

**Title: The effect of a supportive teacher-learner relationship on Grade 12 learners' Mathematics achievement.**

**by**

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*Imre Istvan Andras*

*March 2022*

## ABSTRACT

This study explores the effect that a supportive teacher-learner relationship has on Grade 12 learners' achievement in Mathematics. Data was collected in one quintile classified school in the Metropolitan East area of the Western Cape by means of interviews, group discussions, and observations. The mathematical achievement of the grade 12 participants in relation to a supportive teacher-learner relationship was examined using Glasser's Choice Theory as a framework. According to this framework, we are all driven by five basic needs and that by having a teacher fulfil these needs through a supportive teacher-learner relationship this will directly aid in achievement in Mathematics. The participants' responses to questions in the interview and focus groups were arranged according to their individual response to the question at the time as well as the information they were able to provide. Overall, the data was classified into one of three main categories; routines were further classified into one of the three main categories; observations, focus group discussions and semi-structured interview. The analysis focused on finding a link between how the learners' and teacher viewed the importance of a supportive teacher-learner relationship and how this relationship affects mathematical achievement.

The results of this study strongly support the notion that a supportive teacher-learner relationship does affect a learners' ability to achieve mathematically. Most learners felt that they would have benefited from having a supportive relationship with their teacher. Also, most learners felt that low achievement in Mathematics can be linked to teacher readiness and preparedness. However, a particular participant felt that there was presence of a supportive relationship and that this was evident through having been approached and being thanked for all the support they had provided to them throughout the year. As such, an awareness of how vitally crucial that the current generation of teachers need to be with regards to how impactful they are not only on the state of learners' academically but also are on the country itself.

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## **DEDICATION**

This thesis is dedicated to my parents, Imre and Belinda Andras who have always been by my side and worked long days and sleepless nights to ensure they provided me with the tools to make a success of the life they had given to me. Finally, this thesis is also dedicated to my wife Lenay Andras who, during times of great frustration whilst writing this thesis, remained by my side, and provided motivation

# TABLE OF CONTENTS

<b>Declaration .....</b>	<b>ii</b>
<b>Abstract .....</b>	<b>iii</b>
<b>Acknowledgements .....</b>	<b>iv</b>
<b>Dedication .....</b>	<b>v</b>
<b>Appendices .....</b>	<b>vii</b>
<b>List of tables .....</b>	<b>viii</b>

## CHAPTER 1: INTRODUCTION TO THE RESEARCH

<b>1.1 Introduction</b>	<b>1</b>
<b>1.2 Background to the Study</b>	<b>1</b>
<b>1.3 Problem Statement</b>	<b>3</b>
<b>1.4 Rationale of the Study</b>	<b>4</b>
<b>1.5 Purpose of the Study</b>	<b>4</b>
<b>1.6 Research Questions</b>	<b>4</b>
<b>1.7 Research Objectives</b>	<b>4</b>
<b>1.8 Structure of the thesis</b>	<b>5</b>
<b>1.8.1 Chapter One: Introduction to the study</b>	<b>5</b>
<b>1.8.2 Chapter Two: Literature review and Theoretical Framework</b>	<b>5</b>
<b>1.8.3 Chapter Three: Research Design and Methodology</b>	<b>5</b>
<b>1.8.4 Chapter Four: Data Analysis and discussion of results</b>	<b>5</b>
<b>1.8.5 Chapter Five: Summary, Conclusion and Recommendations of the study</b>	<b>5</b>

## CHAPTER 2: LITERATURE REVIEW AND THEORETICAL FRAMEWORK

<b>2.1 Introduction</b>	<b>6</b>
<b>2.2 Mathematics education in South Africa</b>	<b>6</b>
<b>2.3 The conceptualization of supportive teacher-learner relationships in mathematics</b>	<b>9</b>
<b>2.4 The effects of supportive teacher-learner relationships on Mathematics achievement</b>	<b>10</b>
<b>2.4.1 Chapter One: The academic effect of supportive teacher-learner relationships on Mathematics achievement</b>	<b>10</b>
<b>2.4.2 Chapter Two: The emotional effect of supportive teacher-learner relationships on Mathematics achievement from teachers' perspective</b>	<b>12</b>
<b>2.4.3 Chapter Three: The emotional effect of supportive teacher-learner relationships on Mathematics achievement from learners' perspective</b>	<b>14</b>
<b>2.4.4 Chapter Four: The effect of supportive teacher-learner relationships on Mathematics achievement from a lesson perspective</b>	<b>16</b>

2.4.5	Chapter Five: The health effect of supportive teacher-learner relationships on Mathematics achievement from both teacher and learner perspective	17
2.5	Supportive teacher-learner relationships in a Mathematics classroom	22
2.6	Theoretical Framework	25
2.7	Conclusion	37

### **CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY**

3.1	Introduction	38
3.2	Research Design	38
	3.2.1 Research Paradigm	38
	3.2.2 Research Approach	39
3.3	Research Methodology	39
	3.3.1 Research site	39
	3.3.2 Participant selection	39
	3.3.3 Data collection	40
	3.3.4 Data analysis	42
	3.3.5 Validity and trustworthiness of the study	43
	3.3.6 Researcher's position	43
	3.3.7 Ethical considerations	44
3.4	Conclusion	44

### **CHAPTER 4: DATA ANALYSIS AND DISCUSSION OF RESULTS**

4.1	Introduction	45
4.2	Observations	45
4.3	Focus Group Discussions	48
4.4	Semi-Structured Interview	53
4.5	Conclusion	55

### **CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS**

5.1	Introduction	56
5.2	Summary	56
5.3	Limitations of the study	57
5.4	Implications of the study	57
5.5	Recommendations	57
5.6	Conclusion	58

<b>6. REFERENCES</b>	<b>59</b>
<b>7. APPENDICES</b>	<b>66</b>
<b>Appendix A:</b> Semi Structured Teacher Interview Questions	66
<b>Appendix B:</b> Focus Learner Group Discussions Questions	66
<b>Appendix C:</b> Supervisor's letter in support of student's WCED application to conduct research in school	67
<b>Appendix D:</b> Research Ethics Clearance Letter	68
<b>Appendix E:</b> Approval letter from Western Cape Education Department	69
<b>Appendix F:</b> Learners' Signed Consent letters	70

**TABLES:**

<b>Table 1:</b> Defining teacher-learner relationship	10
<b>Table 2:</b> Focus group discussion guide	41
<b>Table 3:</b> Semi-structured interview guide	41



# CHAPTER ONE

## INTRODUCTION TO THE RESEARCH

### **1.1 Introduction**

This section sets the scene, and it begins by illuminating the problem under investigation. The problem under investigation is presented on background to the study. This is followed by problem statement, rationale and purpose of the study. The section ends with research objectives and questions.

### **1.2 Background to the Study**

In the South African education system, Grade 10 is the beginning of a three-year journey culminating in examinations in the final, 12<sup>th</sup>, year of schooling known as Matriculation. At the beginning of Grade 10 learners would need to decide between either choosing Mathematics, Technical Mathematics or Mathematical Literacy. Since the introduction of Mathematical literacy in schools, many learners have opted choosing mathematical literacy over mathematics. Again, the choice to do mathematics or mathematical literacy for all the learners is based on their mathematics achievement record in the general education and training (GET) phase exit grade. Moses, Kudzai and Emily (2011) state that the main reason behind learners dropping Mathematics was due to their poor achievement in the subject. which was a direct result of learners viewing the subject too difficult to learn. Drawing on their study, poor achievement in mathematics also point to lack of ability to achieve in mathematics as learners continue viewing the subject too difficult to learn especially when compared with other subjects. Koca (2016) states that if a supportive teacher-learner relationship is present then learners are more motivated to grapple with and overcome content that is deemed too difficult to meet the expectations of their teacher. Hence, one can begin to question if underperformance of learners in a subject could be caused by the lack of a positive teacher-learner relationship or the way the subject matter is presented to the learners.

A report on the National Senior Certificate Examinations displays a decrease in the year 2018-2019 between the numbers of learners who wrote Mathematics as well as passed Mathematics from one year to the other (Department of Basic Education's

[DBE], 2019). Van Broekhuizen, Van Der Berg and Hofmeyer (2016) indicated that on average out of the total number of learners who begin school in the same year, only 60% are promoted to their Grade 12 year and only 37% of this cohort successfully complete their Grade 12. The DBE's (2020) report on the 2019 National Senior Certificate Examinations Report highlights that there is a decrease in the overall percentage of learners who were able to achieve higher than 40% average on their result with Mathematics dropping from 39.6% to 35.1%. These percentages become alarming when considering that positive teacher-learner relationships are especially crucial with regards to learners who are at-risk of school failure (Fosen, 2016). Similary Snoke (2019) states that whilst most teacher do not comprehend the significance of a supportive teacher-learner relationship the importance of it can not be understated as a supportive relationship leads to increased learner confidence and academic achievement. Furthermore Shay (2020) states that learners who are unable to achieve a passing result for the subject of Mathematics could possibly find themselves unable to attend universities and if they do find themselves able to attend, they will inevitably take longer to complete the degree to which they have enrolled.

The South African Teachers Union [SAOU] (2015) report back and reflect on the overall standard of Mathematics in Grade 12 across the nation. The SAOU's report (2015) highlights that the total number of Grades 12 learners that wrote Mathematics show a decrease upward of 30 000 in the year 2014-2015. While there was an increase in the number of learners who achieved "30% or more" in their final examination 4.4% decrease was recorded in overall percentage achieved. Trends in the International Mathematics and Science Study [TIMSS] (2015) reinforces the point that South Africa is heading towards an all-time low with regards to numeracy placed second last out of all the countries that took part in the study.

This study intends to focus on approaches that will make use of teacher-learner relationships in the teaching of Mathematics in a Grade 12 classroom. According to Fosen (2016) teacher-learner relationships play a crucial role in academic success. In order to develop that relationship correctly, the teacher first needs to gain a good understanding of the learners' background: academic, social, home support, community support etc. This knowledge can only be obtained by engaging with learners inside and outside the classroom by understanding both academic and personal needs. Wright (2017) expands on this notion by stating that conventional

approaches in modern day classrooms towards teaching Mathematics have become outdated and obsolete. Wright (2017) states that to truly be a change in the system teachers need not only develop positive teacher-learner relationship but also perform critical self-reflection with regards to their own values and classroom practices. Gablinske (2014) and Varga (2017) concur with the notion of the importance of teacher-learner relationship. The crucial components with regards to developing these relationships positively revolve around teacher expectations, attitude, familiarity and communication. Butler (2017) focused on the positive effect of teacher-learner relationships with regards to young male African American students. The study concluded in stating that positive teacher-learner relationship resulted in an increase in Mathematics results. This approach might yield similar results within South African Mathematics classrooms. Hershkovitz (2018) argues that positive teacher-learner relationship was not only crucial to academic success of learners but also the professional success of teachers. Motara (2015) found that when positive teacher-learner relationships were developed it has a positive outcome in terms of shaping learners' perceptions of the learning environment which in turn assisted in moderating not only learners' behaviour but their overall impression on learning itself. While there is a plethora of research about effect of positive teacher-learner relationships on overall academic achievement, this study seeks to explore the extent to which teacher-learner relationships play a role with regards to learner achievement in Mathematics in a South African context.

### **1.3 Problem Statement**

While there has been a vast array of approaches adopted by teachers in the mathematics classroom in order to improve learner achievement, low achievement in the subject remains prominent. Other contributing factors that hinder the development of learners' proficiency in Mathematics becomes include overcrowding, late delivery of textbooks and poor teaching strategies (Marais, 2016). Hattie (2003) states however that teachers who are able to create a supportive teacher-learner relationship are going to have an improving effect on the learners' achievement in the subject. This finding carries a lot of weight when one considers how many forms of interventions, not including a supportive teacher-learner relationship, aimed at improving grade 12 learners' mathematics performance yield little to no effective result. An example of one of these methods includes extra Mathematics classes. The focus of this study is to

examine the effect a supportive teacher-learner relationship has on the Mathematics achievement of grade 12 learners in a South African context.

#### **1.4 Rationale of the study**

There is a local high school in the Western Cape, South Africa, that has for the past 21 years boasted a 100% Grade 12 pass rate and excellent results in Mathematics. The motto of the school is to try your best, no excuses and always do more. These values are accompanied by weekly tests, a Mathematics department compiled of educators who are more than willing to provide endless support in the form of extra classes. In addition, there is a family orientated classroom atmosphere that makes use of a strong and positive teacher-learner relationship. For more than two decades this school has potentially found the solution to the mathematics problem in this country, being the crucial and often overlooked teacher-learner relationship.

