What makes students happy? Factors influencing student engagement using student evaluation data

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Context

This project began as a simple question to do with class size: *Is class size related to teaching?*

15,851 responses to a student evaluation survey form called the Course Experience Survey from Semester 2, 2006 in RMIT University were analysed. The sample contained 84% undergraduate and 13% postgraduate science, engineering and technology students. In addition to the information about study hours, age, whether students were part time or full time, we also included information about class size and delivery mode.

It was found that class size was negatively related to good teaching [$r=-0.25$, $n=14,280$, $p=0.000$]. That is, students in large classes perceived the quality of teaching as poor. However, the effect of class size on teaching is considered small (Cohen, 1992), which then prompted us to investigate further to see if there were *other factors which may influence students' satisfaction with the course*. That is, we tried to tease out the relationship between the various factors associated with student experiences in their courses.

Actions taken

We asked if the students' course satisfaction could be affected by factors such as personal characteristics, motivation, structural and learning environments. We believe that learning environment is one factor that could fall directly under a lecturer's control to influence a student's perception of the course in general. We would expect that the more effective the learning environment is, the better student perceptions of the course would be or the better engagement with courses would be.

Action 1

Before we examined the way in which these factors were related to course satisfaction, we performed a factor analysis on the student evaluation survey items. The factor analysis revealed three clusters of items:

Factor 1: Quality of curriculum (11 items)

These items appeared to reflect students' perceptions of the curricular aspects of the course such as the learning objectives of the course, the course/program outcomes (including the graduate qualities or skills to be developed in the course), the assessment methods, and format of delivery (e.g. lecture or studio or lab).

Factor 2: Quality of teaching (6 items)

These items were similar to the good teaching items which made up the good teaching scale of the national Course Experience Questionnaire. This scale reflects students' perceptions of teaching effectiveness.

Factor 3: Quality of learning materials (or support materials) (3 items)

These items appeared to reflect students' perceptions of the relevance/usefulness of the learning materials/or support materials (including online and web-based learning).

Action 2

Using a combination of Biggs' 3P model of teaching and learning (2003) and Biggs' ecosystem in higher education (1993), a hierarchical regression was performed to find the links between personal factors, motivation, structural (class size, delivery mode) and learning environment (learning resources, curriculum, teaching) factors.

The factors were entered in blocks starting with the personal factors (age, study mode, sector), motivation (hours of study), class size, delivery mode, quality of learning resources, quality of curriculum, and quality of teaching.
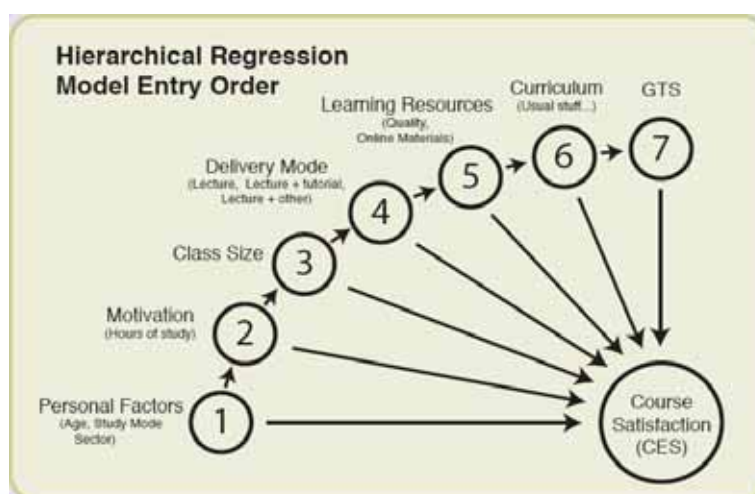

Figure 1: Hierarchical Regression Model entry order derived from Biggs (2003; 1993)

Effect size results

The data shows effect size for successive models (Effect size = $R2 / (1 - R2)$) (Cohen, 1992)[1]. Large effect sizes were noticed for models with:

- Quality of learning resources
- Quality of curriculum
- Quality of teaching.

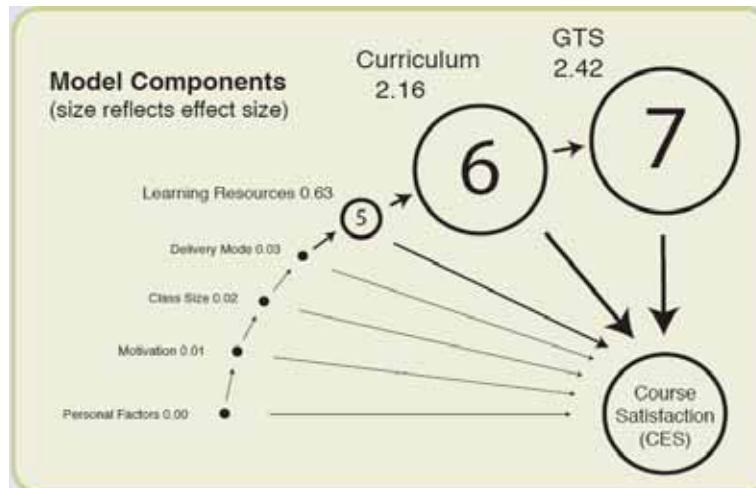[1] Small effects: 0.2 to 0.15, Medium effects: 0.15 to 0.35, Large effects: Above 0.35

