THE DEVELOPMENT OF ON-LINE GRADUATE PROGRAMS IN STEM EDUCATION

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THEME: Teacher education and professional learning in STEM

BACKGROUND AND OBJECTIVES

Before the Covid-19 pandemic, a team of UBC faculty members developed a 2-year, on-line, cohort-based, Master of Science Education program to provide professional development for practicing K-12 teachers. We realized that many educators in rural, remote areas a) have limited access to high-quality graduate professional development; b) cannot fit synchronous face-to-face professional development into their busy schedules; c) require support and mentorship; d) have few local science educators to collaborate with. The on-line curriculum delivery model approach addressed these challenges. Our initial 2018 intake was flooded with applications, as has been the case ever since. It speaks loudly to the demand and need for such graduate programs – particularly in the post-pandemic world. The demand subsequently prompted us to develop and launch two other on-line M.Ed. programs in STEM Education – *Mathematics Education* (2020); *Media and Technology Studies* (2021), and a fourth one to be launched in Environmental Education (2024). These programs will complete the set of STEM teacher education M.Ed. programs. This symposium will bring together the architects and foundational instructors of the programs to discuss a) programs' design; b) lessons learned; c) the evolution of the inaugural model which led to the development of other on-line graduate STEM education programs. Further, we will discuss the evaluation research results that investigated the impact of online STEM education graduate programs on STEM teachers' pedagogy, understandings, and attitudes.

SESSION STRUCTURE

The target audience are educators involved in University-based STEM Education and Teacher Professional Development. The workshop will comprise 5 short 8-minute presentations by the architects and developers of the UBC's Master of Education (STEM Education) programs, followed by 45 minutes of collective sharing of audience perspectives and experiences which focus on the "how to" and key lessons learned in developing such kinds of programs in the following stages: 1) Overview; 2) Vision – goals, target audience, structure; 3) Cohort structure and course planning; 4) Teaching in the program; 5) Evaluation of the program and ongoing improvements; 6) Participants will brainstorm ideas for their own online programs and will be provided feedback; and 7) Summary.

IMPLICATIONS

The intended outcomes/implications of this workshop have relevance for all post-secondary institutions that either have or are planning on-line delivery of graduate STEM education program for practicing educators. The collective years of wisdom and experience, together with the audience's input will open new opportunities for current programs, and pathways for those considering such ventures.

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