#### **1.5 Purpose of the study**

The purpose of this study is to examine effects of a positive teacher-learner relationship on achievement of Grade 12 learners in a Mathematics classroom.

#### **1.6 Research Questions**

The main research question for this study is:

What are the effects of teacher-learner relationships on learners' achievement in Mathematics in Grade 12?

The sub-research question:

How do teacher-learner relationships affect Mathematics achievement among Grade 12 learners?

#### **1.7 Research Objectives**

The study is aimed at examining the effects of teacher-learner relationships on learners' achievement in Mathematics in Grade 12. And further explore in what way(s) do the teacher-learner relationships affect Mathematics achievement among Grade 12 learners.

## **1.8 Structure of the thesis**

### **1.8.1 Chapter one: Introduction to the research**

This chapter introduces the study and offers the origin and background, the rationale, the purpose, and the significance of the study. The focus of the study is explained, where the research questions and objectives are stated. It, finally, contains a description of each chapter of this study.

### **1.8.2 Chapter 2: Literature review and theoretical framework**

This chapter is structured in two major sections. The first section provides a document analysis of the previous literature relevant to research on supportive teacher-learner relationship and its effects in mathematics achievement. The second section of this chapter discusses and analyses theoretical orientations underpinning this study.

### **1.8.3 Chapter 3: Research design and methodology**

This chapter describes the design and methodology of the study. It also discusses the research paradigm, design, and methodology, site selection, sample, data collection techniques, data analysis, researcher's role in the study, and finally discusses trustworthiness and ethical considerations.

### **1.8.4 Chapter 4: Data analysis and discussion of results**

This chapter presents the results and discussion of the findings. The results are collected from the focus group discussions, Class observations and in-depth interviews. These results are discussed in relation to the purpose and aims of the study.

### **1.8.5 Chapter 5: Summary, Conclusion and recommendation of the study**

This chapter includes a summary of the findings discussed in relation to the research questions of the study. It further presents recommendations, highlights limitations and provides a conclusion of the study.

The next chapter discusses the literature review and theoretical perspectives guiding the study.

## CHAPTER TWO

### LITERATURE REVIEW AND THEORETICAL FRAMEWORK

#### **2.1 Introduction**

In this chapter the researcher provides a document analysis of the previous research on the effect of a supportive teacher-learner relationship generally and also locally, studies linked to Grade 12 mathematics achievement. The researcher has decided to limit the field of research by restricting the literature presented to a publishing date of not older than 2010. This literature review summarizes key points from these studies under the following themes:

- The quality of Mathematics education in South Africa
- The conceptualisation of supportive teacher-learner relationships in Mathematics
- The effect of supportive teacher-learner relationships on Mathematics achievement
- The development of a supportive teacher-learner relationship in a Mathematics classroom

Finally, the section ends with an outline of theoretical orientations underpinning the study by drawing on William Glasser's Choice Theory (1998).

#### **2.2 Mathematics education in South Africa**

The lack of quality Mathematics education that was prevalent decades ago is still felt today (Stols, 2015). The above statement carries that more weight when one considers how long the poor standard of Mathematics education in the South African education system has been documented. Learners are still unable to understand mathematical concepts (Jojo, 2019). Shay (2020) states that the number of Grade 12 learners who take the subject Mathematics are of concern as the learners' Mathematics performance is crucial for university entrance. Those without Mathematics as a subject are then not eligible for certain academic programmes at university. The continuous decline of numbers

of learners studying mathematics perpetuate the high demand of candidates to further studies particularly in those fields or careers that require mathematics.

Trends in International Mathematics and Science Study [TIMSS] (2015) reports that while South Africa has managed to raise the level of Mathematics achievement from “very low” to “low”, South Africa remains one of the lowest performing countries in the study. Similarly, WEF’s [World Economic Forum] (2014) report places South Africa third last with regards to overall quality of education. Jojo (2019) highlights a key factor with regards to improving the state of Mathematics in South Africa lies in providing teachers with continuous development opportunities to better equip them with regards to Mathematics content. Jojo (2019) concurs with Arends (2017) by stating that teachers play a vital role in providing quality Mathematics classes through the implementation of various teaching methods and intervention strategies. Unfortunately, the implementation of various teaching methods and intervention strategies have not yielded good results (Umalusi, 2020).

Black (2016) states that a large contributing factor with regards to learners’ ability to attain Mathematical concepts, in correlation to supportive relationships, is influenced by the South African education system’s “maximum four years in a phase” policy, whereby learners are only permitted to fail one year per every three year phase. This method of “progressing” learners has directly resulted in the massive drop in education standards of South Africa (Black, 2016). Mlachila (2019) states that in South Africa despite having a huge budget allocation to education, the quality of education remains low. This is alarming when one considers that other sub-Saharan African countries allocate fewer funds per learner and still achieve higher academic results. While there has been a lot of good progress made in the education with regards to improving access overall, there is still a need for improvement in learner achievement across all schools in the country. Mlachila’s study concluded in stating that while South Africa would need to make significant improvements to teacher training in order to lessen the gaps in content knowledge, school management and

teacher accountability would need to be taken into consideration in order to see an improvement in education quality.

The amount of first year university students that lack understanding of basic fundamental mathematical concepts in South Africa have become increasingly alarming (Forneman, 2019). To assist in the understanding of Mathematics, with the introduction of the CAPS syllabus, the specific mathematical content that was to be learned was more clearly laid out and defined. Froneman (2019) states that the mathematical content learnt from Grades 10 to 12 will have the greatest impact on success in tertiary institutions of learning. Froneman (2019) postulates that it is therefore crucial that the developers of the Mathematics curriculum are sensitive to the requirements of tertiary institutions with regards to the fundamental mathematical concepts required for learners. Joseph (2018) states that the quality of education cannot rise unless the quality of teachers rise too. Research shows that teachers are motivated by appreciation and not by money (Ates, 2018). This appreciation is attained through building a trusting, respectful and supportive relationship with their learners (Joseph, 2018). The study being conducted found that 66% of teachers teaching Mathematics in South Africa are not trained to teach the subject (Joseph, 2018). This highlights the shortage of quality teachers in specific subjects.

The study further highlighted that some South African Mathematics teachers display a lower level of content knowledge than other Mathematics teachers in countries such as Swaziland, Tanzania, Uganda, and Kenya. In many instances the teacher cannot answer the same questions he/she provides to his/her learners. The study concluded in stating that the lack of a supportive teacher-learner relationship further compounded learners' feeling of anger, at times even hunger, and eventually lead to high levels of dropouts at school.

While Feza (2014) highlights a variety of factors that can be credited to a lack of achievement in Mathematics for learners for example, teacher readiness, teacher content knowledge and pedagogical knowledge. This literature review



is aimed at unpacking key aspects that play a role in how a supportive teacher-learner relationship effects a Grade 12 learners' achievement in Mathematics.

### **2.3 The conceptualisation of supportive teacher-learner relationships in Mathematics**

A supportive teacher-learner relationship is defined as "interpersonal meanings" that both teacher and learner associate with one another which stems from their interactions with one another both inside and outside the classroom (Claessens, 2016:478). Claessens (2017) expands on this definition by stating that these moments where both teacher and learner interact are crucial to building a solid foundation with regards to a supportive teacher-learner relationship. da Luz (2015) conceptualises supportive teacher-learner relationship as a positive and safe bond that is formed between both teacher and learner, which again is developed due to interactions between both parties.

Theisen-Homer (2018) states that there are two different types of teacher-learner relationships. These include:

- an “instrumental focus” which involves teachers simply acquiring information about the learner to motivate them to behave well in class. These relationships were seen strictly as a form of control to acquire compliance.
- a “reciprocal focus” which involves the teachers acquiring more in-depth and complex information regarding the learners to assist the learners in their holistic development. This motivates the learners to engage with academically challenging content more actively. It was found that these relationships taught the learners how to think for themselves, which promotes individuality.

Ibrahim (2020) highlights factors that contribute to definition of either a supportive or unsupportive teacher-learner relationship. Table 1, following summarises these factors:

**Table 1: Defining teacher-learner relationship**

Unsupportive	Supportive
<b>Affect:</b> negativity, disrespect, dislike	<b>Affect:</b> care, respect, positivity
<b>No reciprocity:</b> no response to initiatives of the other person	<b>Complete reciprocity:</b> mutuality, sharing, immediate response
<b>All power</b> is retained by teachers	<b>Most power</b> granted to learners
<b>No or low sense</b> of “school belonging”	<b>High sense</b> of “school belonging”

Feza (2013) states that the aim of South Africa’s White Paper 5 was to provide learners with a foundation that promoted lifelong learning and development. However, the role of a supportive-teacher relationship needs to ensure that the learners are nurtured and are assisted in their holistic development in order for them to lead healthy and efficient lives in a modern-day society.

## **2.4 The effect of supportive teacher-learner relationships on Mathematics achievement**

### **2.4.1 The academic effect of supportive teacher-learner relationships on Mathematics achievement**

A good learning environment is dependent on a supportive teacher-learner relationship in order to promote a strong learning process (Alnaserri, 2014). Wright (2017) states that along with developing this relationship, teachers need to discard the modern day outdated and obsolete methods of teaching Mathematics in order to see a change. By doing this learners motivation to learn drastically improves (Koca, 2016). Be (2017) found that learners who were engaged with teaching resources that promoted individual learning and were taught in a classroom based on a learner centred approach were able to develop a supportive relationship with their teacher. This played a big role in their academic success. The study concluded in stating that learners felt that their academic success/progress, engagement and motivation were more

positively affected by this supportive relationship as opposed to learners who were regularly at conflict with their teachers. Similarly, Dayal (2018) states that both teachers and learners value a supportive relationship with one another at all phases and levels of education, both inside and outside the classroom. This relationship has shown to not only improve teachers' professional skills but also have a positive effect on parents and school administrators. In developing a supportive relationship students display a high level of motivation and feel more engaged and stimulated during the lesson. Amadi & Paul (2017) concur that academic benefits for learners are endless when a good level of communication is developed between teacher and learner through the use of a supportive teacher-learner relationship. This good level of communication in turn helps learners develop self worth, especially learners experiencing low economic status (Amadi & Paul, 2017). By engaging in effective communication teachers are able to take a genuine interest in their learners' lives outside the classroom. This communication resulted in classrooms becoming a supportive space where learners are able to engage in academics in a social yet productive manner. The study concluded in stating that learners who have a supportive relationship with their teacher would achieve higher academic results and were more likely to take on academic challenges. Butler (2017) emphasises on the effects of supportive teacher-learner relationship on the achievement of African American males in the Mathematics classroom. A positive teacher-learner relationship resulted in a drastic increase in Mathematic results for African American males.

Contrary to most researchers Rimm-Kaufman (2018) states while learners who have a supportive relationship with their teacher are more likely to achieve higher results as opposed to learners who do not have that relationship with their teacher, having this relationship is not guaranteed to always produce massive improvement in academics. Even with that being said Rimm-Kaufman (2018) states that teachers should never become despondent and should always aim to develop a supportive relationship with their learners. Rimm-Kaufman (2018) however does state that supportive teacher-learner

relationships are guaranteed to always shown to assist in learners adjusting to a school, help the learners improve on their social skills and most importantly promote and foster learners' resilience, motivation and engagement with regards to their academics. Furthermore, learners who were found to have a supportive relationship with their teachers were less likely to be absent and reportedly enjoyed school more (Rimm-Kaufman, 2018).

