INVERSE RELATIONS BETWEEN DIVISION TERMS: A DIFFICULTY CHILDREN ARE ABLE TO OVERCOME

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A problem children experience with the concept of division is the difficulty in understanding the inverse relations between the number of parts into which a particular whole was divided and the size of these parts (Correa, Nunes & Bryant, 1998; Kornilaki & Nunes, 1997; Squire 2002). This relation is considered crucial for the comprehension of the invariant principles of division (Nunes & Bryant, 1996). An intervention study was carried out with 34 third grade Brazilian children who exhibited such difficulties. A control group and an experimental group divided the children equally. Each of them was subjected to a pre-test and a post-test. The experimental group received an intervention that sought to make explicit the inverse relations between the division terms. The intervention involved discussions on situations that (i) required the child to comprehend the effect of increasing /diminishing of the divisor over the dividend, and (ii) explored the inverse relations between the number of parts and the size of the parts by employing problems in which the dividend was kept constant. In the division problems presented, the dividend referred to either the number of parts or to the size of the parts. The pre-test and post-test were analyzed for the number of correct answers and justifications, which varied from inadequate justifications to comprehension of the inverse relations. On the pre-test, the two groups presented the same level of difficulty. Comparisons between pre- and post-test showed that the experimental group not only exhibited a larger number of correct responses, but were also able to offer justifications expressing comprehension of the inverse relations between the division terms. The control group exhibited no improvement when comparing the two testing occasions. The conclusion was that the intervention helps children to overcome their difficulties regarding the inverse relations between division terms. The nature of the intervention and its educational implications are discussed.

References:

Correa, J.; Nunes, T. & Bryant, P. (1998). Young children's understanding of division: The relationship between division terms in a non-computational task. *Journal of Educational Psychology,* 90 (2), 321-329.

Kornilaki, E. & Nunes, T. (1997). What do young children understand about division? *Proceedings of the XXI Conference of International Group for Psychology of Mathematics Education*, Lahti, Finland. 14- 19 July.

Nunes, T. & Bryant, P. (1996). *Children doing mathematics*. Oxford: Blackwell.

Squire, S. (2002). Children´s misunderstanding of of an inverse relation. Em A. D. Cockburn & E. Nardi (Eds.), *Proceedings of the XXVIth International Conference of Psychology of Mathematics Education* (PME), Norwich Uk: UEA Norwich, 1, p. 319.