MATHBENCH AUSTRALIA: DOES IT REACH THE EXPECTATIONS OF BOTH BIOLOGISTS AND MATHEMATICIANS?

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Background

It is well documented that life science students require Quantitative Skills (QS); the ability to apply mathematical and statistical thinking and reasoning, especially in the context of science. However, the relatively low numbers of students completing higher level secondary school mathematics, and the lack of mathematics prerequisites for many Australian university science degrees, has resulted in many students lacking the QS expected by life science academics. This poses a challenge for both life science academics and mathematicians: to raise the level of the QS of students.

This lack of QS was targeted by the OLT MathBench project. The recently released online *MathBench Australia* (http://mathbench.org.au) Biology Modules are Australianised versions of the original US *MathBench* modules. The MathBench Australia Biology Modules can be used comfortably by Australian life science academics in their science subjects to build the QS of their students. The OLT MathBench project had mathematicians and biologists collaborating from start to finish, to ensure that the content is appropriate and correct from both the life science academics and mathematicians' viewpoints.

The first part of this presentation captures the biologists' view of the content and use of the *MathBench Australia* modules. The second part addresses the quantitative aspects of the modules and the fit with reported data on the QS needs of life science students.

Aims

One aim was to investigate whether the QS that life science academics want in their graduates are covered in *MathBench Australia*. Another was to find out how the interviewees used *MathBench Australia* in their subjects, whether they perceived it as useful and how it could be improved.

Design and methods

Interviews were conducted with the biologists involved in the project. The questions asked included some information about the students, the QS needed for the subject, the delivery, and the appropriateness of content. The QS in *MathBench Australia* were compared to the previously reported data (Rylands et al., 2013) on the QS needs and requirements of life science students.

Results and Conclusion

Various *MathBench Australia* modules were used in life science subjects, and in various different ways. Overall, the biologists were very positive, finding the friendly and conversational tone together with correct scientific language, to be appropriate. Some improvements were proposed. On the whole, the statistics and mathematics was agreed to have been well covered in *MathBench Australia,* although the modules cover very basic mathematics and statistics, and do not go as far as calculus.

References

Rylands, L., Simbag, V., Matthews, K., Coady, C., & Belward, S. (2013). Scientists and mathematicians collaborating to build quantitative skills in undergraduate science. *International Journal of Mathematical Education in Science and Technology, 44*(6), 834-845.