

# CONTINUOUS LEARNING TRAITS AMONG KEY LEARNER COHORTS IN THE SOIL MECHANICS & INTRODUCTION TO ROCK MECHANICS COURSE

H.G.P.A. Ratnaweera<sup>1</sup>

<sup>1</sup>*Department of Civil Engineering, Open<sup>1</sup> University of Sri Lanka*

## INTRODUCTION

Soil Mechanics and Introduction to Rock Mechanics (Course Code: CEX4230) is a Level 4 course in the Diploma in Technology (Civil) Programme of the Open University of Sri Lanka (OUSL). The recent changes in Regulations and Rules have permitted Advanced Level mathematics-stream learners with a minimum of three passes, to enrol in the Faculty's Diploma in Technology study programmes. It is also observed that a significant number of national diploma holders and national certificate holders join the Diploma in Technology programme to pursue degrees in technology, in their respective fields of study.

The National Certificate of Industrial Technicians (NCIT), National Certificate in Technology (NCT) and National Diploma in Engineering Sciences (NDES) are programmes conducted by state sector Technical and Vocational Education and Training (TVET) institutes. The National Diploma in Technology (NDT) programme is offered by the Institute of Technology, University of Moratuwa. The Higher National Diploma in Engineering (HNDE) is offered by institutes affiliated with Sri Lanka Institute of Advanced Technological Education (SLIATE), of the Ministry of Higher Education.

The Open Distance Learning (ODL) method also expects learners to engage in continuous learning. Learners are assessed based on two Continuous Assessment Tests (CATs), three Tutor Marked Assignments (TMAs) and the laboratory activity (LAB). The Continuous Assessment (CA) mark represents their average performance during the study period, hence can be considered an indicator of continuous learning. Adult learners are expected to be self-directed learners (Knowles, 1975) practicing experiential learning (Rogers, 1980), and drawing upon their work experiences. However such traits aren't evident even among employed diploma holders.

This study compares the CA marks of a) national diploma holders, b) GCE AL Math-stream learners with three passes, and c) learners who have successfully completed a foundation programme. The findings enable the teacher to pay more attention to the different learner cohorts to address their specific learning needs, as explained in Biggs (2003).

## METHODOLOGY

The study considers active learners enrolled in the CEX4230 course during the academic year 2012-13. It excludes 'non-starters'; i.e. those learners who did not enrol in the compulsory laboratory activity, who still maintained their enrolment status, without having de-registered from the course. Active learners were categorised based on their a) pre-qualifications, b) employment status, and based on c) the sector in which they are employed. CA grades are computed based on the same scheme used to compute final grades, as stipulated in the relevant regulations and rules.

## RESULTS AND DISCUSSION

Results show that 132 out of 237 learners enrolled were non-starters. The balance 105 (44%) active learners belong to three main cohorts: a) NDT, NDES and HNDE national diploma holders (38.1%), b) GCE Advanced Level mathematics stream students with three passes 40%, and c) learners who have completed a foundation programme (16.3%) (refer Fig. 1).

---

<sup>1</sup> Correspondences should be addressed to Dr. H.G.P.A. Ratnaweera, Department of Civil Engineering, Open University of Sri Lanka (email: [pratnaweera@yahoo.com](mailto:pratnaweera@yahoo.com))

