

# BUILDING SCIENTIFIC SKILLS IN FIRST YEAR BIOLOGY UNDERGRADUATES

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## PROBLEM

Many first-year undergraduate students transitioning from a high school education, in our experience, have very limited scientific and research skills. This impacts on their transition to the study of science in higher education. Since 2012, we have been grappling with the challenge of explicitly and authentically teaching these skills to a cohort of 2000 first year biology students (Gleeson et al., 2017).

## INTERVENTION

We developed two parallel approaches to teaching scientific skills. A large-scale approach has enabled all first-year biology students to develop skills through explicit teaching in dedicated workshops. These workshops are closely linked to the students' practical program in the subject and employ peer-to-peer interactions and group discussions to improve skills such as: experimental design, data analysis, critical interpretation of data and science communication. A small-scale approach involves a group within this larger cohort who were invited to experience the uncertainty and complexity of authentic research through undertaking their own research project. Our intention was to pilot this approach and assess its viability at scale.

## REFLECTION

We will reflect on the effectiveness of teaching scientific skills at these two scales and share how they have shaped the design of a new curriculum, which will have biology knowledge crafted around a framework of scientific skill development.

## REFERENCES

Gleeson, D., Godinho L. and O'Neill L. (2017). Explicit teaching of skills for first year biologists: Reflecting on our impact. In T. Overton & A. Yeung (Eds), *Proceedings of the Australian Conference on Science and Mathematics Education 2017* (pp. 40). Melbourne, Australia: Monash University.

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