

## Identifying Some Hindrances to Students' Achievement in Mathematics in South Africa

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### ABSTRACT

The achievement of students in mathematics in South Africa has not been impressive. The poor achievement has been attributed to many factors. This study explored the factors that contribute to high school students' poor achievement in mathematics drawing from data gathered from a sample of 135 high school mathematics teachers. It was found that teacher knowledge, poor students' mathematics background, lack of teaching and learning resources, lack of parental involvement in students' learning, students' negative attitude towards mathematics, indiscipline among students, frequent changing of the curriculum, high student- teacher ratio and language barrier are some of the hindrances to students' achievement in mathematics in the country. The findings of this study can be drawn upon to initiate reforms in school policies in general and mathematics education policies in particular.

**Keywords:** Hindrances, Mathematics, South Africa, Students' Achievement.

### INTRODUCTION

Mathematics is one of the most important subjects that in many ways are an integral element in a country's economic and scientific advancement. Economically for instance, mathematics is important in fields such as accounting, econometrics and related areas. Also, in the scientific arena mathematics is critical in subjects like physics, chemistry, and computer science. The areas enumerated here form an important aspect in terms of research and development including the production and sales of goods and services. All these invariably determine the economic status of a country. Over the years performance in mathematics in South Africa has been poor especially among students requiring university entrance. As a result of the poor performance, the spotlight in research terms has mainly been on aspects related to the teaching and learning of mathematics. In fact, evidence abounds in respect of national and international examinations revealing the poor state of students' mathematics learning and achievement in the

country (Keeton, 2010; Parker, 2012).

Due to the poor state of students' achievement, the Department of Education and other non-governmental organisations (For example, the Association of Mathematics Educators of South Africa [AMESA]) have put in tremendous efforts aimed at improving the teaching and learning of mathematics across the country. However, students' achievement in the subject has shown little improvement (Department of Basic Education [DoBE], 2011; 2012). Poor student achievement has also become a cause for concern among the country's universities' researchers. In this regard, researchers have identified a considerable decline in the mathematical knowledge and skills of students entering the universities (Engelbecht, Harding and Phiri, 2010; Mouton, Louw and Strydom, 2012). In a related manner, studies have shown that a number of students who passed mathematics in the National Senior Certificate (NSC) also experienced difficulties at university and invariably fail the first-year courses (Nel and Kistner, 2009). This situation has led to the universities offering bridging courses for students. The bridging courses are essentially remedial in nature. Their sole purpose is to identify problem areas students may be experiencing and assisting them to attain a better understanding of the subject.

The poor state of students' mathematics performance in South Africa, especially among Black schools, to many

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people, can be attributed to the imbalance in the education system of the apartheid government. Under the apartheid government, teacher education system was racially stratified with separate teacher education colleges for the different races, that created a multiple and separate programmes of teacher education for the different races. The bulk of the training in Black colleges of education was limited to humanities and arts subjects that led to underdevelopment of mathematics and science education in the black schools (Sayed, 2002). The majority of black teachers trained under the apartheid government only had a 3-year College of Education Diploma and the quality of their training, especially in mathematics, was poor (Adler and Davis, 2006; Rakumako and Laugksch, 2010). However, many other factors, apart from teacher knowledge and training, may contribute to students' poor achievement in a subject. Hence, the purpose of this paper is to identify some of the hindrances to students' achievement in mathematics in South Africa by addressing the question: what are the factors that hinder students' achievement in mathematics in South Africa? The study also aims to discuss possible ways of overcoming the identified factors. This will possibly help the stakeholders in mathematics education to address the problem of students' underachievement in the subject directly or it may assist them in reconceptualising their approach to mathematics education.

### **Theoretical Background**

This study is premised on the theoretical perspective of Ingvarson, Beavis, Bishop, Peck and Elsworth (2004) that focuses on the factors that influence student achievement in mathematics. In their theory they postulate that the quality of teachers' instructional practices and activities is fundamental in determining student opportunity to learn and consequently, learning outcomes. The theoretical perspective argues that the quality of the student opportunity to learn is shaped by teacher knowledge, teacher beliefs, school contextual factors, school system factors and student factors.

Teacher knowledge encompasses knowledge of the content to be taught; methods of teaching the content; and how students learn or understand the content. The importance of the knowledge of the mathematics content and how students learn, is that it enables teachers to choose appropriate mathematical tasks and classroom resources that feed into the learning process (Anthony and Walshaw, 2009). Studies have shown in fact that

student learning outcomes are influenced by teacher knowledge (see for example Rohaan, Taconis, and Jochems, 2010; Spaul, 2012). Studies in South Africa (e.g., Rakumako and Laugksch, 2010) have shown that teachers' knowledge is a reason for students' under achievement in mathematics.

