

### Parents as resources

There is a strong relationship between learner achievement and parental education, especially that of female guardians. In 2011, 19% of parents had completed a university degree. This was a substantial increase from 2002, where 11% of parents had completed a university degree. The qualification levels of parents positively affected learner performance in mathematics. The corresponding figure for international learners was almost twice the South African figure of 32%.

Parents themselves are resources that learners can use to supplement what is taught at school. Learners were asked various questions related to parental involvement and interest in learners' schoolwork at home. The study suggested that parental involvement in learners' schoolwork was relatively high; more than 80% of learners' parents spoke to them about their schoolwork or checked if they had enough time to do their homework once or more times per week. Furthermore, 66% of learners' parents made sure that their children set time aside for their homework on a daily basis; 61% of learners' parents asked them every day what they were learning in school; and 54% of learners' parents checked daily if their homework had been done.

### Conclusion

Although South Africa's average household income increased nominally by 113% in 2011 compared to the last census in 2001, a comparison of available selected educational resources in 2002 and 2011 in learners' homes did not show remarkable changes. The evidence showed considerable resource limitations and shortages at most of learners' homes and their school environments compared to international standards. However, there have been improvements in terms of parental education levels and home conditions since 2002. A continuation of this trend may eventually lead to improved educational outcomes. ■

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## A climate of achievement: factors that impact scholarly performance

The school environment is the main setting for educational instruction. *Mariette Visser* and *Andrea Juan* examined the resources, both tangible (school environment) and intangible (school climate), that influence school performance. They found that around 95% of grade 9 learners in the sample group were affected by inadequate educational resources at school.

For purposes of the study, we drew data from questionnaires that formed part of the 2011 Trends in International Mathematics and Science Study (TIMSS). These included questionnaires completed by learners, teachers and schools. The findings depicted considerable resource limitations and shortages at most of South African school environments compared to international standards. We addressed the following questions:

- What is the effect of well resourced schools on mathematics performance?
- What is the effect of a safe, orderly and disciplined school climate on mathematics performance?

### School resources

Tangible elements of the school environment refer to physical resources. Schools with physical assets and infrastructure, such as libraries, laboratories and computers, exhibit more positive educational outcomes, while indicators of inferior infrastructure and assets tend to be negative.

In South Africa, 95% of learners were affected by inadequate resources for mathematical instruction at school (Table 1). The average achievement of South African learners (510) that were not affected by resource shortages was higher than the international average (488), but such conditions applied to only 5% of local learners.

Table 1: Percentage and average achievement of learners by the resource shortage scale

Instruction affected by resource shortages	Not affected		Somewhat affected		Affected a lot	
	% of learners	Average achievement	% of learners	Average achievement	% of learners	Average achievement
Mathematics (SA)	5	510	85	342	10	350
Mathematics (Int. Avg.)	25	488	69	464	6	453

Source: Findings from IEA's 2011 Trends in International Mathematics and Science Study

## In South Africa, 95% of learners are affected by inadequate resources for mathematic instruction at school.

### School climate

The term "school climate" describes the intangible elements of the school environment, for example, the organisation at the school and classrooms. It refers to the "feel" of a school and can vary from school to school. Factors conducive to the creation of a learning environment in general are:

- Students and teachers are (and feel) safe and comfortable everywhere on school property;
- Classrooms are orderly;
- Classrooms and grounds are clean and well maintained.
- Noise level is low;
- Areas for instruction and activities are appropriate for those uses.

### Safety and discipline problematic

An index called the School Discipline and Safety Index was developed from the responses of principals to 11 items in the school questionnaire. The items included problems with the following issues: arriving late, absenteeism, classroom disturbance, cheating, profanity, vandalism, theft, intimidation or verbal abuse among students

(including texting, emailing etc.), physical injury to students, intimidation or verbal abuse of teachers (including texting, emailing etc.), and physical injury to teachers or staff.

It is evident from Table 2 that South African schools experienced many safety and discipline problems. Only 4% of grade 9 learners attended schools with hardly any problems. Almost all South African grade 9 learners (96%) experienced problems with discipline and safety at their schools. It is also evident from Table 2 that an unsafe and ill-disciplined environment had a negative effect on learner performance. The average achievement score for South African learners dropped from 406 points for schools with hardly any problems to 345 points for schools with only moderate problems.

Comparison with international figures revealed that four times fewer learners (4%) in South Africa attended schools with hardly any problems compared with 16% of international learners. Additionally, more than twice as many South African learners (41%) attended schools in the most affected category of the School Discipline and Safety Index than international learners (18%).

