Do games help the learning of probability?

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Abstract

The value of using games to assist students' learning of probability concepts was investigated, primarily using qualitative methods. Games, although generally useful in mathematics for helping children learn, may not automatically be as useful in helping students develop normative probability concepts, particularly because of the nature of randomness.

Sixteen students (Years 7 and 8) participated in the study. The students initially completed a written questionnaire which was designed to explore their understanding of probability. The students' misconceptions were categorized according to various types of probability reasoning. Two games were played by the students in groups of four, over two successive days; a game of chance on the first day, and a game of strategy and chance on the second. The game sessions, each lasting about 45 minutes, were audio-taped and video-taped. Group interviews were conducted during and following the playing of the games.

The study found differences between students in their levels of involvement in and discussion about the games, and differences between the two types of games in the degree of interaction within groups, all of which influenced the games' effectiveness in developing probability learning by the students. There was evidence of inconsistencies in some students' probability reasoning and understanding. When the empirical results from the games conflicted with their ideas, the students were not necessarily aware of such conflict so consequently did not adjust their thinking.

For the use of such games to maximize the opportunities for the students' learning of probability, some implications of the study for classroom teachers are suggested. Consequently the role of and knowledge and understanding of the teacher is critical to ensure effective learning of probability concepts by students.

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