

EXPLORING THE EFFECTIVENESS OF A NOVEL TEACHING APPROACH FOR INFORMATION AND ACADEMIC LITERACIES IN A FIRST YEAR ENGINEERING UNIT

Mariette LeRoux^a, Fiona Jones^a, Nicholas Tse^b, Daniel McGill^b, Azadeh Safari^b, Sudipta Chakraborty^b

Presenting Author: Fiona Jones (fiona.jones@mq.edu.au) and Daniel McGill (daniel.mcgill@mq.edu.au)

^aLibrary, Macquarie University, North Ryde NSW 2109, Australia

^bDepartment of Engineering, Macquarie University, North Ryde NSW 2109, Australia

KEYWORDS: information literacy, academic literacy, blended learning, engineering education

ABSTRACT

First year Engineering students tend to lack key information and academic literacy skills, which results in poor writing and language use, the use of a limited range of sources and poor referencing in their assignments.

In the 2014 graduate outlook survey, 48% of graduate employers ranked communication skills as the most important selection criterion when recruiting graduates. Transferable skills are becoming increasingly important, not just to produce a more adaptable work force, but to inspire lifelong students who will continuously learn and improve.

In the Macquarie University Engineering Program these transferable skills are introduced early in the degree using enquiry based methodology in a core first year Engineering unit. Tutors play a pivotal role in this process, facilitating repeated practice and acting as mentors for the students.

To emphasise the importance of information and academic literacy as the first step in educating Engineering students, librarians developed a series of 'research studios' based on Baratta, Chong and Foster's work (2011) which were run during tutorial sessions in week 4 of session 1. As Engineering students typically have active, sensing, inductive and visual learning styles (Young, 2012, p. 22) an activity based approach was used to help students self-discover and practice. This was supplemented with an online language activity created by the learning skills department. The following learning outcomes were addressed:

- recognising when information is needed
- appreciating the relevance of different types of resources for their field
- identifying the most efficient search strategy to locate relevant information of a high standard
- critically evaluating information sources
- using appropriate academic language
- using the correct format of reporting
- referencing correctly and ethically

Over 300 students attended tutorials held in library classrooms. Each 'research studio' was held in a different room and facilitated by a different library staff member, with groups of students moving from room to room at the conclusion of each 40 minute session. Library staff members provided short instruction, with most of the tutorial time devoted to hands-on activities, small group work and discussion. A large first year core unit was chosen to pilot this approach in order to be representative of the Engineering student population. Evaluation data shows that all of the activities had positive effects on student learning. The online language activity recorded a high number of hits. Student feedback indicated that the activity-based approach to developing information skills helped to consolidate understanding. Tutor feedback indicated that the quality of assignments submitted following the program was improved over previous sessions.

To facilitate integrating these literacies into the unit, tutors will provide input into reviewing the exercises and will be trained to facilitate the learning activities co-designed by librarians and learning

skills specialists in a blended learning format. As there was some feedback that exercises were too easy, the input from tutors will help pitch the training at the appropriate level and also provide valuable subject specific context.

This presentation shares the results of this unique collaboration and its impact on student test results. It will address the information and academic literacy skills that Engineering students require to succeed in their academic and professional endeavours.

REFERENCES

- Ali, R., Abu Hassan, N., Daud, M. Y. M., & Jusoff, K. (2010). Information literacy skills of engineering students. *International Journal of Research and Reviews in Applied Sciences*, 5(3), 264-270. Retrieved June 9, 2015, from http://eprints.utm.my/37881/2/IJRRAS_5_3_08.pdf
- Baratta, M., Chong, A & Foster, J.A. (2011). The research studio: integrating information literacy into a first year engineering science course. American Society for Engineering Education Conference, Vancouver, Canada. Retrieved June 9, 2015, from <http://www.asee.org/public/conferences/1/papers/1407/view>
- Fosmire, M & Radcliffe, D. (2013). Integrating information into the Engineering design process. West Lafayette, IN.: Purdue University Press. Retrieved June 9, 2015, from http://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1030&context=purduepress_ebooks
- Lindsay, E. (2015). Graduate outlook 2014: employer's perspectives on graduate recruitment in Australia. Melbourne, Vic.: Graduate Careers Australia. Retrieved June 9, 2015, from http://www.graduatecareers.com.au/wp-content/uploads/2015/06/Graduate_Outlook_2014.pdf
- Young, S.J. (2012). Engineering. In O'Clair and Davidson, J. (eds) *The busy librarian's guide to information literacy in science and engineering*. Chicago, IL: Association of College and Research Libraries

Proceedings of the Australian Conference on Science and Mathematics Education, Curtin University, Sept 30th to Oct 1st, 2015, pages 46-47, ISBN Number 978-0-9871834-4-6.