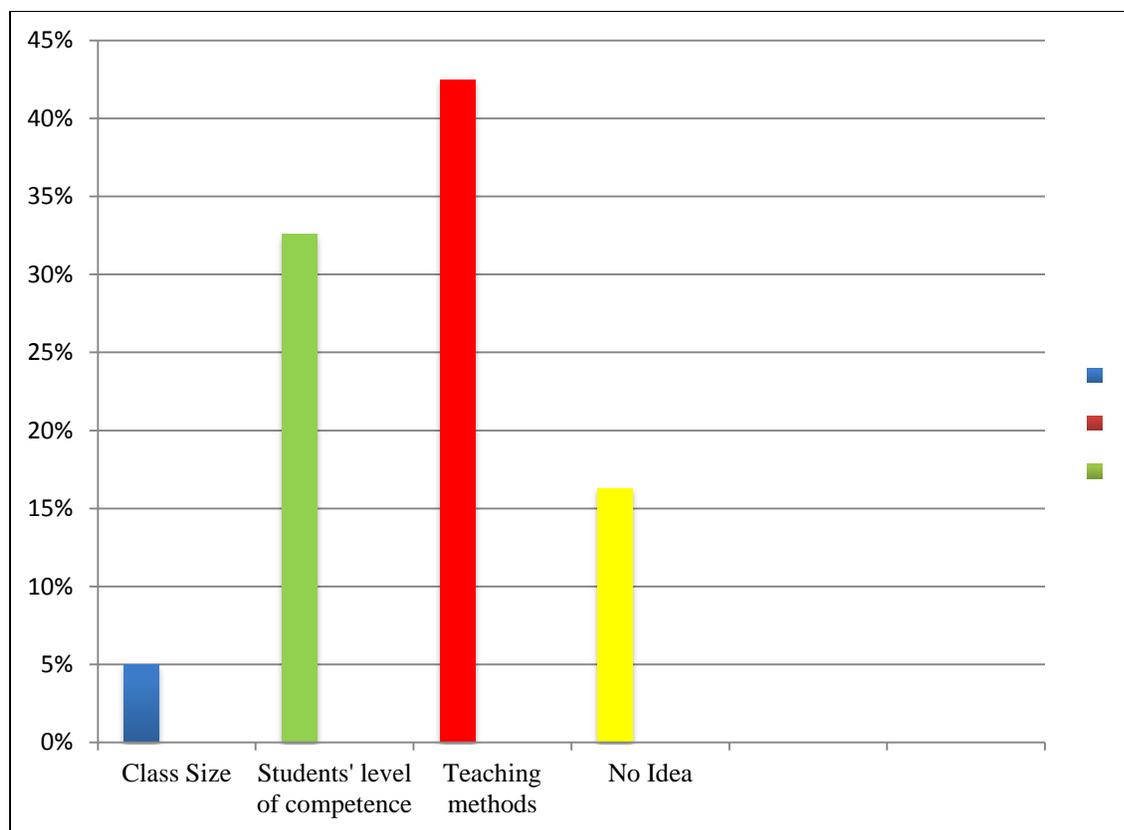


Figure 7: Classroom factors that need to be considered in a goal setting classroom

From Figure 7 it can be seen that four (5%) of the students felt that class size was an important factor to consider when setting goals, whereas 29 (32.6%) of the students felt that the level of students competence is the most important factor in the classroom where goals setting has to be used to improve students' performance, 34 (42.5%) of the students felt that teaching methods that promote goal attainment were the most important classroom factor for consideration, 13 (16.3%) of the students had no idea on what classroom factors were important for consideration in a goal setting classroom.

These results suggest that the 13 students who had no idea of what factors to consider when setting academic and behavioural goals might be the same students who indicated that they did not have an understanding of the goal setting exercise and as such could not have an idea of what

should be considered as being an important factor for consideration in a goal setting classroom. These results concur with what Fuente (2006) warned on the role of teacher that they must not dominate the goal setting process because they hinder the goal attainment process, instead they must convince students and make them understand the rationale behind setting academic and behavioural goals. Fuentes further noted that a quiet or passive teacher who can just accept any goal a student sets without aligning it with the students' ability may make goal setting fail to improve students' performance.

The relevancy of the used teaching methods to the attainment of behavioural goals

The researcher also tried to find the students' perspectives of the relevancy of the methods used for teaching whether they supported the achievement of academic and behavioural goals. Table 13 shows the results of the students' opinions.

Table 13: Teaching methods used by the teacher were relevant to supporting the attainment of behavioural goals

Response	Frequency	Percent
Strongly Agree	12	15.0
Agree	50	62.5
Disagree	13	16.2
Strongly Disagree	5	6.2
Total	80	100.0

Table 13 shows that 12 (15.0%) of the students strongly agreed that the methods which the teacher was using were relevant to support goal setting learning, 50 (62.5%) of the students agreed with the statement, whereas 13 (16.2%) of the students disagreed and five (6.2%) of the students strongly disagreed with the statement.

Grouping those who said agreed and strong agreed to form one group of AGREED, and those who strongly disagreed and disagreed to DISAGREED, it can be seen that 62 (77.5%) of the students agreed that the teachers' teaching methods were suitable to support goal setting learning, whereas 18 (22.5%) of the students felt that the lecturer teaching methods did not support the attainment of behavioural and academic goals. During the planning process for teaching in a goal setting classroom, Wentzel (1998) emphasized that teachers should use appropriate teaching methods that cater for differences in students' academic abilities, and set goals must set aligned to students' level of competencies so that they can improve on them with time, so that as students work towards achieving these goals, they become motivated to perform even better.

