THREE MODELS OF GROUP LEARNING STRATEGIES, MATHEMATICAL ABILITY AND GENDER AS DETERMINANTS OF STUDENTS' LEARNING OUTCOMES IN MAPWORK

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Geography as a school subject has laudable purposes and relevance; its recognition as one of the core subjects in the senior secondary school education; its central position between the liberal arts, social and natural sciences; its importance in the present age of globalisation, characterised with IT cannot be underestimated.

In spite of these, the performance of students has continued to decline over the years. This poor performance has been attributed to a lot of factors among which are; the gross inadequate instructional materials, problem of large classes, poor quality of instruction just to mention a few. These and other factors have led to the search for better strategies that will enhance students performance in spite of the apparent negative factors.

Statement of the Problem

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-     The study determined the relative effects of cooperative learning strategy, mastery learning strategy and integrated group learning strategy (an integration of cooperative learning strategy and mastery learning strategy), and conventional method (the control) on students' learning outcomes in mapwork (an aspect of geography). The study also investigated the moderating effect of mathematicalability and gender on achievement in mapwork, mapwork skills and attitude to geography.
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Hypotheses

- The following null hypotheses were tested in the study.

- Ho_1. There is no statistically significant main effect of treatment on students' achievement in mapwork, mapwork skills, and attitude to geography.

- Ho_2 There is no statistically significant main effect of gender on students' achievement in mapwork, mapwork skills, and attitude to geography.

- Ho_3 There is no statistically significant main effect of mathematical ability on students' achievement in mapwork, mapwork skills, and attitude to geography.

- Ho_4 There is no statistically significant interaction effect of treatment and gender on students' achievement in mapwork,mapwork skills, and attitude to geography.

- Ho_5 There is no statistically significant interaction effect of treatment and mathematical ability on students' achievement in mapwork, mapwork skills, and attitude to geography

- Ho_6 There is no significant interaction effect of gender and mathematical ability on students' achievement in mapwork,mapwork skills, and attitude to geography.

- Ho_7 There is no statistically significant interaction effect of treatment, gender and mathematical ability on students' achievement in mapwork,mapwork skills, and attitude to geography

DESIGN AND VARIABLES OF THE STUDY

The study adopted a quasi-experimental, pre-test, post-test, control group design. Three variables were involved in this study:

A The Independent Variable – This is the teaching strategy or the instruction mode, which occurs at four levels:(i)Cooperative Learning Strategy (CLS);(ii)Mastery Learning Strategy (MLS)(iii) Integrated Group Learning strategy (IGLS);(iv) Control group (conventional method) (CM)

B Two Intervening Variables, namely:(i)Gender – Male and Female;(ii) Mathematical Ability, this occurs at three levels: High; Average; Low
C The Dependent Variables(i) Mapwork Achievement;(ii) Map skills; and (iii) Attitude to geography.

Research Instruments

- The following instruments were used in this study and were validated and reliable:
- ✓ Mapwork Achievement Test (MACT)
- ✓ Mapwork Skills Test (MAST)
- ✓ Students' Attitude to Geography Questionnaire (SAGQ)
- ✓ Unit Achievement Test (UAT)
- ✓ Diagnostic Progress Test (DPT)
- ✓ Mathematical Ability Test (MAT)

Procedure for the Study

The teachers who participated in this study were adequately trained on the purpose, principles and procedures governing the group learning and the use of each treatment. The manual for training was given to them, and they were asked to revisit it from time to time. After the teacher had prepared the students, the pretest were applied. These included the four major instruments i.e. MACT, MAST, the SAGQ and finally the MAT.

Method of Data Analysis

The data collected were analysed using Analysis of Covariance (ANCOVA). The pretest scores were used as covariates. The Multiple Classification Analysis (MCA) technique was employed to find out how each of the groups performed. Where differences were observed in the ANCOVA results, the Scheffé post-hoc test was used to determine the source of variation and direction of significant differences among the groups. The seven hypotheses were tested at 0.05 alpha.

Results

- The results of this study are summarily presented as follows:
- There was a statistically significant main effects of treatment on students'
- ❑ Achievement in mapwork;
- ❑ Mapwork skill; and
- ❑ Attitude to geography

Results contd

- There was no statistically significant main effect of gender on students' achievement in mapwork, mapwork skills and attitude to geography. However, it is worth noting that there was a subtle difference as female students performed better their male counterpart in both the achievement and mapskill scores. Male students however performed better than female students in the attitude scores.

Results contd

- There was a statistically significant main effect of mathematical ability students' achievement in mapwork and attitude to geography. But mathematical ability was not found to be significant for mapwork skills. The MCA, however, shows that high ability obtained the highest mean score, followed by average ability and low ability has the lowest mean score. The high ability consistently performed better than all the groups in all the dependent measures.

Results contd

- There was no statistically significant interaction effects of treatment and gender across all the dependent measures.

- There was no statistically significant interaction effect of treatment and mathematical ability across all the dependent measures.

- There was no statistically significant interaction effect of gender and ability across all the dependent measures

- There was no statistically significant interaction effect of treatment gender and mathematical ability across all the dependent measures.
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Summary and conclusion

- This study was carried out to determine the relative effects of three group learning strategies – the cooperative learning strategy (CLS), the mastery learning strategy (MLS), the Integrated Group Learning Strategy (IGLS) (which is the integration of CLS and MLS) and the conventional method – on students' learning outcomes in mapwork.
- Major findings include the fact that cooperative learning strategy and integrated group learning strategy have been found to be more effective in improving students' achievement in mapwork, mapwork skills and attitude to geography.
- In conclusion, it was suggested that CLS and IGLS should be adopted as modes of instruction to replace the conventional method which dominates our secondary school classes. This, of course, may further solve the problem of large classes, inadequate instructional materials and make peers complement the teacher who cannot afford to attend to students one by one because of an overload of teaching and administrative duties.

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