QUANTITATIVE SKILLS IN THE FIRST YEAR SCIENCE CURRICULUM: REFLECTIONS ON A COLLABORATIVE JOURNEY

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BACKGROUND

An OLT Extension project: *Acquiring and applying a shared meaning of quantitative skills (QS) across core first year science units with a focus on distance education*, commenced this year. One of its aims was to establish an ongoing cross-disciplinary collaboration among scientists, mathematicians and statisticians at a regional university to enhance student learning of QS in interdisciplinary contexts, with a focus on distance education. The success of this project depends on academics from the various disciplines appreciating the need for a collaborative approach, and agreeing to join the facilitator(s) on the journey.

AIMS

This paper will present initial results from the collaborative processes taking place as part of the project but will also examine the complex web of interactions, and formal and informal collaborations that led to the development of this inter-disciplinary, cross-school project.

DESIGN

This is an observational study, which includes some qualitative evaluation of activities, and self-reflection by the authors.

COLLABORATIVE PROCESSES

The initial ideas for the QS mapping can be traced back to the formation of an institutional committee consisting of academic and professional staff from across the university who were interested in the first year (FY) experience. Membership included academic and professional staff and encouraged a holistic collaborative environment to break down the silos as outlined by Nelson, Kift, Humphreys and Harper (2006). With HEPPP funding the committee initiated the development of a FY Teaching and Learning Network (FYTLN). The FYTLN coordinators from the two Science schools could see that, after the science faculty was disbanded, communication between schools on holistic T&L matters had broken down.

With a national increase in students enrolling in STEM degrees without the assumed knowledge, the FYTLN coordinators developed a First Year Experience Survey to determine if this was an issue at their university. At least a third of the respondents did not have the minimum level of assumed mathematics for a science degree. At a university-wide First Year Forum students' lack of assumed knowledge was raised as an issue by numerous academics. After attending a FYiM National Forum on Assumed Mathematics in the STEM disciplines the two FYTLN coordinators felt empowered and designed a QS mapping project, extending the ALTC project of Matthews, Adams, Coady, Rylands, Belward, Tariq, Thompson, and Pelaez (2013).

Academic representatives from STEM disciplines attended a seminar and forum to initiate cross-disciplinary conversations about QS; and subsequent workshops to define graduate QS for the various disciplines and map the QS across the FY curriculum in core STEM units. An evaluation was completed and 90% or more agreed that 'the forum was useful in promoting interdisciplinary discussion about quantitative skills in the STEM disciplines', and that 'I would encourage my colleagues to attend a similar forum if it were held in the future.'

CONCLUSIONS

The conversation regarding assumed knowledge continues, and addressing how to best support students with diverse backgrounds to develop quantitative skills is now an ongoing collaborative process. This has developed through the cross-fertilisation of ideas, and the goodwill of academic staff reaching across discipline and school divides.

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