

THE CALCULATOR'S ROLE IN PROBLEM SOLVING: A CASE STUDY IN A FOURTH GRADE CLASSROOM

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In Portugal, the fundamental aims of mathematics teaching are based on the development of three skills: (a) reasoning; (b) communication; and (c) problem solving (DEB, 1998). The curriculum supports that the solving of problematic numeric or non-numeric situations should be proposed in all teaching topics. This document also refers the calculation methods that should be used in the classroom. Written procedures, mental calculation and the calculator should be present in daily routine classroom. It is important for children of this grade to be able to compute using one of these methods, as well as to be able to decide which means is more suitable for a specific situation (Abrantes, Serrazina & Oliveira, 1999; NCTM, 1991).

However, in the majority of Portuguese elementary schools, there is a certain degree of resistance to the use of calculators, which raises difficulties in its employment in problem solving situations. As a matter of fact, the Portuguese document "Matemática 2001", which reports diagnostic and recommendations for mathematics teaching and learning, presents some results on the use of calculator in first grades. For instance, almost 74% of the teachers do not use calculators to solve complex problems, 71% do not use it to explore numerical concepts and 63% do not use it to verify results (APM, 1998). It seems that many elementary school teachers ignore how powerful a calculator can be in a problem solving context.

Making an effort to improve this situation, a qualitative case study research was developed in order to understand the role that pupils attribute to calculator as a support tool for computation in a problem solving context. The study was implemented in a ten years old class in Braga, Portugal. In this study the calculator's use in solving tasks of estimation, numerical investigations and application of mathematics to real life situations was analysed, attending to strategies used and to interactions between pairs.

This presentation intends to show how was developed the research and to present and discuss its results.

Abrantes, P., Serrazina, L. & Oliveira, I. (1999). *A Matemática na Educação Básica*. Lisboa: Ministério da Educação.

APM (1998). *Matemática 2001*. Lisboa: APM / IIE.

DEB (1998). *Organização Curricular e Programas*. Lisboa: Ministério da Educação.

NCTM (1991). *Normas para o Currículo e a Avaliação em Matemática escolar*. (Tradução portuguesa do original em inglês de 1989). Lisboa: APM / IIE.