UBC Faculty of Education

FACULTY OF EDUCATION

Department of Curriculum and Pedagogy

The Effect of Modeling Innovative Technology Use in STEM Teacher Education on Teacher-Candidates' Knowledge for Teaching and Views on the Nature of Science

Dr. Marina Milner-Bolotin

Department of Curriculum & Pedagogy

UBC Teacher Education

- A B.ED. OPENS UP A WHOLE WORLD OF OPPORTUNITIES IN CLASSROOMS & BEYOND
- ~700 K-12 TEACHER CANDIDATES ANNUALLY

Modeling Innovative Pedagogies

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Physics Education

PAPER

Engaging physics teacher-candidates in the production of science demonstration videos

Gerald Tembrevilla and Marina Milner-Bolotin

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Abstract

This paper describes how future physics teachers' involvement in annual Family Math and Science Day—a public outreach event at the University of British Columbia, Canada—has a potential to transform them as physics demonstration experts and amateur video producers. These science demonstration videos serve as teaching and learning resources not only for their own coursework, practicum, and post-graduation, but also as a useful resource for their peers and other educators. The production of demonstration videos was framed around studies that support physics teacher-candidates' engagement in hands-on science, science communication, technology to promote active learning.

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PHYSICAL REVIEW PHYSICS EDUCATION RESEARCH **12,** 020128 (2016)

Investigating the effect of question-driven pedagogy on the development of physics teacher candidates' pedagogical content knowledge

Marina Milner-Bolotin, Davor Egersdorfer, and Murugan Vinayagam
Department of Curriculum and Pedagogy, Faculty of Education, The University of British Columbia, 2329 West Mall, Vancouver, British Columbia V6T 1Z4, Canada
(Received 29 April 2016; published 7 September 2016)

This paper describes the second year of a multi-year study on the implementation of Peer Instruction and PeerWise-inspired pedagogies in a physics methods course in a teacher education program at a large research university in Western Canada. In the first year of this study, Peer Instruction was implemented consistently in the physics methods course and teacher candidates were asked to submit five conceptual multiple-choice questions as a final assignment. In the second year of the study we incorporated PeerWise online tool to facilitate teacher candidates' design of conceptual questions by allowing them to provide and receive feedback from their peers, and consequently improve their questions. We have found that as a result of this collaboration teacher candidates improved their pedagogical content knowledge as measured by the rubric developed for the study.

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FEATURE ARTICLE

FAMILY MATHEMATICS AND SCIENCE DAY AT UBC FACULTY OF EDUCATION

BY MARINA MILNER-BOLOTIN AND VALERY MILNER

Despite the continuous efforts of provincial governments to revise and improve science, technology, engineering and mathematics (STEM) K-12 education, the performance of Canada's youth on international assessments, such as PISA, is gradually declining [1, 2]. Moreover, many Canadian youth turn away from STEM subjects in secondary schools, thus closing doors to exciting and economically viable future career opportunities [3]. preparation is likely to be rather limited. As a result, many British Columbia K-9 teachers struggle to engage their students in meaningful STEM learning. In order to support teacher-candidates in acquiring positive attitudes about STEM and learning how to engage children and their families in informal STEM educat we founded the UBC F Mathematic

LUMAT 1(5), 2013

Modeling Active Engagement Pedagogy through Classroom Response Systems in a Physics Teacher Education Course

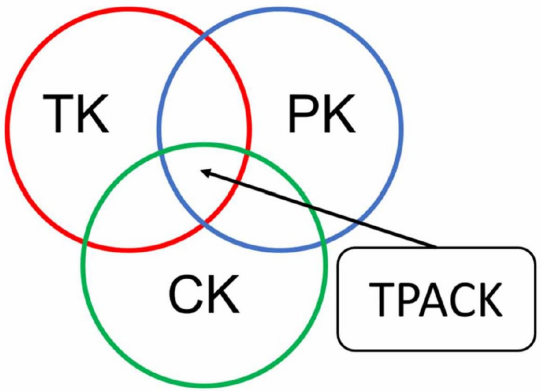
Marina Milner-Bolotin
Department of Curriculum and Pedagogy, Faculty of Education, The University of British Columbia • marina.milner-bolotin@ubc.ca

