



## Psychological challenges facing grade 7 learners in mathematics classes at schools in the Frances Baard district, Northern Cape

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**Abstract** – Mathematics is a science that involves studying quality, structure, space, and change. This science seeks to pattern, formulate new conjectures, and empirically deduce truth from appropriately chosen axioms and definitions. This study identifies the psychological challenges that grade 7 learners encounter in Mathematics classes. It adopts a qualitative approach through a case study research design. It involved six focus group discussions. The thematic analysis was used to analyse data in this study. This study revealed that grade 7 learners encountered various challenges. The psychological factors included anxiety, stress, insufficient assessment timing, negative feelings associated with mathematics, peer disruptions, frustrations, negative learner-teacher relationships, and an unpleasant atmosphere. The academic factors dealt with learners disrespecting teachers, misunderstanding mathematics, class seating arrangement, and insufficient lesson hours. The socio-economic factors included home issues and geographical locations. This study recommends that the teaching style and methods of teaching be upgraded. It further recommends introducing more practical work to encourage learner engagement. Learners should be taught to solve problems and think deeper about concepts instead of rote learning and lecture-style teaching. As the issue of 21st-century learning has taken over the learning scope, learners should be encouraged to think critically about issues and use the content to solve real-life problems. Learners' anxiety could be managed by seeking the help of social services available to schools, even though they are in demand in many schools across South Africa.

**Keywords:** Grade 7 Learners, Psychological Challenges, Mathematics Classrooms, Social Factors, Time Management

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### I. INTRODUCTION

MATHEMATICS is a science that consists of studying quality, structure, space, and change (Yadav, 2017). This science seeks to manipulate, formulate new conjectures, and empirically deduce truth from appropriately chosen axioms and definitions (Yadav, 2017). Mathematics is taught in schools from grade R to Matric. This study focuses on the transition of learners from grade 6 to grade 7, with a special emphasis on Mathematics. Mathematics is a subject that has caused much discussion among professionals in the education field. Yao, Kong, and Cai (2018) noted that the issues that cause the most stress to learners are: self-concept, learner engagement, learner motivation, and learner behaviours in class. Teachers must fully support learners during this crucial stage of their schooling (Coffey, 2013). This study explores the psychological, social, and academic factors affecting mathematics class learners.

#### Challenges that Grade 7 learners encounter in Mathematics' classes

This section articulates the challenges that learners experience in their learning activities. These factors have been presented as themes that have emerged from learners' perspectives, including anxiety experienced by learners, peer disruptions, and time constraints. The study further focuses on misunderstanding topics, negative learner-teacher relationships, shortage of learning resources, and negative

socio-economic situations.

#### Anxiety experienced by Grade 7 learners in the Mathematics' classrooms

Learners experience anxiety in Mathematics classes for several reasons, such as timed tests and misunderstanding topics. Studies have been conducted on anxiety and Mathematics. Escarez Jr and Ching (2022) explored the Math anxiety and Mathematical representations of Grade 7 students. They found that students have a high level of anxiety towards Mathematics. In addition, they experienced high levels of test and numerical anxiety, and their mathematical representations examination showed a 'developing' level of performance (Escarez Jr & Ching, 2022). Other scholars highlighted that learners experienced anxiety if they failed to understand their work (Somers & Llinares, 2018). According to Jolejole-Caube, Dumlaio, and Abojeco (2018), anxiety could determine learners' feelings towards Mathematics. It is essential to note that Math anxiety is related to mental health and is usually associated with negative learning situations. However, Luttenberger, Wimmer, and Paechter (2018) zoomed the spotlight on Math anxiety and understanding its effects. Their results showed that Math anxiety could interact with self-efficacy or motivation in Math, which can intensify or counteract Math anxiety (Luttenberger et al., 2018). This study suggested that the outcomes of Math anxiety concern not only performance in Math-related situations but can also have long-term effects that involve efficient (or not-so-efficient) learning as well as

course and even vocational choices (Luttenberger et al., 2018).

Math anxiety could cause under-performance and inability to perform complex mathematical topics among learners (Shishigu, 2018). Some scholars emphasized that learners struggled with anxiety related to tests (Van der Nest, Long & Engelbrecht, 2018). Similarly, Ajimudin (2021) found that learners struggled with anxiety and timed tests, which often caused them to fail. According to Ecological Systems Theory (EST) principles, the situation within the classes has a bearing on the learner's development and performance in the mathematics classroom.

#### **Peer disruptions in Mathematics classrooms**

Peer disruptions are caused by learners who do not abide by school rules and disrupt learning. A study conducted in Switzerland found that learners disrupt classes by talking excessively to remain popular among their friends (Muller, Hofman, Begert & Cillessen, 2018). Disruptive behaviour is associated with learner disengagement, as established in a study conducted in the United States of America (Calderella, Larsen, Williams, Wills & Wehby, 2019). A study conducted in the United Kingdom placed disruptive behaviours at the helm of mental health issues and thus indicated that educators are not trained in this field (Ogundele, 2018). This is a huge problem in South Africa that needs interventions from higher authorities, as teachers cannot deal with this kind of disruption, especially in rural schools (Nunan, 2021). This kind of behaviours is directly related to how learners are developed within the Ecological Systems Theory (EST), which is the chosen framework for this study. The chronosystem (EST), the community a learner comes from, is a system that molds the learner in this field.

#### **Time Management**

Time management emerged as a theme in this study, and it demonstrated that learners do not have the skill to manage their time properly, leading to incomplete work and affecting performance. A study conducted in Pakistan found that deficient time management skills in the classroom environment affect learners' performance (Zafarullah, Mumtaaz. Murad, Abida & Humera, 2016). A Nigerian study also found that timed tests and time management skills directly affect learner performance (Ubaka, Sangiry & Ukwe, 2015). A South African study on students' time management skills confirmed that learners lack time management skills, affecting their performance (Mukwevho, 2018). Another South African study found that time management is problematic for many rural schools and impacts learning activities (Waller & Maxwell, 2017). The researcher wishes to touch on the EST of this study in iterating the importance of time as one of the tenets of the theory. The relevance of an activity practiced for long enough and for several years will develop the individual to a better level.

