

PRE-SERVICE ELEMENTARY TEACHERS' USE OF CONTEXTUAL KNOWLEDGE WHEN SOLVING PROBLEMATIC WORD PROBLEMS

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Word problems play a prominent role in the mathematics school curriculum. One of the reasons for the inclusion of word problems in mathematics instruction is that they help children develop their critical and problem-solving abilities. However, previous research (e.g., Verschaffel & De Corte, 1997) has shown that children tend to ignore the situational realities embedded in contextual arithmetic word problems. The solution to each of these problems, which are referred to as problematic word problems in the literature, is not the result of the straightforward application of an arithmetic operation, as is the case in traditional school word problems. To solve problematic word problems one needs to take into consideration the realities embedded in the situational context. The present research extends Verschaffel and De Corte's findings to pre-service elementary teachers (PETs). A paper-and-pencil questionnaire was administered to 115 PETs enrolled in a state university in the USA. The questionnaire consisted of 8 experimental items and 4 buffer items. The experimental items were adapted from Verschaffel and De Corte's (1997) study. PETs' performance on the experimental items was poor. The number of correct or realistic responses varied from 2(2%) to 98(85%). One of the lowest numbers (5 or 4%) of realistic responses was for the problem: Sven's best time to swim the 50m breaststroke is 54 seconds. How long will it take him to swim the 200m breaststroke? One of the highest numbers (90 or 78%) of realistic responses was for the problem: 1175 supporters must be bused to the soccer stadium. Each bus can hold 40 supporters. How many buses are needed? Overall, only 243 (26%) responses were correct or contained a realistic comment (e.g., If he [Sven] continues at the same speed, he will take 216 sec.). While the findings of this study cannot be generalized to the whole population of PETs, the results are alarming. On one hand, this study provides additional evidence that traditional word problems are not developing students' critical and problem-solving abilities. On the other hand, future teachers lack a disposition toward realistic modeling of problematic word problems. If we want children to have a realistic perspective when modeling and solving word problems, then teachers themselves need to have the disposition toward the use of contextual knowledge to solve these problems. An implication of this finding is that some PETs need some of type of instructional intervention. I will examine the effects of instructional interventions on prospective elementary teachers in a future paper. The poster will display in both pictorial and written formats the methodology, analysis, results, and discussion of this research project and its findings.

Reference

Verschaffel, L., & De Corte, E. (1997). Teaching realistic mathematical modeling in the elementary school: A teaching experiment with fifth graders. *Journal for Research in Mathematics Education*, 28(5), 577-601.