Heather Fisher
Department of Curriculum and Pedagogy, Faculty of Education, The University of British Columbia

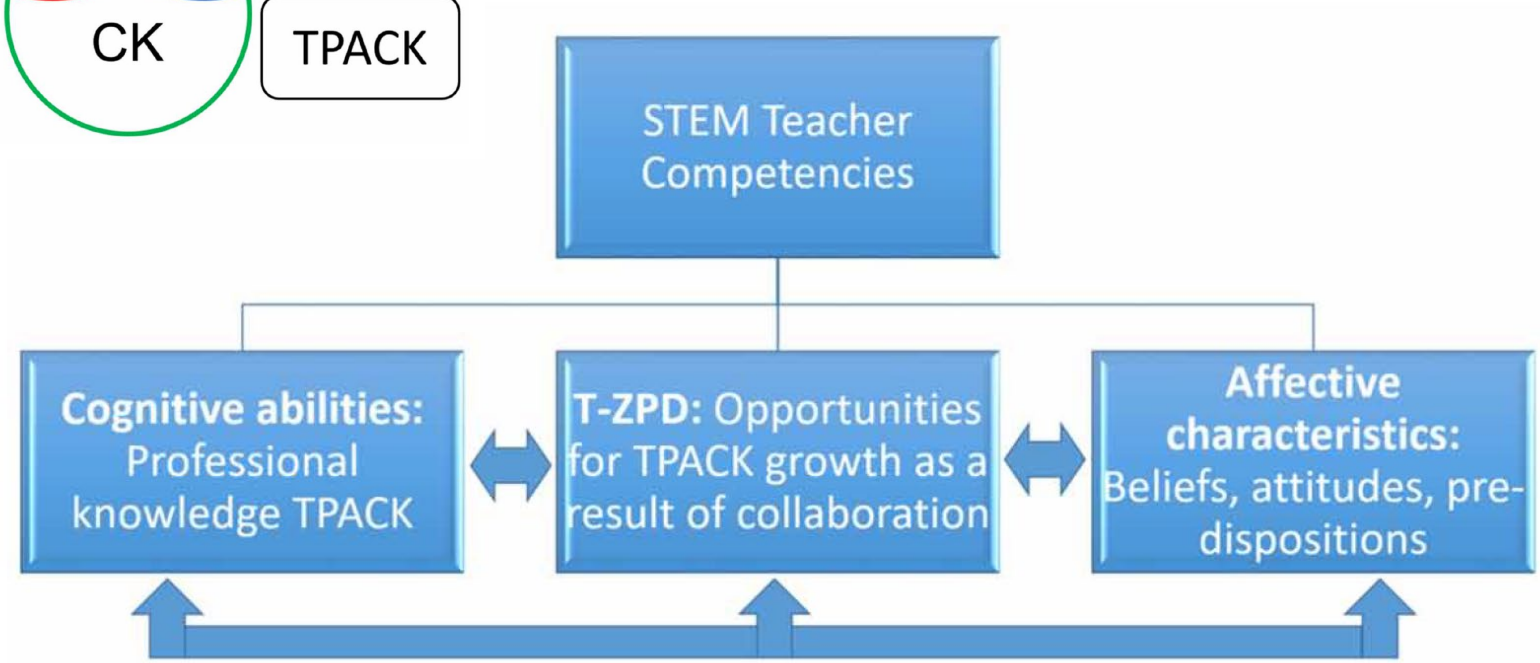
Alexandra MacDonald
Department of Curriculum and Pedagogy, Faculty of Education, The University of British Columbia

Abstract One of the most commonly explored technologies in Science, Technology, Engineering and Mathematics (STEM) education is Classroom Response S instructors generate in-class discussion by soliciting st ... the distributi

