American Games of Chance. National Council of Teachers of Mathematics, Salt Lake City, UT (2008).

8. Francis Pelton, L., Pelton, T., & Moore, K. *Integration of Laboratory Activities, Demonstrations, and Projects in Enriched Mathematics 9-12 Courses to Foster Science and Mathematics Literacy.* The Canadian Society for the Study of Education, Saskatoon, SK (2007).

9. Pelton, T., Francis Pelton, L., & Moore, K. *Clickers in the Class: Student Perceptions of an Audience Response System.* The Canadian Society for the Study of Education, Saskatoon, SK (2007).

10. Francis Pelton, L., Pelton, T., & Moore, K. *Learning by Communicating Concepts through Comics.* Society for Information Technology and Teacher Education, San Antonio, TX (2007).

11. Pelton, T., Francis Pelton, L., & Moore, K. *Geotrekking: Connecting Education to the Real World.* Society for Information Technology and Teacher Education, San Antonio, TX (2007).

Selected Publications

1. Atlantic Evaluation and Research Consultants. (2007). *K – 12 Mathematics Curriculum Review: Final Report.* Conception Bay South, NL: Author. Retrieved from http://www.ed.gov.nl.ca/edu/NLMathReport.pdf

2. Francis Pelton, L., Pelton, T. & Moore, K. (2007). Learning by Communicating Concepts Through Comics. In R. Carlsen et al. (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2007* (pp. 1974-1981). Chesapeake, VA: AACE.

3. Pelton, T., Francis Pelton, L., & Moore K. (2007). Geotrekking: Connecting Education to the Real World. In R. Carlsen et al. (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2007* (pp. 2083-2088). Chesapeake, VA: AACE.

University of Victoria | Graduate Studies

PROGRAMME

The Final Oral Examination
for the Degree of

DOCTOR OF PHILOSOPHY
(Department of Curriculum and Instruction)

Karen Moore

2001	University of Victoria	MEd
1996	Memorial University	BEd
1994	University of Ottawa	BA

"Improving the Teaching and Learning of Mathematics: A Program Evaluation of Newfoundland and Labrador's Excellence in Mathematics Strategy"

Monday, July 28, 2014
10:00 AM
David Turpin Building, room A144

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

External Examiner:
Dr. Florence Glanfield, Faculty of Education, University of Alberta

Chair of Oral Examination:
Dr. Anthony Vickery, Theatre Department, UVic

Abstract

This mixed methods study is a program evaluation of Newfoundland and Labrador's Excellence in Mathematics Strategy commencing in 2007 with a curriculum review leading to the implementation of the Western and Northern Canadian Protocol Common Curriculum Framework in K-12 mathematics along with the implementation of numeracy support teachers in classrooms across the province. The goals of the Strategy were to improve student achievement with the curriculum change; to support teachers, students, and parents; and to encourage an increased interest and enthusiasm for mathematics.

This study included a quantitative analysis of the provincial mathematics assessment results in Grades 3, 6, and 9 from 2007 to 2012 by comparing assessment items that were common to both the old and new curricula, and comparing results of items anchored in 2011 and 2012. Assessment results demonstrated inconsistent results on common curriculum items. Results of items anchored decreased in all grades in 2011 but items anchored in 2012 increased in all grades.

Another quantitative analysis was conducted on the effect of numeracy support teachers (known elsewhere as mathematics specialists, coaches, or mentors) on students' mathematics achievement in schools having Grade 3 and 6 classrooms receiving numeracy support from 2007 to 2011. Schools with numeracy support in Grades 3 and 6 for four years were mostly lower-achieving schools and had achievement results move closer over time to schools receiving one or no years of support which were mostly higher achieving schools. Schools receiving support in both Grades 3 and 6 had the highest proportion of students moving from below standard to at/above standard on open-constructed response questions.

A qualitative analysis was conducted of focus groups with numeracy support teachers and supported the quantitative analysis of the provincial assessment results. Numeracy support teachers shared their experiences of teachers' unconventional assessment methods and students' increase in communicating, reasoning, problem solving, and strategizing about mathematics. Lower-achievers were more engaged in these classrooms and manipulative use in problem solving improved. Numeracy support teachers witnessed physical and attitudinal changes through planning, modelling, co-teaching, and reflecting with teachers thereby helping change the culture of students' classrooms. The goal of numeracy support teachers to build capacity in their teachers through collaboration was evident in some classrooms as beliefs and habits were changing, but some were resistant.

Awards, Scholarships, Fellowships

2006 – 2008	Fellowship, University of Victoria
2006 – 2009	Graduate Student Travel Grant, University of Victoria
2008, 2009, 2011	Newfoundland and Labrador Teachers Association Centennial International Presenter Grant

Selected Presentations

1. Moore, K. & Turner, D. *Teaching with Number Lines: The Best Kept Secret in Mathematics.* National Council of Teachers of Mathematics, Indianapolis IN (2011).

2. Turner, D., & Moore, K. *G-Organize your Thinking.* National Council of Teachers of Mathematics, Indianapolis IN (2011).

3. Francis Pelton, L., Pelton, T., & Moore, K. *Creating Comics: Connecting Mathematics, Art, and Writing to Explain Concepts.* National Council of Teachers of Mathematics, San Diego CA (2010).

4. Moore, K. & Barron N. Numeracy Games: *I Have... Who Has... ? and More.* National Council of Teachers of Mathematics, Washington, DC (2009).

5. Pelton, T., Francis Pelton, L., & Moore, K. *Technology Outreach Workshops: Teaching Teachers Technology by Teaching Their Students.* The Canadian Society for the Study of Education, Vancouver, BC (2008).

6. Pelton, T., Francis Pelton, L., & Moore, K. *Going on a Geotrek: Gonna Catch a Big One.* National Council of Teachers of Mathematics, Salt Lake City, UT (2008).

7. Francis Pelton, L., Pelton, T., & Moore, K. *Lahal, Hidden Ball, and Stick Dice: Probability Investigations Using Native*