University of Victoria | Graduate Studies

Notice of the Final Oral Examination for the Degree of Doctor of Philosophy

of

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MEd (University of Alberta, 1985)
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"Assessing the Need for Culturally Responsive Science Curriculum: Two Case Studies from British Columbia"

Department of Curriculum and Instruction

Wednesday, September 9, 2015
1:00pm
David Turpin Building
Room A136

Supervisory Committee:
Dr. Leslee Francis Pelton, Department of Curriculum and Instruction, University of Victoria (Supervisor)
Dr. Todd Milford, Department of Curriculum and Instruction, UVic (Member)
Dr. John Anderson, Department of Educational Psychology and Leadership Studies, UVic (Outside Member)

External Examiner:
Dr. Eleanor Abrams, Department of Education, University of New Hampshire

Chair of Oral Examination:
Dr. Lara Lauzon, School of Exercise Science, Physical and Health Education, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies

Abstract

This inquiry began with a global question: Why are Aboriginal high school students underrepresented in the sciences? This led to the following series of questions: What is science? Is Aboriginal knowledge about nature and naturally occurring events science? What is science literacy? What are culturally responsive approaches to science education? The initial inquiry began as part of the Aboriginal Knowledge and Science Education Research Project, University of Victoria, British Columbia, Canada. Over time the inquiry morphed into two case studies. The first case study focused on a quantitative exploration to examine the current state of student performance in British Columbia secondary school science (Biology 12, Chemistry 12, and Physics 12), and mathematics (Principles of Mathematics 12). The examination of performance trends for over a decade confirmed the underperformance of Aboriginal students in secondary school sciences and mathematics when compared to non-Aboriginal students. The second case study sought to establish criteria, identify, and document a model project that incorporated the methods of western modern science (WMS) knowledge and ways of knowing represented by traditional ecological knowledge and wisdom (TEKW), local ecological knowledge (LEK), and indigenous knowledge (IK) in a local environment (place-based) and that was culturally responsive to students and faithful to science education principles. An exemplar Canadian model project was identified operating within the Heiltsuk First Nation territory by the Qqs (pronounced “kucks”) Projects Society. This project exemplified the *Te Kotahitanga Project* in Aotearoa/New Zealand by engaging student interns in science in place. Qqs partnered with a number of non-governmental organizations to develop the Supporting Emerging Aboriginal Stewards (SEAS) Initiative, whereby interns used WMS techniques to study their traditional territory in the Great Bear Rainforest. The SEAS project was deemed to make science more relevant for Aboriginal students, who may otherwise have rejected it because of a possible conflict with their cultural value systems and personal relevance.

There is a persistent tension between science espoused by WMS, and the wisdom and sacredness of indigenous knowledge and wisdom (IKW). Finally, recommendations are proposed for a Two-row Wampum Belt or a trans-systemic practice that would enable IKW and WMS knowledge to operate in a spirit of mutual cultural responsiveness, followed by recommendations for future study.