A teacher's belief about teaching and learning is his/her personal opinion, viewpoint or construct that guides the teacher's teaching decisions and instructional behaviours (Stipek, Givvin, Salmon and MacGyvers, 2001). Teachers' beliefs have strong influence on their planning, instructional decisions and classroom behaviours (Mansour, 2009), and consequently influence students learning outcomes.

School contextual factor refers to the professional working condition of the school in which the teacher works. This includes the immediate school teaching and learning condition like the provision of teaching resources, the professional work community, time allocated for teaching, and any other school policies that affect teaching and learning. Lack of teaching and learning resources in schools according to Houtenville and Conway (2008); Lai, Sadoulet and de Janvry (2007); and Onwu (1999) can negatively impact on teaching and students' learning. The school system factor includes the curriculum and education legislations and policies under which schools are run.

Student factor encompasses student socio-economic background, student attitude, interest and proficiency level, prior knowledge (background knowledge of the subject), goals, beliefs and dispositions that the student brings to class (Ahmad, 2008). Student factor impacts on student classroom interaction and thus influence teachers' teaching and the student learning outcome. Some studies (e.g Van der Westhuizen, Mosoge, Nieuw oudt, Steyn, Legotlo, Maaga, and Sebege, 2002) have shown that many teachers believe that indiscipline among student is a major cause of poor performance in South African schools. In their study on the prevalent forms of student indiscipline in South African schools, Maphosa and Mammen (2011) posit that indiscipline among students in South Africa manifest in various forms including failure to do assigned work and distracting others from studies and these severely impede teaching and learning in schools.

In all, Ingvarson et al. advance that student learning outcome is primarily influenced by teacher factor (teacher knowledge and belief), school contextual factor, school

system factor and student factor.

### **Method**

The study aimed to explore factors that hinder students' achievement in mathematics in South Africa. We needed to obtain the current views of the mathematics teachers on the factors they believe hinder the students' achievement in the subject. Hence, cross-sectional survey research design (Creswell, 2008) was employed.

### **Participants**

Data for this study were collected from high school mathematics teachers. Mathematics teachers were used because they are key players in the students' learning and are in position to give information about students' learning and achievement that may not be obtained from any other source. A convenient sample of 135 teachers from three provinces (Free State, Limpopo and North West provinces) took part in the study. These three provinces were chosen on the basis of their annual average students' achievements in mathematics. The annual average achievement period looked at in this paper was between 2008 and 2013. Over this period, the provincial averages were in fact consistently similar to the national averages (see Department of Basic Education [DoBE], 2011; 2012).

### **Data Collection Instrument**

A self-report questionnaire was used to collect data from the participants. The questionnaire had two sections. The first section elicited teachers' demographic information (e.g. qualifications, years of mathematics teaching experience and gender). The second section was an open ended question that requested teachers to write the factors they believe contribute to students' poor achievement in mathematics in the country. Three A4 size pages were attached to the questionnaire to enable the respondents to express their opinions. The open ended question was preferred in order to allow respondents to voice their views independent of the researchers' influence. This is consistent with the view that research respondents should be given *carte blanche* to provide their unencumbered opinions on an issue (Creswell, 2008). The credibility of the instrument (the question asked) was established in two ways. Firstly, by asking

two mathematics education researchers and two mathematics teachers to examine how well the question would elicit teachers' perceptions of the hindrances to students' achievement in mathematics. All the four indicated that the question was credible enough and should lead to the expected responses. Secondly, a pilot study of the instrument was conducted with 37 mathematics teachers that were attending an in-service training workshop. The responses these mathematics teachers provided were adjudged to be consistently addressing the question they were asked. Following these two procedures the question was in a sense seen to be reliable and valid.

### **Data Analyses**

To render account of the respondents demographics, their views on the factors that hinder students' achievement in mathematics in the country, and the number (percentage) of the participants expressing each view, the data were analysed using both thematic (qualitative) and descriptive (quantitative) analyses. These involved identifying themes from the teachers' responses to the question and calculating the number of participants that expressed each view.

