Supporting Student Engagement with Capstone Project Presentations

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Structured Abstract

BACKGROUND
As part of two professional practice courses all penultimate and final year students attend a one-week residential school. One main component is a two-day project conference where students present a 15-minute seminar. The conference is run like a professional research conference and approximately 180 final year and 200 third year students have attended the conference in 2013. Normally, the student seminars are assessed by academics in their field. To provide student with a better opportunity to engage with the presentations, student audience members are required to provide peer assessments for presenters in a session. To facilitate the peer assessment, an electronic, rubric-based Moodle module was used, that allows students to provide feedback, but also allows the critiqued students to access the comments.

PURPOSE
The aim of this project was to engage the student audience in seminars in a final year course where students present their capstone project to actively participate in the feedback process. This paper addresses the research question of whether involving students in peer assessment improves participation and engagement with seminar presentations; and whether student assessments provide constructive feedback above what academic assessors are able to provide.

DESIGN/METHOD
To address the research questions, comments that form part of the student feedback were analysed to demonstrate student engagement. The depth of the student feedback as well as the marker feedback was compared and a student survey was used to get a better understanding of the student perceptions of this activity.

RESULTS
Student comments show a deep level of student engagement and indicate that students reflected on their feedback. Including the student comments as part of the feedback provides presenters with additional constructive comments, helping them to improve both presentation style as well as technical content.

CONCLUSIONS
This work has demonstrated that it is possible to improve student engagement and feedback for presenters by incorporating peer assessment. This improves learning outcomes of students but requires very little input and time commitment by the academic. Currently, feedback by academics is still paper based and it is anticipated that this will also become electronic in the future.

KEYWORDS
Student seminar presentations, peer assessment, constructive feedback.

Introduction

Transferable skills play an important role for professional engineers in their workplace. This has long been acknowledged by professional bodies such as ABET (Accreditation Board for Engineering and Technology, 2011) and Engineers Australia. Deficiencies have been identified in the international as well as Australian context (Male, 2010). To acquire those central skills, students require opportunities to practice. This can be difficult, in particular in the context of online and distance education as these generic attributes cannot be learned passively through traditional didactic educational programs (Brodie, 2010).

The University of Southern Queensland provides both face-to-face courses as well as courses via distance education. If students are enrolled in an external program, the practical training occurs during on-campus residential schools in Toowoomba. This face-to-face time with staff and equipment is an important aspect in the context of the accreditation of the Engineering programs with Engineers Australia. Eight one-week residential schools are scheduled throughout the program, one per semester. Two professional practice courses are part of this offer and students attend the first course in their penultimate year and the second course in their final year of study.

Intended learning outcomes of the courses include reflections on skills and improvements, finding and evaluating information, effective communication, continuing professional development, and evaluating & critiquing. A key component of both courses is a two day project conference where the final year students present a seminar on their capstone project. The event is run like a professional conference. Both third and fourth year students attend the seminars. One difficulty in the past was that the involvement of the audience with presentations was limited as the audience was not formally required to engage as part of the conference.

The use of peer assessments during the seminar was seen as a way to help students to reflect on the content and to provide valuable feedback to the presenters. As these classes are large, approximately 200 students peer course, a practical solution was required to support this approach if peer feedback was to be made available to the presenters after the sessions. The SPIDER (Select, Prepare and Investigate, Discuss, Evaluate and Reflect) Moodle learning activity (Kist & Brodie, 2011) was used to provide this functionality as it allows for assessments using electronic rubrics.

Much of the literature reporting on peer assessment concentrates on how well the peer assessment of students aligns with the assessment of teachers (Dziedzic, Janissek, & Bender, 2008, e.g.). While this is a relevant question, it is secondary in the context of the application of peer assessment in this paper. The main focus here is on how peer assessment can be used to engage students in seminars; how peer assessments is an additional form of feedback for the presenters; and how it encourages reflections by students on the content as well as presentation skills. The underlying research questions are whether involving students in peer assessment improves participation and engagement with seminar presentations; and whether student assessments provide constructive feedback above what academic assessors are able to provide.

