ZMATH 2012c.00081

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A longitudinal look at attitudes and perceptions related to the integration of mathematics, science, and technology education.

Sch. Sci. Math. 112, No. 1, 20-30 (2012).

Summary: The purpose of this study is to provide an in-depth analysis of attitudes and perceptions related to the integration of mathematics, science, and technology education of preservice teachers preparing to teach STEM disciplines. Longitudinal data by individual cohort and across 7 years of the Integrated Mathematics, Science, and Technology (MSAT) Program are reported, analyzed, and interpreted to help design and improve preservice teacher education programs and improve teaching and learning in STEM classrooms. Results of quantitative analyses indicate that there was generally no change in preservice teacher attitudes and perceptions related to the value of the integration of mathematics, science, and technology education– they clearly valued integration at the onset and at the completion of the program. However, there was a significant change in preservice teacher attitudes and perceptions related to integration feasibility in terms of inefficiency and difficulty. Implications for teacher education programs include: (a) more exposure to concepts, processes, and skills in STEM that are similar, analogous, complementary, or synergistic; (b) familiarity with instructional strategies and access to resources; (c) deeper understanding of content across STEM; and (d) strategies for collaboration and team work to make integrated instruction time more efficient and less difficult to manage.

Classification: B50 C29
Keywords: educational strategies; preservice teacher education; preservice teachers; teacher education programs; familiarity; attitude measures; STEM education; longitudinal studies; attitude change; student teacher attitudes; pedagogical content knowledge; teamwork; cooperation; integrated curriculum
doi:10.1111/j.1949-8594.2011.00111.x