### **Findings**

The themes identified from participants' responses to the question are teacher knowledge, weak students' mathematics background, shortage/lack of teaching and learning resources, lack of parental support/involvement in students learning, students' negative attitude towards mathematics, student indiscipline, high student-teacher ratio, language barrier and education/curriculum policies like frequent change of curriculum.

These can be classified as teacher factor (teacher knowledge), student factor (weak students' mathematics background, lack of parental support/involvement in students learning students' negative attitude towards mathematics, indiscipline), school factor (shortage or lack of teaching and learning resources, and high student-teacher ratio) and school system factor (frequent change of curriculum). Table 1 shows the emergent themes and the number (percentage) of the participants expressing views relating to the themes.

**Table (1)**  
**Emergent themes from participants' views**

| Themes                           | No of teachers (%) per Province* |              |              | Total   |
|----------------------------------|----------------------------------|--------------|--------------|---------|
|                                  | LI<br>n = 41                     | NW<br>n = 52 | FS<br>n = 42 | N = 135 |
| <b>Teacher factor</b>            |                                  |              |              |         |
| Teacher knowledge                | 18 (44)                          | 26 (50)      | 25 (60)      | 69 (51) |
| <b>Student factor</b>            |                                  |              |              |         |
| Students' Mathematics background | 23 (56)                          | 32 (62)      | 20 (48)      | 75 (56) |
| Parental involvement/support     | 9 (22)                           | -            | 6 (14)       | 15 (11) |
| Negative attitude                | 27 (66)                          | 25 (48)      | 32 (76)      | 84 (62) |
| Indiscipline                     | 24 (59)                          | 16 (31)      | 30 (71)      | 70 (52) |
| Language barrier                 | 8 (20)                           | -            | 3 (7)        | 11 (8)  |
| <b>School factor</b>             |                                  |              |              |         |
| Resources                        | 13 (32)                          | 24 (46)      | 21 (50)      | 58 (43) |
| High student- teacher ratio      | 5 (12)                           | 26 (50)      | 8 (19)       | 39 (29) |
| <b>School system factor</b>      |                                  |              |              |         |
| Education/curriculum policies    | 11 (27)                          | 18 (35)      | 13 (31)      | 42 (31) |

LI = Limpopo; NW = North West; FS = Free State

### Teacher Knowledge

Sixty nine respondents expressed the view that most mathematics teachers lack the knowledge to teach the subject effectively. The Table shows that close to fifty percent of the respondents from each of the provinces expressed this view. This suggests that teachers' lack of knowledge of the mathematics content and how to facilitate the content to enable student learn meaningfully is likely a major hindrance to students' mathematics achievement. To some of the teachers, this is partly due to the shortage of qualified mathematics teachers which makes schools to employ teachers that did not major in mathematics to teach mathematics. According to one of the respondents "a considerable number of educators who are teaching mathematics in South African schools are not qualified to teach the subject. Such educators cannot clearly explain mathematical concepts to learners as they themselves do not understand the concepts well and they fail to make the subject real to learners. The educators are likely to avoid certain topics and concepts because they don't know how to teach them. If the educators do not understand what they teach, how can their learners learn mathematics?" Another respondent said that "content gap among educators is a major reason for the problem. For example, some teachers with primary diploma qualification are appointed to teach Grades 10 -12".

### Students' Mathematics Background

More than half of the participants (56%) believe that poor preparation of students at the lower grades levels is one factor that contributes to the students' poor achievement in mathematics. This view received a high percentage of responses from across the provinces signifying the seriousness of the issue in the country. As one teacher puts it "*mathematics teaching and learning in the foundation phase seems to be below bar. A considerable number of learners are being pushed through the system without having mastered the mathematics skills and knowledge of a particular grade level... This has resulted in many learners coming to high schools with cumulative learning deficits*". One respondent complained that some of their students in high school "don't know how to manipulate basic mathematical operations". Another teacher said that the students are not adequately prepared at the lower grade levels for the higher grade levels due to the "*shortage of qualified educators at the lower grade levels*". Likewise, another teacher who teaches grades 11 and 12 said "*students have a gap between Grade 9 and Grade 10 work; they seem not to be having basics*". In the bid to close the gap "*teachers are always behind work schedule. Maths is not passed in Grade 12 but from the beginning [lower grades]*".

