

# Moving a unit online: A quantitative evaluation of student responses



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In 2005, a unit was converted to 'wholly online' delivery mode, where all teaching occurred online. Student evaluation survey data for 2005 suggested that students rated many aspects of the wholly online unit delivery significantly lower than previously. For 2006, ten percent of the unit marks were dedicated to an assessed assignment activity based around an online discussion area. Based on student evaluation items common to the pre- and post-2006 period, overall student satisfaction with the unit returned to the same levels as prior to the introduction of wholly online delivery. These findings suggest that careful thought, but not necessarily major changes, may be required to avoid student disillusionment and maximise student learning outcomes when moving an existing unit to wholly online delivery. During 2005 and 2006, the same unit was included in a large survey to gauge students' perceptions of studying wholly online units. The sub-set of respondents relating to this unit was found to have a good demographic match to the total unit enrolment. The survey included the following question item, '39: How satisfied have you been with this unit being offered wholly online?', as an overall measure of student satisfaction with studying the unit in wholly online mode. Multivariate linear regression analysis was conducted with survey item 39 as the dependent variable. While the resultant regression model should not be interpreted literally as a formula for student satisfaction, it does suggest some areas for action to improve student satisfaction with studying this unit in wholly online mode.

Keywords: engineering education, online learning, online discussion, student evaluation.

## Introduction

In Australia, Deakin University is a major provider of distance and online education. It teaches on five campuses located in three cities in the State of Victoria. Initially, Deakin saw itself as a major distance education provider, with some degree of separation between its teaching methods and materials used for on-campus teaching as opposed to off-campus teaching. The use of distance education methodologies and materials for both student cohorts gathered momentum in the early to mid-1990s under the strategic umbrella of flexible teaching and learning. The so-called 'technological imperative' within the University during this period was observed in (Holt & Thompson, 1995), including the case of the reborn School of Engineering and Information Technology (formerly the School of Engineering and Technology). In more recent times the University has attempted to implement institution-wide online teaching and learning systems to provide opportunities to bring together all students in the one learning community. Such inclusively designed online learning environments are seen to provide all students, irrespective of their official mode of enrolment and location, with equal access to learning resources and channels of communication with their teachers, fellow students, and academic and administrative support services.

This might be seen as overly idealistic; however, pragmatically, all universities are now confronted even with their so-called 'full-time' campus-based students with the need to provide more flexible, time and/or place independent study pathways in the face of growing trends towards increasing paid-time employment and student mobility. It would seem that even traditional, school-leaver campus-based student cohorts are taking on the characteristics of their mature-aged, in-employment, off-campus counterparts. This is happening to such an extent that we might argue that many students now seem to be having the distance-type learning experience to one degree or another. The commitment to greater and better quality online teaching and learning experiences is outlined in the University's online technology policy. It set out three levels of online-ness and the University's strategic and operational plans have set targets for the universal move to all units having a Basic presence, and then the progressive move to more units being offered in Extended and Wholly online forms (Deakin University, 2005).

This paper presents a case study of one response to the University's imperative that all students experience at least one unit of study delivered in wholly online mode. It outlines the nature and evolution

of the unit, and a quantitative evaluation of the student responses drawn from two sources. The case study presented engages with a number of the conference themes; it presents an **ICT-based learning design**; it presents the introduction of an online assessment task purposefully designed as a **learning support/scaffold**; and, it presents an **authentic assessment strategy** – online participation in an online assignment in a wholly online unit.

## Background

The School of Engineering and Information Technology has had an eventful history. Inherited from an antecedent Institute of Technology, it was closed in the 1980s and then reborn in the 1990s. Its rebirth saw a School committed to a different type of curriculum and to flexible delivery for both its on- and off-campus and offshore students (Holt & Thompson, 1995). The School offers a four year Bachelor of Engineering (BE) at undergraduate level. This program is delivered in on-campus, off-campus and off-shore modes. The program includes the second-year, second-semester engineering management / professional practice study unit SEB221 Managing Industrial Organisations. This unit consists of four modules.

