

Spoiled for choice? Factors influencing student selection of research projects and how they subsequently evaluate their choices

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Abstract

Undergraduate research projects may significantly affect programme outcomes and are important in developing independent, skilled graduates. They are typically much more open-ended than theory modules. But how do students choose a project, and do they later regret their choices? This paper reports the findings of a project choice survey taken by 150 students studying natural sciences. Students considered project theme/subject and approach (field/lab/literature-based, etc.) the most important factors when choosing, with supervisor least important. Interestingly, cohorts with more control over project design scored autonomy as significantly more important than those working on pre-set projects. With hindsight, 86 (57.3%) said their choice process had worked well, with the rest feeling unprepared to choose effectively. Many would have liked more autonomy. I therefore argue that helping students to evaluate their options and take ownership of their choices could improve both engagement and satisfaction, especially during the current 'anxiety epidemic'.

Full paper

Introduction

A research project is the capstone of an undergraduate science

degree, especially in universities that prioritise 'education through research'^{1,2}. Conducting a research project is an important part of becoming a scientist: it develops graduate skills, fosters independence and helps build professional relationships^{3,4}.

There are important differences, however, between staff and student expectations of projects. Academics value student projects because they enhance retention and challenge more able students, offering them entry into established research cultures⁵. Students, however, do not necessarily want to 'contribute to science', and often do not believe they can unless they have significant autonomy in project design⁶. Student motivation for research comes from feelings of self-efficacy, relatedness and perceived academic or societal relevance (ibid.). The ideal balance between freedom/autonomy and support or structure may thus be different for students and staff, with implications for the student experience in the context of rising rates of anxiety and feelings of isolation among students⁷.

Aim

This case study reports the results of a project choice survey administered to 150 science students in March-April 2022. It aims to explore:

1. Which factor(s) students considered most important in choosing a project. In particular, this emphasised whether students preferred autonomy or clear direction and guidance and how autonomy was scored compared to theme/subject, approach (e.g. lab-based, field-based, literature review), focal group/environment, supervisor identity and skills to be developed.
2. Whether their views changed as the project progressed, and if so, what those students would weight differently if choosing again.

Method

The survey comprised six quantitative questions asking students to score specific factors' importance on a five-point Likert scale. They

were then asked to comment on whether their approach to choosing a project had worked for them, and what (if anything) they would change if they were to choose again.

Three cohorts were surveyed: second-year bioscience students, third-year bioscience students and third-year environmental science students. Bioscience students had chosen projects from a list of detailed adverts written by staff, while environmental science students nominated themes and/or approaches of interest and were matched to a supervisor to develop their own idea. Second-year students were planning their projects while third years were about to submit their write-up.

Results

Respondents ranked a project's theme/subject area and approach (whether field-based, lab-based, literature review or meta-analysis) as the most important factors in their choices. Being focused on a specific animal group or environment, skills to be gained and autonomy were less important, with supervisor the least important and bimodally distributed with groups scoring it either 2 or 4 on the 5-point Likert scale.

Scoring varied by cohort, with statistically significant differences between bioscience and environment students in score on theme/subject (which bioscientists valued more, $p=0.005$) and autonomy (which environment students valued more, $p=0.034$). Principal components analysis indicated that students scored theme/subject, skills, and autonomy similarly, with focal group/environment and approach traded off against one another and supervisor scored highly primarily by those who considered skills and autonomy unimportant.

86 students (57.3%) felt that their choice process had worked well, including the majority of bioscience second-year and environment students. When asked if they would use the same criteria again, 92 (61.3%) said "yes" and 54 (36%) said "no". Those who would have changed criteria mentioned approach and theme/subject most frequently, followed by a desire for more autonomy and focusing more on supervisor identity. Although numbers are tiny, those wanting more autonomy tended to be bioscientists, and several

environment students mentioned feeling unprepared for the choice.

Discussion

These findings suggest that the surveyed students had traded off autonomy (and the opportunity to develop skills) against perceived supervisory support when choosing research projects. The existing literature suggests that both are important motivators, so this suggests students are compromising and fits with Greenbank & Penketh's interview finding that students experience a conflict between choosing a project they feel drawn to and one that they believe will attract more academic support⁸.

The cohort who co-designed their projects valued autonomy more than those whose experience of it was limited, suggesting that facilitating student choice is important if projects are to deliver graduates who work independently. Students with less autonomy more often mentioned that they would prioritise freedom and flexibility more in future choices. Multiple mentions of feeling unprepared to choose, coupled with the relatively high proportion who would choose differently now, suggest that scaffolding choice process itself and promoting co-production by student and supervisor would improve student engagement, motivation and success.

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