#### **2.4.2 The emotional effect of supportive teacher-learner relationships on Mathematics achievement from a teachers perspective**

A study conducted by Sparks (2019) stated that a supportive teacher-learner relationship is a much underrated aspect in education. Sparks (2019) expanded on this by postulating that it is assumed that teachers who are able to form supportive relationships with their learners often do so as a cover for lack of content knowledge. In the same study Sparks (2019) states that teachers benefit from a supportive relationship with their learners as it was found that, that a supportive teacher-learner relationship was a good indicator of whether the teacher experienced joy or anxiety in class. The study concluded in stating that teachers have limited to no understanding with regards to the importance their supportive relationship with their learners have on that learners' identity and sense of belonging. A study by Garcia-Moya (2019) found that a supportive teacher-learner relationship promotes teachers' well being through lowering their levels of stress and burn-out. All of this relates to teachers' "relatedness". It can therefore be stated that a supportive relationship is as important for teachers as it is for learners. During the study teachers were interviewed with regards to their opinion on supportive teacher-learner relationships. They were questioned as to whether they felt this supportive relationship was an integral part of teaching or it if was optional. The feedback from these questions included some feeling that teaching content and building this relationship goes hand in hand and if you are unable to form this supportive relationship whilst teaching your content then you as a teacher are not doing your job. A quote from one of the participants supporting this claim includes:

*“They are almost impossible to separate.” “Good relationships make good learning; good learning engenders good relationships; it is a positive spiral. When relationships are good, excellent, you know, you have got that rapport and the learners have got that rapport with each other, learning will happen so much more quickly. The relationships get better as a result because they feel more confident in their teacher, they feel more trusting in you, and they feel more trusting in themselves. It has to be different, you have to talk to them, know what their interests are, I think having a good relationship with them is going to help in every aspect of teaching.”*

Alternatively, there were those participants that felt building this relationship was optional and had no impact on correct teaching. A quote from one of the participants supporting this claim include:

*“I think it is very much about the teacher you are because some teachers are just interested in getting teaching and learning done and achieving as much as that can group can achieve. There are teachers who are not interested in forming this supportive relationship; they come and want to teach their subject and leave. There are a lot of teachers that possibly butt heads with students because they do not understand or there is personality conflict. There needs to be the right balance between knowing how to talk to your learners and there being mutual respect between learner and teacher.”*

Among these contrasting responses there were some participants who felt equally strong about both sides of the discussion. A quote from one of these participants include:

*“I think you can be an excellent teacher who does not have a good relationship, there are plenty of lovely students who will learn a lot from a teacher who is very good at explaining but is not the friendliest. There are indeed colleagues who do not pay attention to building this relationship but are magnificent teachers who are able to motivate students to work in their own way. These colleagues do not want to know about the learner’s problems at home or emotional*

*situation, but they do know how to give the learner academically what they need to improve. There are teachers that do not go into the emotional aspect at all but when they give an explanation, they do it in such an interesting way regardless of the relationship the learners still love it.”*

The study concluded by stating that it was imperative in finding the right balance between being a friend and a teacher which is key to forming a supportive teacher-learner relationship. All the participants consider having this supportive relationship as important to their well-being as it is a main source of joy and satisfaction. However, it is a complex process with regards to building this supportive relationship as it requires a continuous “balancing act” from the teachers in order to avoid being compromised by having their professionalism being brought into question.

#### **2.4.3 The emotional effect of supportive teacher-learner relationships on Mathematics achievement from a learners perspective**

Lee (2012) states that the absence of a supportive teacher-learner relationship results in a lack of learner engagement. This lack of engagement results in learners becoming disengaged. A disengaged learner struggles academically as engagement is a predictor for academic success, and this ultimately results in high dropout rates. A learner that is highly engaged are less likely to drop out. In this study Lee (2012) highlights numerous factors that contribute to improving learner engagement. These factors include both behavioural (participation in both academic and non-academic school related activities) and emotional (sense of belonging or “relatedness” components. Engagement can also be affected through the language of instruction used at the school. With regards to the emotional components, it was found that learners who are engaged in a supportive teacher-learner relationship displayed higher levels of academic achievement. Lee (2012) states that the primary reason for learners to complete uninteresting activities is that these activities are valued by others with whom they feel connected or have a sense of “relatedness”. This idea directly implies that supportive relationships lead to learners wanting to engage with their

academics as learning is now valued by someone with whom they feel connected to, the teacher. When learners engage in a supportive relationship with their teacher, they begin to feel supported and more secure within the classroom. This level of support ensures that the teacher's expectations for the learners create a positive academic environment at the school (Lee, 2012).

This can also have the opposite effect as learners' who do not feel this support can be further alienated, especially if they are already low academically performing learners. The study concluded in stating that it is also possible for learners with already high academic achievement to benefit with even higher academic achievement if engaged in a supportive teacher-learner relationship. William (2019) states that good teachers are those who foster and enhance their supportive relationships with the learners to create a conducive learning environment whereby learners can develop the skills to go on to become "great achievers, excellent inventors and global leaders". Teachers need to become motivated, committed, passionate and optimistic individuals with regards to developing supportive relationships with their learners in order to have a truly productive impact on that learner's academic outcomes (William, 2019). This study found that teachers who are deemed "sincere, caring, approachable, supportive and inspiring" are more likely to enable their students to achieve academically as the learner reciprocates with respect for their teachers and passion for what they are learning. As stated previously William (2019) reiterates that developing and maintaining a supportive teacher-learner relationship requires time, commitment, and patience. The study concluded in stating that supportive teacher-learner relationships directly influence learners' ability to thrive and prosper not just in the classroom but in life. This is because learners' feel welcomed, accepted, and cared for. If learner's feel that the teacher cares for them using a supportive relationship, they are more likely to listen and engage in the classroom as the instruction is now effective.

#### **2.4.4 The effect of supportive teacher-learner relationships on**

## **Mathematics achievement from a lesson perspective**

Instruction is deemed effective when learners see that their teacher cares for them by taking the time to learn more about them with regards to their interests both inside and outside of school. Taking the time to understand the learner in terms of their interest outside of school results in raising that learner's motivation to learn as the teacher has now made the effort to care about the learner. The classroom needs to be the ideal learning environment where learning can be both informative and exciting. If the classroom is transformed into this environment, then teachers are less likely to need to discipline learners during class time. Another crucial factor deemed important to learners, is the passion displayed by their teacher for the subject they teach. Dewar (2020) conducted a study regarding supportive teacher-learner relationships and stress hormones. The study found that learners who are in supportive teacher-learner relationships maintained normal stress hormone levels during a week of school. This suggests that a supportive teacher-learner relationship have a strong impact on primary school children and then later result in fewer behaviour problems for those same children. In this study the learners who expressed having a supportive teacher-learner relationship displayed higher levels of engagement in the classroom and developed better language skills. This is significant when one considers the fact that learners with strong verbal skills are more likely to succeed in both a social and academically context. Dewar (2020) also found that supportive teacher-learner relationship directly influenced how learners were treated by their peers. The study concluded in stating that teachers felt a greater sense of accomplishment when they were engaged in a supportive relationship with their learners as these relationships resulted in a lot less emotional exhaustion for them. Milatz (2015) asserts that a supportive teacher-learner relationship acts also as a important daily source for teacher emotion, cognition well-being. While this supportive relationship can be emotionally draining and demanding it is proven to be a crucial source of joy and reward in a teacher's daily life. In the absence of a supportive teacher-



learner relationship the likelihood of a teacher developing a case of burnout increases.

#### **2.4.5 The health effect of supportive teacher-learner relationships on Mathematics achievement from teacher and learner perspectives**

Burnout occurs to teachers when work has become “unpleasant, unfulfilling and unrewarding”. Burnout comes with a considerable number of negative consequences which include negativity towards your job, lack of performance at your job and illness-related consequences. In turn these consequences also affect the learners by lowering their education quality and achievement. Once again Milatz (2015) highlights the teachers need for “relatedness” and therefore further stresses the point that a supportive teacher-learner relationships not only for learners but for teachers too. “Relatedness” refers to one of the crucial factors that affect competence, sustainability and motivation. This is found to not only affect learners’ ability to learn but adults too as well as their work process.

Milatz (2015) states that a teacher and learner is a significant person in the other person’s life. It is easy to therefore make the comparison between the importance of supportive teacher-learner relationship to that of a supportive parent-child relationship. This comparison is formed as the teacher acts a secure base which develops and fosters a learner learning experience in all the phases of education. It is therefore not surprising to see that supportive teacher-learner relationships have been highlighted as one of the top predictors in a learner’s academic outcome (Milatz, 2015). When learners were interviewed in this study, participants highlighted that the supportive relationship they engaged in with their teacher acted as a source of positive emotions and satisfaction. When teachers were interviewed in this study, participants highlighted that the supportive relationship they engaged in with their learners acted as a source of motivation to not only stay but to also enter into the teaching profession. The study highlights that any form of social interaction, support or integration are shown to be essential in curving general health problems by lowering levels of

anxiety. The study concluded in stating that teachers who were able to develop a supportive relationship with their learners felt valued and rewarded, this resulted in a positive effect on the learning outcomes of learners who also felt supported. Surprisingly, even teachers who developed a low quality supportive relationship with their learners reported slightly lower levels of emotional exhaustion.

Ibrahim (2019) found that while learners felt their teachers tried their best, they did however find their teaching style boring as they were rarely engaged in group work or had their opinions considered. The situation was further compounded as some learners felt their teachers did not respect them, this resulted in learners disobeying or skipping classes. This lack of respect felt resulted in no supportive teacher-learner relationship being formed. Ibrahim (2019) highlighted that in order to raise academic achievement, lower dropout rates, violence and the disobeying of school policies/rules teachers would need improve on the learners' sense of "school belonging", well-being and self-esteem through the use of a supportive relationship. Ibrahim (2019) postulates that due to schools now a day's being increasingly academically achievement driven teachers have neglected a crucial responsibility of teaching. This responsibility being fostering learning through the use of getting to know their learners by forming a supportive relationship with them. If such an environment is not reinforced, teachers will soon begin to adopt not only negative attitudes towards their profession but their learners as well. This will unfortunately result in learners feeling unsupported, helpless, rejected, fatigued, left behind, alienated, and disengaged from their academics and society. However, if such an environment can be reinforced this assist in developing positive emotional stability, learning experiences and attachment for learners. The above-mentioned environment will result in higher academic achievement and motivation. Ibrahim (2019) states that learning is enhanced with the development of a strong supportive teacher-learner relationship. Ibrahim (2019) expands on this by explaining that irrespective of age, experiences or backgrounds, learners who were engaged in a supportive relationship with their

teacher were more engaged, motivated, self-driven and connected to the school and their peers. Ibrahim (2019) identifies a supportive relationship as a relationship that encompasses warmth, care, empathy, support, safety and intellectual encouragement. This supportive relationship as described above directly positively impacted on learner's creativity, autonomy, satisfaction and resulted in improvement in both academic results and attendance. Learners who are found to be more receptive of their teacher's teachings are more often than not a result of them feeling understood by their teacher as distinct individuals. This statement holds a lot of weighting when one considers the vast majority of culturally mixed classrooms in South Africa. The study concluded in stating that teachers need to actively pursue meaningful interaction with their learners. This interaction includes showing interest in knowing about the learners' life and future plans. The study also found that a supportive teacher-learner relationship had a greater impact on female learner motivation and participation than males. Ibrahim (2020) states that the role of a supportive teacher-learner relationship is to develop the psychological feeling of attachment and "school belonging" which will result in learners wanting to attend school every day. "School belonging" refers to how a learner feels accepted, respected, included and supported at school. Ibrahim (2020) reiterates that a supportive teacher-learner relationship is the most crucial relationship to be developed at school. This supportive relationship is vital for learner's sense of well being as it assists in developing their own individual identities. This supportive relationship needs to not assist in holistically developing the learner not just assisting in improving their academics. In assisting learners in their holistic development this supportive relationship helps to promote positive future behaviours and choices. During the study both teacher and learners described different views on how communication occurred in the classroom. At times learners felt that teachers came across as harsh and uncaring whilst teachers felt they were at all times caring but perceived learners as lacking discipline. Learners also felt that their teachers lacked the correct communication skills when interacting with them and were at times cynical and

sarcastic. It was determined that learners felt that due to how they were addressed by teachers they resorted to skipping classes and ultimately disliking school. While all teachers participating in the study described themselves as being caring, supportive and respectful the learners disagreed with this and stated that they felt the teachers only cared about completing the curriculum and never once cared or supported them academically or psychologically. If the learners display a careless attitude with no desire to co-operate and respect the teacher this may very well result in the teacher further developing a negative attitude which would further result in poor academic performance. Some learner participants blamed their lack of respect on the fact that there was a lack of recognition from their teacher with regards to their academic accomplishments. Another factor of a supportive teacher-learner relationship is sharing of power (Ibrahim, 2020). This is even more prevalent in high school as learners are given the right to have their voices heard in order to adequately prepare them for the future. The results of the study however indicated that majority of the power remained with the teachers in order to maintain discipline. The study concluded in stating that unless there is a considerable change with regards to teacher-learner interaction, such constant negative interaction will just further compound and aggravate more negative interaction.