To address the research questions, in the first instance student survey data was analysed to get a better understanding of the student perceptions of this activity and whether students agreed with the intended outcomes of using peer feedback – engagement and reflection. In the next step both comments that form part of the student feedback will be analysed to demonstrate student engagement and to gage the depth of feedback provided. The former is being reported in this paper, the latter will be addressed in future work. The remainder of the paper is organised as follows: the next section discusses the educational framework that is the basis of this study, followed by how the two courses are organised and how the peer assessment tool is used. The methodology is outlined next followed by a discussion of results and findings.

Theoretical Framework

One important condition to be able to develop as lifelong learning is the ability of students to objectively assess their own learning (Brown, Rust, & Gibbs, 1994). A similar point is stressed by Williams (2008), i.e. graduates must become adept at objectively assessing their own learning to become lifelong learners. For students to become 'reflective practitioners', they have to learn the skills to critically reflect on their own professional practice (Bennett, 1989; Falchikov & Boud, 1989; Schön, 1987). Furthermore, the acquisition of knowledge and skills cannot be limited to the formal education and continue throughout professional life (Sambell & McDowell, 1998). It is therefore important to introduce students to the concept of continuing professional development and to stress the importance of transferable skills.

Practicing these skills in the context of distance education is difficult as they cannot be learned passively (Brodie, 2010) and activities for students that allow them to practice these skills are limited. Distance students also receive very limited informal feedback and have few opportunities to interact with other students. Using peer assessment is one way to improved motivation and ownership, critiquing, evaluation skills and lifelong learning (Brown et al., 1994). Peer assessment of students' encourages student autonomy and higher order thinking skills (Cassidy, 2006). Potential benefits of self and peer-assessment such as improved motivation and ownership, critiquing and evaluation skills have also been are acknowledged by other in the research community, for example by Bostock (2001) and Brown et al. (1994). Also, Kist and Brodie (2011) have demonstrated that the feedback provided by peers includes components of constructive feedback as identified by (Nicol, 2009).

To enable pedagogies that rely on peer assessment in the context of large classes and distance education requires technological support. This thought is enforced by Brodie & Gibbings (2009) who suggest that greater emphasis should be placed on technology-supported tools and techniques to assess context based learning. Independent of individual learning activities and their benefits, diversified learning opportunities will generally benefit many students as variation theory suggests (e.g. Pang, 2003). Reflection also plays an important role in the learning process. Reviewing their own presentation while evaluating the work of their peers allows students to generate perspective (Boud & Falchikov, 1989).

Learning Activity and Context

Professional Practice 1 is a third year course. Two hundred and three students were enrolled in the course in 2013, 68 were on-campus students and 135 were studying by distance education (external students). Professional Practice 2 is a fourth year course with approximately 180 enrolled students in 2014, 106 studying by distance education and 74 students studying on campus.

Both are practice courses with a nominal workload of 50 hours and compulsory attendance requirements. Most activities that form part of this course occur during a one week residential school in September each year. All students, external as all on campus attend the one week face-to-face sessions in Toowoomba. A two-day project conference is the highlight of the week and all engineering students in both practice courses attend the event. It is run very similar to a professional conference, including formal technical sessions, session chairs and a book of abstracts. The technical presentations are organised in five parallel sessions and sessions are clustered by disciplines including civil, mechanical, electrical and computer systems engineering as well as surveying. Most sessions will feature 6 speakers and a speaker has 15 minutes for the presentation and additional 5 minutes are reserved for questions. The audience is encouraged to ask questions of the speaker.

Students have to undertake assessments of the presentations in four out of six sessions. No assessments are required in the session where students give their own talks and in sessions that are scheduled before their own session. Students have to provide feedback for three presentations per session. To make sure all speakers receive feedback, a pattern is

prescribed: Students with odd student numbers assess all presenters with odd presentation slots (1, 3, 5, 7), students with even student numbers provide feedback for presenters in even slots. If there are not enough presenters in a session, the pattern is ignored.

