



Positioned as expert scientists: Learning science through Mantle-of-the-Expert at years 7/8

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Abstract

This study emerged from concern that students disengage from science at an early age. It investigated whether using the drama-based teaching approach Mantle-of-the-Expert would support students' interest in and learning of science. To do this a mixed method action research study was conducted. A science-based unit was co-taught with the classroom teacher over nine-weeks with a class of Year 7/8 students in a semi-rural school.

A Mantle-of-the-Expert unit was devised to support learning about buoyancy and stability with the students positioned as expert scientists re-investigating the sinking of the Wahine in Wellington Harbour, New Zealand on April the 10th 1968. Student assessment data, audio transcription of classroom episodes, the researcher's reflective blog, and classroom artefacts were gathered, analysed and used to describe student learning. Student and teacher perceptions of Mantle-of-the-Expert as an approach to learning science were sought via interviews.

The findings show that the participant framework of Mantle-of-the-Expert produced a collegial inclusive learning environment. Working within an ethical 'expert' scientist position enhanced students' motivation to learn and produce high-quality work, as well as enlarging their conception of how science affects humanity. The students' expert status was supported through a hybridised instructional model incorporating both transmissive and investigative components and using artefacts to create a conceptual bridge between students' actual knowledge and fictional knowledge.

Students demonstrated marked improvement in their understanding of the science concepts taught in their written and oral work. Student perceptions of their self-efficacy in science remained relatively unchanged and their attitudes towards school science declined slightly. There was evidence they gained a greater appreciation of the kinds of work and careers scientists have and that they were more aware of the contribution of science to everyday life.

The findings have implications for curriculum policy and practice in science and drama education through evidence that a Mantle-of-the-Expert based unit can contribute to science and to drama education. Mantle-of-the-Expert is one way that effective practices from both fields can be melded together to generate relevant and effective science learning opportunities. It contributes the notion of 'fictional others' to the theorisation and design of the Mantle-of-the-Expert approach as a way of encouraging ethical thinking and academic excellence. It also speaks of the value of using Mantle-of-the-Expert to enhance conceptual change.