Figure 2: Effect size results

Variance explained

The data shows change in amount of variance explained by successive models. Large increases in amount of variance are explained by models with:

- Quality of learning resources
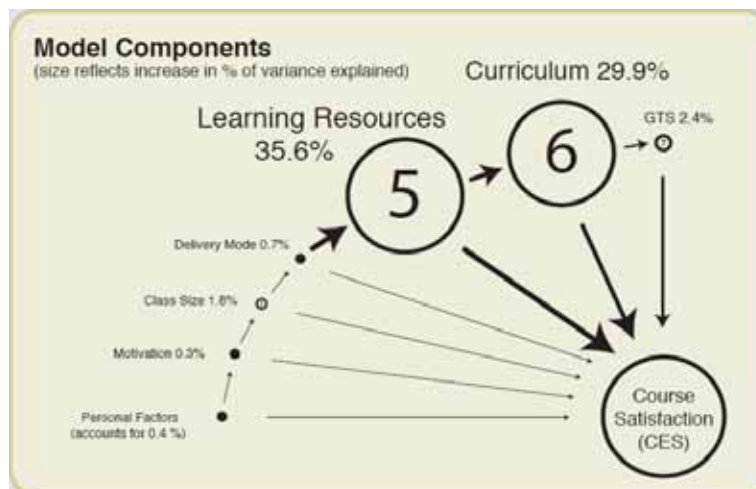- Quality of curriculum.

Figure 3: Increase in % of variance explained

Tips and tricks

Student achievement (e.g. grades) and other intermediary factors such as student learning processes (not obtained and examined in this project) may have accounted for the unexplained variance of CES; however, the effect of achievement on students' satisfaction is a hotly contested issue (see Aitken, 1982; Bean & Bradley, 1986; Pike, 1993).

The student learning factors were not examined. In a 'learning and teaching' context that is student-centred, the investigation also needs to examine the student learning factors, conjointly, with the teaching and organisational factors. Current theories in learning have indicated that student learning factors (such as learning processes, approaches to learning, study strategies and behaviours) are strongly associated with both qualitative and quantitative student outcomes such as student satisfaction, graduate qualities, mental health and general wellbeing, generic skills, and academic performance.

Results, evaluation, impact

Interesting points

1. Our findings are consistent with Biggs' models of student learning and support his theory of constructive alignment, that is, learning objectives, assessment tasks and teaching methods/strategies should be aligned with one another to effectively impact on student outcomes (in this case, satisfaction with a course/program).

2. Our model (curriculum, teaching and learning resources) accounts for 70% of the variance of course student satisfaction outcomes.

3. Curriculum and learning resources were shown to be very important to overall student course satisfaction.

4. Teaching scores alone do not provide a total picture of student course satisfaction. They must be read in conjunction with the scores for curriculum and learning resources when discussing student satisfaction.

Implications

1. Lecturers can positively influence student engagement with the course through the *careful development of their own curriculum and learning resources*. This project's findings suggest that time spent developing learning resources could predict increases in overall student satisfaction. The value of an aligned curriculum (learning objectives, assessment tasks and teaching activities), in particular, should not be under-estimated. Even though the project does not specifically address first year students, the result supports the *first year curriculum principle of engagement, where first year curricula are advised to incorporate pedagogies, teaching approaches and materials that engage students in their learning*.

2. Teaching scores must be read together with the curriculum and learning resources scores. In order to predict students' experiences, all three areas — teaching, learning resources and curricula — must be aligned. Reading the teaching scores in isolation does not give a clear or accurate picture of students' course satisfaction.

3. The curriculum is found to be a critical learning and teaching predictor in effecting positive student experiences — one of which is to engage students in classrooms. The curriculum is a factor that can be controlled by lecturers.

4. Broadly, the results indicate the importance of *lecturers as the designers of learning and teaching environments*. Empirical studies of student approaches to learning have consistently shown that student learning is influenced by variables embedded in the social, psychological and physical learning and teaching contexts. Student approaches to learning are variable: students learn to switch their learning strategies and behaviours (approaches to learning) according to the demands of the learning and teaching environments. Biggs (2003) posited that if a student is embedded in 'a learning and teaching environment X', s/he will be 'entrapped' to meet the demands of X. What this implies is that to develop and achieve stated student outcomes intended by the organisation, the learning and teaching environments must be designed so that the design (physical space, learning objectives, assessment, teaching approach) is aligned with the stated outcomes. That is, if your learning and teaching context (examination question types, assessment types, learning objectives) demands a rote learner, students will use rote learning strategies and behaviours. As such, we cannot blame students if they fail to think critically, problem-solve or fail to use other higher order learning skills.

5. The educational point about the lecturer having control over the learning environment needs to be illuminated, particularly in a context where there is an emerging focus on having a high teaching score on student evaluation forms about teaching and learning. For some teaching staff, the teaching score emphasis appears to mean 'meet the needs of the customers (students)' and looking at the business of teaching and learning from a business point of view rather than an educational perspective. That is, to teach well (service provider) is to teach according to what students (customers) want. This study has shown that *this is a dangerous path*.

Further resources

Nil.

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