

A STRUCTURAL EQUATION MODEL ON PRO-SOCIAL SKILLS AND EXPECTANCY-VALUE OF STEM STUDENTS

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ABSTRACT

The study was conceptualized to develop a structural model on how Mathematics Performance depends on students' self-regulated learning skills, grit, and expectancy-value towards STEM. A Covariance-Based Structural Equation Modeling (SEM) was done on the survey data collected from 664 senior high school students from 17 STEM high schools in Zamboanga del Sur. The use of three latent constructs was acknowledged and validated using confirmatory factor analysis (CFA). The structural component of SEM analysis presents the Respecified Self-Regulated Learning Skill–Expectancy-Value towards STEM – Grit – Mathematics Performance (Respecified SRL-EV-GR-MP) model as the most parsimonious fit indicating as the best empirical support for the theoretical model of this study, $\chi^2(36)=50.308, p>.05$, $RMSEA=.02$, $SRMR=.02$, $NFI=.99$, $CFI=.99$, $GFI=.99$, $TLI=.99$. The reported goodness-of-fit indices show that the respecified model has the best fit to the data with a 14% predicted proportion of variance. The mathematics performance of senior high school students of STEM curriculum is attributable to their high expectancies for success and perceived values of the STEM tasks, high grit, and high self-regulated learning skills. The model showed that the expectancy-value of STEM together with their grit have explained large proportions of variances of STEM learners' mathematics performance. Students' grit and expectancy-value of STEM positively and significantly affect their scholastic achievements. Results suggested that when students have high self-regulation in doing and completing STEM-related tasks, they tend to achieve high life-long perseverance, expectancies, and values of STEM, which consequently increase their mathematics performances. Also, evidence of mediating and moderating grit effects was observed in the concurrent effects of expectancy-values towards STEM and the self-regulated learning skills towards students' mathematics performance. Other implications of the study and directions for future research were also provided.

Keywords: self-regulated learning skills, grit, expectancy-value of STEM, mathematics performance, structural equation modeling