



Scientia Education Investment Fund Grants Final Report

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**Towards understanding changes in classroom environment
required to engage postgraduate distance students online with
formal assessments**

School of Engineering and IT

Dr Keith Joiner, k.joiner@adfa.edu.au, ph 0499202284

**Dr Elena Sitnikova, Dr Leanne Rees, Dr Dijana Townsend, Ms
Britt Levett, Ms Bronwyn Jones**

Reporting: Dr Keith Joiner

1. Executive Summary

- More university post-graduate courses are being conducted on-line to service professionals' demands for life-long learning. Such classes as evaluation planning (ZEIT 8231) and cybersecurity governance (ZEIT 8018) at UNSW Canberra have grown to seventy students per semester studying by distance. Teachers have successfully used Moodle forums and student multi-media presentations as part of formative assessment in order to have these comparatively isolated students critique one another's work and engage more. In accordance with Vygotsky's Theory this engagement builds more robust conceptions through important social interactions and the sharing of perspectives. Also through collaboration such engagement ought to contribute to more positive learning environments. This SEIF Grant supported formal research into the efficacy of these pedagogical engagement techniques using student achievement, qualitative interviews and quantitative classroom environment surveys of experimental and control classes. The educational research methods were standardized and internationally recognized.
- The research determined that structured peer critiquing assists the achievement of students of lower or average prior academic achievement and improves aspects of their learning environment, however students of higher prior academic ability, that is the top quartile, experience a poorer learning environment and are not significantly affected in their achievement. The most significant demographic influence was age, with older students preferring more involvement, and perceiving several environmental dimensions differently to younger students; arguably influenced by older students having lower prior academic achievement. Younger students showed a greater probability of preferring online assessments and less preference for student cohesion.
- Qualitative interviews reinforced student's strong preference for individual assessments and a wariness for direct student critiquing, influenced strongly by the time pressure of mature post-graduate study part-time. The need for efficiency drives students to want clarity in every aspect of their learning and therefore direct feedback from teachers when they can. It remains challenging, particularly in technical domains to convince even postgraduate students that most subjects have perceptual differences and subtleties and their education is more complete and useful if they explore that with peers. Two types of structured peer critiquing were in use in the experimental subjects. The first method was direct exchange of student seminal work developing project measures of success, while the second was posting and response on a Moodle forum of student research analysis on cybersecurity challenges on forums. In both methods students were generally constrained into groups and they were assessed on the incisiveness of their critiques. The latter method using a forum appears to be a more subtle and acceptable means than direct exchange. While the research did not explore generational effects of the Information Age, there were enough significant differences found in younger students, to propose that social media posting and responses is becoming a more familiar means of engagement. Forums were a more subtle means of structuring student critiquing and engagement than direct exchange without creating as much pressure on student-teacher expectations. That said, close analysis of forum interactions found students avoided in their responses direct critique of student posts, preferring to simply present what they might have missed, extend on argument or in some instances simply present their own post.
- In summary, the study found significant benefits of structured peer critique in postgraduate pedagogy for the majority of average and lower-achieving students but at some expense to the learning environment of higher-achieving students. Further risks in the pedagogy are that students' will confuse the student interaction as being instead of, or at the expense of, student-teacher interaction and feedback, and that student-student interaction can be inefficient. Structuring the critiquing around forum posts and responses was accepted better by students but care must be taken to ensure the debate is incisive. Suggested strategies to broaden the appeal of structured peer critiquing are to explain better the curricula need for understanding perceptual differences and subtleties (grey areas) and perhaps allowing high-achieving students to illustrate that learning in other individualistic ways like literature review.

2. Outcomes and impact

- The research had ethics approval dating from March 2018.
- The research incidentally impacted three teachers, five postgraduate subjects all in Semester 2 of 2018, and 377 students varying in impact from offers to complete surveys through to some students spending up to an hour on all quantitative surveys and some students doing an hour on qualitative interview.
- The research methodology and objectives were briefed to the UNSW Canberra faculty teaching and learning day in October 2018.
- Aspects of the structured peer critiquing have been amended for the experimental subjects (ZEIT 8018 & 8231) as both subjects were transitioning from semester two to semester one.
- There has been no impact on future curriculum or pedagogy outside the teachers involved because the work is in write-up. Qualitative analysis completed in November 2018 and quantitative analysis in December-January. Two journal articles are being drafted for high impact international journals..
- Once disseminated there are around 1200 postgraduate coursework students in UNSW Canberra that could benefit from this work because it clarifies the efficacy and challenges of structured peer critiquing.

2. Dissemination strategies and outputs

- The research outcomes will be presented to the UNSW Canberra teaching and learning day in Semester 1 and from there offered to a UNSW Kensington equivalent for wider use.
- The two journal articles in preparation will include all contributors [Joiner, K. F.; Rees, L.; Levett, B.; Sitnikova, E.; Townsend, D. & Jones, B], be submitted by March. The details are:
 - Efficacy of structured peer critiquing in postgraduate coursework, *The Journal of Higher Education* [impact factor 2.28], Taylor & Francis:
 - Learning Environment of Distance and Partly-Distance Postgraduate Coursework Programs, *Learning Environments Research* [impact factor 1.3], Springer

3. Evaluation of project outcomes

- The evaluation strategy has been previously described and will be sufficiently documented in the two journal articles. There number of students decomposed as follows:
 - 377 students across five subjects all in Semester 2 of 2018. Two subjects were control subjects and three subjects were experimental.
 - 187 students were in the experimental courses and 190 students in the control courses
 - 315 of the students had prior academic achievement records with the university enabling grouping into the lowest quartile, middle two quartile and upper quartile.
 - 105 students (28%) completed demographic profiling, preferred learning questions and a standardised preferred learning environment questionnaire (College and University Classroom Environment Inventory CUCEI).
 - 57 students (15%) completed both the actual and preferred versions of the CUCEI enabling an assessment of environmental fit.
 - 30 students (8%) undertook qualitative interview followed by thematic coding analysis for deeper insights.
 - One of the ZEIT 8018 structured peer critiquing forums (posts & responses) involving 52 of 64 students in the subject was examined qualitatively for the incisiveness of the student interaction.
- Quantitative analysis involved multifactor and multi-output regression analysis with the occasional use of logistic regression (binary outputs) or ordinal regression for multiple choices, using the Excel add-on Quantum XL.