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Preservice Teacher Learning to Help ELS Understand Mathematical Problems

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Preservice Teacher Learning to Help ELS Understand Mathematical Problems

Abstract

There is a common belief that teachers do not need to differentiate their instruction for English Learners (ELs) and that helping ELs adjust in school culture is not a teacher's responsibility (Walker, Shafer, & Liams, 2004). This belief is due to their lack of proper training to teach ELs, as statistics show only 13% of teachers are adequately prepared to teach ELs while more than 40% of teachers have ELs in their classrooms (NCES, 2002). Responding to the great need for an adequate teacher preparation for EL in mathematics education, this study was designed to investigate preservice teacher (PSTs) learning to help ELs understand mathematics.

Keywords

Equity and Diversity, Problem Solving, Teacher Education-Preservice

Disciplines

Bilingual, Multilingual, and Multicultural Education | Science and Mathematics Education

Comments

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PRESERVICE TEACHER LEARNING TO HELP ELS UNDERSTAND MATHEMATICAL PROBLEMS

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Keywords: Equity and Diversity, Problem Solving, Teacher Education-Preservice

There is a common belief that teachers do not need to differentiate their instruction for English Learners (ELs) and that helping ELs adjust in school culture is not a teacher's responsibility (Walker, Shafer, & Liams, 2004). This belief is due to their lack of proper training to teach ELs, as statistics show only 13% of teachers are adequately prepared to teach ELs while more than 40% of teachers have ELs in their classrooms (NCES, 2002). Responding to the great need for an adequate teacher preparation for EL in mathematics education, this study was designed to investigate preservice teacher (PSTs) learning to help ELs understand mathematics.

The problem space model (Campbell, Adams & Davis, 2007) was adapted to construct a conceptual framework for this study in order to address the following questions: (a) What strategies do middle school PSTs use to help ELs understand cognitive demanding problems? (b) In what ways do middle school PSTs change in using strategies as they worked with ELs and after they have received interventions? Three middle school mathematics PSTs volunteered to participate in this multiple-case study. Participants prepared a one-hour lesson the same week based on the same problem, each designing their own lessons. After each session, the PSTs were interviewed and provided research-based EL interventions (Chval & Chavez, 2011). The collected data (lesson plans, interviews, video, reflections, and surveys) were analyzed using *the constant comparative analysis method* (Fram, 2013). We developed a code manual after coding implemented strategies in our conceptual framework.

Data showed our intervention influenced certain strategies more than others. All of the PSTs did not consider connecting mathematics with students' life and culture before the relevant intervention. Another impact of the intervention manifested in the PSTs' use of visuals (pictures, drawings, or diagrams). They started using various visuals in more math-related ways after the related intervention. Designing a linguistically and conceptually rich lesson in order to make it accessible to ELs is an important skill for teachers of ELs. Hence, PSTs need to develop this skill in their preparation programs and consider the four components of the conceptual framework.

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