
Published 2015 by the
Higher Education Research and Development Society of Australasia, Inc
PO Box 27, MILPERRA NSW 2214, Australia
www.herdsa.org.au

ISSN 1441 001X
ISBN 978-0-908557-96-7

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Responding to student evaluation of teaching: closing the loop

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Our undergraduate curriculum focuses on preparing students to be critical thinkers, problem solvers, and knowledgeable, responsible information technology (IT) professionals. Students often question the relevance of core subjects which are designed to introduce and develop these attributes; such units regularly perform poorly in student evaluation of teaching. Although these subjects are strongly grounded in meeting industry expectations regarding employability skills, students do not value the learning as the curriculum is deemed non-technical and not worthy of inclusion in an IT qualification. As these are core subjects, improving student perceptions and learning outcomes is of critical importance. Simply responding to student feedback received via student evaluation of teaching had not resulted in any improvement; so a holistic approach was adopted. A workshop was organised to explore the issues and develop a strategy to improve outcomes and perceptions of these subjects. Rather than addressing student feedback specifically, the underlying issues that led to students’ negative perceptions were identified and addressed. Recommendations were implemented in 2014 resulting in improvements in student evaluation for relevant subjects. In this paper, we will discuss the process that was adopted to respond effectively to student evaluations, and explore the impact that this had on them.

Keywords: student evaluation of teaching, student engagement, quality improvement

Introduction

The context
This case study is situated in a School of Information Technology (the School) in a large, multi-campus university in Australia (the University). The School is located across two campuses (Campuses-A and -B) and services students in face-to-face mode at both campuses as well as cloud-based students (Campus-C). The student cohort consists of domestic and international undergraduate students who are studying toward a Bachelor of IT (BIT) degree, which is professionally accredited by the Australian Computer Society (ACS). The programme of study consists of 24 credit points (in this case 24 units of study) normally completed over 3 years (6 trimesters of study). The BIT consists of 8 core units and at least one major specialist sequence consisting of 6 units. Although students can choose units of study from outside the School or Faculty to make up the remaining 10 credit points, most choose to complete a second major and other IT related units, resulting in a very discipline focused programme of study.
The curriculum
Educating undergraduates to respond and adapt to best practices used by IT organisations is embedded within our curriculum. Fundamental attributes expected of our graduates are critical thinking, problem solving, professional skills, communication, teamwork, self-management, and obviously IT skills, themes that align well with those of our professional accreditation body (ACS, 2013). Our aim is to improve our IT graduates to be responsible, employable, and adaptable professionals. However, the strong discipline focus in students’ study programmes has led to some interesting anomalies, not least of which is a general dislike of studying any subject that is not obviously technical in nature.

This is problematic as the core components of the BIT include a strong theme at each year level which focuses on professionalism and graduate skills. In first year there is a unit which focuses on critical thinking and problem solving, essential skills for any IT graduate. In second year the focus is on IT professional skills which includes, in particular, graduate skills such as communication, teamwork, and self-management. In third (final) year, the students have to successfully complete a capstone project unit where they need to use all the knowledge and skills they have developed through their studies to address a significant, authentic, IT related problem. In other words, they have to demonstrate their achievement of the course learning outcomes. Many students question the need for these units which negatively impacts their preparation and study of not only these units but also others which utilise and build on these skills.

The case
The first and second level units within the professionalism component of the core programme are the focus of this paper. For convenience we will refer to the first year unit as SIT105, which includes critical thinking and problem solving, and the second year unit as SIT223, which includes communication, teamwork, and self-management. Student evaluations for both these units were very poor, often with very extreme negative commentary accompanying the low assessment numbers. Comments ranged from ‘discontinue this unit’ to ‘sack the teacher’; ‘critical thinking and problem solving are not relevant to IT’; ‘we learnt how to write a CV in year 8 (at high school) so it shouldn’t be included in this unit’; as well as other ill-informed comments. These demonstrated a lack of appreciation of the importance of graduate and professional skills, as well as lack of engagement with the learning activities by the students.

The initial version of SIT105 commenced in 2009 and covered critical thinking, reasoning and different logic systems. It also included some problem solving where students would use their critical thinking to solve mathematical puzzles. This version shocked our new IT students as they perceived it as a philosophy and mathematics unit rather than an IT unit. Successive versions of SIT105 reduced the amount of mathematics and ensured topics were IT related. In brief, the mathematical puzzles were replaced by designing and developing algorithms using pseudo-code, and analysing IT discourse, such as requirements documents and journal papers, using critical thinking strategies.