#### **Learner-Teacher relationships**

The teacher is the classroom manager; hence, the environment that lingers in the class depends on the teacher's attitude. According to Wright (2017), as deduced from an English study, the relationship between teachers and learners affects learners' performance. It is evident from this study that teachers set the tone in the classes. It is also their responsibility to ensure that all learners are included in lessons and that lessons are differentiated to accommodate all levels of learners. A study conducted in Korea indicated that when learners feel secure in their classrooms, they will learn optimally, which enhances learner performance (Joe, Hiver & Al-Hoorie, 2016). A study conducted in Nigeria established that teachers needed to discuss learner choices and performance with them; this facilitates the creation of a conducive atmosphere in the class and promotes good academic performance among learners (Amadi & Paul, 2017). In South Africa, teachers tend to play a parental role in schools and cannot enforce discipline on learners (Segalo & Rambuda, 2018). A study conducted in Malaysia has advocated the preparation of learners for the 21st century, which is necessary to equip them with critical thinking skills, and this can only be done with learner-centered teaching and learning, thus giving learners the reigns to navigate their learning (Taufik & Maat, 2016). The relationships that learners develop with teachers are found in the EST,

which is the microsystem.

Learning and teaching resources are necessary for effective teaching. According to a Tanzanian study, the lack of learning resources was a cause of learner under-performance (Sephania, Too & Kipng'etich, 2017). A study in Pakistan emphasised that the shortage of learning resources is a problem in schools, especially training facilities (Farooq & Kai, 2018). South African schools have a minor problem regarding textbook shortage, as confirmed by a study on the Siyavula Maths and Science book that is free to the South African public (Lambert, 2019). In addition, South Africa has problems upgrading what is already available and teachers' motivation (Mzuza & Van Der Westhuizen, 2019). One solution that Fleisch and Dixon (2019) have mentioned in a South African study is that if teachers rearrange their classrooms, use more contact time with learners, and use more learning resources, they gain more confidence in the classroom, which inevitably increases learner performance. From the perspective of the EST used in this study, it becomes evident that the context, which constitutes the learner's surroundings, has a significant impact on the development of the learner in this field.

A Canadian study found that the negative socio-economic status of younger learners affects their development (Schibli, Wong, Hedayati & D'Anguili, 2017). An Australian study found that a learner's socio-economic status is an important part of learning and may even be more important than the academic deficiencies experienced by learners (Chakraborty & Harper, 2017). Although some can assist others, schools in Africa are unwilling to share best practices, making it difficult for the struggling schools to prosper. This emerged in a study in three African countries: Kenya, Uganda, and South Africa (Ngimwa & Wilson 2012). The socio-economic situation of learners suggests that the effects of apartheid still linger in South African schools and have a lifelong impact on learners (Khumalo & Alhassan, 2020). Learners in this study received food from the school but struggled with other social issues, like overcrowded homes and absent guardians. Bronfenbrenner's Ecological Systems Theory confirms that the microsystems affect learners, and this is evident in the microsystem of the home and the school's geographical location.

## **II. OBJECTIVE OF THE STUDY**

The objective of this study was to identify the psychological challenges that grade 7 learners encounter in the Mathematics classes at schools in the Frances Baard District, Northern Cape, South Africa.

## **III. METHODS**

### **Research approach**

This study employed a qualitative approach to explore psychological challenges influencing grade 7 learners' performance in Mathematics classes. Scholars refer to qualitative research as an exploration of an issue that happened in its natural surroundings thus relying on the data's linguistic descriptions to analyse the data (Athanasou et al., 2012). It aims to describe and understand rather than predict and control (Maree, 2020). This approach was used in order to elicit learners' "real" feelings. The feelings and demeanour of learners gave the researcher an insight into what is happening on the ground. Interviews with the teachers helped in clarify their feelings and giving them the opportunity to express their feelings. This ensured that the phenomenon's reality is found in this study. Qualitative research needs to be precise in description and language because it deals with abstract phenomena that cannot be statistically measured; thus, it gives the reader a sense of the experience (Lune & Berg, 2017). It is advantageous because it makes meaning of human issues in their actual setting (Rahman, 2016). It benefited this study as it could be composed and recomposed to form an eventual outcome (Rahman, 2016). Conversely, it is disadvantageous as it is arduous because the relevant data is often challenging to track and capture (Lune & Berg, 2017).

### **Research paradigm**

According to Creswell and Creswell (2018), interpretivism means an individual perceives the world from their thinking. The goal of interpretive theory in research is to bring this awareness to the researcher to be aware of the possible bias and to bring the participants' views to the fore in the study (Creswell & Creswell 2018). Interpretivism seeks to ensure that the integrity of the "person" under study is not undermined (Cohen, Manion & Morrison, 2018). The researcher chose this paradigm to eliminate the possibility of data contamination. The researcher is a Mathematics teacher, and they needed to become aware of this. Interpretivism allows the researcher to interpret the behaviours (non-spoken roles) of a participant during the process (Rahman & Areni, 2016). This paradigm was disadvantageous because it helps participants exercise power over a phenomenon by swaying the researcher into his thinking (Wang, 2020).

