THAT'S NOT HOW I INTERPRET IT! SUPPORTING STEM ACADEMICS AS THEY DEVELOP AND APPLY A SHARED MEANING OF QUANTITATIVE SKILLS

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BACKGROUND

This research project was designed to map quantitative skills (QS) across first-year STEM units, while addressing issues that impact on the development of students' QS. Two key reasons why students have difficulties applying mathematics in other areas of the curriculum are the lack of cross-disciplinary communication and the lack of 'shared meaning' of QS among academics (Matthews, Belward, Coady, Rylands & Simbag, 2012). One of the aims of the project was to support STEM academics as they developed and applied a shared meaning of QS to enhance student learning of QS in interdisciplinary contexts.

AIMS

The aims of this presentation are to describe the components of the project that supported STEM academics as they developed a deeper understanding of QS and their importance in the STEM curriculum, and discuss the outcomes of this process.

INTERVENTIONS

Initially, inter-disciplinary workshops were held to identify and develop a shared meaning of core QS. Mapping tools were developed to capture details of when, how and at what level QS were taught, practised and assessed across first year STEM-based courses. The resultant curriculum maps were used as the basis for 'action plan' workshops.

RESULTS

The units that addressed QS and their trimester sequencing were identified, as well as gaps in the development of QS. The mapping process provided further information about the development of individual QS including: the timing of a QS within units and across trimesters, the teaching, practice and assessment of each QS, the level of attainment, and differences in the way QS were developed due to the modes of study (on-campus, distance, part-time, full-time). Using this information, the facilitated 'action plan' workshops led to curriculum change.

CONCLUSIONS

Although curriculum mapping is standard practice, this project was innovative in that the maps provided an exceptional level of detail. Through the provision of these maps and the facilitation of cross-disciplinary discussions and 'action plan' workshops, this project provided comprehensive support to STEM academics as they focussed on how best to develop students' QS. This resulted in a shared meaning of QS, a heightened awareness among academics of the importance of QS in STEM disciplines, and a more integrated approach to the development of students' QS across courses.

REFERENCES

Matthews, K. E., Belward, S., Coady C., Rylands, L. & Simbag, V. (2012) *The state of quantitative skills in undergraduate science education: Findings from an Australian study*, July 2012 Sydney, Australia: Australian Government, OLT

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