SIT223 was introduced in 2012 and was delivered wholly online, much to the dismay of a significant proportion of campus-based students. The curriculum includes: communication, collaboration and teamwork; career development; and professionalism and ethics, all presented in an IT context. The delivery was changed to a blended mode in 2013 in response to poor evaluations which highlighted the lack of face-to-face contact. Lectures were
delivered on-campus and were recorded for off-campus students. Tutorial and workshop style learning activities remained online with students from each campus (including off-campus) being integrated into a number of small, online tutorial groups to complete the learning activities. Despite making the change in direct response to the main themes in the student evaluations, these continued to be disappointingly low with much negativity articulated in the commentary.

As SIT105 and SIT223 are core subjects, improving student perceptions and learning outcomes is of critical importance. Simply responding to student feedback received via student evaluations had not resulted in any improvement; so a holistic approach was adopted. A workshop was organised to explore the issues and develop a strategy to improve student perceptions of these subjects.

**The aims of the case study**

This paper focuses on the exploration of how the questioning, and even rejection, of the need of core subjects, with learning outcomes focussed on graduate outcomes rather than on technical outcomes, negatively impacts students’ preparation and study of not only such core subjects but also others which utilise and build on these skills. We explore the impact this has on the student evaluation of teaching outcomes and discuss the impact of addressing issues holistically.

**Related work**

Deployment of student evaluation of teaching (SET) surveys is a well-established practice in universities around the world: these being used as a measure of teaching performance and teaching quality (Spooren et al, 2013). Tucker et al (2013) indicate that most universities in Australia have implemented institution-specific SET instruments to support evaluation of teaching and learning. Morrison and Johnson (2013) suggest that SET is a “useful instrument for curricular and pedagogic reform, decision making, diagnosis and review” and that both formative and summative data can be used to help institutions “identify, promote, and demonstrate effective teaching and … [improve] teaching and learning” (p. 579).

Over time SET has evolved from individualised, paper-based survey instruments administered in class to institutional, standardised systems deployed online (Morrison, 2013). These were initially designed to gather formative data to help improve teaching and learning. However the ease with which data could be collected electronically has resulted in it being used for much more, including internal quality-assurance processes, faculty personnel decision making and reward (Spooren et al, 2013). In the Australian context regulatory changes have resulted in universities reviewing the purpose of internal SET; these are now being used not only for quality improvement but also managing academic performance, informing professional development, academic performance rewards, promotion processes and as key performance indicators for senior executives and teaching and learning leaders (Tucker, 2013), all of which are considered somewhat controversial (Morley, 2014).

Although concerns have been raised over the validity and reliability of SET instruments (eg Hoefer et al, 2012) they do provide some input to improve teaching by giving insights into the strengths and weaknesses of the course and teaching based on student opinions (Spooren et al, 2013). But they can be influenced by factors that have little to do with what is purported to being measured. Hoefer et al (2012) showed that biases associated with discipline, gender and academic level may influence SET outcomes. Patrick (2011) showed that correlations
existed between students’ expected grades and their evaluation of the course, whether the course was compulsory or elective, and that teacher personality impacted SET outcomes beyond grades or perceived learning. Narayanan et al (2014) conclude that “course characteristics (size, level, and type), instructor characteristics (gender and experience), and course grades significantly affect SET scores”. However, a strength of SET is in the qualitative data where academics can use their professional judgement to use the feedback to support and improve their academic practice (Smith, 2012).

The anonymity associated with online surveys can lead to further bias in responses. In a comparative study of face-to-face and online SET, Barkhi and Williams (2010) found that students were more likely to give lower evaluations in the online environment. Further, they found that extreme negative low scale evaluations were more likely to appear in online evaluations and extreme positive high evaluation were more likely in the face-to-face version. From this finding Barkhi and Williams deduce that students “who are not happy with a class seem more motivated to go on-line to provide negative feedback” (p 255). In line with Narayanan et al’s (2014) findings, the level and type of course had an impact on evaluations. Lindahl and Unger (2010) go further and suggest that the anonymity of online SET allows “students to write cruel remarks and morally disengage from the consequences of their actions” (p.71). This is exacerbated by the student-as-consumer metaphor that is common in higher education at present leading to SET feedback that is focussed “on the product of education rather than the process of becoming an educated person” (Lindahl and Unger, 2010: p.73). Their study indicated that the demoralization caused by cruel feedback is a problem that staff are reluctant to discuss in public but are more willing to discuss privately with appropriate support.