The students' perspectives on the freedom of setting goals they want even if they did not achieve the previous goals

This study also intended to find out how students felt about the goal adjustment process. The students were asked about the extent to which they agreed with the statement that "students should have the freedom to set any goal they want even if they did not attain the previously set goal." Figure 8 shows the results of what students felt about this matter.

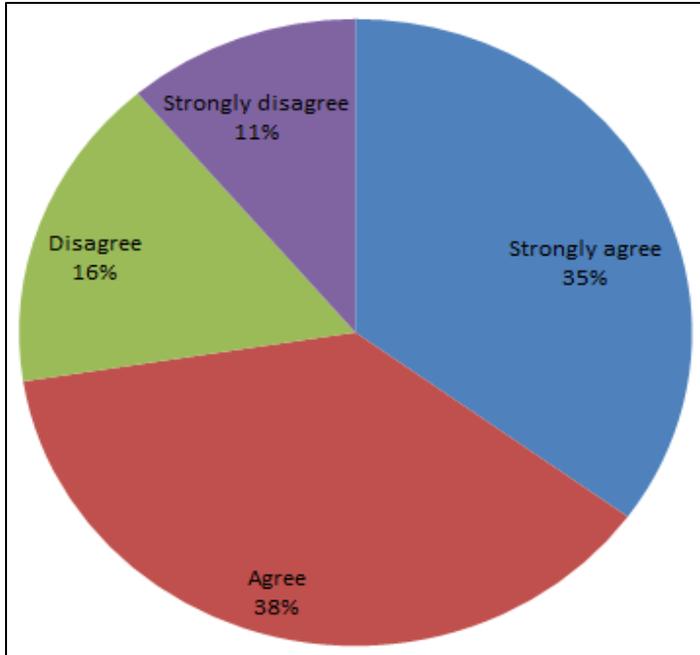


Figure 8: Students should be allowed to set any goal they wish to attain

Twenty eight (35.0%) of the students strongly agreed that students should set any goal they want to achieve even if they did not achieve their previous goal, 30 (37.5%) of the students agreed with the statement whereas 13 (16.3%) of the students disagreed with the statement and nine (11.2%) of the students strongly disagreed.

Grouping those who agreed and strongly agreed to AGREED and those who disagreed to and strongly disagreed to DISAGREED it can be seen that 58 (72.5%) of the students AGREED with the statement while 22 (27.5%) DISAGREED. These results suggest that students wanted to keep setting goals of what they wished to attain even if they did not attain their previous goals. Such a perception by most students will make goal setting fail to improve performance in a learning environment since the processes of goal adjustment and moderation are done in line with the students' ability (Covington, 2000).

The best time to start setting goals in the foundation programme

When goals were set in the Science Foundation Programme they were set starting from Test 2. Test 1 was used as a starting standard to understand the students' performances. The study then intended to find out what students felt was the most suitable time to start setting academic and behavioural goals. Table 14 shows the results.

Table 14: Best time to start setting goals

	Frequency	Percent
As soon as classes commence	35	43.8
Just after Test 1	17	21.2
Just after Test 2	18	22.5
From Test 3 Onwards	10	12.5
Total	80	100.0

Table 14 shows that 35 (43.8%) of the students felt that the setting of goals should start as soon as classes commence whereas, 17 (21.2%) of the students felt that goals should be set just after Test 1, 18 (22.5%) of the students felt that it should be done just after Test 2, whereas 10 (12.5%) of the students felt that goals should be set from Test 3 onwards. This is probably because they might want to get to understand their own performance better before setting goals.

The results above reflect that close to 50% of the students felt that the setting of goals at FP should start as soon as classes commence. This finding does not concur with what Fuente (2009) advises on when goals should start being set. He advises that goals should be set when the individuals setting them really understand what they are doing.

The relevance of the goals pre-set on the behavioural goal sheet

The students' goal sheet had pre-set behavioural goals where students had to pick specific goals they wanted to maintain in order to meet their academic goals. The researcher intended to find how of these pre-set goals in helping students to achieve their desired academic goals. Table 15 shows the results of the findings.

Table 15: The relevance of the goals pre-set on the behavioural goal sheet

Responses	Frequency	Percent
Strongly Agree	14	17.5
Agree	41	51.2
Disagree	19	23.8
Strongly Disagree	6	7.5
Total	80	100.0

Table 15 shows that 14 (17.5%) of the students strongly agreed with the statement that the pre-set goals on the goals sheet were relevant in enhancing performance improvements among FP students, whereas 41 (51.2%) of the students agreed with the statement, 19 (23.4%) of the students disagreed with the statement and six (7.5%) of the students strongly disagreed with the statement.

Combining those who agreed and strongly agreed to AGREED category, and those who disagreed and strongly disagreed to have DISAGREED it can be concluded that 55 (68.8%) of the students AGREED with the statement while 25 (31.2%) of the students DISAGREED with the statement. It seems most students were satisfied with the pre-set behavioural goals which were on the goals sheet.