Teachers need to work on gaining the respect and trust from their learners as respect is key as well as the sharing of power in order to develop a successful supportive relationship. Researchers such as Gallagher (2013) and Sparks (2019) concur that supportive teacher-learner relationships create positive influence on academic results due to promoting learners to become more eager to take on academic challenges as it is correlated with academic achievement. Besides a supportive teacher-learner relationship having an effect on Mathematics achievement, Sepeng (2013) highlights the following additional factors that have been found to have an influence on Mathematics achievement. These include: motivation, personality characteristics, gender, race, home-language, intelligence, self-esteem, self-efficacy, academic expectations, effort, family education values and support, language clarity, word structure and

patterns. The study further found that coupled with a supportive-teacher learner relationship, learners were more actively engaged with their Mathematics content when it was being taught in their home language. Sepeng (2013) states that by using a specific language of instruction in a Mathematics classroom, the teacher position certain groups within the classroom with power and privilege which assists in developing a supportive teacher-learner relationship. Observations in Sepeng's revealed that when the teaching of Mathematics was not in the learners' home language then learners were relegated to the role of "spectator" in the classroom and never attempted to solve or understand any of the Mathematics being taught which hampers the development of a supportive teacher-learner relationship.

One of the findings during the exploration found that teaching of Mathematics in a learners' home language coupled with a supportive teacher-learner relationship acted as the main way to easily connect activities in a Mathematics lesson to everyday life knowledge.

Heyd-Metzuyanin (2015) states that a supportive teacher-learner relationship is affected by whether the learner is identified as a "weak" or "strong" learner. The identification of whether a learner is "weak" or "strong" lies in the approach the learner takes to participation. Heyd-Metzuyanin (2015) states that there are two types of participation: ritual and explorative. Ritual participation refers to the use of rules or methods to solve a Mathematics problem with unique self-narratives of understanding mathematical concepts with the main going being to produce a mathematical narrative for the learner's own sake. The study conducted by Heyd-Metzuyanin the main goal being to connect to or please others. Explorative participation refers to the production of (2015) involved two learners who were identified as "weak" and "strong". It was found that the learner who was identified as "strong" was performing calculations using the ritual participation while the learner who was identified as "weak" was using the explorative participation. The study concluded in stating that the learner who was identified as "weak" at times had a stronger sense of Mathematics.

Unfortunately, due to that learner relying on the explorative participation, this negatively influenced their relationship with their teacher. They were seen as “bad” learner, and this negatively impacted on the learners’ identity as they were identified as outcasts or troublemakers.

Furthermore, a study conducted by Kianipour & Hoseini (2012) highlighted that when William Glasser's choice theory was implemented in a classroom setting it resulted in an increase of academic results for learners. In the same study, Kianipour & Hoseini (2012) placed focus on maturing the learners' responsibility level, which in turn resulted in higher levels of intrinsic motivation (which plays a larger role in academic attainment as opposed to extrinsic rewards according to the study) and therefore a decrease in behavioural problems and an increase in academic performance.

## **2.5 Supportive teacher-learner relationship in a Mathematics classroom**

Along with the discarding of outdated and obsolete teaching methods Rebrean (2017) contends that teachers need to ensure their patience and availability in extra Mathematical intervention outside of class time for learners in order to ensure academic success. Whittle, Telford & Benson (2018) concur that teachers need to combine content knowledge, passion, enthusiasm and pedagogical content knowledge along with making themselves available for student assistance inside and outside of the Mathematics class time in order to promote optimal learning. Fosen (2016) states that in order to develop the positive relationship correctly between teacher and learner, the teacher first needs to gain an understanding of learners in terms of academic performance, interest and personal problems through the use of engagement both inside and outside the classroom. By doing this, a teacher becomes aware of each learner's needs culturally and academically (Bosman, 2015). Bosman (2015) states that supportive teacher-learner relationships are affected by the learners’ nationality, gender, age and learning style which in turn affect academic success. Similarly, Varga (2017) postulates that teacher expectations, attitude,

familiarity and communication all played crucial roles in developing a supportive teacher-learner relationship.

One also needs to take into consideration the emotional intelligence of the teachers. Emotional intelligence is defined as one's ability to be aware of, control and express emotions in a mature, empathetic and calm manner (Rust, 2014). Rust (2014) argues that teachers with higher levels of emotional intelligence who made use of constructive teaching methods were able to develop positive relationships with their learners easier. Along with higher levels of emotional intelligence Rust (2014) explains that teachers need to first and foremost respect their students and treat them with admiration in order to receive that same treatment back. This is will be key in developing a supportive teacher-learner relationship. However, it is not just the developing of the supportive relationship that is crucial but also the maintaining of it in order to ensure long term academic success (Gablinske, 2014). Gablinske (2014) states that to maintain this supportive relationship teachers need to provide structure and constantly teach with enthusiasm and passion in order to get the best out of their learners through a positive classroom environment. Furthermore a constant display of a positive attitude helps to promote a sense of comfort whilst motivating and inspiring learners to actively pursuit academic success in the Mathematics classroom (Gablinske, 2014). Their level of confidence rises as learners no longer feel "constraint" through fear of failure with regards to their academics as the work is now seen as fun as opposed to frustrating. By changing the learners' view towards their academics, the teacher begins to lower the already existing anxiety that is present in the Mathematics classroom.

Rimm-Kaufman (2018) also highlighted the following factors as crucial for teachers with regards to maintaining a supportive relationship with their learners in order to promote achievement in the Mathematics classroom: teachers need to display signs of pleasure and enjoyment when working with their learners, interaction needs to occur in a responsive and respectful manner, extra

assistance needs to be offered with regards to attaining academic goals, knowledge of each individual's learners' backgrounds (in order to construct appropriate learning opportunities), interests (in order to create examples in the classroom that match those interests), strengths and academic ability needs to be known and understood and finally the promotion of caring and respectful peer interaction needs to take place.

Giving learners meaningful feedback, creating a positive classroom environment and displaying levels of respect and sensitivity to learners have also shown to help in nurturing a supportive relationship (Rimm-Kaufman, 2018). One of the most crucial factors with regards to developing a supportive teacher-learner relationship is the promotion of alternative thinking strategies for learners with regards to their academics (Rimm-Kaufman, 2018). Longobardi (2016) states that the development of a supportive teacher-learner relationship is particularly relevant as well as crucial during periods of transition such as the transition from primary to high school. When a learner completes this transition, they are going to begin engaging with more difficult content. It would therefore be at the learners' emotional well-being to begin developing this supportive relationship to lower dropout and failure rate. This study concluded in stating that supportive teacher-learner relationships develop a positive classroom community. Learners who have meaningful interactions with their teachers reproduce this with their classmates as opposed to learners who lack these interactions develop aggression and display a lack of respect for those around them.

It is therefore imperative that teachers develop supportive relationships with their learners transitioning from primary to high school to promote interest in school activities by directly impacting that learner's motivation and willingness to learn. All of this will be prevalent in the lowering amount of absenteeism and dropouts. To maintain a supportive teacher-learner relationship, teachers would need to enhance their learners' ability to reason and think. This would be done



using teaching methods that incorporate interaction and experimentation. These teaching methods that incorporate interaction and experimentation would encourage learners to think for themselves (Ibrahim, 2019)

## **2.6 Theoretical Framework**

William Glasser's Choice Theory guides the study. Choice Theory is based on the premise that every person has the power to control themselves. In the application of the Choice Theory, one begins to take ownership of one's life. In essence, when relationships become stronger then pleasure in life increases. William Glasser's Choice Theory is based on ten axioms, these include:

- The only persons behaviour who you can control is your own.
- All that we can give or get from other people is information.
- All psychological problems are relationship problems.
- A problem relationship is always part of our present lives.
- Everything that happened in the past was painful and has a great impact on who we are today. Revisiting this past contributes little to nothing on what we need to do today. Constantly strive to improve on an important, present day relationship.
- We are all driven by five basic needs: survival, love and belonging, power, freedom, and fun.
- We can only satisfy these needs only by satisfying our picture or idea of a quality world.
- All behaviour is made up of four components: acting, thinking, feeling and physiology.
- All behaviour is governed by verbs and named by the component that is most recognizable.

- All behaviour is chosen, however we do have control over our actions and thoughts.

A quality world is defined as a picture or representation of everything that you want. Only the people, places and things that are important to you fit into that picture or representation. Your quality world must at all time meet at least one of your five basic needs; however it does not need to meet society's definition of quality. A quality world is unique to each person. The Choice Theory states that the only way we experience the real world is through our own perceptual system. This refers to the second axiom of the Choice Theory that explains your experience of the real world comes to you in the form of information through the following five senses: sight, hearing, tasting, smelling and touching. This information gathered then passes through your perceptual system which begins at your "Total Knowledge Filter" which acts as a representation of everything you know or experienced in life. When the information passes through your Total Knowledge filter the following three things could occur:

- Information is deemed not useful and perceptions stops there.
- Information is not recognized but believed to be useful so the incentive to investigate arises.
- Information is deemed useful and passes through to the next filter known as the "Vaulting Filter".

Once information has been deemed useful and passes through the Vaulting Filter then one of the following three values is placed on the information:

- Positive value (information is pleasurable)
- Negative value (information is painful)
- Neutral value (information is neither negative nor positive)

It is therefore due to the difference in information, experiences or values that each individual person's perception of the world is different. Other factors that influence one's quality world include: culture, gender, age, family origin. The

incorporation of the Choice Theory into your life involves a shift in mindset from one that is governed by external psychology (such as luck) to internal psychology (the belief that you are personally responsible for your choices that resulted in certain consequences) When one's real life situation does correspond with that person's quality world that is when one feels happy but when it does not correspond with that person's quality world that is when specific decisions are made in order to rectify the situation and remedy the frustration. This can be compared to a scale, when your scale is in balance you continue to do what you are doing, however when the scales are out of balance you begin to frantically search for what will work more effectively.

In simpler terms William Glasser (2009) states that as people go about the process of living they take in all the information around them with their eyes, ears, nose, tongue and skin. They then use this information to help them determine if their needs are being met. They are faced with a crucial question if what is happening right now matches my idea of a "quality world". If the information does not correlate with this idea of a "quality world" there is distress. At a point this level of distress will force people to behave in a way that will produce an environment more in line with their "quality world".

Furthermore, the adoption of the Choice Theory into your life will result in rectifying a lot of social problems such as:

- How we live our lives (we are able to find new ways to live our lives)
- How we relate to others (we can identify more appropriate way to deal with relationships)
- How we view management (identify a more productive approach to management)
- How we interpret mental illness (obtain a deeper and more optimistic understanding of mental illnesses)

and most importantly and crucial to this study: how we understand education as we will be able to discover an alternative method to certain practices in education.

*The Choice Theory states that all behaviour is purposeful and that every action performed is in attempt to get what you want at that point in time. In getting what you want, you satisfy your five basic needs as stated by William Glasser: Physical (survival), Psychological (love and belonging), Power, Freedom and Fun.*

Physical refers to everything that is required to sustain a healthy life such as; health, shelter, food and clothing. Reproductive sex is included in survival. Psychological refers to the need of feeling connected to others; this may include friends, family, partners, co-workers and pets. Power refers to the desire to feel competent, respected and meaningful. Self-esteem is a huge factor relating to the influence of power. Freedom refers to the ability to make choice and be independent. Freedom encompasses the ability to be creative without restriction. Finally, Fun refers to pleasure, play, humour and relaxation whilst productive learning takes place.

