

Developing research communication skills in 3rd year Biomedical Science students

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There has been growing impetus in higher education institutions to provide research experiences for students. While there is evidence that students benefit from engagement in research, the financial expense and the time consuming aspect of engaging undergraduate students directly in research mean that laboratory placements are restricted to small numbers of students. Developing a curriculum to provide an authentic experience of research for a large class that is inclusive of all students is more challenging.

At Monash University a curriculum initiative that engaged students indirectly in research activities as part of assessed coursework has been implemented for final year students in the Biomedical Science degree. The initiative involved students working in small groups over the 12 weeks of semester in a number of tasks designed to develop authentic research communication skills. Students were tutored and supported by a post-doctoral researcher during the semester. Five assessment tasks were used to guide research skills development. Tasks were designed to develop specific research communication skills, i) writing abstracts for scientific (Task 1) and lay audiences (Task 5), ii) searching the literature, giving an oral presentation and writing a research paper on a current issue in biomedical science (Task 2 & 3), iii) interviewing a research lab director, writing a plain language abstract and giving an oral presentation of the researcher's work to the rest of the class (Task 4).

At the completion of the semester we surveyed a subset of students (30 who attended the final lecture) to determine which research communication skills they thought they had developed. The survey used was based on the Undergraduate Research Student Self-Assessment (Hunter *et al.*, 2009).

Students were asked to indicate which of each of the 5 assigned tasks contributed to their developed of a list of 14 separate research skills. Students identified the abstract writing task (Task 1), where they were given a copy of a primary research article and asked to write an abstract, as the only task that developed "their ability to analyse data for patterns" (58%). This task also developed their "ability to understand journal articles" (67%). Tasks 2, 3 and 4 were found to develop similar research communication skills, enabling students to "understand the relevance of research to their degree" (55%, 70%, 67%), their "comfort in discussing scientific concepts with others" (70%, 61%, 58%), their "confidence in working collaboratively with others" (76%, 85%, 85%), their ability to "defend an argument with asked questions" (70%, 61%, 64%) and their skill in "making oral presentations" (76%, 73%, 70%). Task 4, the lab director interview, was the only task that enabled students to "understand what everyday research is like" (88%) and the "care needed to undertake research in the lab or field" (70%). Students indicated that the tasks did not develop research communication skills of explaining a research project to outside people and writing scientific reports.

In conclusion, we have designed an authentic research experience that develops research communication skills, in particular those associated with discussing scientific concepts with others, defending an argument and understanding journal articles. Our research experience was not seen by students as developing skills in writing scientific reports. Modification of the assigned tasks should be able to address this issue in the future.

Hunter, A.-B., Weston, T.J., Laursen, S.L., & Thiry, H. (2009). URSSA: Evaluating student gains from undergraduate research in the sciences. *CUR Quarterly*, spring 2009.