

# EFFECTS OF PRE-SERVICE TEACHING PRACTICE ON TEACHER-STUDENTS' EVALUATION OF PROBLEM SOLVING STRATEGIES

Julianna Szendrei, Budapest Teacher Training Institute

In Hungary primary teachers' preparation includes about 500 hours of teaching practice, with more than 400 hours of teamwork concerning classroom experiences. My presentation will deal with the following question: How does the teaching practice influence the teacher-students' evaluation of pupils' problem solving strategies? In order to tackle this question, an experimental study was planned. Two samples of 25 second year (before teaching practice) and fourth year (after t. p.) students were chosen. Ten primary school pupils' solutions to the same problem were analysed by the teacher-students, according to the following guidelines:

- A) Try to describe the ways of thinking of this pupil.
- B) Evaluate the solution, if the maximum score is 7.
- C) Evaluate what this particular pupil knows, and what are the necessary elements in his or her knowledge to be acquired in the direction of solving this problem.

The problem was:

*With 32 forints for stamps one can mail a letter weighing no more than 250 grams. Eva has an envelop weighing 14 grams. How many drawing sheets, weighing 16 grams each, may she put in the envelop in order not to exceed (with the envelop) the weight of 250 grams?*

It was chosen because it is a true 'word problem' (not an usual 'exercise' in Hungary!) and, according to precedent studies (see Boero and Shapiro, 1992) it allows different strategies (in particular, trial and error strategies and pre-algebraic strategies). The ten solutions were chosen amongst 300 solutions produced by fourth grade Hungarian pupils. The chosen solutions contained: different strategies; different mistakes (in particular, ineffective calculation or notation mistakes); correct numerical answers with evident loss of meaning, or wrong but reasonable numerical answers; etc.

Some preliminary analyses of student-teachers' protocols show: an overall stability of evaluation (mainly centred on formal correctness) across two years of teaching practice (and attended courses), especially as concerns item B; and (especially for items A and C) some changes as concerns the depth of analyses, the mastery of professional-technical expressions and the security in performing the task. This study raises interesting questions about the reasons for stability, and how to change the student-teachers' deep attitudes towards pupils' ways of thinking.

## References

- Boero, P. & Shapiro, L.: 1992, 'On some factors influencing students' solutions in multiple operations problems: results and interpretations', *Proc. of PME-XVI*, Durhan, Vol. I, pp. 89-96.
- Contreras, L.C.; Climent, N. & Carrillo, J. F.: 1999, 'Teachers' beliefs on Problem Solving and Mathematics Education', in K. Krainer, F. Goffree & P. Berger (Eds.), *European Research in Mathematics Education*, I, vol. III, pp. 51-62; Osnabrueck Forshungsinstitut fur Math.didaktik.
- Goffree, F.; Oliveira, H.; Serrazina, M. & Szendrei, J.: 1999, 'Good Practice', *ibid* pp. 149-169.
- Jaworski, B.: 1999, 'Teacher Education through Teachers' Investigation into Their Own Practice', *ibid* pp. 201-221.
- Grows, D.A.; Good, T.A. & Dougherty, B.: 1990, 'Teacher conceptions about problem solving and problem solving instruction'. *Proc. of PME-XIV*, Oaxtepec, Vol. I, pp. 135-142.