

ABSTRACT

DISSERTATION: The Influence of Self-Efficacy Beliefs and Metacognitive Prompting on Genetics Problem Solving Ability among High School Students in Kenya

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PAGES: 247

Within the framework of social cognitive theory, the influence of self-efficacy beliefs and metacognitive prompting on genetics problem solving ability among high school students in Kenya was examined through a mixed methods research design. A quasi-experimental study, supplemented by focus group interviews, was conducted to investigate both the outcomes and the processes of students' genetics problem-solving ability. Focus group interviews substantiated and supported findings from the quantitative instruments. The study was conducted in 17 high schools in Western Province, Kenya. A total of 2,138 high school students were purposively sampled. A sub-sample of 48 students participated in focus group interviews to understand their perspectives and experiences during the study so as to corroborate the quantitative data. Quantitative data were analyzed through descriptive statistics, zero-order correlations, 2 x 2 factorial ANOVA, and sequential hierarchical multiple regressions. Qualitative data were transcribed, coded, and reported thematically. Results revealed metacognitive prompts had significant positive effects on student problem-solving ability independent of gender. Self-efficacy and metacognitive prompting significantly predicted genetics problem-solving ability. Gender differences were revealed, with girls outperforming boys on the

genetics problem-solving test. Furthermore, self-efficacy moderated the relationship between metacognitive prompting and genetics problem-solving ability. This study established a foundation for instructional methods for biology teachers and recommendations are made for implementing metacognitive prompting in a problem-based learning environment in high schools and science teacher education programs in Kenya.