

UNDERSTANDING DEVELOPMENT OF SCIENTIFIC INQUIRY THROUGH LEARNER EXPECTATIONS OF AN UNDERGRADUATE PHYSICS LABORATORY PROGRAM

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BACKGROUND

Education can be thought of as a system formalising cross-generational knowledge transfer, allowing learners to participate in society. 'Folk knowledge' acquired from their environment is added to by accumulated secondary knowledge (Geary, 2008).

Science as a discipline is informed by the nature of science. Teaching scientific inquiry must adapt to the learner's prior development (Cornish et. al., 2019). At university, the learner starts transitioning into communities of practice (Vygotsky, 1978). This is captured and measured at the Australian level by the Science Learning Threshold Learning Outcomes (Jones, Yates & Kelder, 2001; Barrie et. al., 2015).

AIMS

The aim of the study is to understand learner's expectations of the development of scientific inquiry skills in the transition between learning environments.

DESIGN AND METHODS

A newly developed survey instrument was delivered to first-year undergraduate physics students in 2015 and 2017, receiving 1493 responses. Exploratory and confirmatory factor analysis was conducted in IBM SPSS 24 and AMOS to generate factors corresponding to scientific inquiry.

RESULTS & CONCLUSIONS

Regardless of their prior development, learners start university with similar expectations of developing their understanding of science inquiry. This study informs the development of students as they integrate into the community of practice of science.

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