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Facilitating deep learning by improving study skills of undergraduates

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Many university entrants do not possess basic 'study skills', such as information retrieval, academic reading, note-taking, academic (technical) writing, reflective learning, which are essential ingredients required to facilitate deep learning. As a result, majority of students tend to do 'surface learning', and proceed to simply 'pass' their degree examinations, resulting ultimately in the production of un/under-employable graduates.

To promote deep learning in students, it is important to expose, and develop, their essential 'study skills'. Though study skill courses were popular in many universities in the world even in late sixties (Robinson, F.R., 1970), such courses are lacking in Sri Lankan universities.

Many academics, consciously or subconsciously, believe that the students should possess these skills when they enter our universities. However, our experience with undergraduates indicates that only an academically-motivated minority possesses these skills. Therefore, two statistics

course units, Statistical Communication I and II, were newly introduced in 2005 at the Faculty of Applied Science, University of Sri Jayewardenepura, mainly to improve the study skills of students, since no other practical alternative was found. The courses taught and modelled the 'study skills' processes, such as steps needed to problem-solve using specific problem-examples, stressing on the mastery of process-steps as well as their use in other similar situations (*i.e.* replicability).

Effectiveness of the course units was analyzed using student feed-back evaluations. Their responses were very encouraging. Seventy three percent (sample size = 41) of students rated the courses as 'very important', and 24% as 'important'. Sixty nine percent responded positively on the usefulness/applicability of skills learnt from these courses, compared to other courses they followed. Comparison of the performance of students who followed these courses (average mark = 50.78), with those of their counterparts (average mark = 45.59), revealed their superior examination performance (with a statistically significant difference at 5%; $p=0.012$). Further comments of students and staff will be discussed in the presentation.

A trial study in the use of an Outdoor Training Programme for enhancing student inclusivity

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The Outdoor Training Programme method was aimed to enhance the learning process in the subject of “Safety, Health and Welfare Administration” and “Compensation Management” in the Human Resource Management Degree Programme. The learning outcome of this programme is to enable undergraduates to adopt an active learning strategy by participating in managerial games. Thereafter, undergraduates reflect on their own experience and others behavior in team building and leadership activities. Based on that, they construct a personal skill development model to support their future work as a Human Resource Manager. Further, it develops interpersonal skills such as networking and negotiation.

A batch of fifty undergraduates participated in this programme on team building and leadership development. This involved organizing an outdoor training programme by selecting professional outdoor trainers. This programme is a one-day outing to Gampaha Botanical Gardens. The feedback results showed that 50% considered that their feeling of inclusivity was enhanced through participating in this outdoor training as a group.

We analyzed the alignment of learning outcomes, learning activities and assessment that we had followed in designing this curriculum, by giving samples of course documents to

department members who gave a 95% positive rank to the presence of such alignment. Some of the methods we used for bringing about such alignment were by using Bloom’s Taxonomy, while teaming exercises were used for enhancing inclusivity. Our presentation will discuss methods we used, such as Symon Says, Jony Jony, Key Punch, Spider web, Trust Falls, Blind Polygon and Groping. We will also suggest ways by which outdoor training can be incorporated for skill development, teaching and learning delivery in other higher education subjects.

Changing traditional teaching-assessment to group work to bring about development of undergraduate higher-learning skills

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Summative assessments, commonly used in Sri Lankan universities, test rote-learning rather than active-learning skills, and being ‘confidential’, also eliminates formative lecturer-led feedback for developing student skills, thus leaving students with only self and group feedback for this purpose. This study examined whether collaborative-group work engages students to develop higher-level learning skills by using time-limited group and self feedback.

As part of a formal assessment, students completed a 30-min written assignment, with tasks requiring the use of all cognitive skill levels (*sensu* Bloom), and involving processing of knowledge obtained in theoretical and practical sessions in the

Fundamentals of Microbiology course. Students were divided into two sets, each of 18 members. The first set of students did the assignment individually; the second set was further divided into six small-groups, each comprising 3 members, and did the assignment in these groups. Communication among group-working students was unrestricted, allowing group processes such as storming, forming,... to take place. Answers were assessed by the lecturer. A checklist feedback regarding student opinion on skills requirement for doing the assignment was obtained subsequently.

