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Teaching socioscientific issues and ethical decision-making: a self-study

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Abstract

The research outlined in this thesis involved reflecting on my teaching practice in a self-study to investigate whether changes could be made to the way I teach ethical decision-making on socioscientific issues. I wanted to improve the students' ability to justify ethical decisions they made as part of an assessment.

During 2011 I actively gathered data for a self-study in science education, investigating my teaching of ethical decision-making to my Year 13 Biology students. I was aware that students were not justifying the ethical decisions they made as part of an assessment done in the course, and wanted to develop their ability to do this. The theoretical framework of this research was constructivism. In the case of this self-study, I considered myself to be the learner, making sense out of what I found. The self-study was conducted in a New Zealand secondary school Biology classroom.

The tool used for enabling the students to improve their ethical decision-making is located on the Biotechnology Learning Hub. The Ethics Thinking Tool was developed for use within science classrooms, and provides a selection of ethical perspectives for students to explore.

Data were gathered from a range of sources, in particular my professional journal and interviews with a group of students in my Year 13 Biology class. The interviews, held at the conclusion of the course to minimise ethical concerns, focussed on the teaching that had occurred in a unit on socioscientific issues. These interviews, when analysed alongside my professional journal and critical conversations with a mentor, provided a rich source of data.

Ten critical incidents occurring within the teaching of this unit were identified as being significant events in terms of either the teaching process or the

research process. These were reflected upon and whilst each of these critical incidents revealed insight into my practice, four of them seemed to offer real impetus for change in teaching practice. These four critical incidents were unpacked for further, more in depth, analysis.

Four main ideas emerged from the data, one from each of the critical incidents analysed in depth. I now recognise the significant value of being critically reflective on my teaching, particularly when using new teaching tools or resources. The second insight is that I found that my intended outcomes as a teacher did not always match what the students thought the intended outcomes were. Whilst this dissonance did not necessarily impact on the experience for the students, as a teacher it is important to reflect on differing perceptions within the same teaching and learning environment. It also highlights the tension in secondary education between preparation for university versus preparation for citizenship. The third insight is that it is also essential to teach general research skills as well as subject-specific research skills. My fourth insight is that there is significant value in talking to students about more than the content. Further, conversations with a pedagogical focus can be beneficial for both the teacher and the learner. The result of all of these insights has been a shift in how I conduct conversations with students. Only by changing the focus have I been able to make changes that I hope ensure students develop competencies they can use in future contexts.

As a consequence of this study I intend to take the notion of self-study back to my school to enable other teachers to use the framework developed as part of this research to explore their practice. This type of innovative inquiry within the secondary setting has the potential to lead to real change in the way teachers reflect on their own practice, allowing them to make informed change that will make a difference for both the teacher and the learners, in a collaborative and supportive environment.

Acknowledgements

Originally published in 1949, Joseph Campbell's book[1] on comparative mythology introduced what was at the time the revolutionary idea of the Hero's Journey. Campbell outlined the notion of adventure and transformation that exists in nearly every myth. I started to think of my doctoral journey as my own hero's journey. The Hero's journey is divided into three acts, Separation, including the Call to Adventure; Descent and Initiation, including The Ordeal; and the Return, including the Road Back. I suspect many people, from many walks of life, might identify with such a journey.

Importantly, a Hero's Journey features a cast of characters. I like to think that obviously I am the Hero in this journey, but I would like to acknowledge a number of other cast members. First, there are a number of 'villains' who I do not wish to thank but will quite honestly acknowledge. These (and their role) are Shadow (to destroy), Shape shifter (to question and deceive), Trickster (to disrupt/defy), Tempters (to tempt/mislead/lure), Enemies and Rivals (to oppose/defeat). All of these characters are internal, played by the parts of my own personality that on occasion will procrastinate.

Of much greater significance are the cast members in my journey who I wish to acknowledge and thank for the part they have played in allowing me to complete my journey. The first character is the Herald, whose role it is to warn, announce or challenge. Maureen Hyett played this role admirably, and without her push I would not have been enrolled in an EdD.

The role of Mentor is to guide, and for accepting this part I thank Rose Hipkins. Without the rigour of our conversations or the advice and guidance she offered, the path of my journey would have been far more challenging.

[1] Campbell, J. (2008). *The hero with a thousand faces*. Novato, California: New World Library.

I think of my supervisors as the Threshold Guardians, those whose role it is to test and protect. Campbell describes the threshold guardians as waiting at the 'zone of magnified power'. I acknowledge and thank Margaret Walshaw and Nick Zepke of Massey University, and Alison Campbell of Waikato University for their support and guidance through this zone. From them I learned much about the research process and academic writing, and I have appreciated both the support and challenges that they have offered.

Finally, Campbell describes the Allies and Helpers, whose role it is to support, aid and assist the hero. I wish to acknowledge here the allegiance of my college, including the Board of Trustees, my colleagues and of course the students, particularly those who willingly gave their time to assist me on my journey.

My family and friends have been a huge source of strength during this process, and I wish to particularly acknowledge my nieces and nephews, Angus, Olive, Ella and Felix, as well as my close friend Julie who have all provided me with assistance in the form of diversion when it was most needed. I also acknowledge my father Brian, who has always believed I would get there eventually.

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