1. Systems Concepts for Engineers and Technologists;
2. Managing People in Organisations;
3. Manufacturing and the Environment; and
4. Occupational Health and Safety.

Managing Industrial Organisations is a good example of the variety of students within the School. The subject is studied by all students, unless granted exemption due to prior studies or if the student is able to prove they already have the required unit outcome competencies due to work experiences. In 2004, the last time face-to-face-teaching occurred, there were 175 students enrolled in this unit. There were 74 on-campus students (a mix of full-time and part-time students), 46 off-campus students (some full time but mostly part-time students), 50 full-time students studying at a tertiary institution in Malaysia that is a partner of the School, and 5 part-time students in Singapore who receive some local support. Of the 46 off-campus students, most were working full time, usually in an engineering related occupation, and might live interstate or overseas. The age range for students in this unit was 19 years to approximately 50 years (the part-time off-campus option is very appealing to mature age students). The average age was in the mid 20s. Prior to 2005, on-campus students had access to weekly classroom lectures, and off-campus were provided with printed study guides, with on-campus students generally purchasing the printed study guides as well, and all students having access to an online area providing basic resources, including an optional asynchronous discussion forum and the capacity for academic staff to post ‘announcements’ to all class members. The unit assessment regime consisted of two assignments each worth 25 percent of the unit marks and an end-of-semester examination worth 50 percent of the unit marks.

## Managing industrial organisations going wholly online

In 2005, this unit was converted to ‘wholly online’ delivery mode, where all teaching of the unit occurred online (Holt & Challis, 2007). The printed study guides were replaced by a CD-ROM version of the study materials, enhanced with interactive/animated diagrams and video material. Up to this time, the first author had academic responsibility for the Managing People in Organisations module, and was not responsible for unit overall. The assessment regime was not changed for the initial wholly online unit offering. At the end of 2005, due to staffing changes, the first author assumed full responsibility for the entirety of SEB221, and a review of the wholly online delivery strategy for the unit was undertaken. Deakin University’s policy and procedure for ‘Online Technologies in Courses and Units’ requires that wholly online units be, “... designed to help students to develop their skills in communicating and collaborating in an online environment...” (Holt & Challis, 2007). While the inclusion of an optional general online discussion area may have met the ‘letter of the law’ for the wholly online unit policy, it was considered inadequate as a means for genuinely developing student online communication and collaboration skills. For 2006, ten percent of the unit marks were taken from the final examination and dedicated to a formally assessed assignment activity based around the online discussion area. The other unit assessment items were retained. A summary of the assignment instructions given to students is provided here (‘DSO’ refers to Deakin Studies Online, the local name of the Blackboard course management system (CMS) used at Deakin University):

This assignment requires you to both reflect on your studies and to constructively engage with the wholly online environment used in this unit. You are required to post reflections on the course material and to comment on the postings made by other students during the semester. You have two types of task in this assignment.

**Task 1** – Reflect on the course material you have studied in the current week. Identify what you think is the most important topic, access the DSO system for this unit, open the Assignment 1 forum area for the appropriate week, select ‘Compose Message’ and post a few paragraphs on your selected topic that explain why you think it is important.

**Task 2** – Review some of the Assignment 1 posts made by other students and select one to comment on. With that message open select ‘Reply’ and post a follow-up to the original message. You may add your own additional thoughts/reasons for why that topic is important, you may wish to contribute an example related to that topic from your own experience, or something else.

You need to make at least five postings for each type of task given above, ie, at least ten postings in total, five of type one and five of type two. You should make only one of each type of posting in a given week. Only the best posting for either task type in a given week will be marked. If your postings demonstrate **constructive and thoughtful reflection**, you will be awarded up to 1 mark per posting, up to a maximum of 10 marks in total for the assignment. You can make more than five postings for each type of task to maximise your mark for Assignment 1. Please use your own thought/words, **do not simply reproduce the course notes**. Please note that the forum areas **will not** remain open for posting all semester, ie, **it will not be possible to complete all your postings late in the semester**.

