

EXPLORING THE POSSIBILITY OF ASSESSING STUDENTS' MOTIVATION TO LEARN SCIENCE IN NAMIBIA

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The aim of this study is to adapt and validate an assessment instrument on motivation to learn science among Namibian secondary school students, with a view to combine it with the beliefs about the nature of science instrument currently being developed and validated. Research has shown that beliefs about knowledge and knowing are related to students' motivation. Five factors of motivation were adapted as subscales from the five-point Likert scale students' motivation towards science learning (SMTSL) questionnaire. The subscales are self-efficacy, active learning strategies, science learning value, achievement goal and learning environment stimulation. The factors of motivation serve as the theoretical framework for the study. The paper-and-pencil instruments were used and a sample of 403 students (226 male and 177 female) from two regions (Omusati and Ohangwena) in Namibia participated in the study. The reliability (Cronbach's alpha) of the whole instrument was .76. The reliability of the subscales ranged from .57 to .65. An exploratory factor analysis on the 20 items using principal components extraction with varimax rotation yielded five factors with eigenvalues greater than 1. The factor solution accounted for 49% of the total variance. To validate the measurement model in which construct validity and reliability were assessed, confirmatory factor analysis in AMOS was employed. The results showed that the model had some statistical fit for the data (RMSEA=.04, CFI=.91, SRMR=.05). Convergent validity was evaluated using average variance extracted (AVE) and composite reliability (CR). The AVE values for the five constructs ranged from 0.36 to 0.44. The low AVE values indicate that the constructs can only explain less than 50% of the variance. Composite reliability values ranged from 0.62 to 0.76. The composite reliability of three of the constructs were adequate with values above the acceptable cut-off point of 0.70. These constructs are achievement goal (0.76), learning environment stimulation (0.73) and active learning strategies (0.71). The other two constructs, namely, science learning value and self-efficacy had lower CR values of 0.69 and 0.62, respectively. These findings indicate that the instrument has some validity and reliability, however, the measurement model falls short of the desired properties in terms of adequate convergent validity. Students' self-efficacy, science learning value, learning strategies, learning goal and the learning environment are important motivational factors attributable to science learning motivation. Research related to the relationship between motivation and beliefs about the nature of science are hardly found in Namibia. The motivation to learn science instrument will be examined for further improvement with the view to combine it with another instrument that is currently being validated to assess students' beliefs about the nature of science in Namibia.