#### Research design

This study employed a case study design, which allows the researcher to tackle a more specific feature of a phenomenon (Yin, 2014). According to Maree (2020), the case study method allows the researcher to understand a phenomenon in its actual setting, considering the factors in the environment as it occurs. It also allows the researcher to isolate and define a phenomenon in its natural environment (Karlsson, 2016). This design has a positive characteristic, allowing the researcher to identify and isolate an issue from its context (Maree, 2020). It helps to interpret a situation in-depth and then give realistic meaning to a problem (Karlsson, 2016). However, it is restricted in its goal in that it is bounded by the time and the method of conducting the process (Creswell & Creswell, 2018). This study used this design as the interaction with the participants yielded a clear view of what is happening in schools and why the learners' marks drop when they reach grade 7. Mathematics teachers and learners were interviewed so that the researcher could discover the actual situation of those experiencing the issue under study.

#### Instruments

##### *FGDs: Focus group discussions*

This study was conducted in six primary schools in Frances Baard District, South Africa. The schools were situated in various places, from townships to the city. Each focus group came from the same school, and learners were in similar situations. This study used Focus Group Discussions (FGDs) to collect qualitative data from learners. The main aim of FGDs is to collect data from a specific group of individuals who represent a larger population experiencing the phenomenon under study (Nyumba, Wilson, Derrick & Mukherjee 2017). The researcher chose to have focus group discussions with the learners as it is a good method that supports young people in starting a conversation, yielding rich data (Maree 2015). One advantage of using FGDs is that the data collection method allows the researcher to gather information on an issue that can be used to support other data in the study (Nyumba, Wilson, Derrick & Mukherjee, 2017).

It is disadvantageous because it helps participants to start a debate on the issue if the researcher does not direct the conversation carefully (Then, Rankin & Ali 2014). The learners were asked to fill in a form with biographical information, such as their age, race, grade, favourite subject, who they reside with, and the number of siblings in their home. FGDs were used because the learners are young, and with young people, it is always easier to get them to "talk" in a group (Maree 2015). The description of the groups has explained the process of the discussions held with learners. Focus Group Discussions. Learners' parents had signed consent forms, which were explained to learners. The whole process was detailed, and learners were made aware of the process. The teachers were also present at the beginning of each discussion to ensure that the learners were comfortable, and once they were comfortable with the researcher, the teachers left. The teachers did not stay, as their presence might have made learners feel shy to share sensitive information with the researcher. None of the learners had a problem with the discussions and participated willingly, and they were made aware that they may leave at any time and withdraw any

information shared. The discussion with the learners was divided into two sections. Firstly, the learners' experiences, such as the changes that have occurred for them in their schooling careers, their relationship with their friends and teachers, their plans, and their needs for future success. After that, the focus shifted to their challenges, including their obstacles in the Mathematics classroom, the types of intervention they need, some of the most difficult topics they have to deal with, and whether they understand their teacher. In EST the person's personality must be carefully observed during the interview process. This will explain why and how the individual interacts with their environment (Koller, Raffaelli, de Morais, 2020).

#### Procedure for data collection

After ethical clearance was received from the University of the Free State and The Department of Basic Education, the researcher identified the different schools chosen for the study. An appointment was made with each of the principals to seek their permission to conduct the study. All the principals agreed that their school could be utilised in the study; however, they indicated that teaching time should not be used for this purpose. The researcher contacted each teacher at least one month before the data collection process commenced. Time and venue were mutually chosen and agreed upon when the researcher met with each participant. Before the interview started, the researcher briefed the participants on the background of the study. The interviews lasted between an hour and thirty minutes and two hours. All COVID-19 protocols were adhered to during the interviews. The researcher asked the teachers to give letters to identify learners willing and able to share the richest data with the researcher. The teachers then facilitated the FGDs. The researcher held the FGDs with each group at its respective school. The interviews and FGDs were recorded electronically. Within a day after the interviews and FGDs were conducted, the researcher transcribed each interview and FGD. The transcriptions were stored electronically and placed on a memory stick. After that, the researcher embarked on the data analysis process.

#### Participants

This study involved learners at schools in the Frances Baard District, Northern Cape, South Africa. These participants were selected purposely from six schools. Participants were learners whose marks were dropping in grade 7, and the teachers have had some experience teaching grade 7 mathematics, thus carrying in-depth knowledge in their field. Each group consisted of five to twelve learners. This FGDs consisted of small groups because smaller groups work well for qualitative studies. It was easier for the learners to discuss information with the researcher. One disadvantage of purposive sampling is that only selected participants can have their opinion taken (Cohen et al., 2018). The study's sample size involved twenty-four learners from six schools, which means four learners per school. The participants were willing to participate in the study and were chosen purposively and conveniently by the researcher (as suggested by their teachers). All participants were learners from grade 7, aged between eleven and thirteen. They were selected based on their willingness to participate in this study. All participants could express their experiences and challenges in the Mathematics classes. They were selected from the Frances Baard District, Northern Cape Province, South Africa schools. They were learners who resided in urban and rural areas.

#### Sampling technique

This study used the purposive sampling technique to select participants. According to Cohen et al. (2018), this sampling technique is usually used for small-scale to medium-scale studies. The sample was chosen from the total population of learners in the district. The sample was identified from the total population according to the accessibility and availability of the participants (Cohen et al., 2018). In qualitative studies, the sample size is usually smaller (Merriam & Tisdell, 2016). A strength of purposive sampling is that the participants are chosen according to what they can bring to the study. They are specifically chosen as they have the necessary experience and are the ones going through the phenomenon. In this study, the learners were the ones

whose marks were dropping in grade 7, and the teachers have had some experience teaching grade 7 mathematics, thus carrying in-depth knowledge in their field. The recommended number of participants was 4 participants per school. According to Maree (2015), this is a limitation of this kind of study, and in this case the FGD's had only four participants. This group was smaller because it is a qualitative study, and the researcher felt it may be beneficial to have a smaller group. This made it easier for the learners to discuss information with the researcher. One disadvantage of purposive sampling is that only selected participants can have their opinion taken (Cohen et al., 2018).

