Internationally Educated Mathematics Teacher Candidates: Speaking About Mathematics, Language, and Society

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ABSTRACT

This paper addresses the issues noted among diverse student teacher population at one Canadian university. In her previous research, the author found three main concerns expressed by the internationally educated teacher candidates, namely the communication concern (e.g., use of grammar, vocabulary, pronunciation, accent, etc.), concern for power and authority in the classroom, and the socio-cultural acceptance concern. This study builds on the previous results and addresses the experiences of mathematics IETCs, in an attempt to find how the concerns theory plays out when the IETCs use language to navigate practice teaching in Canadian schools, what kind of discourse of power they see in the cross-cultural encounters, and how they use mathematics discourse to counteract the broader social discourses.

KEYWORDS

Culture, Language, Mathematics Teaching, Pre-Service Teachers

INTRODUCTION

The study described in this paper sought to contribute to the discussion about how mathematics teachers in training (teacher candidates) describe their practicum teaching experience mediated by their own, their schools’, and their students’ language and culture. Mathematics has its own language that consists of symbols, formulas, diagrams, and tables. Pedagogically, teacher candidates whose first language is not English and who are not confident in their English language skills, may prefer to teach using nonverbal mathematics interpretations, handouts, and seat and individual student work. As Lindquist (president of NCTM 92-94) emphasized, “Mathematics is a language and … this language is best learned in a community of other learners” (Lindquist & Eliot, 1996, p. 2), but this requires that one bridges the gap between ordinary language (that they may not have fully developed either) and the language of mathematics. Mathematics topics could be presented verbally (with different levels of sophistication), visually (through graphs, charts, diagrams, animations), and symbolically (using abbreviations, formulas, and expressions). Furthermore, mathematics can be rooted in real-life contexts, or introduced as a theoretical reasoning system. Also, language and culture have a place in mathematics class, although there is much work to do to uncover all the nuances of their interactions. This is especially important since mathematics is commonly viewed as a “culture-free territory” (Bishop, 1995),
Mathematics has somehow always been felt to be universal and, therefore, culture-free. It had in colonial times, and for most people it continues to have today, the status of a culturally neutral phenomenon in the otherwise turbulent waters of education and imperialism. Of course, it goes without saying that it was also conventional wisdom that mathematics was value free. (pp. 80-82)

In the Canadian school system, internationally educated teacher candidates (IETCs) may be more vulnerable than other teacher candidates. They often have strong accent or can be described as visible minorities. While Andrew, Cobb and Giampietro (2005) show that for “acceptable, good, very good, and outstanding teachers, there is no significant correlation between verbal scores and expert assessment of teacher effectiveness” (p. 343), these IETCs are often labelled by their associate teachers as low in verbal abilities and therefore less competent to teach because “it is difficult for students to understand them.” In addition to the resistance they experience in schools, the IETCs may be reluctant to follow Canadian curriculum instructions that, for example, emphasise communication in the mathematics class (to the extent that it is used as a component in the student evaluation process).

Schram, Feiman-Nemser and Ball (1990) showed that the mathematics textbooks are used differently by teachers based on their experience; drawing from their teaching practice or schooling in other countries, the IETCs may be shy in participating in the mathematics classroom discourse and fall back on using simple(r), in terms of language, textbook examples. Furthermore, according to Costa, McPhail, Smith, and Brisk’s (2005) findings, mathematics textbooks or curriculum materials may be written in language not sensitive for the users (students and teachers alike) whose first language is not English. Costa et al.’s faculty institute participants (i.e., faculty members from different disciplines, doctoral students, and public school personnel) found that textbooks often use “the ‘short, chunky, often incomplete’ sentences … to give directions […] and that there are] semantic issues within math texts such as discussion of the ‘legs’ of a triangle, [that the English Language Learners may] trip over” (p. 110-111). In addition, in countries in which mathematics textbooks tend to refer “to recognisable situations and use terms and expressions from everyday life …, [d] oing mathematics presupposes a good knowledge of [mainstream] language and culture” (Elbers & de Haan, 2005, p. 46). Elbers and de Haan, call the process of translating everyday problem into the language of mathematics, mathematization.

Pimm (1987) noted that whenever mathematics and everyday language share some words, in the absence of mathematical meaning students tend to “borrow” the meaning from everyday language. Students not familiar with the meaning of some terms may ask for clarification, not because they wish to learn the language, but in order to complete mathematization. In that way mathematics discourse mediates solving realistic tasks expressed in school language. Aronson and Laughter (2016) relate this process to Paulo Freire’s (1921-1997) ideas of pedagogy based on sociocultural perspectives.

It may be “that all teaching is mediated by language, and thus all teachers are language teachers” (O’Connor, 2015, p. 38). Therefore, all teachers—as communicators, educators, evaluators, educated professionals, and socializing agents of children—must be experts in language issues related to teaching and learning (Fillmore & Snow, 2000). While it is easy to make an argument that children’s future depends on their language skills, where does it put IETCs, who may need to “survive” teacher education program and teaching practice without receiving systematic and intensive preparation in English language and mainstream culture?

Attracting teacher candidates from diverse backgrounds (in terms of social class, ethnicity and primary language; Au, 1993) is recognized as important, since there are many students in Canadian schools with such backgrounds. However, there are arguments which speak against recruiting teachers from diverse cultural and linguistic backgrounds on the basis that they will serve as panacea
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