To facilitate the peer assessment the Moodle SPIDER learning activity and assessment strategy is used. It incorporates many of the key activities associated with student seminars and workshops. Main features of the tool include its ability to manage the process, including topic selection, content preparation, capacity for students to perform investigative and background research, discussions, peer evaluation, and reflection. In the context of these courses, the peer assessment feature is used. As the tool allows for assessing offline items and decouples giving assessments from receiving assessments, it works well in the context of seminars.

For each conference session an individual instance is configured that shows all speaker of the five parallel sessions. Students are free to select any of the parallel sessions and provide feedback for speakers in the session they attend according to the pattern discussed above. After the sessions have finished the tool is switched to the moderation phase to check the feedback that have been submitted by the students. In the next step aggregated results are made available to the speakers in the reflection phase of the tool.

Methodology

On completion of the courses, students were asked to participate in this study approved by the university's ethics committee. Students that agreed to participate completed a perception survey of 32 questions. As part of the process the students were also asked for their consent analyse their peer assessment data. This was an anonymous survey, but students had the opportunity to voluntarily provide their student ID to allow the researchers to correlate assessment data with survey responses. Fourteen questions were about general and background questions, four questions where about critiquing others, four about the feedback received and six relating to professional identity and development. In addition the survey included four open-ended questions: Which aspects of this activity worked for you? What didn't work? What would you change? Any other comments?

As an incentive, students had the opportunity to win a shopping voucher. This paper focuses on the student survey data. Out of a total of 383, 220 students completed the survey, but only 178 provided their consent to participate in the study. The average age of the participants was 29 years and 9 per cent of the respondents were female. Forty per cent of the respondents were face-to-face and 60% distance students. Forty five per cent of participants were studying part time and most of the part time student (95%) where also external students. Fifty per cent of the respondents were completing the third year course and 39 per cent were doing the final year course, nine per cent where enrolled in both courses at the sane time[1]. Fifty per cent of participants were working full-time and 24 per cent were working part-time. Eighty-seven per cent of participants where enrolled in a Bachelor and 17 per cent in a Mater degree. Eighty-three per cent of students were in the penultimate or final year of study.

Results

This section summarises the survey results in the context of the research questions. Two dimensions are discussed: responses in regards to participation and engagement i.e. giving feedback and responses about receiving feedback. Third year students only gave feedback, forth year students both gave and received feedback.

[1] As both courses occur at the same time, this is only possible in exceptional circumstances and involves extensive additional external activities.

Participation and Engagement

The question whether students found it difficult to assess the work of others, 64 disagreed/strongly disagreed, 23 per cent where undecided and only 13 per cent agreed. In contrast 58 per cent agreed and 13 precent strongly agreed with the statement that assessing others stimulated their thinking; only 10 per cent disagreed and 4 per cent strongly disagreed. For the open-ended question of "What did you get out of assessing other students?" a number of major themes occurred, with some specific to one of the cohorts.

Attention and engagement was one theme that equally applied to both cohorts, reflected by comments such as "*made me pay attention*" and "*It made you really listen to what they had to say so you could give genuine responses.*" A number of responses provided more insights such as "*This peer reflection helped raise awareness of the need to assess critically though also ensure I put a postitive(sick) spin on everything. Last year I found myself to critical in questioning the students when I should have been focussed on the good that they achieved"* and "*Attending presentations in order to mark them made me view them in a different light compared to simply attending them* (…)."

The main lessens that were learned by students broadly cover four area: reflections on their own ability in the context of their peers, on presentation skills, what the final year project entails and how their work can be improved.