### **Lack of Parental Support/ Involvement in Student Learning**

Fifteen respondents (from Limpopo and Free State provinces) expressed the view that lack of parental support/involvement in the students' mathematics learning contribute to the students' poor achievement in mathematics in the country. According to them, most of the parents/guardians do not bother about their children's or wards' learning especially in mathematics. They observed that in most cases the parents/guardians are not educated or have low level of education and hence are not able to help the students at home. According to one of the teachers *"some parents seem not to care about their children's mathematics learning. There is nobody to supervise the learners at home, making sure that learners have time to practise mathematics and do their homework. Learners spend most of their time in the streets instead of practising their mathematics and doing their homework"*.

### **Students' Negative Attitude towards Mathematics**

Across the provinces, the respondents saw students' negative attitude towards mathematics as a factor hindering students from achieving in mathematics. While 76% of teachers from Free State expressed this opinion, 66% and 48% from Limpopo and North West provinces respectively were also of the same view. According to the teachers many students in South Africa believe that 'mathematics is a difficult subject' so they come to class with the belief that they will never be able to pass mathematics hence the subject is not for them. This view, as one teacher said, *"is accentuated by some teachers of other subjects who tell students that maths is not for the students"*. Another reason for the negative attitude and lack of motivation to learn mathematics as perceived by one teacher is that *"they [students] don't see the importance of mathematics in real life"*.

### **Indiscipline**

Indiscipline among students also was found to be a factor that contributes to students' poor achievement in mathematics. About half (52%) of the teachers expressed the view that the students lack discipline which is evident in the students disregard to teachers' instructions, not doing their homework, dodging mathematics classes and not paying attention in class. The case of indiscipline among students was expressed by greater percentage of teachers in Free State and Limpopo provinces (71% and

59% respectively) than by teachers in North West Province (31%).

### **Language Barrier**

Language barrier, according to 11 participants (8 from Limpopo and 3 from North West), is another factor that militates against students' achievement in mathematics in the country. According to the teachers, most students at high school level do not understand English very well. English language is the language of teaching and learning mathematics and it is a second or third language to majority of the students. As expressed by one teacher the students find it difficult to understand English and the mathematical terminologies and hence *"they struggle to understand instructions given in mathematics exams"*. Another language issue in mathematics teaching expressed by one of the teachers was the use of home language by some of their colleagues *"to teach mathematics which lead to students misrepresentation of some mathematical concepts"*.

### **Lack of Teaching and Learning Resources**

Lack of teaching and learning resources was opined by 58 teachers from the three provinces as a factor that hinders the achievement of students in mathematics in the country. One of the respondents, Temba (pseudo name is used here and throughout this paper) said that *"the schools in the townships and rural area lack teaching and learning resources to make mathematics learning enjoyable to the students. Mathematics teaching in rural and township schools is mostly chalk and talk due to the absence of other teaching media such as TVs, overhead projectors, slides, computers and software for teaching and learning mathematics. This makes mathematics lessons boring especially for low-ability students"*. Another teacher said *"resources are limited; we don't have enough textbooks, no graph boards, not enough calculators for the learners"*. Similarly, another teacher said *"the learners don't have enough textbooks, sometimes 4 to 6 learners share a book, we are forced to use chalkboard most of the times and it takes a lot of time. Learners don't have calculators; they only borrow them for exams"*.

### **High Student-Teacher Ratio**

Some of the teachers (29%) believe that the high student-teacher ratio in schools is another factor that hinders students' achievement in mathematics. One

teacher said that the overcrowded classrooms make it impossible for teachers to give individual attention to the students. According to another teacher *“our learners struggle with mathematics and it is difficult to give adequate attention to the learners because they are so many in the class and one teacher is teaching many classes”*.

### **Education/ Curriculum Policies**

Thirty one percent of the respondents were of the view that some of the education system policies like *“constantly changing of curriculum”* contribute to students’ poor achievement in mathematics. According to the teachers, the constant change of the mathematics curriculum puts them into confusion and they find it difficult to cope. One teacher, who said he had taught mathematics for 34 years, expressed a different dimension of how curriculum policies impact on students learning of mathematics. The teacher said the curriculum is too wide in that *“students learn many concepts within a short space of time which makes them not to have deep understanding of the concepts”*. Similar view was also expressed by another teacher who had taught mathematics for ten years, the teacher said that the *“mathematics learning content is too much for the allocated period”*. Another respondent was of the view that the *“lowering of students pass requirements for promotion to the next grade level or giving extra marks to students”* to enable them pass a subject seems to do more harm than good to the students learning of mathematics. Such a practice may give students the impression that they ‘will always pass’ or they ‘will always be promoted to the next grade level’ but in the end the students will not learn what they ought to have learnt at the different grade levels.

