SO, WHAT DO OUR TEACHERS KNOW?

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Extended abstract

Globalisation has created many challenges for teacher training institutions. Knowledge is available almost instantaneously using media that is becoming easily accessible to people everywhere. Having knowledge virtually at the fingertips does not solve the problems of pedagogy in classrooms. We still need to train teachers who are knowledgeable in mathematics and its applications as well as pedagogical skills related to mathematics teaching. Knowing either the mathematical content well or having good pedagogical knowledge does not guarantee successful learning. This paper describes the different types of knowledge a mathematics teacher ought to possess and claims that a mathematics teacher must be well-practiced in the subject content matter. Well-practiced will imply a teacher with a well-connected and well-understood conceptual knowledge.

Fullan (1993) stated that "teacher education has the honor of being simultaneously the worst problem and the best solution in education". It is a problem in mathematics because we are not producing sufficiently good teachers and yet it is within the ambits of our own curricula that we can make a difference. There is little doubt that the onus is on teacher training institutions to reconsider how they can prepare effective future teachers to prepare learners well as they enter a rapidly changing world.

All of this is particularly important for South African mathematics classrooms. South African students' mathematics results are generally poor. Often, we seek to blame students and their previous teachers for their current performances in tests and examinations but do our teachers really know what they are teaching? This paper looks at the discourses in mathematics from the context of meaning making and it urges teachers to become reflexive practitioners. The paper also looks at some research conducted within the field of mathematics education.

There are many indications that as mathematics educators we face a barrage of difficulties and, currently, there seems to be no magic wand to rectify the situation. Mcgregor (2009), in a report in the University World News, stated that "higher education is facing a very serious problem in respect of the mathematics knowledge and manifest ability of its entering classes". In 2009, almost 13 0000 students from about 5 higher educational institutions wrote a benchmark test in their first year. The results were indeed shocking. Most frightening of all were the mathematics results. Only 7% of students were found to be proficient in the tests, which measured the skills needed to study first-year mathematics.

Some 73% had intermediate skills and would need assistance to pass, while 20% had basic skills (Mcgregor, 2009) and would need long term support. So what changed in our teaching after this report was released? Whether schools prepare students sufficiently well enough or not, what have we, as teacher educators, done to make a tangible improvement to the results? In particular, what have mathematics teacher educators done to produce mathematics teachers that are capable of turning the tide against our poor school performances?

This paper looks at empirical evidence obtained from final year Bachelor of Education and Post Graduate Certificate in Education students' knowledge. The evidence obtained is showing that all teacher educators need to be concerned and, radical improvements must be made in order to reverse the trend of poor performances in schools. Simple concepts were tested in teacher education classes and the responses scrutinized and the analyses obtained show that our pre-service teachers lack a deep conceptual understanding of simple aspects in school mathematics.