#### Sample

The study's sample size comprised twenty-four learners from six schools, which means four learners per school. The participants were willing to participate in the study and were chosen purposively and conveniently by the researcher with the assistance of their teachers. All participants were grade 7 learners, aged between eleven and thirteen. They were selected based on their willingness to participate in this study. All participants could express their experiences and challenges in the Mathematics classes. They were selected from the Frances Baard District, Northern Cape Province, South Africa schools. They resided in urban and rural areas.

#### Data analysis

This study used thematic analysis to analyse the collected qualitative data. According to Mills, Durepos, and Wiebe (2012), Thematic analysis is an approach to data analysis, a strategy to organize and bring meaning to data (Mills, Durepos, & Wiebe, 2012). The main point that should be considered when analysing data is that it should be categorised according to certain themes, which form the main tenets of exploration (Mills, Durepos, & Wiebe, 2012). In thematic analysis, researchers look for recurring themes, especially those that are recognizable and so outstanding that they make a discernible pattern (Boyatzis in Mills, Durepos & Wiebe, 2012). This technique is advantageous because it helps data coding and does not allow the researcher's biases to contaminate the data, as the themes repeat themselves as they come from the participants (Bryman, 2012). Thematic analysis has a positive attribute as it is flexible; thus, it allows researchers to use it in any possible method, and it is still essential for the researcher to stick to the recurring themes (Hawkins & Allen, 2018). The only disadvantage is that some recurring themes may not be necessary to the study, which may mislead the research (Braun & Clarke, 2012). If the nature of the research is relatively new and not easily recognizable, this will be most suitable (Hawkins & Allen, 2018).

Its flexible nature can thus be used to discover themes, issues, similarities, and differences within various sizes of data sets (Hawkins & Allen, 2018). Putting thematic analysis into the context of this study, there are six steps to follow (Terry, Hayfield, Clarke & Braun, 2021).

The first step is becoming familiar with the data by reading it with critical insight and deep thought. After the interviews were carried out, data transcription was done, giving the researcher a chance to interact with the data. The researcher read the data and found patterns and similarities in data sets. The second step is categorising and coding the data according to what is contained in each piece of information. The third step involved the researcher creating themes that emerged from the data. The recurrent themes become the main themes, which will be used to elaborate data. The fourth step involves refining the themes, utilising the most relevant information, and trimming the irrelevant ones. The fifth step of thematic analysis involves defining and finalising data. The sixth and final step is writing a report on the collected data. Even though this process begins at the start of data collection in qualitative research, a conclusion is brought to the data collection process at this juncture.

Trustworthiness is a crucial component of research and, therefore, must be kept in mind. The steps and methods for managing data must be carefully considered and evaluated constantly (Maree, 2020). Four facets of trustworthiness are credibility, transferability, dependability, and confirmability (Guba, 1981). The researcher in qualitative research

is a research tool anyway, so the trustworthiness and credibility of the researcher are scrutinized. Every detail was recorded electronically, and soon after the recording was done, the information was transcribed verbatim in the participants' words. This information was later shared with each participant to confirm what was said and to ensure that the participant was happy with the information as it was relayed to the researcher. When a clear and concise system of data gathering and recording is kept of everything, this contributes to the study's dependability (Maree, 2020). Athanasou et al. (2015) considered using different data sources to enhance the study's validity. The sources should be at different levels in the same field (Athanasou et al., 2015). Data was collected from learners and teachers, enhancing the study's validity. The data was crystallized by eliciting different perspectives and adding to the study (Athanasou et al., 2015). By employing the above-cited methods to ensure validity, the researcher could better understand why the learners struggle in grade 7 Mathematics in the Frances Baard District.

#### Ethical considerations

After receiving ethical clearance from the University of the Free State the Northern Cape Department of Basic Education to conduct the study in schools, this study identified the different schools that would take part. The researcher obtained an approval from each principal to access their schools premises. The purpose of the study was explained to participants. Time and venue were mutually chosen and agreed upon when the researcher met with each participant. Before the interview started, the researcher briefed the participants on the background of the study. The interviews lasted between an hour and thirty minutes and two hours. All COVID-19 protocols were adhered to during the interviews. The researcher asked the teachers to provide letters to identify learners who would be willing and able to share the richest data with the researcher. Learners' parents signed consent forms, which were explained to learners. The teachers were also present at the beginning of each discussion to ensure that the learners were comfortable, and once they were comfortable with the researcher, the teachers left. The teacher did not stay, as learners might have felt shy to share sensitive information with the researcher. None of the learners had a problem with the discussions and partook willingly, and they were made aware that they could leave at any time and withdraw any information shared. The discussion with the learners was divided into two sections.

Firstly, the learners' experiences, such as the changes that have occurred for them in their schooling careers, their relationship with their friends and teachers, their plans, and their needs for future success. After that, the focus shifted to their challenges, including their obstacles in the Mathematics classroom, the types of intervention they need, some of the most difficult topics they have to deal with, and whether they understand their teachers. The teachers then facilitated the FGDs. The researcher held the FGDs with each group at its respective school. The interviews and FGDs were recorded electronically. Within a day after the interviews and FGDs were recorded, the researcher transcribed each interview and FGD. The transcriptions were stored electronically and placed on a memory stick. After that, the researcher embarked on the data analysis process.

