The impact of bilingual treatment on the math skills of Hispanic high school algebra students

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Abstract
This dissertation was designed to measure the impact of instructional techniques in the Foundations of Algebra classroom to bridge linguistic barriers between Hispanic students and the language of teaching. Two consecutive years of failing to meet anticipated yearly growth among Hispanic students in Algebra I, as determined by the North Carolina End of Course exams, indicated a cognitive gap among these students when it comes to learning mathematics.

The writer developed an experiment to be delivered among 9 sections of Algebra in a North Carolina high school. The control group used Microsoft PowerPoint slides created for every lesson plan determined by the school system's pacing guide over the course of one semester, using the adopted Algebra I textbook (Prentice Hall, 2004) as reference. Supplemental worksheets came from the accompanying Study Guide and Practice Workbook.

The treatment group used the same Microsoft PowerPoint slides as the control group, with the addition of Spanish subtitles for key words and concepts presented during lesson introduction. The subtitles were a smaller font and in a different color. Upon completion of the instruction, Hispanic students were allowed to form monolingual working groups to delve into application. Their worksheets also came from the Study Guide and Practice Workbook but in Spanish.

The researcher examined differences in cognitive domain of both groups using analysis of variance (ANOVA) in pre- and post-test data from the software NovaNet, as well as countywide administered semester final exams. Affective domain changes pertaining to attitudes regarding mathematics as determined by a student questionnaire were compared with frequency distribution on responses. Changes in classroom climate were assessed using the Classroom Environment Scale and teacher interviews.

The treatment group, which exercised the greatest fidelity in experimental guidelines, showed greatest gains in math application skills, while expressing feelings of stronger class affiliation, teacher support, and rule clarity.

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Chemistry and mathematics equally or otherwise. (ii) Laboratory practical have positive impact on SS2 students academic achievement in biology, chemistry and mathematics equally or otherwise. (iii) Girls achieve more academically than boys after laboratory practical lesson/experience in biology, chemistry and mathematics. (iv) Student knows the scientific skills they ought to acquire from practical lesson in the three science subject under study. The scope is also delimited on SS2 biology, Chemistry and mathematics student and their practical achievement on the following contents of SS2 biology, Chemistry and mathematics scheme of work.