Abstract
Semantic Nets for Solving Word Problems
(SPA - A Computer E environment)

The main problem in modeling situations and in solving mathematical problems consists of semantic analysis of the given information. The attempts to translate situation described in natural language into mathematical operations on the basis of verbal cues or even isolated propositions have failed.

Several computer environments have tried to build computer environments that will take into consideration the semantics of the dimensions described in the problem. Most of them did it in a tree like structure and in a sequential order.

SPA is a computer environment that tries to capture the entire structure of the situation in a schematic manner. The basic scheme is a 3-argument relation and not a binary operation. Filling the arguments in a scheme is based on semantic analysis of the entire text. The combination of more complex problems is based on whole schemes rather than on isolated propositions. This architecture reduces the number of generic problems to a manageable size.

In addition the system can react to the students' performance and supply an exact and relevant feedback that helps the student to proceed on the right track. The rationale and the implementation of the SPA approach will be presented at the workshop.