Reflective practice has been demonstrated to have a positive impact on SETs but requires some objectivity in the collection process (Winchester & Winchester, 2014). Since SET tends to elicit subjective responses from students this can prove problematic. Rindermann, Kohler & Meisenberg (2007) suggest that “mere feedback about teaching performance without counselling in which there are opportunities for reflection on teaching … does not result in measurable improvement” (p.83).

Analysis of existing situation

At our University, data related to student satisfaction and feedback was collected by a survey instrument called SETU (Student Evaluation of Teaching and Units) for many years up until trimester 1 of 2014 inclusive, when it was replaced by an alternate survey instrument. The SETU instrument utilised a 5-point Likert scale to capture responses. We are mainly focusing on teacher satisfaction with SIT223, an aggregate measure of all responses in SETU, and teaching satisfaction based on responses to the SETU question ‘how well was SIT105 taught’.

Table 1. SIT105 SETU - teaching satisfaction from 2009 to 2014.

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<thead>
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<tbody>
<tr>
<td>Campus-A</td>
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<td>Campus-B</td>
<td>2.1</td>
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<td>3.1</td>
<td>2.6</td>
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<tr>
<td>Campus-C</td>
<td>3.7</td>
<td>3.3</td>
<td>3.8</td>
<td>3.4</td>
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<td>3.7</td>
</tr>
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</table>
The SETU scores for teaching satisfaction in SIT105, for the three campuses at which this unit is offered, show different trends. These scores steadily declined at Campus-A from a high of 4 in 2009 to 2.9 in 2013 (Table 1 – note that 2014 data has been included in this table for future reference). Scores were similarly low at Campus-B over the same period, but at Campus-C these scores were relatively steady with an average of 3.6.

The SETU scores for SIT223 for nearly all measures were under 3 (out of 5), some were under 2. “The workload … was manageable” was the only measure just over 3 in 2013 with ‘no exam’ being cited as the main reason for this. Similarly, ‘teacher satisfaction’ was also low at 3.37 in 2012 and even lower in 2013 at 3.1. Although not very bad, this number is significant since the teachers being evaluated generally received 4 or higher in other units they were involved in teaching.

The textual feedback for both units was also predominantly negative with students indicating that the curricula are “irrelevant to IT”, “I’m never going to use critical thinking, this is rubbish” and “I did this at school. Why are we doing it at Uni?” for example. In some cases the commentary was unthinking and occasionally cruel. “Dear god, this was a boring-ass stupid subject”. “This unit as nothing to do with I.T. and therefore should not be a core unit”.

After each offering of both SIT105 and SIT223, teaching teams reviewed the SETU data and made appropriate changes in direct response to the feedback received in preparation for the following offering. After each offering the teaching teams were hopeful of an improvement in SETU only to be sadly disappointed. The focus of student commentary may have changed from year to year but the negativity was still evident. A different approach had to be found in order to break the cycle of ‘receive negative comments – respond to comments through curriculum or pedagogical amendments – receive negative comments …’. Following the completion of both SIT105 and SIT223 in the first half of 2013, where student feedback continued to be poor, a workshop was organised to address issues related to these units.

The workshop and recommendations

This workshop was an all-day event held at a centralised location in mid-2013 once trimester results and SETU outcomes were released. Attendance included teaching staff not only from both units but from other units, from the Faculty’s teaching and learning support unit, and students who had completed these units within the last several years. The aim was to ensure a broad range of discussion and maintain objectivity.

Through open discussion of SETU outcomes, and the first-hand experiences of the past students and tutors ‘at the coal face’, the issues underlying the poor SETU comments were able to be teased out rather than just focusing on the comments per se. The Faculty-based support staff were able to provide rather more impartial interpretations of the commentary than the teaching teams were able to do alone, and were also able to provide suggestions as to how issues could be addressed in differing situations. The students and tutors were invaluable at providing the student perspective giving insights that the teaching team were unable to access in other ways.

Recommendations for changes to units (outcomes of workshop)

The main outcome of the workshop was a series of recommendations for both units that were significantly different from those that had suggested themselves previously. The recommendations were generally not targeted at a specific unit but rather were suggestions
that could be adopted in any unit, particularly those that are not technically focussed. The recommendations covered a number of areas including: curriculum, learning activities, student expectations, learning support, and scaffolding. Many of the recommendations are complementary, for example collaboration and teamwork, engaging with industry and industry exemplars, so “a number of birds could be knocked on the head using one stone!”

