

Chapter 6

Effects of Data–Driven Instructional Strategy on Pre–Service Teachers’ Mathematics Lesson Preparation in College of Education Ikere–Ekiti

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ABSTRACT

This study determined the effects of data-driven instructional strategy (DDIS) on pre-service teachers’ lesson preparation in mathematics. The moderating effect of gender was also examined. A pretest-posttest control group quasi-experimental design was adopted. Twenty-seven College of Education pre-service teachers participated in the study. The study was guided by three research questions. Data collected were analyzed using analysis of variance (ANOVA). Instruments used were rating scale tagged practical teaching assessment scale (PTAS) (Scotts’ pie = 0.87) and data-driven instructional package (DDIP). There was a significant main effect of treatment on pre-service teachers’ lesson preparation ($F(1,23) = 26.83$, partial $\eta^2 = 0.54$). Lesson preparations of pre-service teachers exposed to DDIS ($\bar{x} = 7.12$) were better than those of control ($\bar{x} = 4.87$). There was a significant interaction effect of treatment and teachers’ gender on pre-service teachers’ lesson preparation ($F(1,23) = 4.37$). Data-driven instructional strategy enhanced pre-service teachers’ lesson preparation in mathematics.

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INTRODUCTION

Improving instruction in mathematics education has been a major topic for teachers, researchers, administrators and the public (Popoola, 2004). Teachers play a crucial role in the educational process because of the enormous responsibilities placed on them for the translation and implementation of curricular contents, instructional materials as well as assessments of students' learning outcomes (Bolaji, 2005). The importance of the teacher in the meaningful development of education at all levels is reflected in the National Policy on Education (NPE) as it declares that no educational system can rise above the quality of its teachers (FRN, 2013). This declaration underscores the need for effective teaching and learning of mathematics from primary schools to tertiary institutions.

Studies carried out by House and Telese (2008) show that the teachers' method of teaching mathematics as well as their personality contributes to students' attitude towards mathematics. Yara (2009) notes that the attitude of students can be influenced by their teachers' attitude and teaching method. Without interest and personal effort in learning mathematics, students can hardly perform well in the subject. Therefore, attempts to improve the teaching and learning of mathematics will be successful to the degree to which the learners' interests and teachers' teaching methods are considered.

Researchers stress the use of multiple data sources, since there is no single assessment that can inform educators all they need to know to make well-informed instructional decisions (Adewale and Ibidiran 2013). Schools collect enormous amount of data on students' attendance, behaviour, and performance, as well as administrative data and perceptual data from surveys and focus groups, but when it comes to improving instruction and learning, it is not the quantity of the data that counts, but how the information is used (Hamilton 2009). In the teaching- learning process, a teacher is expected to organize curriculum content and teaching with the aim of helping children to overcome barriers to learning. There are various methods of improving the teachings of mathematics in secondary schools which are exposed to pre-service teachers in the colleges of education. Some of them are demonstration, guided inquiry, laboratory, individualized instruction, computer assisted instruction, problem solving and team teaching but these have been neglected due to the school system factors. It is imperative at this juncture to introduce a new instructional strategy that can ameliorate or reduce the problem of poor performance of students in Mathematics like data driven instruction strategy.

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