The Choice Theory (at times referred to as the Reality Theory) was developed to assist people in taking back control of their lives by promoting self-control through the process of being responsible for their own behaviour. The next step in understanding the Choice Theory is by being made aware of the seven connecting and seven deadly habits in teaching (Glasser 1998). By becoming aware of both connecting and deadly habits there is a hope to build a classroom that is run by both the teacher and the learner. Glasser (1998) lists the seven connecting habits as: *Caring, Listening, Supporting, Contributing, Encouraging, Trusting, and Befriending.*

Opposing to the connecting habits, William Glasser (1998) describes seven deadly habits which are used on the basis of control. These habits have been proven to result in the destruction of relationship, disconnectedness, misunderstandings and resentment. The seven deadly habits include:

*Criticizing, Blaming, Complaining, Nagging, Threatening, Punishing, and Bribing.*

In order to develop a healthy and supportive relationship, it is crucial that one understands to not control but to rather be supportive, encouraging and accepting. Teachers are able to make use of the Choice Theory in the classroom in order to develop a supportive teacher-learner relationship with their learners. This will help learners in achieving both education and personal goals. William Glasser's Choice Theory is therefore a suitable framework for this study as it has been proven that by creating a classroom environment that is aware of both connecting and deadly habits helps to promote a strong sense of belonging for the learners and therefore results in higher learner motivation to actively participate in the classroom and perform well in assessments (Arends, 2017). Furthermore, by making use of this theory in a South African setting it has the potential to raise learners' morale to learn mathematics with understanding which would likely lead to improved performance in the subject. Varga (2017) expands on Arends' findings by stating that supportive teacher-learner relationship directly results in higher levels of commitment and engagement from the learners which, as previously stated, can be developed and reinforced through the use of William Glasser's Choice Theory in the classroom. Glasser (2009) states that the adoption of the Choice Theory into a classroom is key to solve the problem of low attendance rates, high dropout rates and overall learner motivation to achieve through supporting the learners' basic needs. This is reinforced by the point that a learner will only engage in inappropriate or ineffective actions in the classroom when one of the learner's five needs are not being met. This can at times result in the five basic needs being misunderstood as "wants". An example of this includes a learner engaging in unnecessary discussions during class time with one of their peers, teachers will see this as a learner wanting to disobey and be disengaged from their class work when in actual fact the learner is attempting to fulfil their need for love and belonging. Another example could include a learner student who does not feel powerful may be disruptive in class to feel more in control. In the example

mentioned above many times teachers might have to share their power to allow learners to have some influence on the classroom climate and rules. This can be very difficult for teachers to do; however, the results are usually worthwhile. Lecei (2014) suggests the following methods to take when confronting a learner that seems to be disengaged with their work:

- Observe (which of the five needs is the learner trying to fulfil)
- Explain (explain to the learner that their behaviour is inappropriate and suggest an alternative method that will help them to fulfil that need. Demonstrating understanding is key)
- Implement (have the learner implement the solution you explained and acknowledge beneficial behaviour if present)
- Choice (if the learner refuses to make use of the alternative solution then offer the learner a choice)
- No excuse (never accept excuses for inappropriate behaviour, point out to the learner that they have made the wrong choice and do not try to further punish, criticise or protect the learner from forthcoming consequences)

Lecei (2014) also highlights that a teacher should always be assured that a learner is motivated to be good, that a learner is best assisted with a non-judgemental approach from the teacher and that learners are rational and more than capable of solving their own problems. Lecei's (2014) study concluded in stating that learners who are more encouraged by teachers, persist longer in activities and are more independent. This assists the learners in understanding that their happiness is a direct product of their choice and in doing so helps develop a greater repertoire of effective behaviour, which will meet their five basic needs in a socially acceptable manner. The Choice Theory will allow teachers to develop better relationships with their learners. This relationship involves teachers spending time with the learners and talking about things that are important to them. The most important factor affecting all of this is

personality of the educators and what kind of teaching style is used. Kianipour (2012) states that keeping learners motivated, engaged and eager to learn is an important task in education. Kianipour (2012) conducted a study which involved the implementation of the Choice Theory into the teaching programme. It was found that academic achievement increased as a result of the use of William Glasser's Choice Theory as learners would become more intrinsically motivated, as opposed to extrinsically, to learn as the act of learning developed into an integral part of learners' quality world. Learners need to experience a positive classroom environment consisting of love and belonging and safety in order to experience positive educational outcomes (Kianipour, 2012). In conclusion if learners' basic needs are met through a positive school climate and a supportive teacher-learner relationship then the motivation to learn will increase and this will directly result in improved achievement. Teachers who care for their learners are remembered, this will effect change and will influence a learners' attitude and actions which will lead to either failure or success. A supportive teacher-learner relationship is therefore defined as integral and critical to academic achievement and educational success. Kelly (2017) conducted a study which examined the effect of William Glasser's Choice Theory on academic engagement. The study concluded in stating that the use of the Choice Theory resulted in improved academic engagement as learners with behaviour problems decreased. Glasser (2009) states that the best teaching occurs when the teacher acts as a leader and not as a boss. A "boss" teacher is defined as a teacher who dictates procedures and orders learners to work. A "leader" teacher is defined as a teacher who stimulates a learning environment, and thus supporting their basic needs, while encouraging learners (Bechuke, 2012). The first step to changing this teaching approach from one to the other is allowing learners the opportunity to acquire information about topics they consider useful or relevant to their future (Bechuke, 2012). Teachers need to spend time befriending their learners and providing them with encouragement as opposed to scolding and punishing. A teacher that is able to do the above mentioned things has taken the most integral step in providing quality teaching.

If quality teaching occurs learners develop intrinsic motivation, which is paramount in learning. Learners are motivated to learn if the curriculum being taught is found to be pleasurable by the learners. If learners find learning pleasurable then all behaviour problems will disappear. Expanding on the definition of a “lead” teacher, Bechuke (2012) states that “lead” teachers work differently. They are able to identify that motivation lies within learners in the form of needs and interests. Lead teachers need to ensure that they discuss and deliver the curriculum in such a way that it attains at all times to learners’ interest and needs, demonstrate alternative ways to achieving a quality standard of work and make it evident to learners that everything possible will be done in order to provide them with a good standard of education. Glasser (2009) states that it is futile forcing learners to behave or learn against their will. Only when lessons are interesting are learners’ basic needs supported and then quality education occurs. Bechuke (2012) states that the very role of the Choice Theory is to assist teachers in understanding human nature and use it to their advantage in order to provide quality education. Teaching is difficult, Glasser (2009) believes if school work is more effective if it is made more interesting. By doing this you will be providing support by addressing learners’ needs. This would solve many a problems faced by high school teachers on a daily basis.

Glasser (2009) states that education fails to prioritise learners’ five basic needs. A simple, yet effective solution to this would be altering how the education curriculum is presented and assessed (Glasser, 2009). Glasser (2009) states that meeting the needs of learners’ is not a difficult task. The following measures can be put in place to ensure those needs are met:

- Survival (school environment is kept safe)
- Love and belonging (learners are involved in class matters and receive attention from the teacher)
- Power (learners are involved in class discussions)
- Fun (learners are engaged with their peers and interesting activities)



- Freedom (learners are allowed to make responsible choices concerning their academics)

Glasser (2009) states that learners will at all time do what is most satisfying to them. It is therefore paramount that learners' are motivated to work hard and comply with expectations because they gain satisfaction from doing so. Almost all problems that occur between teachers and learners are a result of unsatisfactory relationship (Glasser, 2009). It is therefore stressed that establishing a supportive teacher-learner relationship through the use of the Choice Theory (by replacing the seven deadly habits with the seven connecting habits) is crucial to quality teaching. Glasser (2009) makes the following suggestions for establishing quality and supportive teaching in your classroom:

- Relate to you learners
- Befriend
- Develop unity
- Establish rules
- Manage misbehaviour correctly
- Familiarise yourself with new ways of teaching content
- Select appropriate content to be taught
- Encourage learners to strive for higher quality of work presentation
- Teach for understanding
- Allow peer teaching

Furthermore, when the seven connecting habits are adopted and the seven deadly habits are rejected, the teacher begins to fulfil the five needs of any learner: survival, belonging, power, freedom and fun (Glasser 1998). William Glasser's Choice Theory is a suitable framework for this study as it has been proven that by adopting and discarding the relative habits as described above, in a classroom setting, this will result in higher motivation in the learners to not only actively participate in the classroom but also achieve higher academic

results. Glasser (1998) states that by fulfilling the five needs through the use of interaction, this will again empower the learners. Power corresponds to status, dominance, respect and achievement, which are all difficult to satisfy within a classroom (Wong & Jusoh, 2015). Wong & Jusoh (2015) further explain that power contribute a lot to improve learners' achievement, competence, accomplishment, fun and freedom. By employing William Glasser's Choice Theory in the classroom to develop supportive teacher-learner relationships, teachers begin to make learning meaningful. When learning is made meaningful any learner despite being deemed unable to achieve academically by either themselves or their teacher, can succeed in academic aspects. This study focuses on learners' achievement, accomplishment and competence within a Mathematics classroom in South Africa.

Rimm-Kaufman (2018) discusses a similar concept to William Glasser's Choice Theory. In this paper it is stated that all learners enter the classroom needing to fulfil three needs, those being: competence (the ability to feel that they are fully prepared to engage with academic content), autonomy (the ability to feel that they have the right to make decisions) and relatedness (the social connection to their teacher). These three needs can be compared to the five basic needs of the Choice Theory namely: power, freedom and belonging respectively. Rimm-Kaufman (2018) goes on to further explain that these three needs are met in a classroom through learners' meaningful interaction with their teachers. Teachers need to employ a variety of classroom practices in order to nurture these needs. Employing these practices will produce higher levels of engagement and motivation for the learner. These practices include:

- offering meaning full feedback to learners (competence)
- having knowledge on learners' interest and preferences (autonomy)
- establishing a supportive relationship (relatedness).

Irvine (2015) compares William Glasser's Choice Theory to that of Vygotsky's Zone of Proximal Development. The connection comes in the form of the

important of social interaction. Just like in the Choice Theory, social interaction is paramount. Irvine (2015) states that all teaching methods and activities need to address learners' needs. By addressing the learner's five basic needs learner engagement, motivation, attitude towards learning and self-efficacy will increase.

Bechuke (2015) found that when William Glasser's Choice Theory was applied to a primary school classroom within the South Africa setting, the theory was able to address emerging problems. By meeting needs of the learners through the use of the Choice Theory, this resulted in improved discipline from the learners and academic results as the content that was being taught was meaningful (Glasser, 2009). Academic results and discipline of learners can be improved by a supportive teacher-learner relationship. Quality education can only be achieved in a warm and supportive classroom environment governed by a supportive-teacher learner relationship built on trust (Glasser, 2009). William Glasser's Choice Theory has been chosen for this study to examine its effects on learners' achievement when applied in a Grade 12 mathematics classroom with the knowledge of the connecting habits.

Bechuke (2012) states that the Choice Theory is directly designed and implemented to alter challenging learners' behaviours. Due to a lack of effective discipline strategies in South Africa, delivering quality levels of teaching remains a battle. A study conducted in South Africa found that the Choice Theory can be implemented into schools in order to manage and modify learners' behaviour in order to have quality teaching occur. By managing and modifying learners' behaviours, discipline is maintained at schools as learners are educated in the habit of accountability and responsibility with regards to their actions by failing to follow rules and regulations. Behaviour management needs to occur both inside and outside the classroom. This is unfortunately the most difficult aspects of teaching for many teachers in South Africa (Bechuke, 2012). It can therefore be said that discipline is a contributing factor to learners' motivation. Rather than making use of rewards or punishment to manage

discipline at school, teachers need to understand the needs of the learners and which of those needs are not being met that are resulting in this display of challenging behaviour. A teacher then needs to act upon these needs by making use of the caring habits and not the deadly ones. For a supportive teacher-learner relationship to occur there needs to be trust between both teacher and learner and this can only be done by replacing deadly habits with caring habits.

Even though a teacher is able to correctly implement Choice Theory into their mathematics classrooms, there is still a possibility that learners may choose to misbehave. This potentially may directly result in poor academic achievement in Mathematics. It is in instances such as these that the choice theory becomes limited when one takes into account the vast amount of mental or psychological problems learners may potentially develop. Choice Theory has factors that need to be taken into account when developing a supportive teacher-learner relationship such as: belonging, competence, freedom and fun. Building a supportive teacher-learner relationship by taking these factors into consideration helps to promote academic achievement. However, the consideration of these factors within the classroom is meaningless unless also adopted through a “whole-school commitment” (McDonald, 2013). In the absence of a whole-school commitment, the right environment will not be provided to meet every learners’ needs. Clark (2017) postulates that while Choice Theory encourages learners to take control of their own behaviour, it is in no way an effective replacement for treatment in the case of learners struggling with mental health problems. Nunez (2020) concurs with Clark by further stating that Choice Theory is built on the belief that mental diseases do not exist and that if they were to exist, they would not require medication as a form of treatment. This is a flawed view when one considers the plethora of research surrounding mental illnesses in learners.