Knowledge for Teaching Science

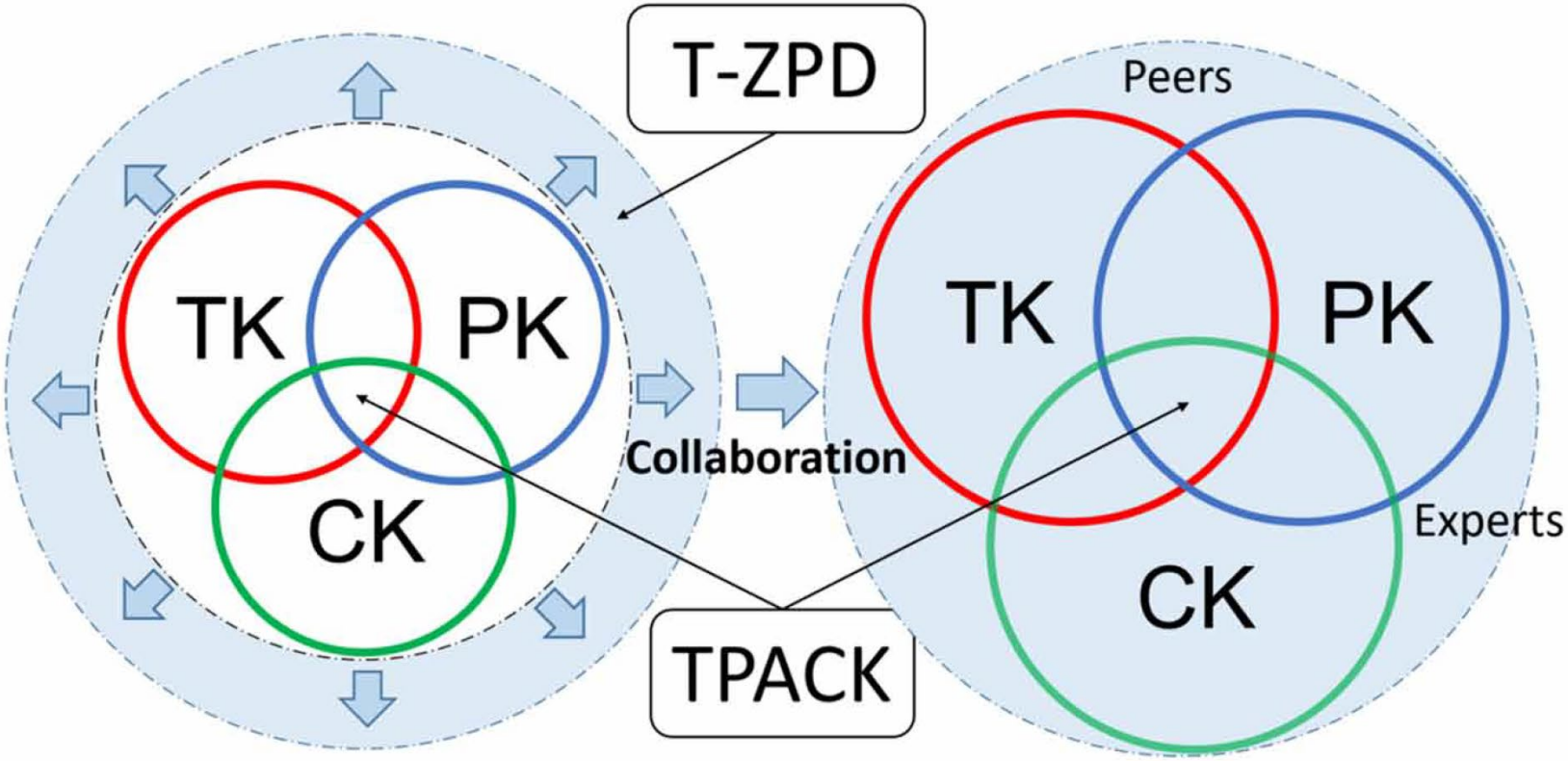


What knowledge do teachers need to acquire to be successful science teachers?



Milner-Bolotin, M. (2017). Technology-supported inquiry in STEM teacher education: Collaboration, challenges and possibilities. In I. Levin & D. Tsybulsky (Eds.), *Digital Tools and Solutions for Inquiry-Based STEM Learning* (Vol. 1, pp. 252-281). Hershey, PA: IGI Global.

Knowledge for Teaching Science



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Directions for Further Research

- What knowledge for teaching do we want TC to acquire?
- What matters for STEM teacher education?
- How do we facilitate this knowledge acquisition?
- What is the role of TCs' active engagement in teacher education?