Student participation in the online discussion was made ‘mandatory’ in the sense that marks were assigned to participation. The literature suggests that some form of extrinsic motivation is required to ensure a high level of student discussion participation. A weighting of ten percent was chosen for discussion participation – this figure is noted in case studies elsewhere in the literature (Graham & Scarborough, 2001)). It was felt that this weighting would provide incentive for most students to participate, while at the same time not compromising the unit assessment regime should there be unforeseen implementation issues with this initial trial of the asynchronous discussion assignment. Strategies to promote a high level of participation in online discussions include requiring a specific number of postings per assignment and/or per week (Conaway, Easton & Schmidt, 2005). In this case, both these strategies were combined. It has been found that a key element in the effective use of computer conferencing is ‘intentional design’ of the online environment (Harasim, 1991). Intentional design includes designating conferences (online discussion areas) according to the nature of the task (formal or informal), the duration of the task (one week, whole semester, etc), size of the group (plenary, small group etc), etc. Separate weekly discussion spaces were created to structure the formal student assignment postings. This permitted newer discussion areas to be progressively revealed, and older areas to be progressively set as read-only as the semester progressed. A separate informal area was maintained for general unit discussion and questions. As noted, the assignment-related discussion areas did not remain open all semester, to encourage students to engage with the unit material in a timely manner across the semester. Due to the nature of the assignment task, all of the discussion areas were open to all students – there was no separate small-group discussions employed.

A cursory examination of the student evaluation survey data for SEB221 for 2005 suggested that students rated many aspects of the initial wholly online unit delivery significantly lower than in previous years. While the changes to the format of SEB221 for 2006 were not made specifically in response to the 2005 student evaluation, it was decided to undertake a quantitative investigation of available student evaluation data for SEB221 to determine in more detail how students had responded to the move to wholly online delivery, and if the changes made for 2006 had any impact on the response.

## **Investigation: A quantitative evaluation of the student response**

### **Student evaluation of teaching and units**

For many years, Deakin has conducted a student evaluation of teaching and units (SETU) survey at the completion of every offering of every unit. While the question items included in the SETU instrument have varied over time, there is a set of questions common to all SETU instruments, creating a longitudinal student evaluation data set. Prior to semester 2, 2006, an 18 item questionnaire was used. In 2006, the questionnaire was simplified to include a ‘core’ of nine questions, which could be supplemented with optional questions relating to particular unit-related aspects, such as tutorials, laboratory work, workshops, etc. The SETU questionnaire asks students to indicate their level of agreement with the question items on a six-point scale with the labels and corresponding numerical values of 1/strongly disagree, 2/disagree, 3/neutral, 4/agree, 5/strongly agree and a NA point is included to allow students to

validly respond to an item that does not apply to them in the unit being evaluated. Based on the mean student response for the 18 SETU question items for SEB221 over the period 2003-2005, the following question items were identified as having a markedly different result after the SEB221 was offered in wholly online mode for the first time in 2005.

- 1 The teaching staff of this unit stimulated my interest in further learning.
- 2 The teaching staff of this unit motivated me to do my best work.
- 5 This unit was well taught.
- 6 I had a clear idea of what was expected of me in this unit.
- 17 I would recommend this unit to other students.
- 18 The use of on-line technologies in this unit enhanced my learning experience.

The numbers indicated refer to the question item number in the pre-semester 2, 2006 SETU instrument. Of the question items selected, only questions 5, 17 and 18 have identical or very similar questions included in the semester 2, 2006 and current SETU instrument. The SETU data provides one quantitative source of data on which to evaluate the student response to SEB221 moving to wholly online mode.

