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LANGUAGE, LEARNING AND PROBLEM SOLVING: MATHEMATICAL PERSPECTIVE

T W KAMBULE

Senior Lecturer, Department of Mathematics,
University of Witwatersrand

The first Russian sputnik launch in the late fifties, sparked off a mathematics revolution in the Western World, more so in the United States of America. Curricula were drastically overhauled so that the results could make America match the Russian achievement. We in turn got some ripples of this revolution but with diminished virility.

Two decades have elapsed since; yet our curricula do not equal the possibilities that can be attained in Scientific and Technological areas. All this stems from our teaching techniques and our slow movement in curriculum development.

The teaching of Mathematics generally does not stress the basic requirements; that of transmitting the basic concepts. And since Mathematics is a highly volatile subject as far as memory retention is concerned, we must teach for understanding rather than for learning. Science equally deserves the same treatment.

The Mathematics revolution was aimed at including most learners, rather than excluding them through emphasizing the difficult aspects of mathematics. The word was "accessibility". Needless to say that American Mathematics made strides following the revolution, but this is not quite so with us.

We are gathered here today to review this position by looking into factors which could play a vital role in promoting accessibility.

We are fully aware (of) the role language plays in understanding and conceiving mathematical ideas. But our position is made adverse by the fact that the language used is not everyone's language, the majority have English as a second language, and this renders our task difficult; and, in addition, we have a great shortage of reasonably qualified Mathematics and Science teachers, thus making us use people who have to transmit ideas they hardly can grapple with sufficient understanding.

How does one solve a problem for scholars when the language used is not sufficiently grasped by the scholars or at times the teacher, which is why problem solving is such a nightmare to most pupils, let alone the pedagogue?

Most of our scholars are made to learn Mathematics and Science, rather than made to understand the basic concepts which constitute the basis of understanding.

Scores of teachers short-circuit the process and claim results; there is more emphasis on the results; they argue that getting into the nitty gritty of Science and Mathematics is time consuming, losing sight of the fact that this is more rewarding in the long run and that scholars taught this survive and go far.

At University we admit close on five hundred for Mathematics and these students come with so-called "top" symbols. The casualties in a three year period are so great that scarce twenty major. All this is a result of lack of concepts, since at that level knowing the mechanics is futile. It is the nitty gritty that counts, namely the concepts.

Also it is worth noting that Mathematics and Science cannot just be learnt but can be learnt by doing.

In teaching Mathematics and Science there should be less dependence on memory since

memory is not fully retentive but decreases with passage of time - whereas understanding is lasting. We all know the results of rote learning - futile.

In conclusion, I would plead with this conference to initiate its own learning revolution, so that our teaching techniques should stress understanding as a basis, i.e. develop conceptual preferences as opposed to just stuffing up knowledge that is cumbersome to the learner and also profitless. If we do the right thing, learning problem solving will be a much more pleasant exercise.