LEARNING ABILITY OF G C E (ORDINARY LEVEL) STUDENTS IN GEOMETRY

A PROJECT REPORT PRESENTED BY

BUHARDEEN KANSOOR RAHMAN

to the Board of Study in Science Education of the
POSTGRADUATE INSTITUTE OF SCIENCE

in partial fulfillment of the requirement
for the award of the degree of

Master of Science in Science Education

of the

UNIVERSITY OF PERADENIYA
SRI LANKA
2009

LEARNING ABILITY OF G C E (ORDINARY LEVEL) STUDENTS IN GEOMETRY

B. KANSOOR RAHMAN
PGIS
University of Peradeniya
Peradeniya
Sri Lanka

In Sri Lankan schools, geometry is taught in small units as part of the mathematics subject with a few of the basic theorems and results. Interest in geometry among senior secondary school students is noticeably low.

The purpose of this study is to identify the reasons and pinpoint the weaknesses for the lack of interest in geometry among the secondary school students and to suggest some possible ways to improve the geometry education.

Teaching-learning processes of cyclic quadrilateral in mathematics at grade eleven classes in various schools in five districts were observed. Fifteen mathematics teachers were requested individually to prepare the lesson in any approach they would prefer and to conduct the lesson. Information was gathered from Advanced Level and university students and also opinions of teachers were considered. A post-test was conducted to find out the performance of the students.

From the classroom observation reports and the post-test, we conclude that teaching methodology of geometry affects the learning ability of the students.

From the post-test, we found that most of the students do not use geometrical notation and technical terms in appropriate ways and do not attempt to 'proof type' questions.

From the discussion and opinion polls, we conclude that teachers work with lack of subject knowledge and also pedagogical knowledge and skills in geometry.

From the classroom observation, answering of post-test, teachers' opinion and responding questionnaire, we conclude that the following 12 abilities are needed for

learning geometry: understanding a problem or theorem, identifying the 'Given' part and 'To be proved' part in the given theorems or problems, contemplations, drawing a geometrical figure, identifying the 'Given' part and 'To be proved' part in the drawn figure, translate the problem or theorem to geometrical notations according to the figure, analysis and synthesis the geometric figures, recalling necessary theorems, making logical conclusion, using symbols, notations and logical terms, computing an angle and/or length and proving a theorem or a problem. Learning geometry also develops some abilities which are planning, logical thinking, logical arguments, creativity, reasoning, decision making and logical conclusion.