Hypothesis testing on the effect of goal setting on students' performance at the Science Foundation Programme

The main objective of this study was to find the effect of setting academic and behavioural goals on the mathematics performance of the science foundation students. Table 16

Shows a summary of the overall performances for both the experimental and control group.

Table 16: Overall performance of the control and experimental group in the Science Foundation programme

Foundation Programme Group Belonged to	N	Mean	Std. Deviation	Std. Error Mean
Experimental Group	80	38.21	5.236	0.849
Control Group	46	34.52	5.602	0.864

The results in Table 16 show the averages of the students' obtained marks for Test 2 up to Test 4. Those tests where the students were setting academic and behavioural goals for themselves. It can be seen that the mean for the experimental group (N = 80) was 38.21 with a standard deviation of 5.236 while the mean of the control group (N = 46) was 34.52 with a standard deviation of 5.602.

An independent sample z test was convenient since (N > 30) and was used to compare the means of the normally distributed intervals for the two independent groups (Control and the Experimental). The null hypothesis test for this study was stated as: H_0 : There is no significant difference in the performances of the two groups ($\mu_E = \mu_C$). H_1 : the experimental group (those who were setting goals) performed better than the control group ($\mu_E > \mu_C$). The results of the z test showed that ($Z_{\text{calculated}} = 3.645$; $Z_{\text{standard}} = 1.645$; $\alpha = 0.05$) with a confidence interval of the

mean difference of (1.651; 5.729). Based on these results the null hypothesis was rejected. It can therefore be concluded that there is a statistically significant difference between the means of the experimental and control groups. The experimental group (N = 80) had a significantly higher mean of 38.21 than the control group (N = 46) which had 34.52. These results are also confirmed in the confidence intervals of the differences of the means of the two groups in that it does not include the zero. Therefore goal setting significantly improved students' performances in the Science Foundation Programme.

Though the attainment of academic and behavioural goals was a bit low for most students but it can be noted that the students who were aiming at achieving their academic goals might have set goals which were a bit too high such that they failed to achieve them but obtained with a very high pass mark which ended up increasing the overall average for the experimental group.

Summary

This chapter presented the findings of the study. It was found in this study that students who set academic goals performed better than those who did not. Apart from that, the study also revealed that students preferred academic goals to behavioural goals. This study further revealed that the setting of academic and behavioural goals is relevant to the Science Foundation programme where class sizes are above 40. Another finding of the study is that there were some classroom factors that needed to be considered in a goal setting environment. There are such as class size, teaching methods, and students' level of academic competence.

CHAPTER 5: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter presents the summary, conclusions and recommendations of the study as per the findings and discussions of the results. The recommendations for the study are classified as; those for teachers and lecturers, then those for the training institutions/universities.

Summary

The purpose of this study was to find the effects of setting academic and behavioural goals on the mathematics performance of the Science Foundation students of the University of Namibia. The study also tried to find out the classroom environment factors that need to be satisfied in order for the goals setting learning to be effective. The study further tried to establish the students' perceptions and experiences with regards to the setting of academic and behavioural goals in the Science Foundation Programme.

In order to achieve the aims mentioned above, the study intended to answer the following questions:

1. What effect does the setting of academic goals have on the mathematics performance of the Science Foundation Programme students at the University of Namibia?
2. What are the classroom factors that affect the setting of academic and behavioural goals?
3. How can the Science Foundation Mathematics lecturers plan and present their lessons to support and promote the setting of academic goals and behavioural goals?

In order to seek answers to the stated questions, this study used the quantitative research design. The academic goals which students were setting to achieve for Tests 1-4 were numeric. Particularly this study tried to align the students desired academic goals and the behavioural goal in order to improve academic performance.

In order to determine each student's academic ability, no goals were set to be achieved for the Foundation Programme mathematics Test 1. Academic and behavioural goals were then set based on the students' performance starting from Test 2 to Test 4 for 2013. This study also used a questionnaire with open-ended and close-ended questions and the information collected from goal sheets.

The study found that students indeed managed to improve their academic performance through goal setting. In order to level the ground for comparison between the experimental group and the control group, after Test 1, a hypothesis test for the students' performances for the two groups revealed that ($Z_{\text{Calculated}} = 1.289$; $Z_{\text{Standard}} = 1.645$; $\alpha = 0.05$) and it concluded that there was no significant difference in performance between the two groups. After averaging the performances of the two groups a hypothesis test for the effect of setting academic goals was performed it was found that ($Z_{\text{calculated}} = 3.645$; $Z_{\text{standard}} = 1.645$; $\alpha = 0.05$) with a confidence interval of (1.651; 5.729) the null hypothesis was rejected in favour of the alternative which stated that the experimental group performed better than the control group. Based on Test 2 results it was concluded that the experimental group performed significantly better than the control group. The findings from this study support the assertion that the setting of academic and behavioural goals has a positive effect on students' performance. The study also revealed that teaching methods and students' competence levels were the most important classroom factors to be considered if the setting of behavioural and academic goals is to be implemented in a learning environment

It was further revealed in this study that when planning lessons in which the teacher intend to implement the setting of academic and behavioural goals, the lecturer should consider most the level of competence of his students, and should allow students to set goals which are within their reach not what s/he wishes them to attain. This was evident in the fact that the setting of academic and behavioural goals and the process of goal moderation should be a collaborative process between the lecturer and the student in order to obtain best results out of the setting of goals.