## **2.7 Conclusion**

This chapter discussed the literature review and theoretical framework for the study. The discussion involved reviewing literature related to supportive teacher-learner relationships and linking it to the theoretical framework for the study. The choice theory was employed to explain the nature of a supportive teacher-learner relationship. The chapter following, looks at research design and methodology employed for this study.

## CHAPTER THREE RESEARCH DESIGN AND METHODOLOGY

### **3.1 Introduction**

This chapter presents the design and methodology that the study employed. This discussion is expanded on by outlining design, approach, site & participant selection, data collection and analysis methods. The chapter concludes by delving into validity and trustworthiness, researcher's position, and finally ethical considerations.

### **3.2 Research Design**

The researcher will employ a case study research design. A case study research design was adopted as the aim of the researcher is to perform an in-depth exploration of a phenomenon, using a small group of participants, in order to gain a further in-depth understanding of it (Yin, 2018). Friedrich (2017) postulates that a case study research design is imperative when the "boundaries between phenomenon and context are not clearly evident". The phenomenon being the effect of a supportive teacher-learner relationship on achievement of Grade 12 learners in a Mathematics classroom. The research will be obtained through a single site case study.

#### **3.2.1 Research Paradigm**

This study will employ an interpretive paradigm. Cohen, Manion and Morrison (2017) postulate that an interpretive paradigm focuses on interpreting and understanding people's views about a phenomenon under investigation. In this case the phenomenon under investigation is the effect a supportive teacher-learner relationship on Grade 12 learner's Mathematics achievement.

#### **3.2.2 Research Approach**

The study will employ a qualitative research approach. A qualitative research approach enables the researcher and participants to interact in order to understand and interpret phenomenon (Creswell, 2015). Similarly, Austin

(2014) states that a qualitative approach is exploratory as it places emphasis on the use of open-ended questions that encourage participants to respond in their own words as opposed to responding through the use of a set of responses. These responses are rich, meaningful and engaging to the research (Mangal, 2013). Furthermore, Aspers (2019) explains that any research conducted qualitatively needs to have the phenomenon studied in its natural setting in order to bring true interpretation of the phenomenon to the forefront through the views of the participants present in the study. In this study the researcher intends to interact with participants in order to understand the effect of a supportive teacher-learner relationship on achievement of Grade 12 learners in a Mathematics classroom.

### **3.3 Research Methodology**

#### **3.3.1 Site**

The single site for this case study is a local public high school in the Metropolitan East area, Western Cape in South Africa. This high school has been chosen against the bad publicity of the reality of South Africa's learners' low Mathematical performance. It is one of the top achieving school in Mathematics. This institution has been operating for more than 80 years and is within close proximity of the researcher. Classified as a quintile school, it offers classes from Grade 8 to Grade 12 level and currently has enrolled over 1200 learners.

#### **3.3.2 Participant selection**

The study employed an extreme purposive case sampling procedure. Cohen et al (2017) states that extreme purposive sampling is a procedure that deliberately targets respondents based on specific characteristics. In this case, the researcher deliberately targeted learners within the Grade 12 Mathematics class as the learners' results for Mathematics in this final year of high school will directly impact on their further studies thus their ability to enroll in tertiary courses.

Purposefully selected participants involving one Grade 12 mathematics teacher, identified as , 5 Grade 12 mathematics learners in the Mathematics class of 30 learners participated in the study. The factor determining the inclusion of that particular learner or not was based on current mathematics results. Of the 5 learners, 2 learners were borderline cases on the verge of not meeting minimum pass requirements for the subject, 1 learner achieving average results in the subject and the final last 2 learners were above average achievers in the subject. The gender and race of the learners were taken into consideration when selecting participants. The reason for the inclusion of the teacher in this study is for the researcher to gain an understanding of the link between a supportive teacher-learner relationship to that of achievement in Mathematics from the perspective of the teacher who interacts with the learners, delivers content and influences the results.

### **3.3.3 Data Collection**

The study employed a variety of research instruments including an *interview* with the Grade 12 Mathematics teacher, a focus *group discussion* with 5 Grade 12 Mathematics learners, *observations* of the Mathematics classes being taught by the teacher the results of the learners' weekly Mathematics tests. Semi-structured interviews and focus group discussions are face to face conversations, which explore the phenomenon being investigated in the study (DeJonckheere, 2019). The questions that were asked in the semi-structured interview session were intended to unearth the teachers' perception of mathematics, if ~~they~~ he felt there was a need for a supportive teacher-learner relationship to help learners' mathematics achievement and whether or not ~~they~~ he lived the experience with their learners. The focus group discussions were intended to unearth the learners' view or perception of about the nature of mathematics, their view of a Mathematics teacher, whether or not they felt a supportive teacher-learner relationship has an effect on mathematics achievement and whether or not they felt they had experienced that in mathematics classroom. The following Tables 1 & 2 show the ~~main~~ questions



items that formed part of the semi structured interviews and well the focus group discussion respectively:

**Table 2: Focus group discussion guide**

<i>Focus Group Discussion</i>
Questions
1) What is your feeling towards the subject of Mathematics?
2) What do you define as qualities of a good Mathematics teacher?
3) What do you define as a supportive teacher-learner relationship?
4) As a group, how would you describe your relationship with your Mathematics teacher?
5) As a group, how much do you feel your relationship with your teacher has played a role in your academic success with regards to Mathematics?

**Table 3: Semi-structured interview guide**

<i>Semi Structured Interview</i>
Questions
1) How long have you been a part of this institution for?
2) What image do you have of Mathematics?
3) What do you define as qualities of a good Mathematics teacher?
4) What do you feel separates you from other Mathematics teachers?
5) What do you define as a supportive teacher-learner relationship?
6) How would you describe your relationship with your Mathematics learners?
7) How do you go about creating a supportive relationship with your learners?
8) How much do you feel your relationship with your learners has played a role in their academic success with regards to Mathematics?

Furthermore, semi-structured interviews (Table 2) and focus group discussions (Table 3) allowed the researcher opportunity to truly grasp how the interviewee and focus group participants view the phenomenon being investigated (Pessoa, 2019). As previously stated, semi-structured interviews as well as focus group discussions are a more natural form of obtaining rich and meaningful data through interaction as the responses generated by the interviewee and the focus group participants are more personal than opposed to filling in a questionnaire (Longhurst, 2009). Mohajan (2018) states that observations allow the researcher to gain an in-depth understanding of the phenomenon in its natural setting. It is stated that observation is key to not only gaining an

understanding of the phenomenon in its natural setting but also how the participants are affected by this phenomenon (Sutton, 2015). It is also found that immersion into a natural setting assist in building rapport which will later foster free speaking and open mindedness with participants of the study (Yin, 2011). Finally, document analysis is seen as an effective method of data collection as it is less time consuming with regards to other data collection methods (Brown, 2009). In the case of this study it is not time consuming to analyse the answers and results of a Mathematics test to see whether or not based on the result of that test if a supportive teacher-learner relationship played any role.

### **3.3.4 Data Analysis**

The study employed content analysis. Vourvachis (2015) defines content analysis as a method of extracting information and making inferences from the text and any other form of qualitative data and then attaching codes to that information. Elliot (2018) defines coding as the process of deconstructing text in order to identify various concepts and ideas and then the reconstructing of the data acquired from the text into themes based on similar and contrasting ideas. It is one of the main ways in which qualitative data can be analysed in order to summarise key points and results (St. Pierre, 2014). The researcher began by transcribing all the data recorded from the semi structured interview with the Mathematics teacher, the focus group discussion with the learners and the observations of the classes taught. The researcher analysed the transcribed data and attached codes in order to allow the relevant data to be grouped together. By making use of the organised data, the researcher then reflected on the results from the learners' weekly Mathematics tests and then highlighted similarities between the results of the assessment, the attendance and the organised data through the use of deductive processes and reasoning. Park (2020) states that deductive reasoning aims at testing an already existing theory. In the case of this research the already existing theory that will be guiding the data analysis process was

William Glasser's Choice Theory analytical tools using the 5 basic needs. By adopting this approach, it allowed for the researcher to interpret key factors relating to the effect of a supportive teacher-learner relationship on the academic achievement of Grade 12 learners in Mathematics.

### **3.3.5 Validity and Trustworthiness of the Study**

Chiang (2015) defines validity is defined as to what extent a phenomenon is accurately measured in a qualitative study. In order to maintain validity and trustworthiness of the study the researcher employed data source triangulation. Fusch (2018) defines data source triangulation as a way of ensuring the validity of the data through the use of multiple approaches to collect, such as learners' written work, audio recordings of semi-structured interviews and focus group discussions and observation notes, and analyse data in order to develop a clear picture. In terms of the semi-structured interviews and focus group discussions there were audio recordings taken which can be replayed by the researcher, supervisor and anyone else who wished to do so in order to determine and improve the validity and trustworthiness of the study. Data source triangulation was ensured by using four data collection tools, namely semi structured interview, focus group discussions, observations and document analysis. The researcher also made use of member checking, as a method of enhancing the credibility and descriptive validity of the results by having the participants cross check for any inaccuracies that may have occurred.

### **3.3.6 Researcher's Position**

The researcher plays a neutral position in the study. The researcher is not in any way affiliated to the school where the study was conducted and therefore no subjectivity or bias occurred during the data collection and analysis process.

### **3.3.7 Ethical Considerations**

Ethical issues were observed by gaining ethical clearance from both Cape Peninsula University of Technology (CPUT) as well as the Western Cape

Education Department (WCED). Participants were informed of the purpose of the study. Confidentiality was maintained throughout the entire study by making use of pseudonyms as well as keeping the data in confidence. Data would only be made public through anonymity. Participation was voluntary. Consent forms were signed by all participants. Consent forms, the learners' mathematics tests, observation notes and audio recordings from the semi-structured interviews and focus group discussions would only be accessible by the researcher during the investigation. Furthermore, the results and findings of the study will be made available to all participants when requested as well as to the school's management portfolio. Participants were informed that they had the freedom to withdraw from the study at any time without any consequences. Finally, due to the worldwide pandemic known as Covid-19, all interviews, focus group discussions and observations were conducted following strict guide lines such as maintaining social distancing in order to ensure no participants lives were at threat.

### **3.4 Conclusion**

This chapter discussed the research design and methodology of the study. The discussion involved paradigm, approach, design, site & participant selection, data collection and analysis methods, validity & trustworthiness, researcher's position and finally ethical considerations. The following chapter will present and discuss the findings of the study.

## **CHAPTER FOUR**

### **DATA ANALYSIS AND DISCUSSION OF RESULTS**

#### **4.1 Introduction**

The previous chapter focused on research design and methodologies used in this study. This chapter presents findings and discussions which were made in response to the critical enquiry guiding this study: The effect of supportive teacher-learner relationship on Grade 12 learners' Mathematics achievement. As the study was centred on 5 Grade 12 learners and their Mathematics teacher, it was found that all participants agreed on the view that a supportive teacher-learner relationship is imperative to the academic success of Grade 12 learners in Mathematics. The findings will be grouped and discussed using three main categories: findings arising from observations, focus group discussions, and a semi-structured interview.

## **4.2 Observations**

It is important to note that due to COVID-19 pandemic the school was only able to accommodate me for 3 lesson observations because of the change in attendance schedule. For example, learners attended on alternate days in a week, and daily timetable changes due to absenteeism of teachers or learners. Throughout my 3 lesson observations I noticed that the teacher hardly ever goes off topic as she was found to teach in a very structured manner. While this is a good thing as the learners remain focused on the task at hand, this can be seen as a sign of either limited content knowledge or the damaging effects COVID-19 has on lesson outcomes as the teacher hardly engaged with topic questions outside of the content, she had prepared for specifically for that lesson on the day. This was evident as during the lesson when the teacher was asked questions pertaining to a separate topic that was covered previously but very briefly the teacher refused to appropriately respond to the question. Lepp (2021) states that COVID-19 has directly impacted and greatly influenced teachers' teaching decisions by having focus of the lesson be motivated based off of short-term goals by only covering exactly what is required to be covered today. This can be detrimental to learners' Mathematical knowledge as by using this approach teachers are not delving as deep into the subject matter as they have in the past. Alternatively, Barendsen (2019) argues that teachers' actions

in a lesson directly correlates to their content knowledge and thus anytime where a teacher finds themselves diverting questions on content is a result of their own lacking content knowledge.

