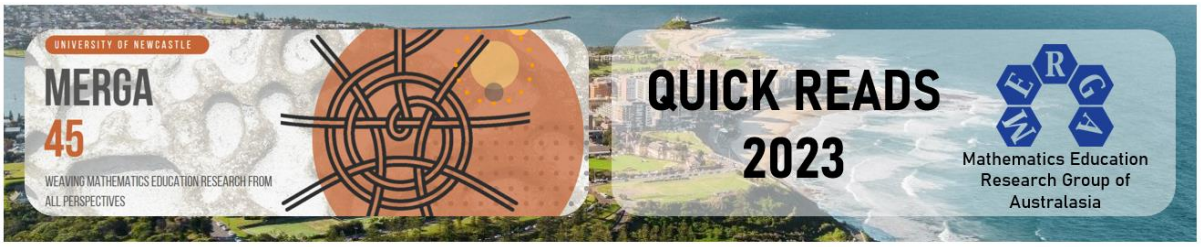

Preservice Secondary Mathematics Teachers' Perceptions of Teacher Knowledge and its Sources

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In this research, we investigated a group of preservice secondary mathematics teachers' (PSMTs') perceptions of teacher professional knowledge and of sources of that knowledge. This is important because teachers' perceptions (both inservice and preservice) can influence their professional learning decisions. The informants for this research were PSMTs who expressed interest in participating in a research project aiming to enhance their representational competence. The research was advertised in two mathematics education units, in the Bachelor of Education (BEd) and Master of Teaching (MTeach) programmes, at the authors' university. Within that project, interested PSMTs completed an open-ended questionnaire containing eight items sourced from the literature. Relevant to this paper are Items 1 to 4 (below) where the aim is to access the PSMTs' perceptions of the types of professional knowledge that teachers of mathematics should have (Item 1) and how that knowledge is developed (Item 3), with a specific focus on how knowledge of students is gained (Item 4). From the entire population enrolled in two units (n = 30), six second-year BEd and six first-year MTeach PSMTs (n = 12; 40%) voluntarily completed the questionnaire. Nine of them were majoring in mathematics while the other three were studying a minor in mathematics.

Item #1: What type of professional knowledge should a teacher of mathematics have?

Item #2: How important is it for teachers to have this knowledge?

Item #3: How do teachers continue to enhance their professional knowledge?

Item #4: How do teachers know about their students' strategies and understanding of a particular mathematical content?

Data analysis has revealed that PSMTs place greatest emphasis on mathematics content knowledge and mathematics pedagogical knowledge, two components of teacher knowledge that have been generally considered as key factors for effective mathematics teaching and students' mathematics learning. This is perhaps to be expected in a subject such as mathematics, which faces unique challenges among school disciplines in terms of student engagement, student anxiety, the wide range of applications, and cultural expectations. The PSMTs expect to gain most of their knowledge through formal preparation within the professional learning system rather than through self-study or through interactions with peers. This emphasises how important it is for schools and professional associations to provide regular formal learning opportunities, because teachers may otherwise not (usually) be self-motivated to continue improving their skills independently of this. Saying that, we would like to see a study done of the professional development opportunities in Australia for mathematics teachers, to determine whether the range of topics being taught matches with what preservice, and practising, mathematics teachers feel are the most important areas to know. What gaps, if any, are there in professional development opportunities, and are all the knowledge domains being adequately explored by the professional service providers?