Conclusions

This study concluded that the setting of academic and behavioural goals can positively improve the performance of students in the Science Foundation Programme. The findings from this study further suggests that if students are let to set goals they intend to achieve they will become responsible for their own learning and this gives them the autonomy to control the entire learning process that takes place in the classroom since they are accountable for every result they obtain. If they set academic goals they can always reflect on their behaviours and check if they are in line with their pre-set academic goal targets, or if the behaviours they portray will make them achieve their academic goals since the two types of goals (behavioural and academic), complement each other and should always be used together in order to improve academic performance.

Apart from that it can be concluded that lack of academic and behavioural goals in a learning environment does not help improve their performance since the students are not given total responsibility of their own learning.

Recommendations

In light of its key findings highlighted above, this study recommends the following to various stakeholders in the teaching and learning of mathematics who may want to implement the setting of behavioural and academic goals in their learning systems:

Lecturers

1. Academic and behavioural goals should only be set after a standard test item upon which the lecturers base the performance of the student.
2. Lecturers should allow students to self-reflect and self-evaluate after every test item so that they can make necessary adjustments to their behaviours rather than setting one goal for a term or a semester; students tend to forget what they have set to achieve if the time spun is too long. The aspect of being motivated by set goals tends to decrease as time elapses.
3. The lecturer should keep checking the students' set academic and behavioural goals so that he/she keeps on reminding them if their behaviours are deviating from the intended behaviours which might enhance academic goal attainment.
4. The lecturer should create a platform for goal discussion with each student so that students understand the entire process of goal setting, and that it is not something being done on them as a routine, but it's something they are doing to benefit them in the long run. Once students have an understanding of the goal setting process they might become independent students who bear the overall responsibility for their own learning.

Teacher training institutions

1. The setting of academic and behavioural goals is a new phenomenon in the Namibian educational system. Therefore teacher training institutions, who may wish to exercise the setting of academic and behavioural goals, should include goal setting in the courses they offer.
2. I suggest that the Ministry of Education should hold in-service training on the setting of academic and behavioural goals to teachers who are already in the teaching service and give them the support needed in the setting of academic and behavioural goals if they want to make the setting of academic and behavioural goals part of the school curriculum.
3. The setting of academic and behavioural goals, goals tracking and goal moderation require a lot of time. As a result more trained teachers will be required so that the teacher/student ratio which is currently standing at 55 is lowered and manageable for effective goal tracking and moderation.

Further Research

1. There is need to find out the perceptions and attitudes of the lecturers and students in Namibia with regards to the setting of goals in a learning system.
2. It is recommended that further research be carried out to identify ways of how the setting of behavioural and academic goals can be incorporated in the teaching of University Mathematics in Namibia.

3. Research needs to be carried out in order to find out the academic level at which the setting of academic and behavioural goals can be introduced to students in Namibian institutions if goal setting is to be implemented in all schools.

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**APPENDIX 1: PERMISSION REQUEST LETTER TO THE UNIVERSITY OF
NAMIBIA MANAGEMENT**

University of Namibia Oshakati Campus
P.O. Box 2654
Oshakati
moseschirimbana@gmail.com

17 April 2013

The Programme Coordinator Science Foundation
University of Namibia Oshakati Campus
Oshakati campus
Oshakati

Ref: Request for permission to do a research study

I am Moses Chirimbana, a member of the University of Namibia lecturing staff at Oshakati Campus lecturing in the Science Foundation programme. I'm registered as an MED candidate at The University of Namibia undertaking a Masters in Mathematics Education. My student number is **201127938**. My area of focus is on the Mathematics goal setting. The topic for my study is:

"The effect of setting academic and behavioural goals on the mathematics performance of The University of Namibia Science Foundation Programme (SFP)".

I wish to find out how the setting of academic and behavioural goals can affect students' mathematics performance at the SFP. The overall goal is to come up with a goal setting manual that can help both students and lecturers and other Namibian schools who may wish to implement the goal setting theoretical framework in their schools. Therefore I am seeking your permission to undertake this study at Oshakati Campus.

Thank you

Have a blessed day.

Chirimbana Moses

APPENDIX 2: PERMISSION LETTER FROM THE UNIVERSITY OF NAMIBIA
UNIVERSITY OF NAMIBIA

NORTHERN CAMPUS

P.O. Box 2654, Oshakati, Namibia, Eliander Mwatale Street

Telephone: (+264) (65) 2232287, Fax: (+264) (65) 2232271



22 April 2013

To Mr Moses Chirimbana

Student number: **201127938**

REF: REQUEST TO DO RESEARCH AT UNAM OSHAKATI CAMPUS (SCIENCE FOUNDATION PROGRAMME), FOR THE PERIOD OF: 1 April to 30 September 2013.

Dear Sir

We hereby grant you permission to conduct research at Unam Oshakati Campus (Science Foundation Programme) on the topic “**The effects of setting academic and behavioural goals on the Mathematics performance of the University of Namibia Science Foundation Programme (SFP)**”. We however would like to learn from your findings, so a copy of the report will be highly appreciated. May we also request that the research activities may not interrupt with the University teaching programme.

Please take a copy of this letter when you go and conduct your research as proof of permission granted.