### Experiences of learning online survey

During 2005 and 2006, the second author undertook a large online survey of students enrolled in wholly online units to gauge students' perceptions of studying wholly online units (Holt & Challis, 2007). The 'experiences of learning online' (ELO) survey sought information regarding

- student demographics;
- total time spent studying unit and time spent online for the unit;
- the organisation and structure of the unit;
- teaching and learning aspects of the unit;
- interactions with teaching staff and other students;
- unit assessment;
- graduate attribute development;
- student performance in the unit; and
- how the unit had influenced the student's approach to learning.

Of the 5,862 students enrolled in the 21 separate unit offerings included in the survey, survey responses were received from 761 students, yielding an overall effective response rate of 13.0 percent. The 2005 and 2006 wholly online offerings of SEB221 were included in this survey. From a combined enrolment of 233, 53 survey responses were received, yielding an effective response rate of 22.8 percent for the SEB221 sub-set. The gender and normal mode of study were known for population enrolment of SEB221, and was included in the information collected from the survey respondent sample. The population and respondent groups were both relatively large, and both the gender and normal mode of study results satisfied Cochran's rule (no expected frequency less than 1 and no more than 20 percent of expected frequencies less than 5), permitting a chi-square goodness-of-fit test between the sample and the population.

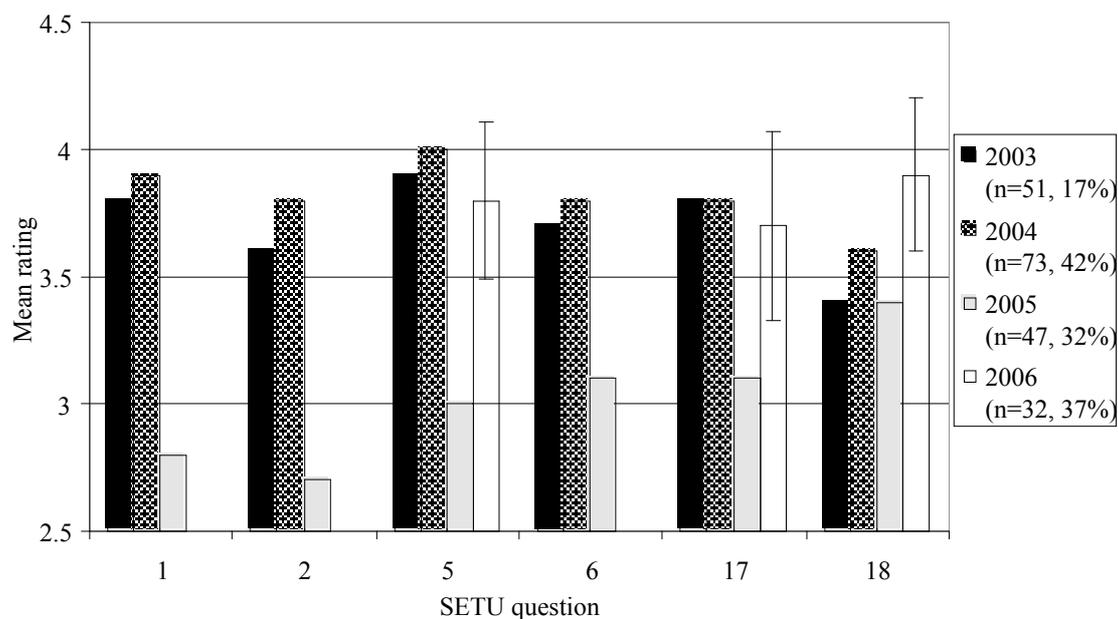
Work by Ramsden and Entwistle in Britain in the early 1980s with a Course Perception Questionnaire established a link between students' perception of their learning environment and their quality of learning (Ramsden & Entwistle, 1981). This and subsequent research is the rationale for much of the use of student evaluation of teaching (SET) as proxy measure for quality of teaching and quality of student learning outcomes. The ELO questionnaire included the following 'student satisfaction' question item, '**39: How satisfied have you been with this unit being offered wholly online?**' (on a scale of 1 to 5), as an overall measure of student satisfaction with the experience of studying the unit in wholly online mode. Multivariate linear regression analysis was conducted with the ELO item 39 as the dependent variable. All other ELO question item variables were initially introduced as independent variables, and step-wise regression was performed until all remaining variables were significant. The regression residuals for the predicted variable were approximately normally distributed.