### **Discussion**

In consonance with Ingvarson et al.’s (2004) theory this study identified teacher, student, school, and school system factors as the major factors that hinder students’ achievement in mathematics in South Africa.

The finding that some teachers lack knowledge of some of the topics in the curriculum and how to teach them, as some other studies (e.g. Rakumako and Laugksch, 2010) have also shown, was not unexpected. This is because the majority of the black teachers only had a 3-year College of Education diploma and the quality of their training, especially in mathematics was

poor (Adler and Davis, 2006; Rakumako and Laugksch, 2010; Sayed, 2002). Many of the teachers of mathematics have not had the opportunity to learn further mathematics in order to effectively teach the new mathematics curriculum. Such teachers find some of the topics very challenging to teach and may resort to avoiding teaching the topics.

The issue of students’ weak background in mathematics that in most of the teachers’ view is a hindrance to the students’ achievement in mathematics cannot be contested. Few would argue that a student’s success in a higher grade levels in school depends to a large extent on how well the student was prepared in the lower grade levels. This makes a case against the Ministry of Education (1998) policy that students should progress with their age cohort; repetition should only be one year per school phase where necessary. When the students fail to master the mathematical concepts they ought to have mastered at the lower grade levels, they get to higher grade levels with gaps in knowledge that it may be difficult for them to cope. To this end, we recommend that the intervention programmes to enhance students’ learning and performance in mathematics, which in most cases are targeted at the high school levels, be extended to the lower levels of schooling. This is because it is at the early (primary) level of schooling that the background for meaningful learning of mathematics is established.

The study also showed that lack of parental involvement in their students’ mathematics learning contributes to hinder students’ achievement in mathematics. For students to perform well at school the parents have their roles to play (Larocque, Kleiman and Darling, 2011). They have the responsibility to ensure that their children always attend school and do their homework. This role becomes difficult when the parents are not educated as is the case of many parents in the country. However, with close collaboration between the school and the communities, parents can always be more involved in their children’s education and can easily seek the help of teachers and other parents in their communities that are more educated themselves.

Students’ negative attitude towards mathematics was found by 62 percent of the respondents in this study to be one of the hindering factors to students’ achievement in mathematics in South Africa. Their negative attitude towards the subject may have resulted from the students’ learning experiences in mathematics classes over time. In most classes, mathematics is presented as abstract subject

without connection to the real world. This makes students not to see the use of mathematics in real life and consequently get disillusioned with mathematics learning. The negative attitude that the students display towards mathematics may have been the consequence of their past failures in the subject or even the failures of their predecessors that make them believe that they will never succeed in the subject despite the amount of effort they put in. The attitude of the students towards the subject can hence be boosted by presenting the subject in ways that will make the students see how mathematics is connected to their world. This can be achieved by the use of context-based examples (Harvey and Averill, 2012), information technology (Lopez-Morteo and Lo'pez, 2007), cooperative learning groups (Zakaria, Chin and Daud, 2010), and problem solving (Clarke, Breed and Fraser, 2004) in mathematics teaching to make students' learning experience of the subject motivating and interesting.

The finding that the mathematics teachers view indiscipline among students as a factor that hinders students' achievement in mathematics in South Africa agrees with the result of the study by Van der Westhuizen et al. (2002) that teachers view indiscipline among students as a major cause of poor performance in South African schools. As also found in this study, Van der Westhuizen et al. observed that the students are uncontrollable, deliberately ignore teachers' instructions, leave classrooms during lessons, don't do their homework, come to school late and leave school before time.

The study also showed that language barrier is another factor that hinders students' achievement in mathematics. This is because English which is the language of teaching and learning mathematics at secondary school level is a second or third language to most of the learners. It is a language the students do not normally use outside the school, it a language they often do not command and hardly understand well (Brock-Utne, 2012). The student's language barriers make them not to understand mathematical concepts because for students to learn content successfully they need to acquire the language of instruction. Hence, the first step to solving this problem is to find ways of helping the students to acquire the language of instruction even in the mathematics classroom. Visual aids like flash cards, charts, or graphs can be used to help students comprehend mathematical concepts that are being taught.

Teachers can also use group discussions or whole class mathematical discourse to make students interact with one another and thereby develop more language proficiency and at the same time learn mathematics.

