

## *Graduate Mathematics Seminar*

### **The Impact of Teacher Self-Efficacy on Methodology and the Use of Graphing Technology in Teaching Factoring Quadratic Functions: Perspectives of International Introductory Algebra Teachers**

**Malgorzata Mart EdD**  
*University of Concordia*



**Abstract:** The primary purpose of the study was to determine whether there is a relationship between self-efficacy of international algebra teachers and their level of incorporating technology in teaching factoring quadratic functions to introductory algebra students. The secondary purpose of the study was to examine the influence of self-efficacy on the perspective of international teachers with respect to the methods they use to teach factoring quadratic functions to introductory algebra students. The participants, 54 mathematics educators from 15 countries on five continents, replied to the UVGIA survey instrument. Quantitative analysis of data brought two results. There is a strong positive relationship between the level of self-efficacy of teachers and their level of implementations of technology regardless of country of origin. The second result shows that the level of self-efficacy of math teachers is statistically different in individualistic countries versus collectivistic countries, revealing higher self-efficacy in collectivistic countries. However, their level of implementation of technology is not statistically different. Qualitative analysis of open-ended questions showed teachers' perspectives on teaching and learning factoring quadratic functions to introductory algebra students. Teachers identify students' lack of basic mathematical skills, their lack of understanding graphs, difficulties with identifying the purpose, and difficulties factoring when the leading coefficient is different than 1. Teachers recommend incorporating meaningful applications into mathematical methods with real-life contexts, graphs and visualizations, and systematic reviews of background knowledge. They suggest removing automatic procedures in favor of conceptual understanding and eliminating some methods of factoring.

***When:*** Monday, September 20, 2021, 6:00 – 7:00 pm

***Where:*** Zoom

One University Drive, Camarillo, California 93012-8599 Tel: (805) 437-8967 Fax: (805) 437-8864 [www.csuci.edu](http://www.csuci.edu)