Successful Teaching Model for Engaging the Learners Effectively in Large Classes of Higher Educations

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ABSTRACT
The most common form of teaching in tertiary educations is undoubtedly lecturing. Lecturing could be an effective, efficient, and satisfied method for lecturers to deliver the subject context as required by unit outline to the students. There are many advantages as well as disadvantages in this teaching model of lecturing. Conducting lecture and controlling or managing high number of students in a large class room is really a challenge and demanding very high potential skill. Very large classes have some special characteristics, which make them different from small classes. Large classes require very well formal preparation, more constructive planning, more formalized procedures and time management than small classes. In lecturing large classes, improving lecturing is arguably the critical problem. The most importantly when teaching in large classes, lecturer should engage the learners effectively for the entire scheduled time of the lecture. Although several learning theories ranging from behaviourism to cognitive to humanistic education have been proposed, to choose the appropriate effective teaching models, none can be applied across the board to all learners in all situations. A combination of pedagogical and andragogical, “middle of the road” approaches meet the need of a larger segment of the audience. This paper describes the teaching model implemented for the units, Engineering Maths 120 and Engineering Maths 140 of class strength >150 students in each unit and analyses its effectiveness based on the achieved results (pass rates, median marks and maximum marks). This paper focuses on continues quality improvement (CQI) plan developed based on the feedbacks, evaluation reports and reflections by the students for further effectiveness.

Key words: Large classes, Engaging learners, learning theories, Improving lecturing, and Time management.

1. INTRODUCTION

Teaching large classes at institutes of higher education is a very challenging task for lecturers due to many constrains imposed on such classes. We consider a class of more than 100 students is a large class. How to create a learner centred environment, promote active learning and engaging learners when there are so many students to deal with? The simplest answer is to break a large class into small classes but it is quite difficult due to economic constrains. Therefore, much effort has been made to understand the difficulties faced by lecturers in teaching large classes. These difficulties include encouraging class attendance, delivering well balanced course contexts to keep learners interest on subject, knowing learners and creating interactive classes, identifying and making time to help learners at risk, and getting/giving feedback and managing learner’s inquiries. Gibbs and Jenkins [1] suggested many methods to address these issues. With the rapid development in communication and information technology, especially the internet, it is possible to address these difficulties with the help of various existing technologies. The proper use of communication and information technology not only enhances the learners learning experience but also maximizes learner’s engagement level.

2. TEACHING LARGE CLASSES

Most lecturers agree that teaching small classes of students is easier, more enjoyable and time effective than teaching large classes. Unfortunately, due to budgets, space, or lack of lecturers, many institutes of higher education only offer large classes in particularly for the first year units. In large classes, lecturers must come up with a customised teaching model that keep all the learners effectively engaged and learning their subject context to achieve the objective skills. While there are numerous challenges when it comes to lecturing large classes, there are some advantages are also there in teaching large classes [2,3]. The large classes with many learners may be noisy, but there are also funs and exciting. Teaching to large number of learners is an effective use of lecturer time. In large classes, there is always someone may be willing to answer questions even if they are just guessing and more possibilities to receive the interactive participations from a variety of learners. Some learners like large classes because it is usually non-threatening and they can hide in the crowd. If clear objectives are given to learners and good support materials are available, research shows that learners learning course as measured by content examination is equal to that of other teaching method [4]. One of the main challenges in teaching large classes is identifying and remembering learners’ names. Lecturers may feel that they do not get to know their learners as well as they would like to and meeting the individual needs can be difficult or impossible when class size is very large. Marking and grading assignments, tests and final exam scripts can be very time consuming. There are more distractions for lectures in large classes, such as latecomers and people chatting during lecture period and large classes can become out of hand when learners are working in pairs or groups. At times lecturer may feel more like a discipline master than a lecturer. Lecturers may find it difficult to keep learners on task because they have to monitor too many pairs and groups in the assigned activities.
3. ENGAGING LEARNERS IN HIGHER EDUCATION

Capturing and retaining the learners’ attention effectively in the learning process for the lecturer period is an important part of teaching in large classes for higher educations. When learners are engaged they are focused on text, their eyes are moving, and pages are turning. They are writing the answers to written exercises. They are attending to lecturers or they are helping each other do their work. When they are not engaged, they are talking about matters that have nothing to do with the class, taking breaks, or simply daydreaming. There are three types of engagement patterns: learners engaging with materials, learners engaging with lecturers and learners engaging with other learners [5]. Materials are the objects and focus of engagement. The majority of learners’ time is spent working on materials. When learners interacted with lecturers or other learners, their interactions are centered on materials. To an extent, the materials’ directions determine what learners would engage in. The exercises given in the materials carried the subject matters and learners’ success in correctly completing the exercises is the most visible of learning progress for both the lecturers and the learners. As a facilitator lecturers are playing very important role in engaging learners. In assigning materials, lecturers directed what learners would engage in. Obviously the appropriateness of the materials is an important factor in what learners learned and how quickly they progressed. Learners’ engagements with other learners are influenced by classroom norms and informal rules of behaviour that allowed by lecturer for the purposeful interaction. Learner-to-learner engagement should be focused on the subject matters, helping each other in clarifying the directions of materials, solving assigned problems and other class-related tasks.