Table 2: Mathematics achievement scores by School Discipline and Safety Index

School Discipline and Safety Index	Hardly any problems		Minor problems		Moderate problems	
	% of learners	Average achievement	% of learners	Average achievement	% of learners	Average achievement
Maths (South Africa)	4	406	55	352	41	345
Maths (international average)	16	483	66	467	18	437

Source: Findings from IEA's 2011 Trends in International Mathematics and Science Study

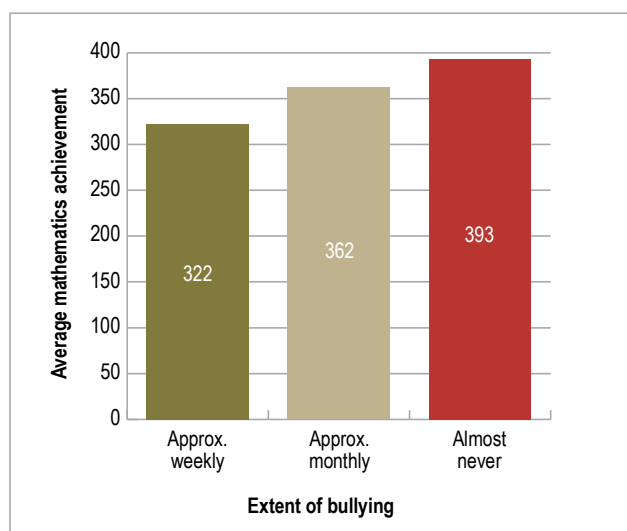
## Learners in South African schools are suffering physically and emotionally from schoolyard bullying.

### Bullying at alarming levels

An alarming finding from the study concerned bullying at school. Learners in South African schools are suffering physically and emotionally from schoolyard bullying. An index called Learners Bullied at School Index was developed from six questions posed in the learner questionnaire. The questions explored how often the learner had been made fun of or called names, was left out of games or activities by other learners, had had someone spread lies about them, had had something stolen from them, had been hit or hurt by other learners, and was made to do things that he/she did not want to do by other learners.

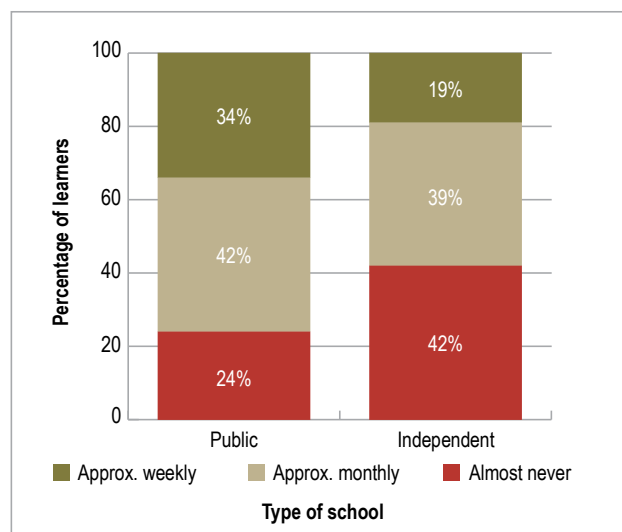
Almost three times more learners (33%) were exposed to bullying on a weekly basis than the international average (12%). More than half (59%) of international learners had almost never experienced bullying at their schools, while three in every four learners (75%) in South African schools experienced bullying on a monthly or weekly basis. It is further evident from Figure 1 that bullying had a negative effect on learner performance in mathematics. In addition, the study revealed that independent school learners were less affected by bullying than public school learners (Figure 2). Almost half (42%) of independent school learners – compared to one in every four (24%) public school learners – had almost never experienced bullying.

Figure 1: Learner average mathematics achievement by extent of bullying



Source: Derived from IEA's 2011 Trends in International Mathematics and Science Study

Figure 2: Extent of bullying by type of school



Source: Derived from IEA's 2011 Trends in International Mathematics and Science Study

## Almost all South African grade 9 learners (96%) experienced problems with discipline and safety at their respective schools.

### Conclusion

A favourable school environment for teaching and learning must have efficient and effective management procedures and practices; motivated, competent and satisfied teachers; sufficient facilities, books, technology, teaching and learning materials; and motivated, healthy and disciplined learners. The study showed that on average, most of South African learners were deprived of some or all of these aspects when compared with international standards. It was also evident that the performance of South African learners compared well with international averages in all instances where learners were exposed to favourable school environments. ■

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