## IV. RESULTS

### Biographical results from learner participants

Table 1: Biographical results from learner participants

Focus-Group Discussions		Gender	Age	Race	Home Language	Schools
FGD 1	Learner 1	Male	11	African	Setswana	School 1
	Learner 2	Male	12	African	Setswana	
	Learner 3	Female	11	African	Setswana	
	Learner 4	Female	11	African	Setswana	

FGD 2	Learner 1	Male	11	African	Setswana	School 2	<i>Numbers make me feel stressed</i> " (FGD 4; Learner 2). " <i>...but when there is something new... then I stress... sometimes I will panic</i> " (FGD 5; Learner 3).
	Learner 2	Male	11	African	Setswana		
	Learner 3	Female	12	African	Setswana		
	Learner 4	Female	11	African	Setswana		
FGD 3	Learner 1	Male	11	Somalia n	English	School 3	
	Learner 2	Male	12	Indian	English		
	Learner 3	Female	11	Coloured	English		
	Learner 4	Female	11	Indian	English		
FGD 4	Learner 1	Male	12	Coloured	English	School 4	
	Learner 2	Male	11	Coloured	English		
	Learner 3	Female	12	Coloured	Afrikaans		
	Learner 4	Female	12	Coloured	Afrikaans		
FGD 5	Learner 1	Male	11	African	Setswana	School 5	<i>"Maths is difficult for me; I feel like failing all my Mathematics tests"</i> (FGD 3; Learner 2). <i>"Maths gives me stress, but I need to study what I need; so even if I have stress, I will still do it"</i> (FGD 3; Learner 3). <i>"I think when it comes to tests, there is not enough time for us, and I do not always finish my test"</i> (FGD 4; Learner 1).
	Learner 2	Male	11	African	Setswana		
	Learner 3	Female	11	Coloured	Afrikaans		
	Learner 4	Female	11	African	English		
FGD 6	Learner 1	Male	11	Coloured	Afrikaans	School 6	
	Learner 2	Male	11	African	English		
	Learner 3	Female	11	Coloured	English		
	Learner 4	Female	12	Coloured	English		

### Thematic results

#### Psychological challenges faced by grade 7 learners in Mathematics classes

The psychological challenges include anxiety, stress, negative feelings associated with Mathematics, peer disruptions, frustration, unpleasant atmosphere, learners' disrespecting teachers, misunderstanding of mathematics, negative learner-teacher relationships, learners' attitudes, and peer pressure.

##### Anxiety

The results showed that Grade 7 learners faced anxiety in the Mathematics classes. Learners expressed internal fear that caused stress. They mentioned that new concepts in mathematics cause anxiety.

*"I feel scared, .....which is not a good feeling...."* (FGD 5; Learner 2).

*"Mathematics is stressful. I always feel like I am going to miss something; Numbers make me feel stressed"* (FGD 4; Learner 2).

*"...but when there is something new... then I stress... sometimes I will panic"* (FGD 5; Learner 3).

*"I think when it comes to tests, there is not enough time for us, and I do not always finish my test"* (FGD 4; Learner 1).

From the above mentioned responses, some grade 7 learners showed their anxiety towards assessment, and the prospect of failing an exam contributes to anxiety and stress for learners. Learners feel fear for the subject, and this fear could be a leading factor in anxiety. A new concept may mean they will not understand the first time.

##### Stress

The results indicated that stress could be a challenge faced by grade 7 learners in mathematics classes.

*"Maths gives me stress, but I need to study what I need; so even if I have stress, I will still do it"* (FGD 3; Learner 3).

*"...as it makes me feel stressed"* (FGD 5; Learner 2).

*"Mathematics is stressful. I always feel like I am going to miss something;*

*Numbers make me feel stressed"* (FGD 4; Learner 2).  
*"...but when there is something new... then I stress... sometimes I will panic"* (FGD 5; Learner 3).

Although learners are stressed during mathematics classes, they endure as they know they must study it to complete their desired studies. Learners experience stress because the subject causes them to panic, especially when they do not understand concepts. Some learners suffer from stress caused by numbers, a difficulty that learners have. New concepts also cause stress for learners, as they may have consolidated knowledge of previous knowledge needed to understand the concepts.

##### Negative feelings associated with Mathematics

The results indicated that grade 7 learners had negative feelings associated with Mathematics classes. Some mentioned that learners and teachers alike experience such feelings because of past experiences or even incidents in Mathematics classes. Some learners have issues coming into grade 7, which are coming from Grades 5 or 6. This could be a major problem, as they cannot work from previous grades in the class. These feelings are not always positive, which is problematic for learners' performance. The extracts from eight learners express these.

*"Maths is difficult for me; I feel like failing all my Mathematics tests"* (FGD 3; Learner 2).

*"Maths gives me stress, but I need to study what I need; so even if I have stress, I will still do it"* (FGD 3; Learner 3).

*"I think when it comes to tests, there is not enough time for us, and I do not always finish my test"* (FGD 4; Learner 1).

Mathematics is not an easy subject and is thus associated with negative feelings that learners experience. Learners are anxious about tests they get during mathematics classes, as all the challenges this study has found become manifested. Despite the difficulty that learners experience, they still have to persist because they need to study it for success in the future.

##### Peer disruptions

The results showed that peer disruptions could be a challenge that grade 7 learners experienced in Mathematics classes.

*"My classmates are my only issue. I do not think I have other problems. They cause disruptions, and this is not good for the class, as we do not know what is going on in the class"* (FGD 6; Learner 1).

*"The main issue for our group is the discipline of the learners; some friends do not understand the teacher and make funny sounds, it is very annoying and they do not want to take responsibility for their actions"* (FGD 5; Learner 1).

*"...and the other children do not always allow her to explain again"* (FGD 1; Learner 3).

Learners in mathematics classes are often not ready for their grades due to the progression policy of the South African Schooling system. This means that many learners misbehave in classes, and this causes disruptions in the class. This becomes a challenge for learners. Many learners who may be ready for the grade misbehave in classes and seek attention by displaying miscreant behaviours.

##### Frustration

The results showed that frustration could be a psychological challenge that grade 7 learners faced in Mathematics classes. This could be an obstacle and hamper their academic performance and learning. They mentioned that other learners caused disruptions in the class.

*"When the learners do not listen, it will mean we do not hear the teacher, and then we do not understand; this is a serious problem"* (FGD 5; Learner 3).

