

## **IMPACT OF THE PERFORMANCE OF G.C.E (O/L) MATHEMATICS ON COMBINED MATHEMATICS AND PHYSICS AT THE G.C.E. (A/L)**

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In the past two decades, we have noted that, a majority of students in the science stream who have obtained very good grades in the G.C.E. (O/L) examination did not achieve good grades in the G.C.E. (A/L) examination. The aim of this study is to find out why there is no correlation between the performances of the two important national level examinations held at different levels. Due to some constraints, we have selected schools in the Batticaloa district where 2<sup>nd</sup> author live and worked and also we considered only two disciplines mathematics and physics for this study. For this purpose we considered the results of O/L Mathematics from 1997 to 2000, and the results of AL Combined Mathematics and Physics from 2000 to 2003.

Data were collected using special charts with the help of higher rank authorities of the schools and the zonal education offices in the Batticaloa District. An opinion survey was carried out from the students who were studied in G.C.E. (A/L) in the science stream from 2000 to 2003 in the Batticaloa district and the teachers who are teaching combined mathematics and physics for G.C.E. (A/L) classes in Batticaloa district and the directors who are in-charge of senior secondary level mathematics and science in the Batticaloa district. This data was tabulated using Likerts' scale method.

Product moment correlation coefficient (PMCC) for O/L mathematics and combined mathematics is 0.30 and PMCC for O/L mathematics and physics is 0.36. Thus there exist positive, but weak correlations between O/L Mathematics and Combined Mathematics; and also between O/L Mathematics and Physics. Three indicators, namely; Performance Indicator for O/L Mathematics (PIM), Performance Indicator for A/L Combined Mathematics (PIC) and Performance Indicator for A/L Physics (PIP) are calculated using the data and it is noted that  $PIM > 2.8$ , but  $PIC < 1$  and  $PIP < 1$  for Batticaloa district. Through the opinion survey, it is also observed that there are gaps (abstract and content-wise) between O/L syllabi and A/L syllabi for mathematics and physics. Moreover, students' motivation, learning environment, teachers' commitment, basic conceptions in O/L mathematics and relatively advanced conceptions in combined mathematics and physics are also factors for the poor performance levels (low values for PIC & PIP) of mathematics and physics at the G.C.E.(A/L) examination.

The weak correlations between the two achievement levels for the two important disciplines mathematics and physics are due to the inadequacy of the O/L subject coverage in mathematics. Also due to the present examination system, which does not focus on the comprehensive knowledge and skills of the candidates, pupils choose incorrect subject streams at the A/L classes based only on their O/L grades. Therefore a remedial teaching-learning program in mathematics at the pre-A/L stage and academic counseling for the students who are planning to study at A/L in the science stream are absolute necessities. The new techniques to develop mathematical concepts at both levels and training of teachers at both levels to adapt new teaching methods for mathematics will make the science and mathematics learning- teaching environment healthy at the senior secondary level.