4. PERSONALISED TEACHING MODEL

A teacher’s work can be conceptualized around three main functions: the executive, the interactive and the organizational. Berliner [6] suggested that teacher’s executive roles are similar to those of leaders who work in other type of organizations. Joyce Weil and Showers [7] identified and described 20 major models or approaches to teaching. Effective teachers have diverse repertoires and are not restricted to a few pet practices. No one approach was found to be consistently superior to any other. Instead, many teaching approaches were found to be appropriate and the selection of a particular model depended on the teacher’s goals and the characteristics of a specific group of learners. Although several learning theories ranging from behaviourism to cognitive to humanistic education have been proposed, none can be applied across the broader spectrum to all learners. Davenport et al. [8] recommended a combination of pedagogical (teacher-directed) and andragogical (learner-directed) methods in adult education because this “middle of the road” approach meets the need of a larger segment of the audience. From our vast experience since 1976, observations and feedbacks from learners, we too confirm that the approach recommended by Davenport et al. [8] is very much appropriate to achieving best performance and comparable results from the students enrolled to first year basic units in engineering courses. The practising personalised teaching model, based on “middle of the road” approach is described below:

Teaching plan and schedule: Set clear and realistic weekly programs to cover the entire syllabus outlined along with assignments release date, submission dates and feedback dates for the unit. Provide materials hard copy/soft copy well in advance before the start date. Make sure there are no deviations in the teaching schedule. This clear scheduling facilitates students to set their own program of attendance by identifying the critical classes that could not be missed for their own interest. For large classes, lecture need to be more structured and well organised in advance. Planning for simple, less time consuming classroom demonstrations during lecture may effectively engage the learners and make them to understand the subjects of interest more easily. Avoid too long monotonous repeated lectures on unimportant areas. Teach only the important points and make additional materials available separately for learners to download later. The allocated time scheduling for each unit of Engineering Maths 120 and Engineering Maths 140 are, 3 hours lecture per week, 2 hours each for tutorial and lab in alternate weeks. The lecture slots are 2 hours and 1 hour. To engage the students effectively in learning, the 2 hours slot is handled by two lecturers, each 55 minutes lecturing and 10 minutes break in between them. While one lecturer is continuing his teaching, another lecturer also will be in the lecture theatre as a peer observer. His feedbacks on both learners and lecturer are very important for continuous quality improvements. This teaching model facilitates to contact Learning Centre to arrange for additional peer observations if required. The maximum numbers of students are limited to 25 for lab and tutorial classes and they are grouped into maximum of 4 for the class tasks. The role of electronic media is an important tool when teaching large classes. Familiarise with the equipment available and check the volume levels before lecture start.

First week of teaching: Most of the engineering units demand mandatory prerequisite knowledge for effective learning. While we are introducing course outline overview, context, expected outcomes and assessment criteria, make sure all the students understand the importance and criticality of the prerequisite knowledge required for effective learning. In the first week before starting the course, provide all the important text references and refresh the critical areas of prerequisite courses. If we failed to identify their level of knowledge on the key element of prerequisite and fix the misconceptions if any, we may not achieve the expected learning outcome even at very high effort shown through teaching.

Classroom and Time management: The learning environment must be physically and psychologically comfortable; long lectures, periods of interminable sitting and the absence of practice opportunities rate high on the irritation scale. The key to the instructor role is control and to draw the effective attention of the students for maximum duration of the class. The instructor must balance the presentation of new material, debate and discussion, sharing of relevant student experiences, and the clock. Presenting the lecture in the large classes should be like a similar way of delivering the television news. Tell the learners about what are going to cover (the headlines), followed by the detail presentations (the actual information) and at the end, recap. Many lecturers feel nervous when presenting to large classes. Learn some presentation techniques to overcome this. For example, make sure you know your material well. Practice your ‘opening’ until you have it word perfect. Make it interesting by using a relevant story and use your own experiences. For engaging and retaining the students’ attention effectively in learning, lectures should have an excellent rehearsal for a
powerful presentation like a stage actor in the monodrama. Even though lecturers may have a large physical presence or a strong personality, they may appear to be quite small, particularly to those at the back in the large theatres. So project yourself a little more than you usually with very well formal dressing and have a unique pleasant mannerism and signals to indicate your indention and initiatives. Rather than asking the questions at the end, frequently ask and encourage questions during the lectures and repeat the questions clearly before answering them.