Yours Truly



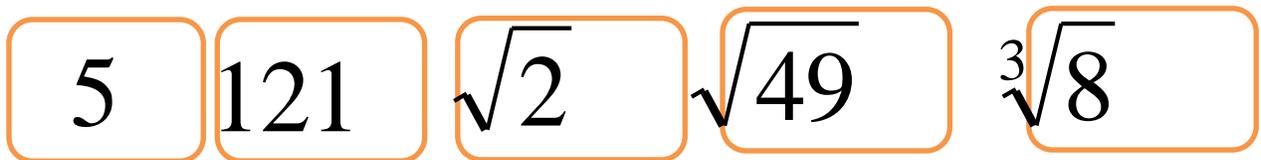
LEENA LAHJA TILENI Nghipandulwa
COORDINATOR: SCIENCE FOUNDATION PROGRAM (OSHAKATI CAMPUS)
Oshakati Campus
University of Namibia
Tel: 065-2232287 - E-mail: lnghipandulwa@unam.na - Web: <http://www.unam.na>

APPENDIX 3: MAF1100 2013 MATHEMATICS TEST 1

Time Allowed: 230minuntes Total Marks: 50 Examiner: Chirimbana M

1. Answer all questions and show all your working.
2. All your answers and working out must be written on the separate answer paper.
3. You may use a non-programmable calculator.

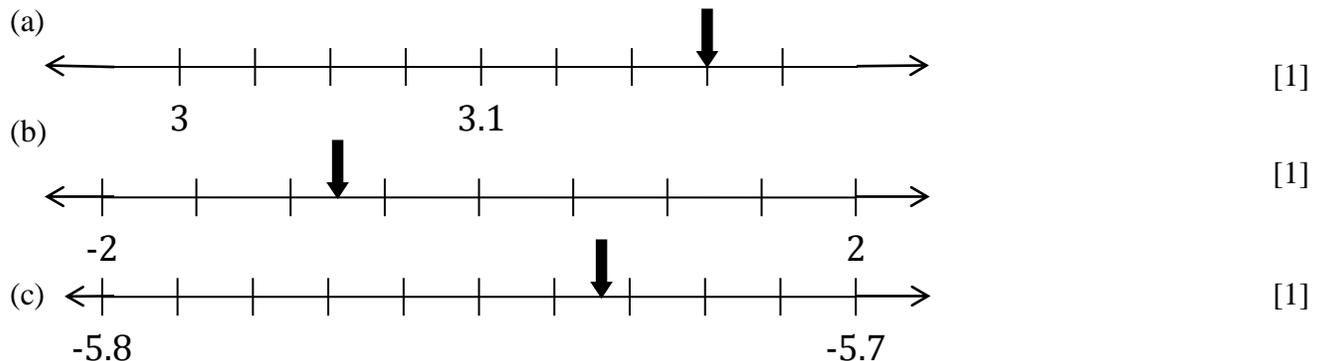
1. Mr. Paulus is using 5 cards given below to teach his students about numbers:



By using each number only once from the numbers given above choose:

- | | |
|-------------------------|-----|
| a) An integer | [1] |
| b) A natural number | [1] |
| c) An irrational number | [1] |
| d) Prime number | [1] |
| e) Perfect square | [1] |
2. Convert the following decimals to common fractions:
- | | |
|---------------------|-----|
| a) 0.0375 | [2] |
| b) 0.0101010101.... | [2] |

3. Complete the following number lines by indicating the number that must be at the place where the arrow is.



- | | |
|---|-----|
| 4. (a) Write 840 and 720 as a product of prime factors. | [4] |
| (b) Use your solution for (a) to find the Highest Common Factor (HCF) of 840 and 720 | [2] |
| (c) Use your solution for (a) to find the Lowest Common Multiple (LCM) of 840 and 720 | [2] |

5. Calculate the following.

(a) $\frac{1}{4}$ of 18 \div (5 - 2) [2]

(b) $22 \div (2 \times 6 - 1) - 6 \div 2$ [3]

(c) $12 + \frac{1}{2}$ of 24 \div (6 - 3) \times 5 - 3 [4]

6. Calculate the value of $\frac{6 \times 3 - (10 \times 2) + 5}{3 \times 8 \div 2} \div \frac{(48 - 12) \div 12}{7 \times 3 - 11}$ you must show all your working giving your answer as a fraction in its lowest terms. [4]

7. Calculate the value of $4\frac{1}{3} \div \left(2\frac{7}{8} - 1\frac{3}{4}\right)$. You must show all your working. [4]

8. Round off the following to the accuracy given in the brackets:

(a) 0.00728 (2 d.p.) [1]

(b) 0.998 (1 s.f.) [1]

(c) 6998 (100s) [1]

9. Simplify the following surds

(a) $\sqrt{12}\sqrt{24}$ [2]

(b) $\sqrt{3}(2 + \sqrt{3})$ [2]

(c) $(\sqrt{7} - 2)(2 + \sqrt{7})$ [2]

APPENDIX 4:MAF1100 2013 MATHEMATICS TEST 2

Time Allowed: 2:30mins Total Marks: 50 Examiner: Chirimbana M

- 4. Answer all questions and show all your working.**
- 5. All your answers and working out must be written on the separate answer paper.**
- 6. You may use a non-programmable calculator.**