## Results and discussion

### Student evaluation of teaching and units

Figure 1 shows the mean student responses to six SETU question items identified previously, for SEB221 for the period 2003-2005 and, where possible, for 2006. The number of respondents and response rate for

the SETU questionnaire is also given. For 2006, the first author, as unit chair, had access to the complete SETU data set, and was able to estimate and show 90 percent confidence intervals for the 2006 SETU data, based on the *t* distribution. Except for question item 18, all other reported SETU items suffered a significant decline in mean student rating when SEB221 was converted to wholly online mode in 2005. It might be argued that items 1 and 2 relate to staff/student interaction, and might be expected to suffer in a mode of delivery where all face-to-face contact is eliminated. However, prior to 2005 there were many off-campus students enrolled in SEB221, and the average difference in rating between on- and off-campus students for question items 1 and 2 was about 0.3 less for off-campus students compared to on-campus students – there appears to be something more than just lack of contact with academic staff at play here.



**Figure 1: Mean student responses for a sub-set of SETU question items for SEB221 for 2003-2006**

- 1 The teaching staff of this unit stimulated my interest in further learning.
- 2 The teaching staff of this unit motivated me to do my best work.
- 5 This unit was well taught.
- 6 I had a clear idea of what was expected me in this unit.
- 17 I would recommend this unit to other students.
- 18 The use of on-line technologies in this unit enhanced my learning experience.

Even though no change was made to the assessment regime in 2005 when the unit was first moved to wholly online mode, the 2005 SETU results for question item 6 suggest that students were less clear about what was required of them. The SETU items that might be considered overall measures of student satisfaction with the unit, question items 5 and 17 both dropped significantly with the move to wholly online delivery. Finally, question item 18, asking students about the learning value of online technologies used in the unit, remained about the same in 2005, even though significant effort and resources had been invested in the re-development of the unit materials for delivery in the wholly online mode. On the face of it, given that the unit material and assessment remained ostensibly the same over 2003-2005, the principal factor associated with the decline in mean student SETU ratings appears to be the change to wholly online mode of delivery. Experience with a large number of such mandatory wholly online units at Deakin would suggest that a significant decline in SETU ratings was a common experience. A (negative) discrepancy in student satisfaction between online and face-to-face modes of delivery for the same unit is noted in the literature (Johnson, Aragon, Shaik & Palma-Rivas, 2000)

For the 2006 unit offering, the comparatively minor change of a formally assessed (i.e. marks attached) online discussion element was made to the unit assessment regime. However, this requirement for regular active and reflective engagement with the unit material, with the associated online environment and with other students appears to have had a beneficial impact on student evaluation of the unit (Richardson & Swan, 2003). It is known that students respond strategically to assessment tasks – they are more likely to complete activities that are directly associated with assessment (James, McInnis & Devlin, 2002). Based on the SETU questions items common to the pre- and post-2006 period, the overall student satisfaction with the unit, as measured by the mean SETU rating for question items 5 and 17, returned to

approximately the same levels as prior to the introduction of wholly online delivery. Further, the response to SETU question item 18 increased significantly, indicating that students evaluated the re-jigged online environment as positively contributing to the learning experience in the unit.

### Experiences of learning online survey

Table 1 presents a summary of the demographic information for the pooled SEB221 sub-set of results from the experiences of learning online survey.

