

MATHEMATICAL LANGUAGE AND PUPILS' PERFORMANCE

Godwin Hungwe and Ebert Nhamo Gono

Midlands State University and Ministry of Higher Education and Technology

This paper reports on an investigation that was carried out to establish the effects of specialised mathematical language on the performance of pupils at secondary school level. Since Zimbabwe's independence in 1980, the lowest pass rates in national examinations at secondary school level, have been in English and Mathematics (Riddel and Nyagura 1991). The pedagogical question arising from this scenario is whether or not the performances of pupils in these two subjects are related. Official syllabus documents, stipulate that one of the aims of mathematics education is to make pupils understand, interpret and apply mathematical information. The question of interest here is whether this is being achieved. The majority of students in Zimbabwe fall into the category which Barwell (2000) called English Additional Language. This means that mathematics is taught in English, to pupils whose first language is not English. In such situations there is always a possibility of lack of equivalents in the pupils' language for some mathematical expressions. In addition to this, a mathematical fact that appears obvious to adults may be a highly structured and stylised statement to pupils Southwell (1994).

Two mathematics tests were administered to Form 3 classes (15-16 year olds) in four randomly selected secondary schools in Harare, Zimbabwe. The first test established how pupils interpreted specialised mathematical terminology, while the second one tested the applications of the interpretations in word problems. The question- by-question analysis of the pupils' performance, revealed that many pupils used the same interpretation in answering corresponding test items in the two tests. Thus most of the pupils who failed to interpret mathematical expressions correctly, also failed to solve the corresponding application problems. For such pupils, incorrect interpretations led to incorrect application solutions. On the other hand correct interpretation resulted in correct application solution strategies. Therefore the study concluded that specialised mathematical language has an effect on the performance of pupils.

REFERENCES

- Barwell R. (2000), Plus, and add: Addition and English Additional Language learners of mathematics, in Nakahara T. and Koyama M., (Eds), Proceedings of the 24th Conference of the International Group for the Psychology of Mathematics Education, Volume 1, Hiroshima University, Hiroshima.
- Riddel A.R. and Nyagura L.M. (1991), What Causes Differences in Achievement in Zimbabwe's Secondary Schools? World Bank, Washington DC.
- Southwell, C. (1994), Mathematics in context, in Mathematics in schools, (23).