

An investigation into the role of the problem-solving approach to bridge the gap between Grades 4, 5 and 6 in a multi-grade mathematics curriculum

This study looked at how the problem-centred approach of teaching could succeed in solving the problems experienced by a multi-grade teacher; namely, where two or more grades are taught by one teacher in one classroom at the same time. The National Department of Education does not provide any policy documents for a multi-grade curriculum; the multi-grade teacher is therefore left to his own devices.

Consequently, this study aimed to determine whether the problem-centred approach might solve the multi-grade teacher's problems and to bridge the gap between Grades 4, 5 and 6. Traditional teaching has been compared to problem-centred teaching by looking at the role of the learners, teacher, learning material, classroom atmosphere and methods of assessment. The role of prior knowledge was emphasised as well as minimal, partial or full guidance for learners.

Through constructivism, a major learning theory in mathematical problem-solving, the roles of the teacher, learners, and the different phases and implementation of cooperative learning was examined. Learners were shown how to apply the problem-solving approach and the different processes and strategies of the problem-solving approach were explained.

Data were collected through written pre- and post-tests. After the pre-test, learners completed a questionnaire and each learner was interviewed. During the pre-test, the learners solved four cycles of problems in groups of four learners each from Grades 4, 5 and 6. Each learner had a role to play in the group. The researcher observed the groups to ascertain how they go about solving the problems. After the four cycles, each group completed a group feedback questionnaire regarding their experiences in the group.

The marks of the pre-test were compared to the marks of the post-test, according to the respective grades. After the post-test, learners completed the same questionnaire as after the pre-test. The same interview as after the pre-test was conducted and compared with the previous interview.

Based on the collected data, according to the average mark of the learners in the post-test, the gap between the grades had narrowed.

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