Marks were analysed to test two hypotheses. The first was that scores obtained by students are inversely proportional to the cognitive skill-level requirement for fulfilling an assessment task. The second hypothesis was that group work leads to improvement of higher-level cognitive learning skills through active group-learning, with skills being transferred among group members.

Results revealed that higher the simultaneous cognitive skill-level requirement in an assessment task, lower were the marks obtained by individually-working students. Most individually-working students found higher-level cognitive tasks to be difficult (78%), and time-consuming (82%), compared with group-working students who obtained higher marks for questions testing higher skill levels (26% and 87% - for students working individually and in groups, respectively). Marks for questions requiring lower cognitive-skill levels were not significantly different between the two sets, showing that passive learning skills are independent of group work.

These results show that mechanisms underpinning higher-level learning skill usage are better transferred/shared among group-work members, analogous to the phenomenon of syntrophy.

**A trial study in Peer Assessment:
Evolving Structures for brining about
Improved Learning**

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This study investigated the effectiveness of peer assessment method as a mode of assessing undergraduate performance. Educational theorists, policy makers in higher education and funding bodies have stressed the importance of peer input in the learning process, to bring about students' active engagement. Accordingly, before conducting the research, the researchers predicted that assessment by peers would be an effective and meaningful assessment mode.

This trial assessment targeted a last-semester final-year B.Sc. Accountancy (Special) Degree elective course of the University of Sri Jayewardenepura, where students had to make a pre-informed class oral presentation, assessed to yield a 20% mark. The presentations (n=44) took place over four weeks, and each presenter was assessed by peers and course lecturers using the same assessment criteria, with each student using the given peer-assessment sheet, as did the lecturers. To find out the extent to which the marks by the lecturers and peers were congruent, descriptive statistics measures were applied (mean, standard deviation, simple regression analysis).

It was found that even though there was a strong positive correlation between the marks allocated by lecturers and students (0.83), there existed significant differences in the mean values (lecturers = 70; peers = 83) and standard deviations (lecturers = 15.07; peers = 7.77). Since scale differences among gradings are low, these differences will create a significant impact over student Grade Point Averages. The results indicate differences between lecturers and students in their conceptual framework when applying marking schemes for assessment purposes, with a more focused approach among student-peers, as indicated by their lower standard deviation. Hence, assessment training is needed before incorporating peer assessments into course units. Replication of this type of study would lead curriculum designers to analyse the underlying reasons for the noted divergences, enabling them to come up with better assessment systems with student-peer involvement.

Use of Learning Outcomes to improve students' learning and examination performance

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Giving learning outcomes at the beginning of each lecture and using them in designing questions are fundamental principles of Constructive Alignment (Biggs, 1999), though not used by many lecturers. I present how this use of learning outcomes improved learning in students, as judged by examination performance and feedback.

The study was undertaken on students who followed a third-year general degree course, comparing two batches (with 55 and 76 students) with an earlier batch (of 35 students). A question paper format of six questions, where four questions are answered in two hours was used. Of these six questions, two were taken from last five years past papers with small modifications, two were based on tutorials, and two were new and challenging questions.

The learning outcomes for each lecture were carefully designed, so that each could be easily converted into a question, printed and distributed to students at course commencement. Students were asked to write a one-page summary of each lecture and show after each lecture that they achieved the intended learning outcome/s, by converting each learning outcome into questions, and answering them. At the end of each section of the course, students were asked to summarise all the learning outcomes again on one page. At the end of the course, the students were asked to summarise all the sectional summaries, again on one page. The sectional summaries and the final summary were collected, corrected and returned to the students.

The above use of learning outcomes improved the pass rate by 11%. The marks distribution, showing a normal distribution, also changed from the earlier peak range between 40 – 49%, to a 50 – 59% range. Numbers of 'A' grades increased by 12%. Student feedback showed that students expressed confidence in the above-described use of learning outcomes as it made them study continuously, and preparing summaries helped them for their examinations.

