

## WHAT DO SUCCESSFUL BLACK SOUTH AFRICAN STUDENTS CONSIDER ENABLED THEM TO BE SUCCESSFUL

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*Black South African students have a poor success rate in school leaving mathematics examinations. Attempts have been made to shift teachers' practices from teacher-centredness to learner-centredness, in Black schools, in order to improve the situation. The attempts have failed to yield the desired results. This paper reports on the findings of a study that aimed at learning from students and teachers in Black schools, as to what classroom practices lead to success in school mathematics, in their impoverished context.*

### INTRODUCTION

An analysis by Blankely (1994) in Howie (1998:27) reveals that only 1 in 312 Black students entering the school system leaves with physical science and mathematics as final year subjects. In comparison, the corresponding figures for the other racial groups are: 1 in 5.2 Whites; 1 in 6.2 Indians, and 1 in 45.9 Coloureds.

Although the above quoted analysis is now several years old, in my experience as an educator in South Africa, there has been little improvement if any in the schooling of Blacks in South Africa. The poor performance of Black students has resulted in their inability to pursue careers that require one to have passed the school leaving mathematics examination. Tertiary institutions in South Africa have not yet found any other acceptable yardstick to use in selecting students. Whether school leaving examinations are a good reflection or not of students' capability, nevertheless, they still continue to be the only instrument used for selection.

### IN SEEKING A SOLUTION

Fingers have been pointed in all sorts of directions to demand an account for why Black students do not do well in mathematics. It is acknowledged that through apartheid policies there has been poor human and material resourcing amongst Blacks. One area that gained prominence in mathematics education circles in South Africa, and with the new democratic government, is teachers' classroom practices (more specifically, the methodology of teaching).

Even before the democratically elected government came to power in 1994, attempts had been made to try and improve classroom practice amongst Blacks. This is because what goes on in the classroom is believed to influence greatly the learning gains of students.

When it was impossible to convince the apartheid government to improve the lot of disadvantaged Black communities, Research and Development units in Mathematics and/Science Education based at universities and independent NGOs in the 1980s, intervened in the teaching and learning of mathematics and science. A National Audit

by Arnott and Kubheka (1997:54) revealed that, there were at least 36 NGO programmes in Mathematics and Science aimed at teacher up-grading throughout the country. These programmes are essentially designed to meet the need for in-service training of teachers already in the field. The aim of the NGOs is to shift teachers' classroom practices from **teacher-centredness** to **learner-centredness**.

Studies and observations on the effectiveness of the intervention programmes in Black schools have yielded findings including:

- 1) There were no sustainable changes in the teachers' classroom practices that is, from teacher-centred to learner-centred (Harvey:1999).
- 2) There are problems if classroom practices are seen not to be directly related to improving results in the existing examinations (Kitto: 1994).
- 3) What is possible in the developed world with adequate supply of human and material resources may not be possible in Black South Africa (Brodie:1998).
- 4) In the absence of support it might be wise to limit educational reform to developing the quality of existing teacher-centred teaching methods through improved resourcing, rather than attempting a radical shift in underpinning pedagogy (Harvey:1999).

The findings on the effectiveness of intervention programmes in Black South African schools including those summarised above gave rise to my study.

#### **PURPOSE OF STUDY**

The study focussed on Black students, in tertiary institutions, who have been successful in school mathematics, and their teachers. The aim of study was to learn what classroom practices students and teachers find enabling and which lead to success with reference to the South African Curriculum. Secondly, my study attempted to learn from students and teachers how those practices are carried out in a manner that is meaningful to them in their own social contexts, and why it is meaningful to them. This is against a background of intervention programmes that simply labelled teachers' classroom practices as "teacher-centred" therefore bad, and in need of changing. A shift to learner-centred classroom practices by teachers is accepted, by the interventionists, as one way of improving the success rate of Black South African students.

#### **FINDINGS FROM THE STUDY**

In the study successful Black students were asked what classroom practices helped (enabled) them and which particular teachers have been effective in teaching them mathematics.

Data gathering was preceded by a questionnaire completed by 480 students from two tertiary institutions. This was followed by individual interviews of a few selected students. From the student interviews, 14 students and 14 teachers were finally selected. Five of the students were taught in Black rural schools whilst the rest (9

students) attended schools in townships. Townships are residences formerly designated for Blacks close to the cities. Generally, they have better infrastructure when compared to the Black rural schools. Following the students' interviews, teachers were first interviewed and then observed teaching.

The study followed a grounded theory approach, where categories and themes emerged from students and teachers own responses. The following practices were cited by students and teachers as enabling: Extra classes; Friendly to us, open to us, created a good environment; Provided extra resources; Working in groups; Preparedness in class; Used Practical examples; Availability; Encouragement / Motivation; Active participation; Language used in class; Homework; Tests; Competition. Other than these practices above, my study also established the challenges that students and teachers face in the teaching and learning of mathematics. This throws some light as to why the suggested practices are critical to students' success. For this paper, I have chosen only to elaborate on two categories namely, extra classes and active participation as a sample of my findings.

#### **Extra classes**

The extra classes were conducted at different times depending on the circumstances of teachers and students. For those that took place in the school, only two teachers conducted them in the morning before classes began, one teacher created space in the school timetable to have extra classes. The rest were conducted in the afternoon during study time or free periods. Other extra classes are those conducted on Saturdays and during school holidays. The duration of the classes ranges from one to two hours. The frequency of classes was from 2 to 4 times a week.