The first point was evident in comments such as: "*An understanding of what's required, and an understanding of the range of other people's abilities, and how I might fit into that range*", "*Caused me to reflect on how I perform in some of these areas myself*" and "*I think I gained some perspective of what to look for in my own work in similar circumstance.*"

In regards to presentation skills comments included: "*Picked up good points from other presenters*", "*Ideas for my own presentation*", "*Avoid mistakes they make*" and "*Feedback allowed me to improve my presentation.*"

A common theme among the third year students was their understanding of the final year project: *"The implied knowledge that was required for the project"*, *"A feel for what is expected of the final year project (in terms of quality and quantity of work)"* and "*I enjoyed being able to preview what sort of work we should be completing in the upcoming year.*" A number of final year students also reflected on their work in general: "*How to improve my work."*, *"I could see what I did wrong and could fix it"*.

In the large cohort there were also a few students that did not engage with this activity reflected by comments such as *"I do not believe I get anything by assessing other students."* The question of whether the participants know that critiquing and constructive feedback form an integral part of professional practice and that it is important for practicing engineers, 58 per cent agreed and 30 per cent agreed; five per cent disagreed or strongly agreed.

Fifty-nine per cent of participants agreed and 21 per cent strongly agreed with being empowered by the ability to use their expertise and knowledge to provide feedback, a very positive outcome of the exercise.

Receiving Constructive Feedback

As only the final year students presented, they were also the cohort that received the feedback. 51 per cent agree and 21 per cent strongly agreed that the feedback given by their peers was honest and factual. 59 per cent agreed and 14 per cent strongly agreed with the statement that the peer feedback was constructive.

In regards to the feedback provided by students the value was judged by some as superior to academic feedback, "*I consider my peer's advice somewhat more important than the academic advice*"; by a few others it was seen as irrelevant: "*I have yet to look at my peer feedback. the reson(sick) is a majority of students were not really even paying attention so as*

such I do not warrant(sick) their opinions. I took the feedback of the assessors onboard and that of anyone I spoke with afterwards. ”

Findings

The main aim of using peer assessment and peer feedback was to support the engagement of the audience members in the presentations. The results in regards to receiving feedback show that this was generally successful. Students have also provided some pointers on how this can be improved in the future. Several pointed to the limitations in the assessment rubric. In light of these comments we have revisited the rubric for the offer in the following year.

Judging by the survey results and the open-ended questions, the peer assessment activity worked for most students and largely addressed the intended learning outcomes. There are a number of comments that show are very limited understanding of the need to practice and acquire transferable skills, e.g. “*The fact I was unable to do my real university work*.” This is also reflected in the negative responses to the question whether critiquing and constructive feedback form an integral part of engineering practice with three per cent of participants strongly disagreeing and six per cent disagreeing. While this is a fairly small number, this is one aspect that warrants closer investigation.

Another observation that was made during the sessions that needs to be mentioned is that using computers in seminars for the peer assessment also provided an irresistible temptation for some students that rather than listening, surfed the Internet, browsed Facebook or played games on their computers. This is besides the fact that it was explained several times that this is not acceptable behaviour. A number of students voiced their disapproval or this during the conference as well as in the feedback that was provided.

Overall, the majorly of student responses were positive and most of the feedback for the residential school suggested a positive learning experience for both the third as well as the fourth year cohorts. Facilitating formal peer feedback has contributed to this outcome.

Conclusions

This paper has introduced a study that has demonstrated that peer assessments in the context of final year project presentations are an effective way to improve the student engagement. At the same time this also leads to additional feedback for the presenters and requires very little effort by academics. In addition, the process of peer assessment has been widely acknowledged is as a tool to foster the development of transferable skills. This was also supported by the comments of the participants in the survey.

At this point only the survey results have been analysed in detail. While this gives a very good general picture, it says little about the quality and accuracy of the peer feedback. Future work will address this issue by analysing the feedback students have provided and by correlating this information with the survey responses. While it is not expected that this leads to any novel discoveries, it might provide insights in how the validity of student assessment can be automatically measured.

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