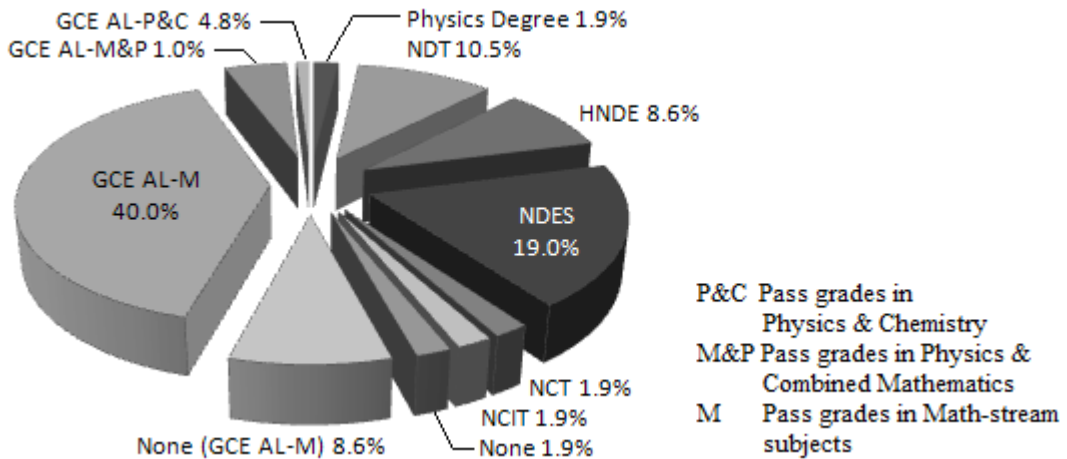


Fig. 1: Recognised qualifications of active learners.

The employment status of active learners (refer Fig. 2) indicates that 100% of diploma holders, 48% of GCE AL Math-stream learners with three passes, and 67% of learners who have completed a foundation programme, are employed full-time or part-time. It seems that such employment is a necessity, rather than an academic requirement for adult learners and learners of school leaving age.

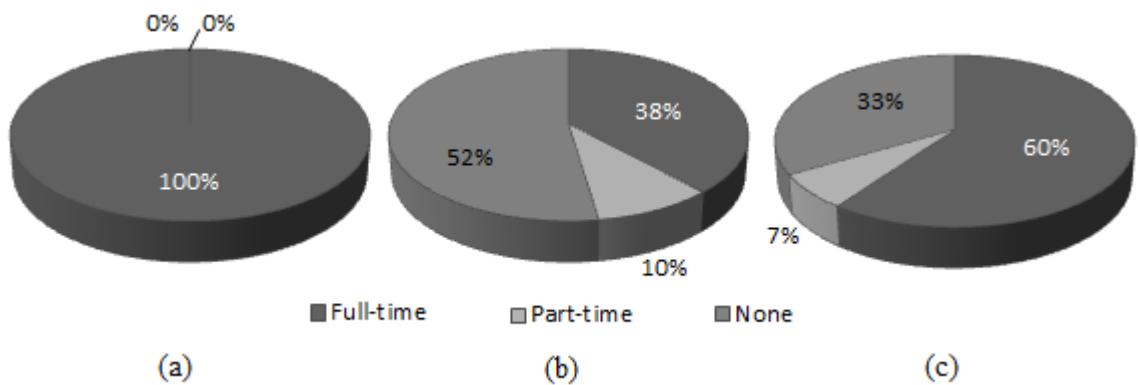


Fig. 2: Employment status of (a) diploma holders (b) GCE AL Math-stream learners with three passes and (c) learners completed a foundation programme.

Fig. 3 shows that 100% of diploma holders, 45% of GCE AL Math-stream learners with three passes and 82% of learners completed a foundation programme are employed full-time in the construction sector.

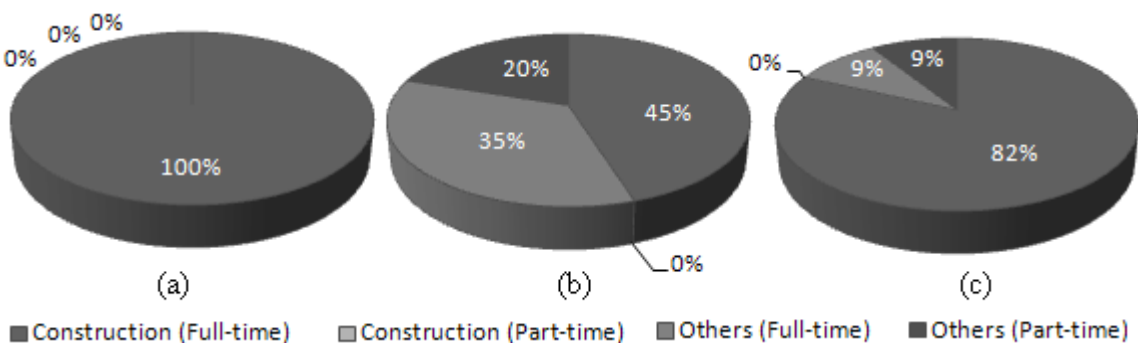


Fig. 3: Employment of (a) diploma holders (b) GCE AL Math-stream learners with three passes and (c) learners completed a foundation programme, in the Construction Sector.