1. a) Express $\frac{13}{20}$ as a percentage [2]
- b) Convert 450km/h to m/s [2]
- c) Hangula and his young sister inherited N\$45000 from their late uncle. They divide the money in the ratio 8:7 so that Hangula gets the bigger share. How much did Hangula get for his personal use? [2]
- ii. Given that the sister decided to invest her share with a bank that offered 7% per annum simple interest rate, how much will she have after investing the money for 9 years. [3]

2. K varies directly as L and inversely as M.
- a) Write down an equation linking K,L and M with a constant a. [1]
- b) Calculate the value of the constant “a” given that K=6 when L=14 and $M=\frac{28}{3}$ [3]
- c) Find the value of M when L=6 and K=40 [2]

3. Use the exchange rates in the table below to answer the questions which will follow.

Currency	Exchange rates
1 British Pound Sterling £	N\$12.00
1 French Franc	N\$3.80

A woman went to Britain and France on a business tour. Her company gave her an allowance of £1000.

- a) While in Britain the woman spent $\frac{3}{4}$ of his allowance .How many British Pounds is she left with? [3]
- b) On arrival in France she converted all his remaining allowance into Francs .How many francs did she receive? [3]

c) On arrival into Namibia, the woman converted 220 francs into Namibian Dollars. Calculate the amount she received in Namibian dollars. [3]

4. Each girl in a group of 45 was asked to say which subject she preferred. 13 chose Mathematics, 14 chose English and 18 chose geography. 4 chose Geography and English, 6 chose mathematics and English, then 3 chose geography and mathematics. 4 chose none of the three subjects.

a) Draw a Venn diagram to represent this information [4]

b) How many students chose?

i. All the three subjects. [2]

ii. Chose English and mathematics but not geography [2]

iii. Geography or mathematics [2]

iv. Express the number of students who chose geography and English as a percentage of the total number of the girls in the group.

5.a) If $\mathcal{E} = \{x : x \in \mathbb{Z}, 2 \leq x \leq 9\}$, $A = \{x : x \in \text{prime numbers}\}$, set $B = \{x : x \in \text{perfect squares}\}$ and $C = \{x : \text{Even Numbers } 3\}$,

a.) List the following sets:

i. $(A \cup B)^1$ [2]

ii. $B^1 \cup C$ [2]

b) If $\mathcal{E} = \{x : x \in \mathbb{Z}, -2 \leq x < 9\}$, set $A = \{x : x = 2n, n \in \mathbb{Z}\}$ and set $B = \{x : x = n^2 - 2, n \in \mathbb{Z}\}$.

List the following sets:

(i) A [1]

(ii) B [1]

(iii) $A \cap B$ [2]

6. Mrs Kamati drove her car for 975 km spending \$967.20 on petrol costing \$12.40 per litre.

Calculate the fuel consumption of her car giving your answer in kilometres per litre [3]

7. In printing shop A the cost, C dollars, of printing invitation cards is partly constant and partly varies as N, the number of cards printed. Printing 20 cards costs \$12 and printing 50 cards costs

\$21.

- a) State the correct law of variation for the above scenario. [2]
- b) Calculate the cost of printing:
- i. 75 cards. [1]
- ii. 150 cards. [1]

8. In another printing shop B, the number of cards printed and the cost per card are represented in the table below:

Number of cards	20	50	75	150
Cost per card in cents	60	a	b	34

- i. Calculate the values of **a** and **b** in the table below. [1]
- ii. Explain why the cost per card will never be less than 30c. [1]
- iii. How many cards would need to be printed for the cost per card to be 31c? [1]
9. Rationalise the denominator of the following surds and simplify them.

(a) $\frac{2}{3\sqrt{2}}$ [2]

(b) $\frac{2}{3 - \sqrt{2}}$ [2]

10. Mr. Hamutenya bought a house AT an auction for N\$ 250 000 to this cost a VAT of 15% has to be added and a premium of 5% should also be added. Mr. Hamutenya has two options. OPTION A: VAT to be added first and then Premium later. OPTION B: Premium to be added first and VAT later. Use calculation to help Mr. Hamutenya to decide which option is cheaper. [5]

11. A family made a loss of 5% for selling their house at N\$ 712 500, what was the initial value of the hose? [3]

APPENDIX 5:MAF1100 2013 MATHEMATICS TEST 3

Time Allowed: 2 Hours

Total Marks: 50 Examiner: Chirimbana M

Answer all questions and show all your working

All your answers and working out must be written on the separate answer paper.

You may use non-programmable calculators.

1. a) Find the inverse of the matrix $\begin{pmatrix} 2 & 4 \\ -1 & 3 \end{pmatrix}$ [2]

b) Given that $\begin{pmatrix} 3 & -1 \\ 1 & 2 \end{pmatrix} \begin{pmatrix} 3 \\ a \end{pmatrix} = \begin{pmatrix} b \\ 7 \end{pmatrix}$ find the values of a and b. [3]

2. Given the matrices $A = \begin{pmatrix} 2 & 1 \\ 4 & 3 \end{pmatrix}$ and $B = \begin{pmatrix} -3 & 2 \\ 1 & -2 \end{pmatrix}$ find:

i) The determinant of A [1]

ii) The inverse of A [2]

iii) BA [2]

iv) B^2 [2]

v) $2A - 3B$ [2]