*"My peers do not respect the teacher, especially the boys. They do not behave. They become jealous when I get good marks"* (FGD 1; Learner 1).

*"The other learners in my class do not always listen to the teacher, and they make her angry and upset"* (FGD 1; Learner 4).

Learners often feel frustrated when in a class, and adequate teaching and learning do not occur. Learners, especially the boys, are often rowdy and do not listen to the teacher, which is a cause of frustration for the other learners in the class. Learner groups are often big, which is also a cause of frustration for learners, as they all have different tendencies.

##### Unpleasant atmosphere

The results showed that an unpleasant atmosphere could be a challenge that learners experienced in Mathematics classes.

*"The main issue for our group is the discipline of the learners; some friends do not understand the teacher and make funny sounds, it is very annoying, and they do not want to take responsibility for their actions"* (FGD 5; Learner 1).

*"...and the other children do not always allow her to explain again"* (FGD 1; Learner 3).

*"I feel scared, which is not a good feeling as it makes me feel stressed"* (FGD 5; Learner 2).

Learners who do not listen to instructions in the class cause an unpleasant atmosphere, and this causes a lot of difficulty for learners. It creates an atmosphere of disruptions in the class. This makes the learners and the teachers frustrated. Learners cause disruptions in some schools, leaving the classroom in disarray.

#### **Learners' disrespecting teachers**

Learners who disrespect the teacher cause frustration as learners who want to learn cannot learn. This becomes a problem and causes a drop in the learners' performance in the class.

*"My peers do not respect the teacher, especially the boys. They do not behave. They become jealous when I get good marks"* (FGD 1; Learner 1).

*".....some friends do not .....make funny sounds; it is very annoying, and they do not want to take responsibility for their actions"* (FGD 5; Learner 1).

This shows that disrespecting teachers causes an unpleasant atmosphere in class and is not conducive to learning.

#### **Lack of understanding of mathematics**

The results revealed that misunderstanding Mathematics could be a psychological challenge that grade 7 learners encountered in Mathematics classes. They highlighted that they do not always understand what the teacher says. Some said that they are in the classrooms but feel like they are missing out on important work.

*"When the learners do not listen, it will mean we do not hear the teacher, and then we do not understand; this is a serious problem"* (FGD 5; Learner 3).

*"The main issue for our group is the discipline of the learners; some friends do not understand the teacher and make funny sounds, it is very annoying, and they do not want to take responsibility for their actions"* (FGD 5; Learner 1).

*"The main issue for our group is the discipline of the learners. Some friends do not understand the teacher ....."* (FGD 5; Learner 1).

*"The teacher expects too much from us; we cannot always understand her"* (FGD 4; Learner 2).

*"Sometimes she talks so fast that I get lost in words"* (FGD 5; Learner 3).

This lack of understanding could cause some frustration. Learners do not always understand the teacher because they are not all on the same level, and this causes some problems, as the teacher does not have the time to repeat the lessons. Those learners who are not on the same level are the ones causing the disruptions. Learners at this time do not understand because of the disruption caused in the class by the other learners.

#### **Negative learner-teacher relationships**

The results suggested negative learner-teacher relationships could challenge Grade 7 learners in the Mathematics classes. Learners mentioned that the negative relationships with their teachers made them struggle more, harming their performance. Teacher expectations were cited as a problem; when the teacher expects too much from learners, this causes a form of anxiety for the learner. They do not always have a good relationship with their teachers. The learners' ill-discipline results in the teacher's aggravation, contributing to the lessons not being carried out properly.

*"He comes and teaches us and leaves. He does not talk to us; he is very boring"* (FGD 4; Learner 4).

*"My relationship with my teacher is not good; She has favourites"* (FGD 1; Learner 1).

*"Yes, maybe if we could have a more friendly relationship, then we could do better. It is difficult for me to understand her"* (FGD 4; Learner 3).

Some teachers do not have a positive social relationship with learners, and some learners feel that if they did make an effort to get to know them better, it would make a difference in their learning. Learners

have expressed the need for a more social relationship with their teacher; maybe if he knows them as people, it may make all the difference in how they perceive the subject, and this could be a factor that enhances their performance in the classroom.

#### **Learners' attitudes**

The results demonstrated that learners' attitudes could challenge grade 7 learners in Mathematics classes. The attitude of some learners in the class and the teachers' character is an impeding factor for learners.

*"The other learners in my class do not always listen to the teacher, and they make her angry and upset; it is difficult to be in the class"* (FGD 1; Learner 3).

*"...and the other children do not always allow her to explain again"* (FGD 1; Learner 3).

*"My peers do not respect the teacher, especially the boys. They do not behave. They become jealous when I get good marks"* (FGD 1; Learner 1).

The attitude that teachers have adopted in Mathematics classes often leads to the challenges they experience. Teachers are disrespected and this also becomes a challenge in the classroom. Learners' relationships with their teachers inculcate a learning or non-learning culture. If learners disrespect teachers, it causes a lot of frustration for teachers and other learners.

#### **Academic challenges**

##### *Insufficient assessment timing*

The results demonstrated that insufficient assessment timing could be a challenge faced by grade 7 learners in Mathematics classes. They said that timed tests always give learners stress as they may not be able to finish a test on time, and this may cause them to fail.

*"I think when it comes to tests, there is not enough time for us, and I do not always finish my test"* (FGD 4; Learner 1).

*"Other obstacles are that I cannot concentrate enough; I need to sit with my work, which takes some time for me"* (FGD 6; Learner 1).

*"I would appreciate more time, though"* (FGD 4; Learner 4).

*"I am afraid to ask my teacher again. As I know she does not have the time to do the same work again"* (FGD 4; Learner 3).

This means they have to spend extra time on the topic. Learners felt stress at the beginning of the term. There is always a degree of stress involved as learners get used to a higher standard and a new teacher once they adapt and get used to it.

