A Study of Students' Difficulties in Geometry at the High School Level

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Abstract

Education plays a vital role in the realization of sustainable human resource development of any nation. The education of children is the central purpose of any school and the teacher is the most single resource in producing quality education. Learning geometry in mathematics with understanding is the goal of every teacher of mathematics. In order to develop learning environments that promote understanding efficiently, the teacher needs to be aware of students' difficulties in geometrys. The purpose of this research is to study students' difficulties in geometry of Grade (10) students for improving teaching-learning process in geometry. Eighteen Basic Education High Schools were selected as the sample. There are (10) chapters in Grade (10) mathematics textbook. Among them, (2) chapters were selected in this study. Total population was (5608) students (Bio 1767 + Eco 3841). Sample size for this study was (980) students (Bio 460 + Eco 520). A specially designed test which includes (45) multiple choice items was used to find out the students' difficulties in which areas and (45) Likert scale items which are assigned by (1) very easy, (2) easy, (3) ordinary, (4) difficult, and (5) very difficult. A questionnaire for Grade (10) students was used to know the reasons for Grade (10) students' difficulties in geometry and a questionnaire for Grade (10) mathematics teachers was used to know the difficult chapters and the reasons for Grade (10) students' difficulties in geometry according to their teaching experience in mathematics. Independent samples t-test was used to determine whether there were significant differences of difficulties in geometry of Grade (10) students in mathematics achievement, selected schools, strata, selected chapters; knowledge level, comprehension level, application level(KCA); the whole area of Geometry by gender and by subject combinations. There were significant differences of difficulties of Grade (10) students in chapter (9) [Circles, Chords and Tangents] and in knowledge level questions [$t = .022$ for chapter (9) and $t = .003$ for knowledge level questions] by gender. There were significant differences of difficulties of Grade (10) students in chapter (9) ($t = .000$), in geometry ($t = .031$), in the schools ($t = .017$) and in the strata ($t = .002$) by subject combinations.. According to the research findings of this study, some difficulties of Grade (10) students from selected Basic Education High Schools are; (1) difficulty in properties of chords, and(2) difficulty in circle theorems.

Key words: geometry, difficulty, a given task

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