

Abstract

Research has shown that elementary students have various difficulties in determining probabilities of events. In this study, we sought to investigate and develop children's probabilistic thinking. Our research questions were: How do children's initial understandings of probability develop?; and What sequence of teaching strategies can be used to support children's development of probabilistic thinking? The study participants had completed fourth grade and were entering fifth grade. One pre-interview was conducted for each student. During pre-interviews, students generally exhibited limited knowledge of probability concepts. Three out of the four students had difficulty when attempting to describe or represent the probability of a given event. We planned seven one-hour lessons based on the pre-interviews to aid in students' understanding of probability language, exploration of experimental versus theoretical probability, and different methods of representing probabilities. Post-interviews were conducted the ninth week. The pre-interview, post-interview, and each of the seven lessons were audio and video recorded, transcribed, and analyzed qualitatively to assist in analyzing student reasoning. At the conclusion of the study, each student showed progression toward understanding concepts associated with elementary probability. Our research suggests that in order to help students fully understand probability concepts, probabilistic ideas should be introduced during the early school years and built upon as students progress through each grade level. Our study also provides examples of probability tasks that may seem simple to teachers, but prove to be challenging for beginning learners of probability. Teachers should keep these challenges in mind as they foster children's probabilistic thinking.