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

of

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MSc (University of Victoria, 1993)
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“Characterization of Critical Thinking Indicators in Problem-Based Learning Online Discussions of Blended and Distance Undergraduate Environmental Science Students using the Community of Inquiry Model”

Department of Curriculum and Instruction

Thursday, August 24, 2017
10:00 a.m.
Clearihue Building
Room B107

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

External Examiner:
Dr. Norman D. Vaughan, Department of Education, Mount Royal University

Chair of Oral Examination:
Dr. Natia Frank, Department of Chemistry, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies
Abstract

This mixed methods study compared distance and blended undergraduate environmental students at Royal Roads University (RRU) as they participated in online asynchronous PBL case discussion forums as part of an Ecotoxicology course. This study examined the differences between distance and blended teams in their activity, approaches, and levels of critical thinking in an online PBL activity. Critical thinking was evaluated using the cognitive presence indicators of the community of inquiry framework developed by Garrison, Anderson and Archer (2001). An organization indicator was added to the framework to capture posts that organized the discussion forum layout or the team and the distribution of work. The use of the organization indicator in the thread map analysis revealed that teams adopted one of two approaches to the online PBL activity, either an organic approach or an organizational scaffold approach. An open coding approach to content analysis of the posts was used to develop two coding schemes to capture the use of learning scaffolds and degree of online collaboration respectively. These coding schemes were used to compare scaffolding and collaboration behaviours of distance and blended students during the online PBL activity. The study found that whether teams used the online discussion forums or face-to-face discussion as their primary communication method influenced both the timing and the critical thinking content of the online discussion forums. Student moderators’ choices influenced the structure and approach to the PBL activity, as well as the form of document assembly that was observed in the online discussion forums. The learning scaffolds coding scheme demonstrated that both distance and blended students were reading beyond the assigned reading list. Both distance and blended students appeared to develop skills in identifying information gaps over the progression of the PBL case problems as their observable level of critical thinking remained consistent as the problem scaffolding was faded. Although both environmental and non-environmental work experience may be used to scaffold team learning, they are used differently. Online PBL is a good fit for the Royal Roads University Learning and Teaching Model and may be used to provide some consistency across blended and online course content.