There were also a number of unit specific recommendations including:

- SIT223: encouraging representatives from professional associations to talk to students.
- SIT105: focus less on English language examples.
- Rebadge SIT105 to include IT in the unit name.

**Implementation and Outcomes**

Most of the recommendations were addressed straightforwardly within the annual unit improvement process. Others were considered from learning outcomes and student appreciation perspectives. One recommendation was considered as potentially the key to convincing students that these “hated, not belonging to the IT curriculum” units have value; bring guest speakers from industry into the classroom to talk about how these skills relate to their work.

**SIT105 Implementation**

SIT105 focussed on the ‘engaging with industry and industry exemplars’ recommendation in 2014. Although there appeared to be sufficient time to organise guest speakers for 2014 (over 6 months), this task was complicated by the lack of enthusiasm and commitment by IT industry to release staff to speak to the students. Only three people agreed to speak and were invited to talk to Campus-B students for around 30 minutes. The first speaker (systems manager) discussed real life problem solving in his department; the second speaker (electrical engineer) talked on what can go wrong when testing fails; and the third speaker (soon to be IT graduate) presented in week 9 on employability in the IT industry.

Scheduling these speakers to present at one campus only allows us to determine the impact, if any, of these speakers with respect to student perceptions and satisfaction of SIT105 by analysing SETU feedback from each campus and comparing feedback with feedback of previous offerings.

In 2014 nearly all aspects of this unit were the same across all three campuses and were similar to the previous offering. All staff and students have access to the same guides, lecture notes, practical materials, online resources, assessment questions and solutions, and other unit-related materials. Some aspects must differ, such as academic staff, due to the geographic location of these campuses. Assignments differ from year to year but essentially the questions are similar and the scenario changes; for example an IT requirements document from a volunteer organisation was used in 2013, whereas an IT journal paper was used in 2014. These differences are evident to all students in the unit. However, as the three guest speakers only presented at Campus-B, any difference in student satisfaction could be attributed to the guest presentations.

**SIT105 Outcome of Implementation**

SETU data related to SIT105 shows a substantial increase in student satisfaction towards teaching at Campus-B in 2014 (Table 1) corresponding to the introduction of guest speakers.
Interestingly, although Campus-B scores were much lower prior to 2014 and Campus-C scores were relatively steady, these two student cohorts had access to the same materials and were taught by the same seasoned lecturer.

SETU comments from Campus-B students historically are a mix of positive and negative ones, however, it was surprising to see very few negative comments in 2014 in relation to ‘teacher satisfaction’ such as “I greatly enjoyed learning from this man. He has the knowledge to impart and a good way of doing it.”, “He delivered the unit very well.”, “Very thorough, enjoyed learning from him.”, “He did well in teaching this unit. He is very concise and exact with his wording which I learn from quite well.”, “He is master of his unit and very helpful.”, “He made the 2 hour lectures interesting and engaging.”. Further, in the area of ‘unit satisfaction’, positive comments from Campus-B students indicated that the unit was interesting, with comments such as “dry but quite interesting”, “helpful”, “enjoyable”, “engaging”, “of great assistance”, “lectures are best”; on the other hand some students are still struggling to understand the rationale for the unit; ‘I am still trying to think how I would use this in a IT environment’, ‘some of the material taught may have little relevance to actual IT work environment’. Understanding the reasons for this turnaround in student perceptions is clearly worthwhile.

**SIT223 Implementation**

Since SIT223 already incorporated some guest speakers, the focus for improvements was on curriculum and pedagogy in the face-to-face environment. Off campus students continued to be accommodated in the online learning environment as before. A flipped classroom approach was adopted with weekly 2-hour workshops for campus-based students, but the one hour lecture each week was maintained, mainly to accommodate the guest speakers. An additional speaker from a professional association did present a lecture. Workshops were timetabled in tutorial rooms in the hope that students would soon realise that preparatory work was indeed just that, to be completed before arriving in class. A few classes were scheduled in labs as no other appropriate rooms were available.

Within each workshop students were expected to work in groups of about 6, membership of which was determined by the tutor and changed almost every week. The weekly learning activities, including preparatory tasks, were published at least one week in advance. A weekly checklist of activities that students were expected to complete was also published to assist them with their scheduling and completion of tasks. The preparatory work set the scene for the in-class activity that was completed collaboratively within the small groups. Most activities required groups to speak to the class or do a short presentation on the work they completed during the class. The outcomes of one in-class activity (run across two weeks) resulted in an assessable group assignment (a group presentation) which was marked in class by the tutor. All the learning activities contributed to the Portfolio assessment, a major individual assessment where students had to evidence and reflect on their achievement of the unit learning outcomes.

