

# SUPPORTING FIRST YEAR LEARNING OF SCIENTIFIC WRITING SKILLS WITH A FLIPPED EMBEDDED ACADEMIC INTEGRITY MODULE

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## BACKGROUND

Scientific writing is a fundamental professional skill but remains a daunting task for the trainee scientist. Understanding, synthesising and integrating research are essential writing skills; however, appropriate use of the literature continues to be problematic with many students accidentally plagiarising because they lack paraphrasing and citation skills (Devlin & Gray, 2007). Materials to support students in developing these skills tend to be decontextualized, generic, and even ignored if presented without providing opportunities for hands-on training (Bretag, Mahmud, Wallace, Walker, McGowan, East, Green, Partridge & James, 2014). As writing scientific reports accounts for a substantial proportion of most undergraduate science assessments, discipline-specific academic literacy resources must be embedded early in the science curriculum.

## AIMS

Our aim was to design and embed a flipped, interactive academic integrity module (AIM) for a large core first year biology subject that:

1. Builds student understanding of what constitutes plagiarism and academic integrity in the scientific discipline, and how these relate to being a professional scientist,
2. Improves student skills in paraphrasing and correctly citing the scientific literature.

## DESIGN AND METHODS

The design of our bespoke AIM drew on the First Year Curriculum Principles (Kift, Nelson & Clarke, 2010). Pre-workshop learning included instruction on paraphrasing and referencing in Science via an online interactive AIM. Workshop active learning involved practising paraphrasing skills, with peer discussion and feedback. Paraphrasing and referencing skills were assessed in the final scientific report.

We monitored student completion of the AIM prior to the workshop. Students were surveyed (with ethics approval) at the end of the semester to evaluate their learning experience using the AIM.

## RESULTS

In the pilot program, engagement was strong with 60% of students completing the AIM even though no marks were associated with it. On average, students who completed the online AIM performed better for the referencing criterion in their assessment than those who did not attempt the AIM. Evaluation surveys revealed that students identified the importance of (a) academic integrity (Likert score 4.19, n=245) and (b) correct use of the scientific literature (Likert score 4.17, n=247) to a science career.

## CONCLUSIONS

Using a flipped learning approach, first year students engaged in independent and collaborative learning of professional scientific writing skills. We have plans to adapt the module for embedding in other science subjects.

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