Software GOLUCA: Knowledge representation in Mental Calculation

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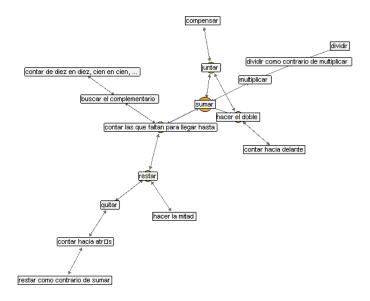Spain

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ABSTRACT

In this paper we present the GOLUCA software (Godinho, V. Luengo, R. & Casas, L., 2009) that automatically allows obtain graphical representations in the form of Pathfinder Associative Networks (Schvaneveldt, 1990) of the cognitive structure of a subject in a particular area of expertise. In this case, we studied the strategies used for mental calculation.

Usually, it appears that many teachers, although considered competent in mental calculation, are not consciously aware of the strategies they use and therefore not use them methodically to improve the teaching for their students.

In the context of a teacher training activity were identified in the first place, what were the most frequently used strategies. Once identified, subjects were asked to perform a test using the software GOLUCA. All possible pairs formed between different strategies were presented to subjects at random, and they were asked to allocate a score of similarity, depending on the relationship they felt that had between one and another strategy.

Using GOLUCA software, networks were obtained representing the relationship between different strategies, visually highlighting what the most important were, the relationship between them, and the consistency of this relationship. We can see one of these networks:

Among the results of the work can be noted that the technique allows visually identify significant differences between teachers who are considered at higher or lower mental calculation skills and also identify the most appropriate strategies to become aware of teach them effectively.

The GOLUCA software, with its ease of use and versatility, is useful for identifying the cognitive structure of the subjects in this area and others that are being investigated.

Keywords

Knowledge Representation, Mental Calculation, Pathfinder Associative Networks, Software.

Observations