**SIT223 Outcome of Implementation**

The group work was facilitated by rearranging the furniture in the tutorial rooms to accommodate small group discussion. The tutor had to be very creative to provide a similar environment for those classes scheduled in labs, which included moving chairs in each aisle between the computers and to the corridor outside the lab.
It took some students several weeks to realise that preparatory work should be completed before arriving at their workshop. This compromised their ability to complete the learning activities satisfactorily and tutors had to make some accommodations on the fly to allow students to actively participate in some classes. The need for such modifications reduced as the term progressed with students realising the advantages of being adequately prepared for class.

Considering that our IT students generally do not enjoy group work there was surprisingly little mention of this aspect of the flipped classroom in the SETU outcomes in 2014. Indeed, all measures are over 3 with only ‘I would recommend this unit to other students’ being under 3. Curiously satisfaction with “the workload was manageable” had increased to 3.8 despite the actual workload increasing through additional and extended learning activities! As with SIT105, teacher satisfaction has increased considerably to 3.9, but of more significance is that this was more closely aligned with the numbers that the tutors normally received in other units. In other words, any perceived shortcomings in curriculum or delivery were not clouding students’ perceptions of teacher quality as in previous years.

In 2013 the number of useful positive comments could be counted on one hand with most focusing on administrative aspects of the unit: “the assignments and task that were needed to be completed … were presented at the start of the unit … allows students to manage their timetables”; “response time on forum was pretty good”; “demonstrate our learning through an actual set of projects and not just one big test at the end of trimester”.

In 2014 the majority of positive comments focussed on the curriculum and learning activities, rather than the administration of the unit, although there had been little change in the curriculum: “learnt some valuable life lessons”; “I liked we were taught things that are applied in the real world IT industry”; “reflecting on the stage I’m at with my IT career” “industry guest speaker where the best aspect”; “it was just very clear and the student expectations were clearly outline from early on making it a good experience from start to finish”; “learning how to prepare for interviews was really helpful and something I never would have expected to find in a unit”.

Surprisingly there was no negative commentary on the regular group work and just one positive one: “I actually did learn some quality … teamwork techniques”.

Conclusions and further work

The workshop provided an environment for open and informed exploration of the SETU outcomes, identification of underlying issues and development of strategies to address these in a collaborative, supportive and collegial manner as recommended by Rindermann, Kohler & Meisenberg (2007). Not only did this process improve teaching and evaluation outcomes, it also improved teaching staff sense of well-being. SETU results in 2014 show that students can embrace these subjects, acquiring the ability to be critical thinkers and problem solvers, and adopt a professional approach, which can lead to improving our graduates to be responsible and adaptable professionals. The increase in student satisfaction is clearly welcome, and identifying its root cause is worthwhile.

In SIT105 the introduction of guest speakers at Campus-B, who ‘validated’ the curriculum, was a major difference between the offerings at the other two campuses. This would appear to be the reason for such a large increase in students’ satisfaction at Campus-B. However, this
inductive argument appears weaker after analysing SETU commentary as there was no reference to any guest speaker. SIT105 will move to include guest speakers at all campuses. It will be interesting to see whether such a small change will have a similar effect on SETU at all campuses. However, enticing and procuring guest speakers is a challenge in itself; “Making improvements is not always possible without support to teachers to enable effective change” (Tucker et al 2013).

In SIT223, the focus on communication and collaboration amongst peers seemed to be the main attraction for students. This was supported with well-structured authentic activities and clearly articulated student expectations. “I liked we were taught things that are applied in the real-world I.T industry.”; “This unit has given me inspiration to work hard on the area where I need more attention.”

There is still room for improvement as indicated by the continued, but now constructive, negative commentary in both units as well as the ongoing issue of the perceived value of these units. Areas for future improvements include:

- Rubrics – students do not perceive these as providing feedback
- Technical issues (problems with video-conferenced lectures and simultaneous recording – two different systems not designed to cooperate with each other!)
- Number of submissions required for assessment (recognised in 2013 but not able to action change process in time for implementation for 2014)
- Guest speakers – although valued they need to be better informed as to expectations, particularly ensuring they arrive on time, keeping on topic and keeping to schedule

Encouraging past students to participate in lectures and give short presentations could mitigate many of the perceived deficiencies of these units, perhaps best proof of which is a comment from one workshop participant (a tutor): “when I was a student I too could be quite thoughtless and inconsiderate when writing comments on SETU!”

References


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