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Supporting students' probabilistic reasoning through the use of technology and dialogic talk.

Pope, Sue (ed.), Proceedings of the British Society for Research into Learning Mathematics (BSRLM). Proceedings of the British congress of mathematics education, BCME-8, University of Nottingham, UK, April 14–17, 2014. London: British Society for Research into Learning Mathematics (BSRLM). 215-222 (2014).

Summary: Research has shown that pupils and many adults have intuitions about probability that are often at odds with accepted probability theory. Drawing on the literature on probabilistic reasoning, effective pedagogical approaches and the use of technology tools, our aim is to examine the relationship between students' talk together, their use of TinkerPlots software and the development of their reasoning about uncertain outcomes. In this paper we report on findings from the first iteration of a design study conducted in an afterschool club for Year 7 students in Exeter. More specifically we describe the trajectory of two students making conjectures about the fairness of some games involving combined events, testing and revising their initial theories based on simulation data. Our analysis shows that these students' use of dialogic talk in combination with the technology leads to a shift from intuitive reasoning to probabilistic reasoning.

Classification: K53 C53 U73
Keywords: probability theory; probability; concept formation; probabilistic reasoning; educational research; design study; lower secondary; student-student interaction; communication; dialogic talk; technology use; computer as educational medium; statistical software; data analysis; computer simulation; graphical representations; games of chance
http://www.bsrlm.org.uk/BCME8/BCME8-28.pdf