

## A Study of the High Failure Rate of Ethnic Minority Students in Mathematics Modules

WU Sui Lun, Richard, LI Lung Ming

Department of Information & Communications Technology, Hong Kong Institute of Vocational Education (Tsing Yi)

The aim of this abstract is to present the study of the fundamental problems and difficulties experienced by the Ethnic Minority (EM) students in Mathematics learning, with proposed enhancement measures. The study was requested by the Foundation Studies Board in June 2011 to investigate the high failure rate of Full Time Foundation Diploma (FT FD) EM students in Mathematics modules (Li & Wu, 2012).

The study analysed the data of 2,788 local students and 189 EM students of FT FD (Hospitality Stream and Business Stream) from AY09/10 to AY10/11. Views and comments were also collected from course leaders, teaching staff, current and graduate FD EM students. Four issues were identified as follows:

1. Overall Mathematics modules passing rates of the EM students were lower than local students. The passing rates of EM students were 14.4 – 22.0% lower than the local students across different FD's.
2. Students with weak Mathematics foundation had higher failure rates. 48.6% of EM students who obtained grade U or X (Absent) in HKCEE Mathematics failed the FD Mathematics module. The failure rate of other categories were 0.0 – 27.8% only. Those students might not have a strong enough Mathematics foundation to study the Mathematics modules.
3. T-Test and ANOVA tests confirmed that the HKCEE Mathematics results affect the students' Mathematics modules results at 95% confidence level. There was a strong relationship between the Mathematics background and the Mathematics modules results.
4. EM classes had a high proportion of students who obtained grade U or X in HKCEE Mathematics. The proportions were 34 – 56% in FD (Hospitality Stream) and 13 – 31% in FD (Business Stream). The proportion of local classes was 0 – 5% only. Those students obtained lower passing rates.

Three measures were recommended for implementation: (1) A bridging course or additional tutorial hours for students obtaining grade U or X in HKCEE Mathematics; (2) experienced teachers and smaller class sizes to improve learning; (3) balancing the loading of the two FD Mathematics modules.

In conclusion, the study found that the Mathematics background of students greatly affects the passing rate of the Mathematics modules. Measures are recommended to provide better support for those students. As this study investigated the Mathematics learning of FT FD EM students only, it is suggested a comprehensive study to investigate the education situation of EM students be carried out in the future.

### Reference :

Li, L.M., & Wu, S.L.R. (2012). *An Investigation Report on the Low Passing Rate of Ethnic Minority (EM) Students in Mathematics Modules of Full Time Foundation Diploma*. Hong Kong Institute of Vocational Education.