

EFFECTIVENESS OF APPLYING SELF-DETERMINATION THEORY IN TEACHING MATHEMATICS: A CASE STUDY IN HATTON EDUCATION ZONE

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Self-Determination Theory (SDT) is a motivation theory which emphasizes student centered learning under three main subcomponents, viz. autonomy, competence and relatedness. The teacher becomes a facilitator based on the above theory. This approach is different from traditional teacher-centered method and it is meant to be more effective in improving student performance in mathematics. This study compares the effectiveness of applying SDT against traditional method. The sample selected, based on the convenience sampling method, consisted of eighty (80) Grade 10 students and five (5) mathematics teachers from three schools in Hatton Education Zone. Data collection was conducted through questionnaires, semi-structured interview schedules, and question papers. Quantitative data were analyzed using SPSS 17.0 and qualitative data were analyzed using thematic analysis. The lesson unit selected for the study is perimeter including length and perimeter of a sector of circle. Two homogeneous samples were identified as control and experimental groups through a pre-test which was used to explore students' prior knowledge. Prior to the intervention, a questionnaire was administered to both groups to investigate motivation and aspirations of students. The experimental group was instructed according to the aspects of SDT and the traditional method was used for the control group. Students' performance, motivation and aspiration were examined in both groups after the intervention. An independent sample *t*-test showed that there is a significant difference in students' performance between the control and the experimental groups ($t = 12.224, p = 0.012 < 0.05$) according to the post-test marks demonstrating higher performance in the experimental group ($mean = 64.75$) compared to the control group ($mean = 29.95$). Moreover, there are significant differences on students' motivation ($t = 8.152, p = 0.001 < 0.05$) and aspirations ($t = 20.048, p = 0.0001 < 0.05$) between the control and the experimental groups, showing higher motivation ($mean = 2.96$) and aspirations ($mean = 3.25$) in the experimental group. Thus, performance, motivation and aspiration of students have increased with the lessons prepared based on the aspects of SDT as compared to the traditional method of teaching. Qualitative findings reveal that time management and non-willingness by the teachers on SDT are problems to introduce new teaching methods. However, most of the students experienced positive attitudes on the use of the new approach of teaching. Thus, it is suggested that the present classroom teaching method be changed to student centered approach with the use of aspects in SDT.

Keywords: Mathematics, Self-Determination Theory, Student-centred teaching