Furthermore, the study found that lack of teaching and learning resources contribute to students' poor performance in mathematics in South Africa. This agrees with the views of Houtenville and Conway (2008); Lai, Sadoulet and de Janvry (2007) and Onwu (1999) that lack of teaching and learning resources in schools can impede effective teaching and consequently students' performance. Non-availability of adequate teaching and learning resources can hamper teachers' motivation to teach and students' interest to learn. It can also make an educational institution to be non-conducive to learning.

The changes in curriculum policies were also identified by the teachers as a factor contributing to poor mathematics performance of students in the country. This, probably, is because the curriculum changes necessitated major shift in the philosophy of teaching and learning of mathematics which demanded new roles on the mathematics teachers that many of them were not initially trained to handle.

### **Conclusion**

The findings of this study have important implications for all stakeholders in mathematics education in the country. The study shows that there is need to instil more discipline on students. This may imply the need to enact new policies that can help curtail indiscipline in schools. School management and teachers may be given authority to execute adequate disciplinary actions against undisciplined students in schools. In relation to teachers' knowledge, while a lot of efforts have been made by the government and other stakeholders over the past few years to help teachers improve their knowledge of mathematics and how to help students learn it, it seems more work needs to be done. It appears that the short periods of professional development workshops normally organised for teachers by various agencies have not yielded the expected results. Moreover, it is likely that majority of the mathematics teachers have not benefited from such workshops as most times only one or two teachers are nominated from a school to attend the workshops. There is need to find other ways of making the delivery of teacher professional development workshops easily and readily accessible to the teachers especially to the teachers in the rural areas. Also,

changing of curriculum should be matched with constant training and retraining of teachers to enable them to be on par with the changes taking place in the curriculum. To inspire students to learn mathematics there is need to make the students understand the importance and value of mathematics at the early stages of schooling – right from the primary school. This will likely help the students have a more positive attitude towards mathematics because if students do not recognise the importance of mathematics and how it connects to their goals and interests in life they may not be motivated to put in more effort to learn the subject.

Providing teaching and learning resources especially in the previously disadvantaged schools has been a major focus of the democratic government over the past two decade but the finding of this study, that teaching and learning resources is still a factor that hinders students achievement in mathematics, suggests there is need for the government and other stakeholders to step up the provision of teaching and learning resources in schools. In addition, the high student-teacher ratio should be addressed by building more classrooms (or schools) and

employing more mathematics teachers. We believe that the findings of this study and the recommendations made could be drawn upon to initiate reforms in mathematics education in the country.

### Limitations

This study was conducted following appropriate research methods however some limitations are worth acknowledging. Data were collected using only one instrument and also were collected from teachers only. Moreover, the study was conducted in three out of the nine provinces in the country so the emergent themes may not be a perfect representation of the views from other provinces. There may be other methods and sources of data collection that could have yielded different results from what was obtained in this study. For example, a different result might have emerged if data were collected using lesson observations or collected by interviewing students. In light of the limitations identified in this paper, verification of the findings can be done through similar studies; as well as through different methods and sources of data collection.

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## تحديد بعض العقبات التي تعيق تحصيل الطلبة في الرياضيات في جنوب أفريقيا

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### ملخص

لم يكن تحصيل طلبة المرحلة الثانوية في جنوب أفريقيا في الرياضيات مثيرا للإعجاب، ويُعزى ضعفُ التحصيل هذا إلى عدة عوامل. وقد حاولت هذه الدراسة استكشاف العوامل التي تساهم في تدني تحصيل طلبة المرحلة الثانوية في الرياضيات، فجمعت البيانات من (135) معلماً من معلمي الرياضيات للمرحلة الثانوية. وقد تبين من تحليل البيانات أن من العوامل التي تؤدي إلى ضعف تحصيل الطلبة في الرياضيات: معرفة المعلم، وضعف الخلفية المعرفية لدى الطلبة في الرياضيات، ونقص مصادر التعليم والتعلم، وعدم مشاركة الآباء في تعليم الطلاب، واتجاهات الطلبة السلبية نحو الرياضيات، وعدم انضباط الطلبة في أثناء التدريس، وكثرة تغيير مناهج الرياضيات المدرسية، وارتفاع نسبة الطلبة إلى المعلمين، والمعيق اللغوي.

وعلى ضوء التوصيات، يوصي الباحث بضرورة البدء بإصلاح السياسات المدرسية بشكل عام، وسياسات تعليم الرياضيات على وجه الخصوص.

**الكلمات الدالة:** المعوقات، الرياضيات، جنوب أفريقيا، تحصيل الطلبة.

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