Fig. 4 shows performance at CA, of the three main learner cohorts. The success rate (i.e. C-grade and above) of diploma holders is 20 out of 40 (50%); AL Math-stream learners is 35 out of 42 (83.3%) and learners completed the foundation programme is 12 out of 17 (70.6%).

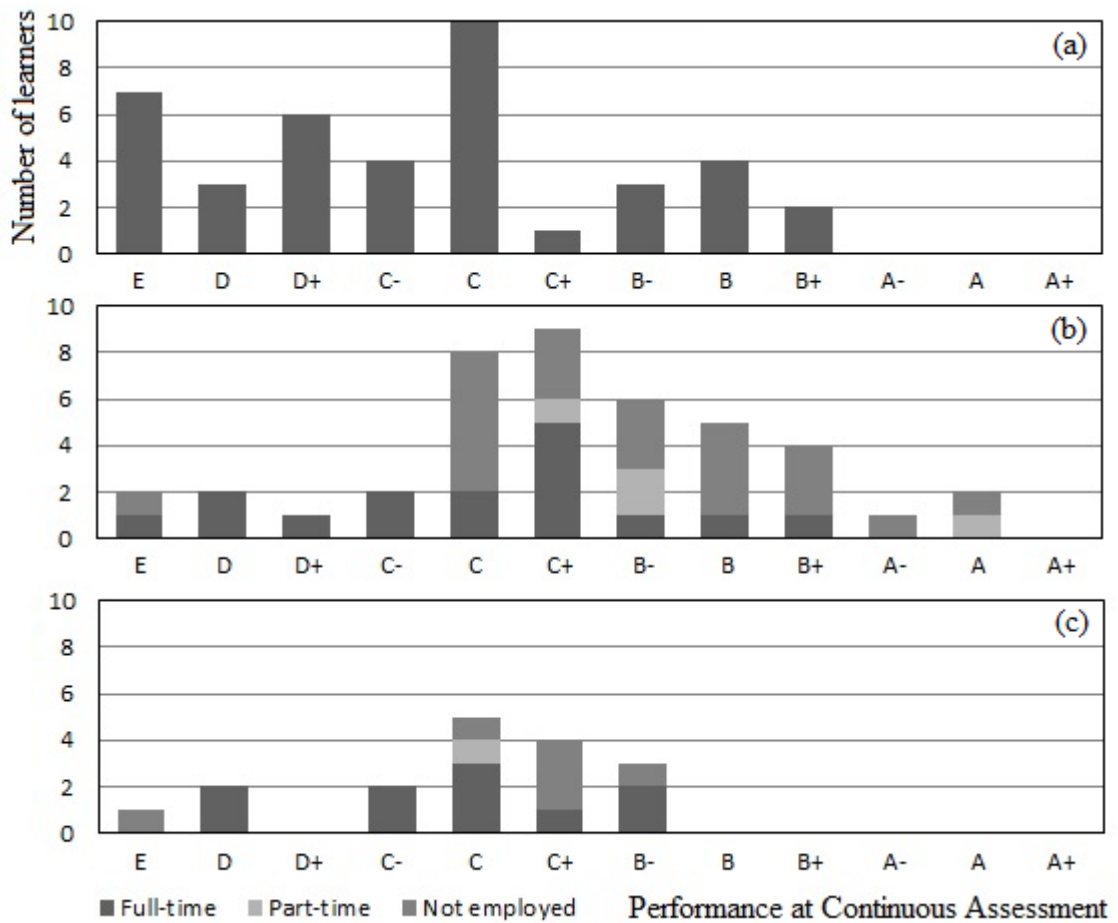


Fig. 4: Learner performance at Continuous Assessment by a) Diploma holders, b) AL Math-stream learners with three passes, and c) Learners completed the Foundation Programme.

Fig. 5 shows performance of diploma holders. Results show that learners with NDES qualifications have fared poorly compared to NDT and HNDE diploma holders.

