Abstract

Certified teachers in British Columbia (BC) schools can be assigned to teach secondary mathematics without having a major, minor, or formal background in mathematics. This is known as out-of-field teaching. These non-mathematics subject specialist teachers (NMSSTs) must learn or relearn the subject matter of mathematics to teach secondary mathematics. This study investigates what professional learning activities NMSSTs participate in to gain subject matter content knowledge in mathematics, which activities these teachers believed best facilitated the acquisition of subject matter, and which they believed helped them to teach secondary mathematics better. This was a descriptive study using survey methods. Sixteen professional learning activities were considered. The survey questionnaire was distributed and completed online. Sixty-two NMSSTs completed the survey in full. Most learned the subject matter autodidactically from teaching secondary mathematics, referring to textbooks, or going online. However, formal learning activities such as completing a graduate degree in mathematics or a mathematics-related field best facilitated the acquisition of the subject matter and helped in teaching mathematics better. Other findings include the following: learning from an expert in the field was highly valued; professional learning days were not highly valued but frequently participated-in; the perceived level of subject matter content knowledge of those who completed a graduate degree and those who did not were the same; the NMSST characteristic of perceived level of subject matter content knowledge did not influence participants in this study to self-identify as mathematics subject specialists. Recommendations for practitioners include not learning the subject matter in isolation and to find a mentor. Recommendations for school leaders are to redesign professional development days and to consider purposeful teaching assignments. Recommendations for future research were to develop a self-assessment tool and to implement a study on subject matter acquisition of NMSSTs in a master of mathematics education program.

Keywords: content knowledge; out-of-field teaching; professional learning; experiential learning; self-directed learning; subject matter