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Abstract

What attitudes about subjects do students bring into class, and how do these influence the learning of new topics? What prior knowledge including naïve conceptions do students possess, and under what conditions will some students still continue to use these naïve conceptions although they successfully learned formal theories? Questions like these refer to individual differences between students, an important determinant of student learning. Aspects of individual differences refer to facets as diverse as differences in cognitive learning factors, like prior knowledge, and differences in affective factors, like attitudes and beliefs toward academic subjects. Features of student learning discussed in this thesis represent contemporary educational 'puzzles'. The first puzzle refers to misconceptions in statistics and probability theory that students bring into class as naïve prior knowledge. The relationship, or rather, the absence of it, between levels of misconceptions and other components of prior knowledge in statistics and student characteristics are discussed in the first two empirical studies. Attitudes and beliefs towards academic subjects appear to be a factor related to misconceptions. In the final three empirical studies the composition of attitudes toward statistics and other subject matters is investigated.