

Difficulties encountered by 'Key Stage 3' pupils in solving numerical division problems

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Mathematics knowledge is needed by every individual to live in modern society in a meaningful manner. To have adequate mathematical skills needed for everyday life, it is absolutely necessary to lay a proper foundation at primary level. In Sri Lanka, primary level education system consists of Key Stage 1 (Grades 1&2), Key Stage 2 (Grades 3&4), and Key Stage 3 (Grades 5). The objective of this study was to investigate the difficulties encountered by Key Stage 3 pupils in solving numerical Division Problems with special emphasis on the types of errors that they commit. An attempt was also made to review the sections on Division in the prescribed primary textbooks with an intention to suggest improvements. Thus this research study was aimed in the following directions:

- (i) To find the types of Division Problems that Key Stage 3 pupils find most difficult.
- (ii) To find the most prominent error patterns related to Division Problems in the Key Stage 3.
- (iii) To find the methods of improving prescribed Primary Mathematics Textbooks to help pupils to overcome the difficulties in solving numerical Division Problems.

The sample consists of 551 students from 6 schools of the Akurana Education Division in the Central Province. Data were collected with the help of primary pupils, primary teachers, and educationists using quantitative and qualitative methods. Three item analyses were carried out using the test information to identify the difficulties and error patterns related to numerical Division Problems at the Key Stage 3.

Analysing the test items, different types of errors and error patterns committed by pupils were identified. In Division Problems, which include zero digits in the dividend or in the answer, facility index of 18 items out of 60 has varied between 11.5 and 24.8. This implies that at least 75% and at most 88% of the students in the sample faced difficulties on those items. A review of the sections on Division in the prescribed textbooks revealed that some of the areas could be improved by including more worked examples and supplementary exercises similar to that of 18 items. Two main types of recommendations can be suggested. One type is focused on special training for primary mathematics teachers and the other one is the use of "Place Value Method" as an alternative method for Division Problems. It is envisaged that these suggestions can be used fruitfully for further research work.

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