**Table 1: Demographic information for the pooled SEB221 sub-set of ELO survey**

Characteristic	Respondent sample	Class population	Significance test
Female	9.4 percent	9.0 percent	Chi square test $\chi^2_1 = 0.009, p > 0.92$
Male	90.6 percent	91.0 percent	
On-campus	64.2 percent	59.7 percent	Chi square test $\chi^2_1 = 0.365, p > 0.54$
Off-campus	35.8 percent	40.3 percent	

There was no significant difference between the respondent and population groups with regard to gender and normal mode of study. While the comparatively low response rate is noted (22.8 percent), the good match between the demographic characteristics of the sample and population groups suggests that valid conclusions about the population group can be inferred from the respondent group. The ELO survey included the following question item, '**40: In what ways, if at all, has studying this unit online influenced your approach to learning?**', inviting an open-ended written response from students. Table 2 presents the pooled, un-edited written responses received from students. The online questionnaire field for question item 40 limited student feedback to 200 characters in length, causing some of the responses in Table 2 to be truncated.

**Table 2: Written student responses to the questionnaire item 'In what ways, if at all, has studying this unit online influenced your approach to learning?'**

<p>It has encouraged me to embrace new ways of learning.          I'm more likely to attempt to research things and learn more about them.          It would be more efficient if the notes are to be printed on as study materials and distribute to the students.          i believe that the unit has made things harder than they otherwise needed to be          Aside from not wanting to do it wholly online - I don't think it has          It has made me frustrated because this information could be found more easily and quickly using previous techniques          to rely more on my self and follow through with my own ideas whilst still considering others more educated than myself.          DSO was down the night before our exam so that was a disadvantage          Online studying makes be study more by myself.          The unit helped me understand that all information is not required in a given extract, it is necessary to take only what is necessary from the the extract. do selective reading, and not rely wholly o          Flexibility is good and feedback from lecturer is timely. The ability to post assignments online is great. A big improvement on previous years. The need to submit weekly postings keeps us from leaving          It has re-emphasised the importance of time management          its nothing different to any other subjects as i study off campus.          The extreme flexibility online study provides is very important to me as i work full tiem and travel a fair bit. The influence on my approach to study is that i am able to work solidly for a week (or          Time management. Ment that I could log in from anywhere and at any time. Great for family life when being an off campus student.          I STOPED          more self regulated          more pro active          Larnat that I need to be a bit more self regulatory in my studies, to start and finish things earlier than I have been.          Never take a unit wholly online, whilst studying a full semester of other subjects there is little time not inclination to sit in front of a computer and read for hours on end without having a knowled          I think that for on-line subjects, more assignments would be useful to get used to the system. Online tests would be good too.          improved my working with others without face to face contact          It's encouraged me to take more initiative with regards to my own studies.</p>
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it helped me realise the importance of being disciplined; work and study online at my own free time but have and follow a time frame.  
I can only say that I feel more confident using online journal search engines... The unit being online as opposed to in-class made little difference to me.

The presence of a number of negative comments is consistent with the observed decline in SETU ratings commonly observed in mandatory wholly online units at Deakin. A number of students relate the flexibility of wholly online study to their status as an off-campus student – for those students wholly online mode is similar to the way that they already study normally. Many students refer to the need to be self-reliant and organise their time effectively. Table 3 presents the variables and corresponding coefficients of the linear regression model in order of contribution for the dependent variable ‘How satisfied have you been with this unit being offered wholly online?’ from the experiences of learning online survey.

