

**Upgrading of mathematical skills needed for the secondary level
science education at the Pre- Advanced Level stage**

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Pupils are selected to the G.C.E. – Advanced Level (A/L) science classes based on the performance at the G.C.E - Ordinary Level examination. Though most of the pupils enter the AL science stream with “A” or “B” grades (Distinction or Credit passes) for mathematics and science at the OL examination, a substantial number of pupils find it extremely difficult to follow Chemistry, Physics and Combined Mathematics subjects at the first year of their AL program due to lack of mathematical skills gained at the pre-A/L stage.

The objective of this research was to identify the weak areas in basic mathematics of pre-AL science pupils and to propose remedial measures that can be adopted at the secondary level education to minimise the shortcomings of the teaching and learning process. The sample selected for this study was 360 pupils from 1-AB schools of Kegalle district with AL science classes. Via pre-tests and pre-test interview schedules, twelve key areas of basic mathematics were identified as essential pre-requisites for AL science subjects. The organised remedial teaching (ORT) programme was experimented for a period of three months via teaching and monitoring the specially prepared lesson units in the twelve key areas to subclasses of the sample which were selected according to the weaknesses in mathematical knowledge and basic mathematical skills.

The results of the post-test show that the sample mean mark has increased from 24% to 59% and also coefficient of variation has increased from 31.96% to 37.46%. Post-test interview schedules have indicated that the ORT program has bridged the gap in basic mathematics of pre-AL science pupils to a certain extent. Paired t-test confirms that improvement due to the ORT program is significant at the confidence level $\alpha = 0.01$. Therefore an ORT programme in mathematics for pre-AL science classes is an absolute necessity to enhance mathematical skills needed for physics, chemistry and combined/higher mathematics at the AL science classes. The adequacy with respect to the time duration of the programme has to be studied separately as a continuation of this research project. Moreover, the OL mathematics curriculum should be revised in the light of ORT programmes so that there will be more coordination between areas of science and mathematics, rather than mathematics being a mere subject for examination purposes. With a good grounding in basic mathematical skills, AL science education can be made more fruitful.

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