A Novel Model to Overcome Technical Report Writing Difficulties for First Year Engineering Students

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BACKGROUND

Written communication skills is a critical competency required in the workforce and it is one of the generic attributes that mentioned in Stage One Competency of Engineers Australia (EA, 2013). Technical information can be contextualised by graphical presentations (such as drawings, models etc.), by concept maps or by mathematical modelling. Comprehensive delivery of engineering ideas often requires written description. Engineering programs have been designed to develop technical report writing of students. However, a systematic development of this key skill is lacking in many higher education programs and the development of this skill should not be left to the final year (Mills and Smith, 2014). In particular, first year students who are transiting from a much-guided learning environment at secondary school to a more independent learning system at universities and TAFEs, face the challenges of writing technical reports at the early stages of their tertiary education.

A range of interventions seeking to address student technical writing skills in engineering demonstrates the continuing need for something to shift in their curriculum. If we closely examine the practices that are enacted in this context and what the engineering academics / students do or required to do in their teaching / in these subjects, these practices include opportunities for students to practise or develop proficiency in different types of writing. This relationship is illustrated in figure 1. The figure demonstrates how the elements of a practice, represented by the circular arrows within the diagram (sayings, doings and relating) are held in place by practice architectures, represented by the circles of the diagram (the arrangements). All of these interact with one another to enact the project, represented by the large horizontal arrow (outcome of the practice).

AIM

- The aim of this study is to develop ‘technical writing skills’ of engineering students by embedding a systematic technical writing program in one of the first year engineering subjects.

METHODOLOGY

The proposed model consists of implementing a block program embedded in an existing first year subject. The model includes delivery of ranges of topics in scientific and technical writing running 30 minutes per week for 8 consecutive weeks of the second semester of the first year. The topics include lecture materials, hands-on activities, and facilitated in-class study skills and guided discussions. Students’ feedback at the end of semester can be a measure of the effectiveness of the model.

RESULTS

Preliminary results from the program indicated that students valued the technical writing support and they were able to incorporate feedback from teachers to improve the quality of their written assessment tasks. It is anticipated that improving the technical report writing skill in a systematic approach will address one of the core challenges for first year students as they transit from secondary school to tertiary education. Furthermore, it is expected that students are likely to overcome threats pertaining to engineering study continuation which may evolve due to difficulties related to writing skill.

CONCLUSIONS

Students need a systematic approach of report writing training at the early stage of their engineering education. The present study explored the way of enhancing technical writing skills of students by embedding systematic learning programs in one of the first year engineering subjects. Further research is warranted to explore the opportunities and challenges of implementing this program.

REFERENCES

- EA. Engineers Australia. (2013). Stage 1 competency standard for professional engineers. [accessed 8.8.18]