While the learners were less confident in the content being taught their motivation to achieve never lingered. This was evident in the lesson as the learners remained actively engaged with one another as well as the content being taught throughout the entire time whilst they were separated in their “study” groups. Motivation is a key factor affecting all teaching-learning situations when implementing any Mathematical curriculum. The success in a classroom environment is directly influenced by whether or not learners are motivated to achieve learning goals. A sign of a good teacher is one who centralises motivation learning as the core of their lesson (Filgona, 2020).

The Grade 12 learners, who were also part of the focus group discussions, either take Physical Sciences or Accounting as subjects. Due to overcrowding at South African schools as well as the country not having a sufficient amount of educators some schools are forced to restrict their learners to certain subject choices whether they want to take that subject or not. As such these learners can be considered to be either average or above average achievers in the subjects at grade 12. Shirazi (2017) states that scientific subjects are more susceptible to being dropped due to factors influencing the learners’ motivation and interest such as how the learner perceives the subject as difficult or not.

Each lesson began with the teacher greeting each learner present in the classroom differently, this included at times greeting the learner in one of the native languages of South Africa. It is important to note that the school uses English and Afrikaans as languages of learning and teaching (LOLTs), so to have the teacher greet and to a certain extent interact with learners their mother tongue was typical multilingualism ability that is found lacking in many of the current cohort of teachers in schools. This for the researcher was a good sign of a supportive teacher-learner relationship the teacher had with each individual learner. One of the suggestions Glasser (2009) makes with regards to

establishing quality supportive teaching in your classroom is to “befriend” and “relate” to your learners.

The teacher also made the learners aware in class that there were extra classes being offered in mathematics at the school. This willingness to offer assistance outside of school hours, despite there being evidence of extra tuition not improving learner results, shows desire, interest and motivation to help improve the learners’ Mathematics results. By having the teacher willing to go the extra mile in providing help to the learners, this directly contributes in growing a supportive teacher-learner relationship. With these extra classes not being compulsory yet a large majority of learners confirming that they would be attending shows that the teacher is fulfilling the need of “freedom” whereby learners are allowed to make responsible choices concerning their academics. During each lesson the teacher also walks around to individually engage with each learner or “study” group at their own desk throughout the lesson whether or not they understand the working being taught. This is a key example of how William Glasser’s Choice Theory need of “love and belonging” is met as each learner receives direct individual attention from the teacher.

When it came to the lesson on Statistics the learners in the class engaged constructively with all questions posted by the teacher on the content being taught at the time and then also asked good informative questions themselves on the concept of a box-and-whiskers diagram. By having the teacher engage the learners with such questions and in turn having the learners generate such responses the teacher has met William Glasser’s Choice Theory need of “power”. The teacher was also able to make use of multiple teaching resources to bring across content knowledge, adopt easier terms to relate to Mathematical content for learners to identify such as “boompies gates” representing tally’s and consistently have the learners work in pairings to answer questions while maintaining correct COVID-19 protocols. This method of engaging the learners assists in their need of “fun” being met as well as “survival” as the safety of the school environment is maintained.

At one point during the observations a poor academically performing learner stated that they had lost their textbook and the teacher displayed a low level of understanding/empathy on the matter as the teacher brushed the matter off in a way that suggested there would be no way for any support to be provided on the matter. This was very crucial for the researcher as it highlighted the very core of William Glasser's Choice Theory. Due to there being no supportive teacher-learner relationship present; the teacher showed no willingness to assist the learner, and this directly influenced the learner's lack of interest or care that they had lost their textbook. This lack of understanding/empathy and support displayed by the teacher is only of the seven deadly habits Glasser (2009) tells us to avoid. By adopting any of the seven deadly habits the teacher prevents any form of supportive relationship from occurring. This directly causes poor academic achievement. One can therefore hypothesis that due to this non-existent supportive teacher-learner relationship the learner is destined to consistently achieve poor results.

### **4.3 Focus Group Discussions**

When questioned about their feelings towards the subjects of Mathematics, one of the learners opened up by stating that in the beginning the subject was found to be very easy. They felt this was the case because while their original Mathematics teacher in Grade 8 was not the most proficient in terms of Mathematical content, all the learners had a great relationship with him. All the learners credit this relationship directly to their good achievement in the subject in the earlier years. L01 felt that their lack of achievement at times in Grade 12 is due to the fact of the teacher relies too much on the textbook as a means of content delivery as opposed to using their own knowledge. By relying too much on the textbook the learners felt that they were losing confidence in the teacher as the teacher themselves did not seem confident. Tuncel (2015) postulates that subjects that are taught by a teacher with higher self-confidence are more successful as confidence leads to higher learning outcomes. L05 stated:



*Full participation from both the learner and the teacher is very important. Sometimes it is not just about being given homework and being told to do it at home. Sometimes it is about being told by the teacher to stand up and do the sum on the board. Then the teacher and the other learners can all participate and show you what is your mistake and where you are going wrong.*

Hearing this statement from the learner further reinforced that in order to have a supportive teacher-learner relationship the teacher needs to ensure they develop a classroom environment where the need of “fun” is met by having the learners engage with a variety of activity forms. L05 reinforced this by stating that one’s ability to understand Mathematics improves with practice and a supportive relationship and that achieving in the subject of Mathematics is a very attainable task. Contrary to this L04 felt that irrelevant of supportive relationship there is just certain learners who will never understand specific Mathematical content while there are others who are just gifted with a “maths brain”. L02 then agreed with the above point of view and felt that while some learners might never understand certain Mathematical content and others will always achieve great marks in the subject, they feel that the motivation to want to achieve in the subject plays a massive role. When questioned about the origin of this motivation to want to achieve L02 said:

*Your motivation mainly comes from your future, what you want to achieve. That is where everyone gets their motivation from. Or your parents they motivate you to do your work to get high marks to go further in life because the higher marks you get the easier life will be for you. No one wants to get low marks and not get into college.*

The researcher then questioned that learners as to whether or not they felt that motivation could also be attributed to by their relationship with their teacher. L05 then went on to say:

*The relationship with my teacher influences whether I find the subject too hard. If the subject gets too hard then I might not want to continue with it. If you can deal with*

*you are motivated to not drop it. It is up to that teacher to keep me motivated to continue. Maths has to do with motivation. If you understand a topic you are motivated to do more. I need to have a strong relationship with my teacher as the teacher needs to act as a guide. Without a great guide you will never achieve in it and be lost.*

L01 agreed and added on by saying:

*By having a good relationship with my teacher and having them as a guide it not only motivates me to achieve in Mathematics but other subjects too like Physics and Accounting.*

The above statement weighs a lot when one considers one of needs that one of the good habits described by William Glasser when wanting to develop a supportive teacher-learner relationship is to encourage and motivate learner to strive for higher quality of work presentation. The learners continued to agree that a teacher needs not only know what he/she is talking about in terms of content knowledge but also needs to develop fun and interesting ways of engaging the entire class in the lesson. L05 added on by saying that while fun is an influencing factor, teacher content knowledge takes priority. L05 felt that without good content knowledge, passion, and confidence the teacher directly raises a learners' anxiety and stress level. L05 continued by saying that if a teacher notices they are not good in a certain topic they would need to spend more time becoming prepared. The learners felt they are more willing to develop a relationship with a confident & passionate teacher than with one that is not.

L02 raised the opinion the regardless of passion and confidence without a supportive teacher-learner relationship where the teacher knows the learner and how to bring content understanding to the learner then all the passion and confidence is meaningless. L02 felt that in a sense the teacher needs to find themselves forever adapting to each individual learners' needs and personality. L05 concurred by stating that if the teacher knows each learner personally the teacher would then have a better understanding of that learners' strengths and

weaknesses which in turn will help them grow immensely in the subject. L05 continued by saying:

*If the teacher knows me personally, they will know that when I get a question wrong without even needing to look at my book they will know where I went wrong because of my personality.*

When questioned about what would be deemed as knowing the learner too personally L05 felt there is no such thing, she said:

*If for example I have that teacher's number and I am struggling with work at home then I will feel comfortable to contact them and the more I feel comfortable the more I want to really impress them and I am motivated to achieve. When they don't know me personally, I feel there is this border they have created and then I don't feel confident to ask them for help. I feel judged. But when they know me personally I feel free to ask for help whenever.*

When questioned about what the learners define as a supportive teacher-learner relationship L01 felt that at the core of the relationship each interaction between the teacher and learner needs to be meaningful free of embarrassment or mockery. This goes hand in hand with William Glasser's Choice Theory as he states one of the learners 5 basic needs is power. L01 to say that extra effort from the teacher is a must and that a classroom devoid of humour is a classroom where one cannot learn. L05 added that a supportive teacher-learner relationship involves the teacher taking the time out to gain understanding on the type of situations learners are individually dealing with at home. L05 went on to add that by understanding their home life they would be more comfortable to approach the teacher in future situations where they were absent and require work to be caught up on.

When asked as a group how the learners would collectively define their relationship with their teacher the learners agree that in Grade 10 their marks were higher due to this supportive teacher-learner relationship and because the teacher introduced topics in a very slow, fun & interesting way. But due to the

teacher spending less time on certain topics their confidence and trust in the teacher has wavered. This wavered confidence has caused their to be a block in communication which has directly negatively impacted the relationship. Glasser (2009) states that communication and trust is of the utmost important when developing this supportive relationship. L01 added that previous year Grade 12's complained about similar problems that they are dealing with right now. This shows that the lack of a supportive teacher-learner relationship in this Grade 12 classroom seems to be a reoccurring problem. L01 continued by saying that when they saw the lack of a supportive teacher-learner relationship they have with their Grade 12 teacher they approached their Grade 8 Mathematics teacher to assist them with the Grade 12 work. This is evident of how desperate learners are for this type of relationship. The learners felt COVID-19 has negatively impacted how teachers deliver content. L05 said:

*A low point for me was when the teacher said I never did this work at high school so I'm not even going to bother teaching it. I cannot trust and I find my teacher very unreliable.*

When asked about how the learners feel whether or not the supportive teacher-learner relationship has played a role in their success in Mathematics one learner stated that their mark has dropped from above 70% to just barely above 40%. When asked about how much the learners felt the teacher contributed to assisting them answers varied from some stating very low to other stating zero and this was due to them crediting their success to own self studying. When asked why some learners felt it was so shockingly low one learner felt that it was due to the fact that when a learner knows more about the question than the teacher then the teacher has no impact on them academically.

In a concluding statement to the focus group discussion L05 said:

*If the department of education since they have seen this ongoing pattern of failure in Grade 12 Mathematics, they should introduce a system where teachers need to write tests every year to assess their own knowledge. Instead of looking at our work they should put the teacher in the seat of the learners. Because I find it very strange that*

*a learner can achieve such high marks in the first term but have that mark drop a lot in the final term.*

#### **4.4 Semi-Structured Interview**

When asked about how the teacher's view on Mathematics, the teacher stated that while they have been a part of this institution for 3 years when they had originally arrived there was at maximum 10 learners in an FET Mathematics classroom and all learners were fearful of Mathematics and felt it was out of their reach. With that being when questioned about the teacher's image of the subject the teacher stated that while they absolutely love the subject, their main focus right now in terms of Mathematics at the school is to increase the number of learners taking the subject at a FET level. Despite some learners still performing poorly in the subject the fact that the number of learners taking the subject increased they feel they are winning the battle against the poor perception of Mathematics. The teacher feels that despite it being their first year teaching Grade 12 Mathematics, irrespective of experience, good results for Mathematics is relative to the effort learners put in. When questioned about other reasons as to why results are so poor the teacher said:

*In the younger grades a lot of the teachers teaching Mathematics are not Mathematics teachers and do not enjoy the subject and unfortunately this rubs off on the learners.*

The teacher credits achievement in Mathematics solely to a learners' work ethic. They feel a learner can really struggle but if they have the right work ethic, they can make it.

When questioned about what the teacher defines as a good Mathematics teacher the teacher stated that they have no idea. They expanded on that statement by saying when they were a learner one year, they had a teacher they enjoyed and then had one that they didn't like the next year. However, the teacher does feel that a good teacher is moulded by his/her learners. The learners contribute greatly to shaping a teacher. The teacher credits staying

relevant to current times, being loud, excitable and funny as a way of keeping the learners engaged in the classroom.