An initial study into student's perceptions of choice criteria in the selection of non-Sri Lankan fee-levying degree awarding institutes available in Sri Lanka

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Tertiary education has become more competitive in recent years due to lack of student places in the conventional Sri Lankan universities, and the greater emphasis that the higher-salaried corporate sector places on graduate employability skills, commonly perceived to be more readily delivered by fee-levying non-Sri Lankan universities. As competition increases, the role of marketing, previously non-existent in most universities, has grown significantly. Key information that would assist a university's marketing effort, and for education managers to develop marketing strategies, would include an identification of factors that determines a student's university choice.

This paper examines the information requirements and their ranked importance used by students who selected a non-Sri Lankan fee-levying university. Data were gathered, using in-depth interviewing and survey questionnaires, from 200 final-year students studying at degree awarding institutions located within Colombo and affiliated to overseas universities. Asia Pacific Institute of Information Technology, Australian College of Business and Technology, American National College, Informatics Institute of Information Technology and Royal Institute made up 80% of these sampled degree awarding institutions.

Results indicated that the four most important determinants of university preference were facilities provided, duration of the degree, cost of the degree, and teaching quality. Initial pilot study was completed and when it was checked for reliability, it recorded a Cronbach's α value of 0.8157 which was above the value of 0.70, and is therefore considered to be very reliable. Friends joining the same Universities (mean value: 2.43, of maximum 4), duration of the degree program (mean: 3.1200), cost of the entire degree program (mean: 3.5300) are considered to be the most important aspects, while semester break/summer holidays (mean: 7.83 of maximum 10) and 'friendliness of locals' in the area (mean: 7.8950) are considered to be the least important aspects of selection criteria for the students in the selection of degree awarding institutions with foreign affiliations in Sri Lanka.

Identifying teaching-learning practices and perceptions for effecting a paradigm shift from teaching to a learning culture

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The effectiveness of the graduate produced by our universities, and university accountability, are being increasingly questioned. Employers persistently complain about lack of 'skills' considered essential for graduate-level employment. In contrast, criticisms on a lack of 'knowledge' in the graduate's disciplinary base are infrequent.

This is possibly because higher education is discipline and teacher-centred, and because lower levels of learning (*sensu* Bloom, 1956) can be reached through passive rote-learning mediated through teacher-centred methods, whereas higher-level and meta-cognitive skills require engagement in active learner-centred methods.

Effecting paradigm shifts from teaching to learning is difficult, as change generates resistance (Kotter and Schlesinger, 1981). Overcoming resistance by planned change requires a Diagnosing Stage, with Individual-Level-Diagnosis (ILD) being its initial/lowest level (Cummings and Worley, 2001).

This study focussed on addressing ILD through identifying practices and perceptions required to facilitate a Student-Centred Teaching/Learning (SCTL) culture change, with questionnaire-surveys among academics (n=121; 23 senior academics: SL; 70 probationary lecturers: PL; 28 contract-lecturers/tutors/demonstrators: CL) in 8 universities.

Practices underpinning SCTL deployment such as *Learning Outcomes, Student Feedback, Self-Feedback, Peer-Feedback* were in use by 43-68% of CL, 27-87% of PL and 57-100% of SL. However, 21-82% of CL, 43-87% of PL and 30-74% of SL were unaware of concepts, such as *Reflective Practice, Action Research, Constructive Alignment, Bloom's and SOLO Taxonomies*. These data give us an indication on the extent of change required if academics are to change their teaching approach to bring about SCTL. Perceptions among 90% of CL, 93% of PL and 100% SL were encouraging, since they were amenable to increasing their contribution to fulfill the university's social accountability through making SCTL effective. The presentation will discuss the use of the above data and how the Staff Development Centre has begun shifting paradigms from a teaching to a learning culture, through a long but rewarding journey.

This volume of the SLAIHEE Newsletter contains the abstracts that were presented at the 2nd **SDC / SLAIHEE Conference**, which was held at the Staff Development Centre, University of Colombo, Colombo 3 on Thursday 18 May 2006, 9.30am to 4.30pm. The theme of the conference was "*From Teaching to a Learning Culture - Providing Structures for the Paradigm Shift*". The keynote address on this theme was delivered by Mr Stephen Cox from England, former consultant to the Staff Development Centre, University of Colombo.

(For more details on this conference, please see www.slaihee.org)