

ANALYZING "MORE THAN" AND "n TIMES AS MANY AS" IN MOZAMBIKAN BANTU LANGUAGES

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In English, comparative relations are often described using *more than* and *n times as many as* (MacGregor, 1991). The former is used to describe a linear difference (e.g. 5 *more apples than*) and the latter, a proportional comparison (e.g. 3 times as *many apples as*). MacGregor analyzing these expressions in English and in other languages found that difficulties pupils have in understanding them may vary from language to language. "In some languages, the logical form of a relation matches the grammatical form used to express it. In others, including English, grammatical form obscures logical form. Some languages offer no way of translating certain English expressions until their logical form is revealed by paraphrasing (MacGregor, 1991)". Misinterpretations of *more than* and *n times as many as* in mathematics are also reported by Zepp (1989), Dickson, Brown and Gibson (1984).

An ongoing study carried out among Mozambican Bantu language speakers, representing three different communities (*Nyungwe*: 8 participants, *Changana*:12 participants and *Makhuwa*:17 participants), showed that in local languages people may better state and understand simple linear difference problems and proportional comparison problems than in Portuguese, the language of instruction in schools.

For the research, the following verbal problem was used: *Paulo has 7 apples. Maria has 5 more apples than Paulo. Rita has 3 times as many apples as Paulo. How many apples does Maria have? How many apples does Rita have?* The problem was given to participants (unschooled adults and children) in Portuguese. The statement *Rita has 3 times as many apples as Paul* is translated into Portuguese as *A Rita tem três vezes mais maçãs do que o Paulo* (*Rita has 3 times more apples than Paulo*). MacGregor observes this statement as being seen by some pupils as a complex relation that combines difference and proportion.

The participants were asked to solve the problems in Portuguese and then, to translate into their Bantu language as clear as possible. Their statements were collected and confronted with other speakers of the same language. Preliminary results showed that people understand these relations better than in Portuguese.

References

- Dickson, L.; Brown, M.; Gibson, O.: 1984, *Children learning mathematics: A teacher's guide to recent research*, Cassell Educational, London, UK.
- MacGregor, M.: 1991, *Understanding and expressing comparison of quantities: confusion between "times" and "more"* (unpublished), University of Melbourne, Australia.
- Zepp, R., 1989: *Language and Mathematics Education*, API Press, Hong Kong.