Assessment tasks and feedback: One of the most important key elements in successful learning and teaching are assessment tasks and feedback. Number of assessments and volume of work involved in each assignment should be very carefully reviewed based on students work load distribution. Teachers must also respect that students have other interests and engage in time-consuming activities outside the classroom. For equitable work load, Curtin, Australia proposed 2 formative assessments followed by one summative final exam for 12.5 credit units and 3 or 4 formative tasks followed by a summative final exam for 25 credit units. Ideally, set one assessment task early and make sure the students have feedback within the first four weeks of the semester. The all assessment tasks should be spaced throughout the semester. The final exam papers would be prepared in such a way that 80% of the questions could be answered by the average students with adequate preparations and the remaining 20% of the questions may require excellent knowledge and very well preparations to answer. This facilitates the intelligent students with good preparations can score high marks and retain their class ranking.

5. CONTINUOUS QUALITY IMPROVEMENT

There are some aspects of teaching that can be learned in college classroom and can be learned by studying what researchers and experienced teachers have to say about the topic of interest. However, many of the most important features the art of professional practice can be learned only through experience. Effective teachers should have a learning agenda for lifelong growth coupled with careful analysis and reflection that produces the growth with experiential learning. Johnson and Johnson [9] described the cyclical nature of experimental learning, shown in Figure 1.

![Figure 1 Cyclical nature of experiential learning](image)

The statistical summary of the assessment results for the units, Engineering Maths 120 and Engineering Maths 140 after practicing the personalised teaching model described in the above section in the semester 1&2, 2009 and semester 1, 2010 at Curtin University, Miri Campus and total strength of the students in each semester are given in Table 1.

<table>
<thead>
<tr>
<th>Units</th>
<th>EM 140</th>
<th>EM 120</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester</td>
<td>S1 2010</td>
<td>S2 2009</td>
</tr>
<tr>
<td>Mean</td>
<td>69.9</td>
<td>67.6</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>15.9</td>
<td>14.4</td>
</tr>
<tr>
<td>Students Number</td>
<td>104</td>
<td>131</td>
</tr>
</tbody>
</table>

The cumulative and individual percentages of students achieved the prescribed range of marks were plotted for the three semesters and shown in Fig. 2-5. The achieved results are very consistent and showing significant improvements in mean marks.

![Figure 2 EM 120 Cumulative Percentage of students vs Range of Marks](image)

![Figure 3 EM 120 Individual Percentage of students vs Range of marks](image)
All the three semesters’ results of Curtin University, Miri Campus are very much in the same line, even better than with the results of our main Campus at Bentley, Perth, Australia in the corresponding semesters. The pass rate / median marks for the unit, Engineering Maths 120 in semester 1&2, 2009 and semester 1, 2010 of Miri Campus are 75% / 63.5, 75% / 61.5 and 79% / 67 respectively and the corresponding data for the Bentley Campus are 71% / 60.0, 75% / 60.5 and 79% / 66. For the unit Engineering Maths 140, the pass rate / median marks of both campuses in the three semesters are given in Fig. 6-8 showing the comparison of percentage of the students achieved the prescribed mark ranges. The summary of the achieved assessment results for the units Engineering Maths 120 and Engineering Maths 140 in three semesters at Miri Campus and the analysis of comparative learning outcomes in the corresponding semesters with Bentley Campus, are confirming that the practising personalised teaching model is very effective, consistent and successful for the large classes of higher educations. The students’ previous experience in the practising personalised teaching model from their prerequisite unit EM 120 enhances better performance in the unit EM 140 as compared to EM 120, very first unit enrolled by the students while entering to Curtin University for engineering education from various institute with different learning experiences.

6. RECOMMENDATIONS

Based on the summary of achieved assessment results, students evaluation reports and peer observation feedbacks the following recommendations are proposed to implement in the forthcoming semesters to achieve further effectiveness and improvements in the learning outcome of the large classes. 1. Video recording the
lectures may facilitate the advantages of flexible learning and to use repeatedly as i-lectures by the slow learners to achieve the objective learning outcome. 2. As an optional requirement, ask the tutorial lecturers to attend the main lectures to enhance mutual benefits to both, main lecturer could improve their presentations from the additional peer observation feedbacks and tutorial lecturer could gain more information and knowledge from main lecture classes and 3. Changing the tutorial groups into maximum limited to 4 for first two weeks, 2 for second two weeks and individual for last two weeks may provide the opportunity to even slow learners to participate the class tasks.

7. CONCLUSION

The achieved assessment results, student’s evaluation reports and peer observation feedbacks are showing that the practising personalised teaching model is very effective, consistent and successful for the large classes of higher educations. The proposed recommendations of video recording of the lectures, ask the allocated tutorial lecturers also to attend the main lectures and changes in the grouping of students for the tutorial classes, will be implemented from the forthcoming semesters in 2011. The role of the teacher is a complex one that has been shaped by historical and contemporary forces. Increasingly teachers are expected to have advanced preparation and to demonstrate their knowledge of both subject matter and pedagogy. Effective teachers are those who understand the knowledge base for teaching, can execute a repertoire of best practice, have attitudes and skills necessary for reflection and problem solving and consider learning to teach a lifelong process.

8. REFERENCES