##### **Insufficient lesson hours**

The results showed insufficient lesson hours could be a challenge affecting grade 7 learners in the Mathematics classes. They reported that the teaching and learning timing in Mathematics is always essential as learners need more time to spend on their work. They acknowledged that they had time constraints in terms of spending enough time with their teachers, sitting down, and consolidating their understanding of the concepts. The learners also mentioned that they had to spend time retaining facts, which is vital for their success. The extracts from the following learners express these.

*"The time we have with our teacher is too little, which means that we do not always get our work done, and when it is the next period, we have other work to do"* (FGD 4; Learner 1).

*"Maths needs more time; during COVID-19, we got enough time to work, but it also made me lazy... because now we have too much time, which is getting wasted"* (FGD 4; Learner 2).

*"I am afraid to ask my teacher again. As I know she does not have the time to do the same work again"* (FGD 4; Learner 3).

*"Other obstacles are that I cannot concentrate enough; I need to sit with my work, which takes some time for me"* (FGD 6; Learner 1).

*"I would appreciate more time, though"* (FGD 4; Learner 4).

It is essential to consider that learners felt that they did not have adequate time management skills, as the subject needs time, and when they did get the time during COVID-19, they did not know how to manage it, and much of it got wasted in futile activities, and their schoolwork still suffered. Time is wasted on the discipline of peers, which is also a problem for learners as many of them need extra time on a topic. When the peers aggravate the classroom circumstances, this becomes a significant issue for learners.

### Seating arrangements in classes

The results showed that class seating arrangements could affect the grade 7 learners in Mathematics classes. Some learners said that their seating position made a difference in their learning. They indicated that disruptive learners always sit at the back of the class.

*"...and the other children do not always allow her to explain again"* (FGD 1; Learner 3).

*"The other learners in my class do not always listen to the teacher, and they make her angry and upset"* (FGD 1; Learner 4).

There are often too many learners in the class, and this makes teaching difficult. It means there are so many learners in the class that there is insufficient time for the teacher to explain the subject content fully. It also frustrates other learners in the class. Learners need time and space to accommodate the teaching that needs to take place. Although schools have sufficient resources, the classroom capacity does not always encourage a learning environment.

### Shortage of learning resources

The responses from participants' transcripts showed a shortage of learning resources as a challenge for grade 7 learners in the Mathematics classroom. There were two resources that learners expressed a need for; one was using a textbook, and the other was using technology. The textbooks cannot be given to learners because they have a problem looking after the books, and schools do not have access to computers, making learning a bit boring though not impossible. Having computer-assisted learning would enhance the learning environment but does not necessarily remove the obstacles that learners experience. Teachers did not express the need for textbooks, although learners did. According to teachers, textbooks are not needed as teachers usually make copies and give learners activities; this means they have work and explanations of relevant topics. The extracts from five learners express these.

*"I would like to have a textbook we can work from"* (FGD 1; Learner 2).

*"We do not have textbooks, but we have copies of notes that are clear and understandable"* (FGD 2; Learner 2).

*"We could also do with some computer programs... that will be nice, and maths will be fun, it can be very boring"* (FGD 3; Learner 3).

*"If we had textbooks, it would be easier; the copies are not always clear, and sometimes we miss them if we are absent, especially now in COVID-19"* (FGD 5; Learner 4).

*"Before COVID-19, the learners did not look after the books, so the school cannot give us books"* (FGD 5; Learner 3).

Although the resources are enough, they are not well looked after. This means the Department of Basic Education must spend more and more on resources every year. They are then not allowed to take the books home as their socio-economic situation does not support the learners at home. The COVID-19 pandemic was an obstacle imposed on learning in Mathematics classrooms as it affected the learners negatively.

### Socio-economic challenges

#### Home issues

The results indicated that home issues could challenge grade 7 learners in Mathematics classes. They mentioned that socio-economic issues negatively influence their learning.

*"I always have to take care of my siblings, and it is sometimes difficult for me to give them food"* (FGD 1; Learner 2).

*"My parents come from work late. My mom is a nurse, making it difficult for me"* (FGD 1; Learner 3).

*"...Yes, many children are in my house and bother me when I have to do my homework"* (FGD 2; Learner 1).

From the above, poverty, unemployment, and the responsibility of looking after siblings are some of the home issues that affect learners. Most parents often wake up early and return home late in the Frances Baard District. Thus, learners are living with grandparents or guardians, not always taking total care of their social and emotional needs. Sometimes these situations are not ideal for learners and cause some difficulty for them, impacting their performance.

#### Geographical locations

The results indicated that the geographical locations could challenge grade 7 learners in Mathematics classes. Most learners' residences are an issue because some live in rough areas and face unpleasant situations that affect their academic performance. In some instances, extra family members live with learners and do not fully support learners academically. This, too, has become a factor that results in the decline of learners' performance. The extracts from five learners express these.

*"I have an aunt that lives with us, and she does not share her things with our house. We are many in the house. We have to share a lot, and they like to fight each other"* (FGD 3; Learner 2).

*"Sometimes the neighbours fight, which causes a lot of noise in my street. We live in a busy area, and this is not always the best for us"* (FGD 3; Learner 2).

Learners all over rural South Africa live in these conditions, where many family members live in their homes. This means that the socio-economic situations at home are not always good; school-going children bear the consequences of these situations. This is a challenge for learners in the Mathematics classrooms. The environments that learners come from mean that their concentration in class is affected, and therefore their learning is affected.

## V. DISCUSSION AND CONCLUSION

The findings indicated the psychological, academic, and social challenges that grade 7 learners encountered in the Mathematics classroom. Psychological challenges include anxiety, stress, insufficient assessment timing, negative feelings associated with mathematics, peer disruptions, frustrations, negative learner-teacher relationships, and an unpleasant atmosphere. Academic and social challenges include learners disrespecting teachers, and not understanding Mathematics, class seating arrangement, insufficient lesson hours, shortage of learning resources, and negative socio-economic situations. The findings indicated that grade 7 learners experienced anxiety in the Mathematics classes. These are consistent with the literature, which indicates anxiety as a mental health issue associated with learning (Luttenberger, Wimmer & Paechter, 2018; Zwane & Mukuna, 2023).

