

# EXPLORING THE CHANGE ACROSS A GENERATION: FIRST-YEAR PHYSICS STUDENTS' CONCEPTIONS AND STUDY APPROACHES BETWEEN 2002-2018

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It is often not contested that students' performance in STEM disciplines is declining. As well as the more recent results from standardized testing of younger students, it is not uncommon to hear university STEM professors anecdotally report of the failure of more recent cohorts to live up to the standard of their predecessors. However, it is rare to find studies which address the purported declining standards amongst students entering university STEM studies using the same instruments over an extended time period. This repeated cross-sectional study examines how students upon entry into university physics studies respond to an established conceptual survey on mechanics as well as two surveys probing epistemological beliefs. A total of 2448 first-year undergraduate students were surveyed at an Australian research-intensive university from 2002 to 2018. Our findings show that students' conceptions of the structure of physics knowledge and their study approaches, remain remarkably stable. In the measures of physics conceptual understanding, students in the later cohorts return significantly higher scores over the study period. We discuss the backdrop in which this study has occurred and argue that these findings offer a unique insight into similarities and differences of a narrow band of student cohorts over more than a decade.

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