An Analysis of Variance (ANOVA) test suggested that the regression model is significant ( $F_{24} = 66.56, p < 5 \times 10^{-11}$ ) and predicted 96.5 percent of the variation in the dependent variable ( $R^2 = 0.965$ ). The standard error of predicted variable estimate from the model (0.26) was significantly less than the standard deviation of all student responses to question item 39 (1.37). While the regression model explained nearly all of the observed variation in the students’ response to the ELO survey question item, ‘39: How satisfied have you been with this unit being offered wholly online?’, it shouldn’t be interpreted literally as the ‘formula’ that determines a student’s satisfaction with studying the unit in the wholly online mode. Rather, it points to those factors most likely to influence student satisfaction with studying this unit online. In the section below, each of these factors is considered in more detail. Note that the ELO survey used a range of different respondent rating scales for different questions, and the appropriate rating scale is indicted with the question item.

**Table 3: Multivariate linear regression model for dependent variable ‘How satisfied have you been with this unit being offered wholly online?’ from the ELO survey**

Variable	Coefficient	Stand. error	Beta	Significance
9: Organising and being responsible for your own learning - Satisfaction	0.601	0.089	0.787	$p < 4 \times 10^{-6}$
9: Organising and being responsible for your own learning - Importance	-0.641	0.107	-0.494	$p < 2 \times 10^{-5}$
21: Interacting with staff who convey their enthusiasm for this area - Satisfaction	-0.252	0.067	-0.337	$p < 0.0017$
10: From the start, it was clear to me what I was supposed to learn in this unit	0.303	0.064	0.332	$p < 2 \times 10^{-4}$
37: I am confident of my ability to learn online	0.340	0.096	0.300	$p < 0.0026$
32: Having the opportunity to develop/practice online technical skills - Satisfaction	0.163	0.055	0.221	$p < 0.0085$
5: On average, how many hours a week did you spend studying this unit?	0.186	0.049	0.219	$p < 0.0015$
Constant	2.015	0.472	—	$p < 6 \times 10^{-4}$

**9: Organising and being responsible for your own learning – Satisfaction** (rating scale 1 to 7) – the positive regression model coefficient suggests that students who were more confident/satisfied in their ability to be organised and take responsibility for their own learning activities were also more likely to be satisfied with studying in wholly online mode. The importance of this factor is supported by its frequent appearance in the open-end student comments listed in Table 2.

**9: Organising and being responsible for your own learning – Importance** (rating scale 1 to 7) – the negative regression model coefficient suggests that students who rated being organised and responsible for one’s own learning as important were also less likely to be satisfied with studying in wholly online mode. The student comments listed in Table 2 confirm the importance of organisation, time management and self-direction for online learning. Compared to being satisfied with one’s ability to be organised and responsible, a student who rated these factors as important for success in online study, may actually be expressing a concern about their own ability/capacity in this area. An analysis of the ‘gap’ between the importance and satisfaction ratings for question item 9 revealed a mean gap of 1.1 – that is, on average, students rated their satisfaction 1.1 (on a scale of 1 to 7) lower than their rating of importance for this factor.

**21: Interacting with staff who convey their enthusiasm for this area – Satisfaction** (rating scale 1 to 7) – the negative regression model coefficient suggests that students who were more satisfied with staff interaction were also less likely to be satisfied with studying in wholly online mode. This is perhaps reflective of the changed (and generally reduced) nature of interaction between staff and students in the wholly online format. Students with a higher need for staff interaction may find the online study mode less satisfying.

**10: From the start, it was clear to me what I was supposed to learn in this unit** (rating scale 1 to 5) – the positive regression model coefficient suggests that students who felt that the unit learning objectives were clear were also more likely to be satisfied with studying in wholly online mode. While it might be reasonable to expect this relationship to hold true for student satisfaction in any unit, regardless of mode of study, it is likely to be particularly important for units delivered in wholly online mode where the opportunity for formal interaction with, and explanation by academic staff is potentially more limited than in face-to-face modes.

**37: I am confident of my ability to learn online** (rating scale 1 to 5) – the positive regression model coefficient suggests that students who felt more confident about their ability to operate in the wholly online mode were also more likely to be satisfied with studying in wholly online mode.