When asked about a supportive teacher-learner relationship the teacher felt that it is just like any other relationship, “you make it work”. The teacher expanded on this by stating it is always about communication, “you need to keep communication open”. The teacher further mentioned that above all else a personal one on one interaction, where you know exactly how to get through to each learner individually, is important and that until the teacher puts in that effort to develop that relationship then it is just empty promises with no action.

The teacher described their relationship with the learners as complicated where it is a scenario of it is “strict but fair”. The teacher however feels that this type of a approach to a relationship is crucial to ensuring the learners survive in the real world.

When asked how the teacher goes about creating a supportive teacher-learner relationship the teacher responded by saying no matter the disagreement they need to be present at all times and be willing to assist with not only matters concerning Mathematics but matters concerning real life problems. The teacher strongly disagrees with teacher who distant themselves from learners especially in current times with COVID-19. The teacher expanded by stating that a supportive teacher-learner relationship is a key factor in preventing burnout for teachers as well as preventing teachers from leaving the profession. The relationship can be seen as a “push & pull” or a “give & take”.

When questioned about how much they feel their relationship with their learners has played a role in their academic success the teacher stated that they felt it had played quite a significant role. The teacher stated that a few weeks back a learner had approached them and thanked for all the support they provide to them.

#### **4.5 Conclusion**

The next chapter outlines the main findings that were identified and discussed in this chapter, followed by the summary and conclusion of the study and finally recommendations that can be taken into consideration with regards to the possible future research in mathematics education.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

## **5.1 Introduction**

The previous chapter focused on data analysis and discussion of results. In this chapter, I provide, in a consolidated form, a summary of the thesis, limitations, implications, conclusion and recommendations that should be taken into consideration for further research avenues. The concept of a supportive teacher-learner relationship is one that I am passionate about as the foundation of such a relationship is based off human interaction which is something I enjoy. This study set out to investigate the phenomenon surrounding the effect a supportive teacher-learner relationship has on the achievement of Grade 12 learners in Mathematics. The core focus on the study was that of experiences both teacher and learners had directly had with the phenomenon and its effects. In education, there is often a debate regarding the relationship between both teacher and learners and whether that relationship is deemed professional or not. This qualitative study employed the use of observations, focus group discussions, semi structured interviews, and document analysis as a means of obtaining data. I examined and analysed the collected data to answer the main research question: what are the effects of teacher-learner relationships on learners' achievement in Mathematics in Grade 12? And the sub-research question: how do teacher-learner relationships affect Mathematics achievement among Grade 12 learners? During my analysis I drew on the experiences and opinions of all the participants.

## **5.2 Summary of results according to the research questions**

Mathematics is a crucial subject at school as even though the learner may not pursue a degree in a mathematical field the subject teaches a key skill namely problem solving. The results of this study revealed that there is a direct link between a supportive teacher-learner relationship and that learner's ability to achieve in Mathematics. Both the teacher and the group of learners felt that success in Mathematics is dependent on the bond shared between teacher and learner. I adopted William Glassers' Choice Theory as a theoretical framework to investigate the phenomenon which guided the study. William Glasser's theory



is based on the premise that every person has the power to control themselves. By adopting this theory as a framework, it provided me with lenses to make a connection between what the participants and the theorist were saying.

### **5.3 Limitations of the study**

The findings and results are limited to the group of participants from one grade 12 class from a quintile school and as such cannot be generalized. Therefore it is crucial to understand that further research should be conducted at other institutions such as private schools in order to strength the findings of this study.

### **5.4 Implications of the study**

The result of this study provides an in depth look at how effective a supportive teacher-learner relationship can be with regards the attainment of Mathematics for Grade 12 learners. The result of this study supports the notion that both teacher and learner require this supportive relationship in order to succeed both professionally and academically respectively.

### **5.5 Recommendations**

1) The current generation of teachers, those in their final year of studies as well as the ones who are currently actively teaching in the classroom, need to be made aware of:

1.1 extra teaching strategies to employ within the classroom in order to assist in the carrying over of content knowledge to learners, in a way they understand, who are clearly struggling as opposed to sticking to old, outdated methods that are clearly not working.

1.2 the 5 basic needs of a learner as highlighted in Glasser's Choice Theory as well as regularly attend staff development workshops to ensure they actively pursue a positive teacher-learner relationship within the classroom in order to yield academic success.

- 2) The current generation of policy makers, for example SACE, need to be made aware of this form of supportive teacher-learner relationship in order to update current policies to ensure that no supportive relationship is abused and remains legally safe for all parties involved.
- 3) The study focused on the supportive teacher-learner relationship experienced at a quintile school. It would be intriguing to repeat this study at a private school.

## **5.6 Conclusion**

The role of a teacher today more so than ever plays a crucial role in the academic achievement of the current generation of students in South Africa. The findings of the study have already proven beyond a shadow of a doubt that if a learners 5 basic needs are not met, especially within a Mathematics classroom, the battle of trying to achieve academically in the subject becomes significantly more challenging. It is therefore vitally crucial that the current generation of teachers understand that decisions they make today regarding their daily role in the classroom does play a great role as it not only influences the learners current state academically but the very future of the country itself.

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## APPENDICIES

### Appendix A: Semi Structured Interview Questions:

#### Teacher

1. How long have you been apart of the institution for?
2. What image do you have of Mathematics?
3. What do you define as qualities of a good Mathematics teacher?
4. What do you feel separates you from other Mathematics teachers?
5. What do you define as a supportive teacher-learner relationship?
6. How would you describe your relationship with your Mathematics learners?
7. How do you go about creating a supportive relationship with your learners?
8. How much do you feel your relationship with your learners has played a role in their academic success with regards to Mathematics.

### Appendix B: Focus Group Discussions Questions:

#### Learner

1. What is your feeling towards the subject of Mathematics?
2. What do you define as qualities of a good Mathematics teacher?
3. What do you define as a supportive teacher-learner relationship?
4. As a group, how would you describe your relationship with your Mathematics teacher?
5. As a group, how much do you feel your relationship with your teacher has played a role in your academic success with regards to Mathematics?

**Appendix C: Supervisor's letter in support of student's WCED  
application to conduct research in school.**



Cape Peninsula University of  
Technology  
Faculty of Education  
Mowbray  
70000  
12 August 2020

**LETTER OF RECOMMENDATION**

**TO WHOM IT MAY CONCERN**

This letter confirms that Imre Istvan Andras (student number 213096374) is a registered student of Cape Peninsula University of Technology studying Master of Education with specialisation in the mathematics.

He started last year (2019) with a research proposal which was approved at the end of 2019. Now (2020) is required to collect data in a school relevant for his research project to complete his master's in education.

I therefore recommend him to be given an opportunity of working in a school as a researcher for the duration required by the study. I am working with him as a research supervisor.

Kind regards

A handwritten signature in black ink, followed by the date "13/08/2020" written in a similar style.

Dr Sibawu Witness Siyepu

Cape Peninsula University of Technology  
Department of Senior and Further Education and Training  
Faculty of Education  
Mowbray Campus

## Appendix D: Research Ethics Clearance Letter



<b>***For office use only</b>	
<b>Date submitted</b>	<b>28-2-2020</b>
<b>Meeting date</b>	<b>6-4-2020</b>
<b>Approval</b>	<b>P/Y/N</b>
<b>Ethical Clearance number</b>	<b>EFEC 13-2/2020</b>

### FACULTY OF EDUCATION

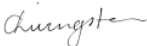
### RESEARCH ETHICS CLEARANCE CERTIFICATE

This certificate is issued by the Education Faculty Ethics Committee (EFEC) at Cape Peninsula University of Technology to the applicant/s whose details appear below.

**1. Applicant and project details (Applicant to complete this section of the certificate and submit with application as a Word document)**

<b>Name(s) of applicant(s):</b>	II Andras	
<b>Project/study Title:</b>	The effect of a supportive teacher-learner relationship on Grade 12 learners mathematics achievement	
<b>Is this a staff research project, i.e. not for degree purposes?</b>	N/A	
<b>If for degree purposes the degree is indicated:</b>	Master's degree in Education	
<b>If for degree purposes, the proposal has been approved by the FRC</b>	Yes	
<b>Funding sources:</b>	None	

**2. Remarks by Education Faculty Ethics Committee:**

The EFEC unconditionally grants extension of the ethical clearance for this study. This certificate is valid until 31 <sup>st</sup> December 2024		
<b>Approved: X</b>	<b>Referred back:</b>	<b>Approved subject to adaptations:</b>
<b>Chairperson Name: Dr Candice Livingston</b>		<b>Date: 28-4-2020</b>
<b>Chairperson Signature:</b> 		
<b>Approval Certificate/Reference: EFEC 13-2/2020</b>		

## Appendix E: Approval letter from Western Cape Education Department



Directorate: Research

[Audrey.wyngaard@westerncape.gov.za](mailto:Audrey.wyngaard@westerncape.gov.za)  
tel: +27 021 467 9272  
Fax: 0865902282  
Private Bag x9114, Cape Town, 8000  
[wced.wcape.gov.za](http://wced.wcape.gov.za)

**REFERENCE:** 20200814-7515  
**ENQUIRIES:** Dr A T Wyngaard

Mr Imre Andras  
PO Box 5333  
Helderberg  
Somerset West  
7130

Dear Mr Imre Andras

### **RESEARCH PROPOSAL: THE EFFECT OF A SUPPORTIVE TEACHER-LEARNER RELATIONSHIP ON GRADE 12 LEARNERS' MATHEMATICS ACHIEVEMENT**

Your application to conduct the above-mentioned research in schools in the Western Cape has been approved subject to the following conditions:

1. Principals, educators and learners are under no obligation to assist you in your investigation.
2. Principals, educators, learners and schools should not be identifiable in any way from the results of the investigation.
3. You make all the arrangements concerning your investigation.
4. Educators' programmes are not to be interrupted.
5. The Study is to be conducted from **24 August 2020 till 30 September 2020**.
6. No research can be conducted during the fourth term as schools are preparing and finalizing syllabi for examinations (October to December).
7. Should you wish to extend the period of your survey, please contact Dr A.T Wyngaard at the contact numbers above quoting the reference number?
8. A photocopy of this letter is submitted to the principal where the intended research is to be conducted.
9. Your research will be limited to the list of schools as forwarded to the Western Cape Education Department.
10. A brief summary of the content, findings and recommendations is provided to the Director: Research Services.
11. The Department receives a copy of the completed report/dissertation/thesis addressed to:

**The Director: Research Services  
Western Cape Education Department  
Private Bag X9114  
CAPE TOWN  
8000**

We wish you success in your research.

Kind regards.  
Signed: Dr Audrey T Wyngaard  
**Directorate: Research**  
**DATE: 17 August 2020**

## Appendix F : Examples of Learners' Signed Consent letters

### CONSENT FORM

Title of Project: **The effect of a supportive teacher-learner relationship on Grade 12 learners' Mathematics achievement.**

Name of Researcher: **Imre Andras**

Please initial all boxes

1. I confirm that I understand the nature of the study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.  BC
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my legal rights being affected.  BC
3. I understand that data collected during the study, may be looked at by individuals. I give permission for these individuals to have access to these records.  BC
4. I agree to take part in the above study.  BC

Brenda  
Name of Participant

10 Sep 2020  
Date

[Signature]  
Signature

Brendaline  
Name of Person taking consent

10 Sep 2020  
Date

[Signature]  
Signature

**CONSENT FORM**

Title of Project: **The effect of a supportive teacher-learner relationship on Grade 12 learners' Mathematics achievement.**

Name of Researcher: **Imre Andras**

Please initial all boxes

1. I confirm that I understand the nature of the study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
  
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my legal rights being affected.
  
3. I understand that data collected during the study, may be looked at by individuals. I give permission for these individuals to have access to these records.
  
4. I agree to take part in the above study.

Walter Sitkoci  
Name of Participant

09/09/2020  
Date

[Signature]  
Signature

[Signature]  
Name of Person taking consent.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

**CONSENT FORM**

Title of Project: **The effect of a supportive teacher-learner relationship on Grade 12 learners' Mathematics achievement.**

Name of Researcher: **Imre Andras**

Please initial all boxes

- 1. I confirm that I understand the nature of the study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
- 2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my legal rights being affected.
- 3. I understand that data collected during the study, may be looked at by individuals. I give permission for these individuals to have access to these records.
- 4. I agree to take part in the above study.

Bukho Wilson

Name of Participant

08/09/2020

Date

[Signature]

Signature

Chamaine

Name of Person taking consent.

08/09/2020

Date

[Signature]

Signature