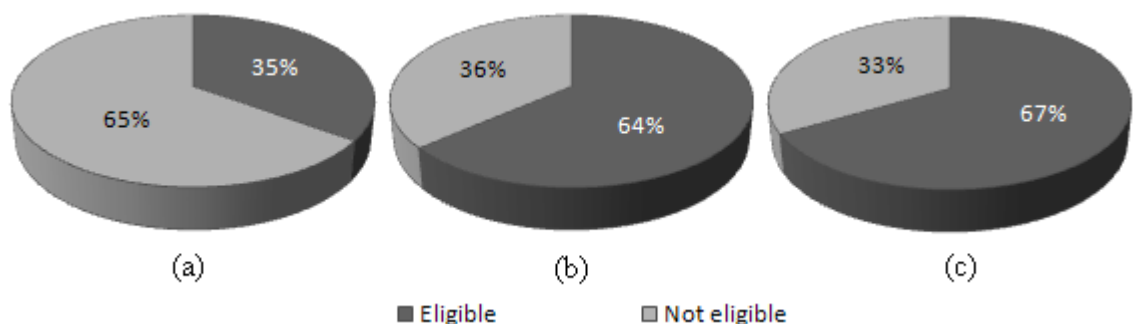


Fig. 5: Performance of diploma holders (a) NDES (b) NDT and (c) HNDE.

The observed low success rate of diploma holders compared to other two cohorts of learners wasn't an anticipated outcome. The following reasons may have attributed to their poor performance: a) As new registrants, learners may not have the necessary skills to practice ODL; b) Work pressure may not give them sufficient time to engage in self-learning; c) inadequacies in pre-knowledge required to construct new knowledge; d) learners resorting to

a surface learning approach whereas the course demands more in-depth learning. This study, however, does not investigate the reasons for poor performance.

## **CONCLUSIONS/RECOMMENDATIONS**

This study shows that employed diploma holders have performed poorly at CA (i.e. 50%), in spite of their training and work experience in the construction sector. The mode of delivery seems to favour AL Math stream learners with three passes (i.e. 83.3%) and those learners who have completed the foundation programme (i.e. 70.6%).

The poor performance observed among NDES diploma holders compared to NDT and HNDE diploma holders, needs to be investigated. This could be done by monitoring learner interactions, assessment of performance, and by using a questionnaire survey.

The use of an on-line Virtual Learning Environment (VLE) is a viable mode that would enhance student engagement and support, in continuous learning. It could be used to address specific requirements of the three learner cohorts. Even though learners enrolled in this course have responded positively to the use of a VLE, the frequency of access by employed learners is found to be low (Ratnaweera, 2013).

A VLE can be used effectively to synchronise learner support with their learning. It may also serve as a useful tool to prepare learners prior to a learning event; to facilitate self-assessment and to encourage peer interactions; and to link their learning to work experience.

VLEs facilitate timely submission of responses to assignment questions, perhaps even at the end of each session. This may encourage learners to practice continuous learning.

Gibbs (2012) explains how formative assessments help achieve better learning than its summative counterpart. Though formative assessment methods aren't used at present, a few Tutor Marked Assignment questions of the formative type could be introduced via a VLE, which may enhance learner engagement.

## **REFERENCES**

Biggs, J.B. (2003). Teaching for quality learning at university. Buckingham: Open University Press /Society for Research into Higher Education (2<sup>nd</sup> edition).

Gibbs, G. (2012). Improving student learning through assessment and feedback in the new higher education landscape, Professor Graham Gibbs at the learning @ City Conference, <http://www.youtube.com/watch?v=DbzMTXRbCQk>, downloaded on 29.07.2013.

Knowles, M.S. (1975). Self-directed learning: a guide for learners and teachers. Englewood Cliffs: Prentice Hall/Cambridge.

Ratnaweera, P. (2013). Student-type response comparisons to rationalize use of a Cloud Server based Virtual Learning Environment (VLE) to facilitate Open Distance Learning (ODL), pg. 21, Creative use of technology to enhance student-centred learning, Sri Lanka Association for Improving Higher Education Effectiveness, Sri Lanka.

Rogers, C.R. (1980). A way of being, Boston, Houghton Mifflin.