Activities in extra classes are different from those in normal classes, between 08:00 and 14:00. The morning sessions are dominated by teaching and some class work whilst the afternoons are dominated by group work and discussion. This description of activities in the different sessions does not mean that there is no discourse in the morning sessions. My class observations showed that the majority of morning sessions had students asking questions and teachers responding. The discourse, in the afternoon sessions, is between teachers and students and mostly between students themselves. Few observed classes had vigorous discussions in morning. This somehow explains the sweeping generalisations about classroom practices in Black schools, because if class observation is done only in the morning, and for a short time, one would simply claim that meaningful dialogue between students and teachers hardly takes place in Black schools. There are however some setbacks to this practice in that not all the students are keen on these extra sessions and that, as my study has documented, they are mainly common with grade 12 students in the year when they write school leaving examinations.

For reasons why the extra classes were critical to success in school mathematics both teachers and students frequently cited the following points, which are generally learner-centred:

- Morning sessions do not allow much time for discourse as they are short and teachers hurry to cover the heavy syllabi
- Students struggle with concepts and extra classes provide students with an opportunity to catch up where they feel left out. Students struggle because they lack some basics which were supposed to have been learnt in earlier grades
- Provides students with an opportunity to teach each other
- Provides an opportunity for discussion and where the teacher simply supervises as students practice sums
- Students are exposed to different approaches to manipulations of mathematics, especially for extra classes conducted during holidays and weekends where the teachers are different. Here, students meet others from different schools. In some cases it is the very same teacher that takes students during the week
- Students have more practice of problems/sums as they learn from each other
- Provides opportunities to handle difficult tasks

From the above discussion it is obvious that opportunities get created in Black schools, with some teachers, where teachers elicit their pupils understanding and then develop concepts from there.

#### **Active participation**

Other than giving pupils a lot of tasks, in the form of homework or class work, some teachers promoted active participation by asking students to come to the board during morning sessions. Students volunteer or are randomly asked to come to the board to do sums. This was usually after a homework had been assigned the previous day. There was only one case where coming to the board followed after students had been exposed to a particular mathematical concept.

The chalkboard is usually divided into four parts or less. Whilst the students are writing solutions the teachers took the opportunity to check whether students have done the homework. After students finish the writing of solutions on the chalk board, the teacher together with students discuss the solutions, line by line. One teacher, even showed the allocation of marks for each solution. Where there were problems or misconceptions the teachers in my study embarked on re-teaching by going back to some basic mathematical concept(s) that throw light into the task at hand. In the discussions that ensued as solutions are checked students actively participated. In the mathematical discourse, that occurs, teachers were able to elicit pupils meanings and

understanding and then building upon them. An ideal situation would have been where a teacher elicits the meanings and understandings of students in a one to one basis but I found this practice to be one of the closest ways that teachers could get to pupils' meanings and then building upon them, given the large numbers and other social constraints in Black schools.

### **DISCUSSION**

There is no doubt/debate about the significance of learner-centredness. Numerous studies have shown learning gains, on the part of students, where classroom practices leaned towards learner-centredness. However, an argument arises when the status of learner-centredness in teaching and learning is raised to the level of a panacea, especially in Black South African schools. Not only that, but a problem also arises when it is presented as the only way in which teachers' classroom practices may developed (improved) in order to lead Blacks learners to success in South African school mathematics. This ignores, as my data has revealed, that rich experiences for learners can also be provided, by teachers, in a way that enables students to succeed in school mathematics in Black South Africa. These classroom practices that can be casually characterised as teacher-centred and therefore bad for any learning to take place, by those who have not taken a closer look at them.

At the centre of the argument is a lack of an interpretation or clarity, of how the concept of learner-centredness can be meaningfully implemented in Black South African secondary schools. Several studies in South Africa cited earlier have revealed that there have been no sustainable changes in Black teachers' classroom practices when attempts were made to impart the concept of learner-centredness.

Although the same South African studies record teachers showing an interest and appreciation of the concept of learner-centredness, however, teachers later resort to the same old practices. This dilemma of non-sustainability is not unique to Black South Africa, which can be classified as part of a developing world. A review of existing literature reveals a need, amongst researchers and education practitioners elsewhere, to define and elaborate on the meaning and implications for practice of successful "progressive" classroom practices such as learner-centredness, in the developing world. I must, again, state here that learning gains associated with progressive practices are supported by research in the developed world, for example, Boaler (1997) compared two schools in UK and found that there was an improvement in learning gains amongst students whose teachers implemented practices that leaned towards learner-centredness.

### **CONCLUSION**

It is not beneficial to stereo-type classroom practices into, simply, teacher-centred therefore bad, and learner centred therefore good. Even classroom practices that appear learner-centred, in how they are organised, for example students working in

groups, can be a failure depending on what goes on in there. On the other hand rich experiences can be provided in practices that appear teacher-centred. Dewey (1902/1975) in Liping Ma(1999: 153) sums it all up when he states that,

"...it is easier to see the conditions in their separateness, to insist upon one at the expense of the other, to make antagonists of them, than to discover a reality to which they belong."

My study has begun to lay a base to which learner-centredness and teacher-centredness belong to in the Black South African situation.

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