AN INTERVENTION PROGRAMME TO OVERCOME LEARNING DIFFICULTIES IN MATHEMATICS, FACED BY GRADE 4 PUPILS IN SRI LANKA

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Abstract

This thesis explores the learning difficulties in mathematics, faced by a sample of Grade 4 Pupils in Sri Lanka, and implements an intervention programme, with remediation, to overcome their learning difficulties (LD) in addition and subtraction of whole number computation. The sample consisted of 18 Grade 4 pupils with LD from a target population of Grade 4 pupils in a 1AB school in the Colombo District. Since the research design of this study consisted of three phases namely, investigation, intervention and post-intervention, the advantages of using a multi-method approach were considered in the collection of data. Written Tests were used to measure the student achievement levels in mathematics, and questionnaires were used for identification of the background factors that influenced the LD of pupils; in order to study in depth, clinical interviews, a self reflective journal maintained by the researcher, students' portfolios and pupil's diaries were used.

The results of the diagnostic Tests administered during the investigation phase revealed that the majority of the pupils in the sample had not sufficiently mastered the mathematics content and that further remediation was necessary. The results of the diagnostic interviews revealed that the 'Process Skills' had been the most difficult strategy that these pupils encountered in computing algorithm problems.

The Intervention phase entailed three consecutive stages of teaching-learning-assessment processes. The total sample of pupils (18) participated in the intervention-I for 7 weeks. The summative assessment-1 results have revealed that 14 pupils in the sample had attained mastery (80% or above) in addition and only 6 pupils in subtraction problems. Intervention-II was carried out over a period of 2 weeks for pupils who did not master in both processes in summative assessment-1. The summative assessment-2 results revealed that all 4 pupils who participated in the intervention-II had attained mastery in addition and, of the 12 pupils who received remedial intervention in subtraction, 11 had attained mastery. Only 1 pupil who followed both interventions could not attain mastery in subtraction. Hence an Intervention-III was conducted for this

pupil only for a period of one week to help him to overcome difficulties in subtraction. In the summative assessment-3 this pupil was able to score above 80% and, attain mastery.

The responses to the parent questionnaire revealed that the home background factors are relatively conducive for learning but financial constraints adversely affect the majority of parents providing learning facilitation in the home. The most crucial message from the pupils' responses was that class teachers in lower Grades have not properly diagnosed pupils' strengths and weaknesses, more specifically at entry to Grade 1, and have not planned remedial interventions to cater to different levels of ability. Responses of the Principal, Sectional Head of upper primary, and Key Stage 2 class teachers are interrelated and this was supplemented by data from interviews with the In-Service Advisors and the former Associate Project Team Member-Mathematics. This information can be summarized as five main findings. They are; teachers in this sample lack professional competencies and are not very conversant with the methodology and know how of teaching mathematics at primary level; they do not find it easy to interact with pupils on a one to one basis on account of large class size; the monitoring and supervision by the sectional head has not been discharged satisfactorily; the Key Stage 2 class teachers have not used School Based Assessment procedures effectively, and have failed to initiate diagnostic and remedial interventions for pupils with learning difficulties; and, the class teachers are discouraged by the existing monitoring system, by the lack of a proper mechanism to guide classroom practices.

Several factors have contributed to make the action research programme, an effective one. The following are outstanding among them. The setting of the classroom environment was conducive for learning; pupils worked individually and in groups at their own pace, time and conceptual level; the pupils' were assessed continuously in order to plan further remedial measures; the active involvement of the parents of pupils to monitor their children's homework, and their punctuality in attending school proved very supportive.

These findings raised a number of policy issues in respect of school background factors pertaining to Grade 4 pupils in the sample with LD. The study strongly recommends adopting a standardized developmental profiling system to record the emerging competencies of the child, prior to entry to Grade 1 classes; an action plan for school-based diagnostic and remedial intervention programmes to be developed in the primary cycle; that in-service training programmes should emphasise subject matter on 'Clinical Mathematics Methods'; to provide venues to encourage teachers design and conduct small-scale classroom based research; strengthening school-based assessment procedures; strengthening monitoring and supervision procedures to facilitate diagnostic and remedial teaching, proper coordination system to be developed to address pupils' needs and potentialities and maximizing pupils' learning opportunities through home-school partnerships.