3. A salesman's monthly income is made up of a fixed amount plus a commission which varies directly as the number of articles he sells. When he sells 30 articles his income is \$400. When he sells 600 articles his income is \$800.

i. What type of variation is suitable for the above situation? Give reasons. [2]

ii. Find the law of variation [2]

iii. Find the income in a month during which he sells 30 articles? [2]

4. Given that $A = \begin{pmatrix} 5 & 5 \\ -3 & -3 \end{pmatrix}$

a.) Find n if $A^2 = nA$ [2]

b.) Find the determinant of A. [2]

c.) What **special** name is given to matrix A. [1]

5. A circle is drawn with a centre O, A, X, and B are on the circumference of the circle angle $\text{AOB} = \theta$. AOBY forms the minor sector of the circle while AXB forms the Major sector of the circle. Given that the length of the cord AB is 24cm and that the radius of the circle is 15 cm.

You may draw relevant diagrams to clarify your working.

- a) Show that angle θ is 1.855 radians to 3 decimal places. [2]
- b) Find the length of the arc AXB [3]
- c) Find the area of the shaded region [3]

6. A piece of wire of length 32cm is bent to form the perimeter of a sector of a circle, Centre O such that the acute angle POQ where P and Q are on the circumference.

- a) Given that the radius is r cm and the angle of the sector is θ radians, express θ in terms of r and, hence show that the area of the sector, $A \text{ cm}^2$ is given by $A = 16r - r^2$ [3]
- b) If the arc length PQ is twice the radius, find :
 - i) The area of the sector [2]
 - ii) The length of the chord PQ [2]

7. Use Cramers Rule to solve the following simultaneous equations $x+3y=14$ and $2x-3y= -8$ [3]

8. Use matrices to solve the following simultaneous equations $3x-y=11$ and $5x+4y=7$ [3]

9. Given that two similar cylinders P and Q have diameters of 2cm and 10 cm respectively.

- a) Write down in its simplest form the ratio of
 - i) The height of P: the height of Q. [1]

- ii) The volume of P:the volume of Q. [1]
- b) Given also that the volume of P is 3000cm^3 find the volume of Q. [2]
- c) Given that the curved surface area of Q is 900cm^2 find the curved surface area for P. [2]

10. Given that the matrix $B = \begin{pmatrix} k-1 & 2 \\ 4k & -2 \end{pmatrix}$ is singular find the value of k. [3]

The End

APPENDIX 6:MAF1100 2013 MATHEMATICS TEST 4**Time Allowed: 2h30mins****Total Marks: 50 Examiner: Chirimba M****7. Answer all questions and show all your working.****8. All your answers and working out must be written on the separate answer paper.****9. You may use a non-programmable calculator.**

1. Simplify $\left(1\frac{9}{16}\right)^{-0.5}$. Give your answer in its simplest form. [2]

2. Evaluate: $\log 18 + \log 200 - 2\log 6$. Show all your working. [2]

3. Given that $\log 7 = 0.8450$ and $\log 5 = 0.6989$ use this information to evaluate.

4. i) $\log 175$ [2]

ii) $\log 3\frac{4}{7}$ [2]

5. Evaluate the following

a) $\log_6 18 + \log_6 54 - 3\log_6 3$. Show all your working. [2]

b) $\log_{0.25} \frac{1}{2}$ [2]

c) $\log_{81} \left(\frac{1}{27}\right) - \log_{16} \left(\frac{1}{128}\right) - \log_{125} \frac{1}{25}$ [3]

6. Simplify $3\log a - 2\log a + 3\log b$. Show all your working [3]

7. Simplify the following as far as possible.

$$\left(4x^{\frac{1}{3}}\right)^{\frac{-3}{2}} \times \left(8x^{\frac{-1}{4}}\right)^{\frac{4}{3}} \times \frac{1}{\sqrt[3]{(16x)^{-3}}} \quad [3]$$

8. Solve the following equations

a) $10000^{(m-4)} = 10$ [2]

b) $3^{\frac{x}{2}} = \frac{1}{27}$ [2]

c) $3^{x-1} = 4^{x-1}$ [3]

d) $\log_3(x+2) = 4$ [2]

9. Reduce the following expressions to single terms

a) $2\log 5 - \log \frac{3}{7} + \frac{1}{2}\log \frac{9}{16}$ [3]

b) $\frac{1}{3}\log(2x-1) + \frac{1}{9}\log(x+3) - \frac{2}{9}\log(x+1)$ [3]

10. Express the following in terms of $\log a$, $\log b$ and $\log c$: $\text{Log} \frac{a\sqrt{b^3}}{\sqrt[3]{c^{-2}a^5}}$ [3]

11. Remove brackets in the following expression and simplify $2v^2(5v-2w)(5v+2w)$ [3]

12. Factorise the following expressions completely

a) $3x^2+11x-4$ [3]

b) $8f^2-12f+12gf-18g$ [2]

c) h^3-h [2]

14. Express the following expression as a single fraction in its lowest term

$$\frac{3x+2}{x^2+x-2} + \frac{2}{x+2} \quad [3]$$

15. Make k the subject of the formula in the following equation

$$\frac{wk}{5h} - \frac{vk}{6h^2} = w + v \quad [3]$$

The End

APPENDIX 7: QUESTIONNAIRE.