Similarly, peer disruptions in the Mathematics classroom could affect the learners' attention, understanding, and performance (Camerini & Schulz, 2018). The learners also experience problems due to disruptions caused by their peers. Learners feel that there are learners who are not well-mannered and show disrespect to the teacher, and do not adhere to the rules; these learners cause problems in the class. They make a noise, and this does not allow for efficient learning. This study has found that peer disruption is a challenge for grade 7 learners in the Mathematics classroom. Time is essential in the Mathematics classroom, as it takes time to understand complex topics. Learners need time to spend with their teachers and consolidate the work already taught. Learners do not have the necessary ability to manage their time accurately to avoid late assignments. In recent years, there has been an increase in risk-behaviours among young children in the Sub-Saharan region, countries like Zambia and South Africa, which impedes learners' academic performance (Ssewanyana & Bitanihirwe, 2018). When the class is not managed adequately, the learners always face challenges. Time management is a problem in rural schools in South Africa, as this hampers learner performance (Waller & Maxwell, 2017).

This study has found peer disruption challenging for grade 7 learners in the Mathematics classrooms. Therefore, fractions and patterns are complicated for the average Mathematics learner. They have this preconceived idea that it is difficult, which may be why it becomes challenging for them. Learners often misunderstand problems, cannot understand issues and choose the wrong procedures for solving a problem (Novitasari, Lukito, & Ekawati, 2018). In a Tanzanian study, it emerged that learners from grades 4 to 6 experience high levels of poverty and violence, affecting their ability to work academically (Berger, Benatov, Cuadros, VanNattan & Gelkopf, 2018). The learners in this study felt that if they had been allowed Mathematics aids like



calculators earlier, it would make their learning easier and they would have time to work. This study has found negative learner-teacher relationships as a challenge for grade 7 learners in the Mathematics classroom. Learners who have negative relationships with their teachers have negative experiences in the classroom. They are unsure of the work, and tension is prevalent. The classroom is often not conducive to learning and teaching because the teacher does not have control of the class. This view regarding negative relationships between learner and teacher is supported by other scholars, that learners who have had negative relationships with their teachers earlier in their schooling careers are usually more disruptive in their behaviours (Bergen, Graham, & Sweller, 2020; Zwane & Mukuna, 2023). Teachers and learners need to be in a supportive environment to enhance learners' performance in classrooms (Stoppelbergin, McRae & Smith, 2020). One problem that was found in Kenyan schools is that overcrowded classes do not allow teachers to form relationships with learners, and this affects their performance (Hungu, Njagi, Wekulo & Ngware, 2018). The learners in this study have expressed unhappiness that when the teacher is upset, she will take her frustrations out on the learners. This study has found that learners would appreciate a more friendly relationship with their teachers. Bronfenbrenner's EST states that the nature of individuals' relationships with the relevant parties in their environments plays a major role in their development. This study has found the shortage of learning resources as a challenge for grade 7 learners in the Mathematics classroom. According to the teachers in this study, the problem is not that they do not have the resources, but with learners who do not look after the resources. Two schools stated that they cannot provide textbooks to learners, as learners do not look after the books. Using modern technological resources is important for learner satisfaction in the class. The learners in this study expressed different views about using and not being able to use a calculator. The researcher believes that if learners can access teaching materials like electronic calculators, they can focus on conceptual understanding of issues, which is the core of Mathematics (Abadi, Pujiastuti & Assaat, 2018). This study found that external distractions are a challenge for grade 7 learners in the Mathematics classroom. Learners in this study have situations at home that negatively affect their schooling and learning, such as overcrowded homes. Some parents tend to place too much responsibility on learners. The EST, which guided this study, also proposed the microsystem, the home of the learners; this is one of the environments in which a learner spends a lot of time, and this has a specific effect on the individual. A study conducted in Kenya supports the notion that overcrowding and poverty in their schools affect learners' performance (Hungu et al., 2018). This holds true for learners who cannot function when they are overworked. Families must realise that learners need a safe academic environment (Chinyoka & Naidu, 2012). The learners in this study were stressed by the emotional responsibility they had to carry. Classroom control strategies are an element that is important for eliminating peer disruption in the classes. It takes planning limits based on the needs of all the learners in a class and is a necessary skill set for teachers to adopt (Gonzalez-Ponce, 2020). Learners need social and emotional support from professionals, as this is a leading factor that impedes learners' development (Kiweewa, Knettel & Luke, 2018). The anxiety learners experience in the Mathematics classroom is twofold: intrinsic and extrinsic. This learner needs special attention from their teachers and support from families and stakeholders in the education sphere. This study recommends that teachers be the facilitators in the classes; they determine the atmosphere created and maintained in the school, and therefore, teachers' training is vital in this regard. Teachers need to do self-evaluation and see where they need to improve and where they can share best practices. For the researcher therefore recommends professional learning communities. This would also help new teachers to learn from the expertise of more experienced teachers. Professional learning communities should be implemented across the province and schools in the district. Peer disruptions occur because learners are not fully engaged, and to

eliminate the problem of engagement in the class, the recommendation has been made above regarding learner disengagement. It is recommended that the teacher should facilitate cooperative learning groups and learners need to teach each other. In the average South African classroom, class sizes are too big for one teacher and a good option would be cooperative learning groups. On the one hand, this gives the strong learner the opportunity to develop as a leader and also to internalise the learning process. On the other hand, it makes the weaker learner understand, because he/she is learning from someone on his/her own level.

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