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The king and prisoner puzzle: a way of introducing the components of logical structures.

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Summary: The purpose of this paper is to provide issues related to student understanding of logical components that arise when solving word problems. We designed a logic problem called the King and Prisoner Puzzle – a linguistically simple, yet logically challenging problem. In this paper, we describe various student solutions to the puzzle and discuss the issues with students' logic. In particular, it is thought-provoking that invalid arguments in students' solutions to the puzzle are based on a lack of precise understanding of some basic logical components. This emphasizes the necessity of additional teaching to form mutual understanding of the meaning of the logical components.

Classification: E35 A20

Keywords: teaching and learning of logic; logical component; conditional and its converse; meaning of “a” and “there is a . . . ”; negation of a statement

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