This section seeks to elicit your perception and experiences about the setting of academic and behavioural goals

Section A: Demographic information

Section B: General questions about students' experiences about the setting of academic and behavioural goals

Section C: Classroom and planning conditions that students feel need to be satisfied for the successful implementation of goal oriented learning.

SECTION A: DEMOGRAPHIC INFORMATION (Tick the correct box)

1. What is your gender?

Male

Female

1

2

2. What is your age to the nearest year

<18

18-19

20-21

22-23

>23

1

2

3

4

5

3. What FP class do you belong to (**tick the right box**)

Class 1

Class2

Class 3

1

2

3

4. What mathematics symbol did you enter FP with?

A*

B

C

D

E

F

G

1

2

3

4

5

6

7

SECTION B: STUDENTS' PERCEPTIONS AND EXPERIENCES ABOUT THE GOAL SETTING EXERCISE

PART 1: STUDENTS' PERCEPTIONS ABOUT GOAL SETTING

5: The goal setting exercise motivated me?

Strongly Agree	Agree	Disagree	Strongly disagree
1	2	3	4

6. I understood the goal setting exercise

Yes	No
1	2

7. What aspects of goal setting exercise did you enjoy most?

8: What do you think affected your understanding of the goal setting concept?

Lacked clarity from the teacher	My attitude was negative	My attitude was positive	Teachers explanations were clear
1	2	3	4
Goal setting	Goal moderation	Goal Tracking	None
1	2	3	4

9: What was your perception with regards to the goal setting exercise in the FP?

Goals were useful	Goals were not useful
--------------------------	------------------------------

1

2

10: To what extent do you think the goal setting exercise influenced your academic performance positively?

Not at all

Partially

Greatly

1

2

3

11. Goal setting is relevant to FP?

Strongly agree

Agree

Disagree

Strongly disagree

1

2

3

4

12. Which type of goals do you think impacted more positively to your academic performance?

Academic Goals

Behavioural Goals

1

2

PART 2: CLASSROOM ENVIRONMENT FACTORS

13. The methods the teacher used to teach were relevant to support the attainment of academic goal oriented learning.

Strongly agree

Agree

Disagree

Strongly disagree

1

2

3

4

14. The methods the teacher used to teach were relevant to support the attainment of behavioural goals.

Strongly agree

Agree

Disagree

Strongly disagree

1

2

3

4

15: Goal oriented learning was relevant to FP despite the large class sizes?

Strongly agree	Agree	Disagree	Strongly disagree
1	2	3	4

16: What factor do think is most important to be considered in a goal oriented classroom?

Class size	Students' level of competence	No idea	Teaching methods
1	2	3	4

17. A should set the goal he wishes to attain even if he did not attain the previous goal?

Strongly agree	Agree	Disagree	Strongly disagree
1	2	3	4

18: When do you think the goal setting exercise should comments in the FP.

As soon as classes comments	Just After test 1	Just after test 2	From test 3 upwards
1	2	3	4

19: The goal sheet pre-set behavioural goals were relevant to enhance performance improvement.

Strongly agree	Agree	Disagree	Strongly disagree
1	2	3	4

20: What classroom factors would you consider in the setting of behavioural goals in order to get maximum benefits from the goal oriented learning process?

.....

.....

.....

.....

.....

.....

21: What classroom factors would you consider in the setting of academic goals in order to get maximum benefits from the goal oriented learning process?

.....

.....

.....

.....

.....

.....

22: What challenges did you face in the setting of:

a) Behavioural goals?

.....

.....

.....

.....

.....

b) Academic goals

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23: How did you overcome the challenges you encountered in the attainment of behavioural goals in **(22a)** above?

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24: How did you overcome the challenges you encountered in the attainment of academic goals in **(22b)** above?

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25: What do you think the University need to do to support the goal learning at FP?

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26: How can the Science Foundation Mathematics lecturers plan and present their lessons to support and promote the setting of :

a) Academic goals

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b) Behavioural goals?

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**APPENDIX 8: STUDENTS' GOAL SHEET FOR THE SCIENCE FOUNDATION
PROGRAMME
OF**

THE UNIVERSITY OF NAMIBIA

**a) BEHAVIOURAL GOALS TO BE MAINTAINED PRIOR TO AN ASSESSMENT
TEST**

	Behavioural Goal	Ass T1		Ass T2		Ass T3		AssT4		Overall	
		✓	+/-	✓	+/-	✓	+/-	✓	+/-		+/-
		✓	+/-	✓	+/-	✓	+/-	✓	+/-		+/-
1	To complete homework and hand in for marking on time										
2	Listen carefully and respond to questions										
3	Write neatly and legibly										
4	Asking for help when something is not understood										
5	Coming for mathematics lessons on time										
6	Avoidance of noise making during lessons										

Key Ass1- Assessment Test 1; Achieved Behavioural Goal (+); Not Achieved behavioral Goal (-).

b) ACADEMIC GOALS TO BE ACHIEVED

	Signatures		Set Goal	Obtained Mark	Goal Achieved (1) / Not Achieved (0)
	Student	Lecturer			
Assessment Test 1					
Assessment Test 2					
Assessment Test 3					
Assessment Test 4					

Overall					

Assessment Test Comments

	Behavioural Goals	Academic Goals	Overall
Assessment Test 1			
Assessment Test 2			
Assessment Test 3			
Assessment Test 4			
Overall Comments			