

Project-based learning for statistics in practice – collaboration, computation, communication

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Project-based learning provides an opportunity for students to experience group work that mimics professional practice but tasks must be authentic, provide a sense of ownership, and be structured appropriately [1]. Here we describe a constructivist approach to learning statistics and statistical practice [2] implemented in a compulsory unit in the first year of an undergraduate BSc [3] and a second term unit in a year-long MSc of Health Data Science (conducted remotely). Students were asked to self-organise into groups, choose a topic where data was readily available, and collaboratively write a scientific report using the R software for all data preparation, statistical modelling and visualisation tasks.

Problem solving task assessments in the BSc unit were structured to prepare students for the group project, gradually giving students responsibility for identifying which aspects of the problem and solution require discussion.

MSc students undertook a work-integrated learning project on behalf of an industry client. The students were required to meet with their client to scope out the project, identify key questions and methods, and plan and execute the work under the supervision of a faculty member. Students provided their client with a written report, executive summary, and code, as well as performing a 15 minute presentation to the client, teaching team, and all other students in the unit.

Both units required students to fill in a self- and peer-assessment survey. MSc students additionally completed a reflective essay inviting them to reflect on their prior experience and what they had learned about themselves and professional work during the unit. Students reported high levels of satisfaction with the project task and the structured team environment. Clients for the MSc unit rated the students' work and client engagement skills very highly. Higher scoring reflective essays indicated students' growing awareness of their own skill set and how they can contribute to a team while also learning new skills.

References

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- [3] Czaplinski, I., Clifford, S., Luscombe, R., & Fyfield, B. (2016, July). A blended learning model for first year science student engagement with mathematics and statistics. In *HERDSA 2016 Conference: The Shape of Higher Education*.