**32: Having the opportunity to develop/practice online technical skills – Satisfaction** (rating scale 1 to 7) – the positive regression model coefficient suggests that students who were satisfied that the unit provided opportunities for them to become competent with the necessary technical skills for online learning were also more likely to be satisfied with studying in wholly online mode.

**5: On average, how many hours a week did you spend studying this unit?** (rating scale 0-2, 2-4, 5-7, 8-10, 10+ hours per week) – the positive regression model coefficient suggests that students who spent more time in study related to the unit were also more likely to be satisfied with studying in wholly online mode. While it seems reasonable that a greater level of student engagement with the unit might lead to increased satisfaction generally, interestingly, the ELO survey also asked students how many hours per week that they spent online for the unit, but the response to this question item was not strongly or significantly correlated with their satisfaction with studying in wholly online mode.

## Conclusion

Using existing student evaluation data sources, a quantitative investigation was undertaken to determine how students had responded to an existing unit being converted to wholly online delivery in 2005, and if the subsequent changes made to the unit for 2006 had any impact on the response. Based on student evaluation of teaching and units (SETU) evaluation data that is collected systematically by Deakin University, simply translating existing unit print-based study resources into electronic/online format, retaining the same assessment regime and dropping all face-to-face contact with academic staff appeared to lead to a significant decline in mean student ratings for a number of SETU questions items, including items that might be considered overall measures of student satisfaction with the unit. This finding suggests that simply performing a ‘direct conversion’ of an existing unit for wholly online delivery may not produce the optimal result for student learning and satisfaction. By making a minor change to the unit assessment in 2006 to incorporate a formally assessed activity that required students to regularly reflect on the course material and participate in an online discussion area, SETU item ratings common across the period 2003-2006 showed a recovery to their prior levels, and the item relating to the value of online technologies in student learning actually rose significantly. These findings suggest that careful thought, but not necessarily major changes, may be required to avoid student disillusionment and maximise student learning outcomes when moving an existing unit to wholly online delivery format.

As part of an institution-wide evaluation of the policy to implement mandatory wholly online units, SEB221 students were surveyed in 2005 and 2006 about their experiences of learning online (ELO). The student demographics of gender and normal mode of study for the pooled sub-set of this ELO evaluation data relating to SEB221 was found to be representative of the pooled unit enrolment population. The data from the ELO survey was used in a multivariate linear regression using the question item ‘How satisfied have you been with this unit being offered wholly online?’ as the dependent variable. While the resultant regression model relates only to the SEB221 data set, and should not be interpreted literally as a formula for determining student satisfaction with the wholly online delivery mode, it does suggest which factors were most likely to influence student satisfaction with studying this unit online. Factors which were found to positively influence student satisfaction with studying this unit online included the student’s satisfaction with their own ability at organising and being responsible for their own learning, how clear to

students from the start it was what they were supposed to learn from the unit, how confident the student was of their own ability to learn online, the student's satisfaction that they'd had the opportunity to develop/practice online technical skills, and how many hours per week, on average, that students spent studying the unit. Factors which were found to negatively influence student satisfaction with studying this unit online included how important the student considered it to be organised and responsible for their own learning, and how satisfied the student was with interacting with staff enthusiastic for the area.

These findings suggest the importance of formative assessment activity throughout the semester that: promotes/requires regular, structured and extended student engagement with unit; that incorporates regular 'contact' with unit academic staff such that staff have an opportunity to demonstrate knowledge and enthusiasm for the subject area; that helps clarify unit learning objectives; and, that helps students to develop and practise the technical and other skills that they require to operate effectively in an online learning environment.

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**Please cite as:** Palmer, S. & Holt, D. (2007). Moving a unit online: A quantitative evaluation of student responses. In *ICT: Providing choices for learners and learning. Proceedings ascilite Singapore 2007*. <http://www.ascilite.org.au/conferences/singapore07/procs/palmer.pdf>

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