

# Enhancing Final Year Projects: A Stakeholder Study

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## Introduction

It has been reported nationally<sup>1</sup> that some bioscience students feel that their courses did not prepare them adequately for their subsequent posts and it is also acknowledged that we can do more to enhance our students' future careers via critical final year research skills (see the STARS project<sup>2</sup>). This goes some way towards addressing UKCES<sup>3</sup> concerns that "...in a competitive and globalising labour market, their [learning providers] duty to students has to go beyond teaching specific knowledge and vocational skills". The honours project is considered to be the place where generic and subject-specific skills gained over the previous years are integrated to demonstrate competent, independent research. There is still debate on a national basis regarding the best strategy for delivering final year projects, with institutions adopting a range of approaches or alternatives to projects<sup>4</sup>. What is clear is that project content, supervision and assessment have become a rising challenge for Bioscience academics.

This poster presents an action research study using a stakeholder perspective that identifies key research skills related to employability and if they could be enhanced in the project module. By focusing on the final year project at Plymouth, we assess the effectiveness of current provision and whether proposed changes creating a new module are likely to be effective from a staff, student and employer point of view.

## Methods

Ethical approval for this study was granted by the Human Ethics Committee in the Faculty of Science at the University of Plymouth.

- 11 Academic staff (all Programme Leaders) agreed to take part in semi-structured interviews.
- 17 actual or potential employers of University of Plymouth bioscience graduates agreed to take part in structured phone interviews.
- 9 Plymouth bioscience alumni (with a range of degree classifications) agreed to take part in structured phone interviews.
- 99 (22%) Level 1 & 2 students from across 14 programmes voluntarily replied to an online questionnaire.
- 22 (8%) Level 3 students voluntarily replied to an online questionnaire.
- Semi-structured interviews were transcribed and key themes identified using an iterative, inductive approach and placed into categories (validated by two independent observers). Structured interviews were recorded onto individual record forms and all data collated onto a master form.
- Online data were collated by Perseus Software Solutions and imported into PowerPoint.

## Student Perspectives

The main skills which Year 1 & 2 students **expected** to graduate with are broadly comparable to those skills that Year 3 students **actually** developed prior to graduation, albeit with differing proportions (Table 1). Communication skills were consistently ranked highly by all groups. Alumni attached less importance to methodologies, project planning and data analysis, and more on subject knowledge in the form of practical research & lab skills.

Skill	% of Yr 1 & 2 students	% of Yr 3 students	% of alumni
Communication	78	82	67
Data analysis	66	39	22
Research methodologies	65	48	0
Project planning & organising	54	65	11
Practical research & lab skills	44	74	89

Table 1. Skills identified as being important by current and past students

Overall, employability was identified as the most significant reason why these skills were deemed important. Year 3 students also thought that these skills were equally important in helping to progress their academic or research interests (Fig 1).

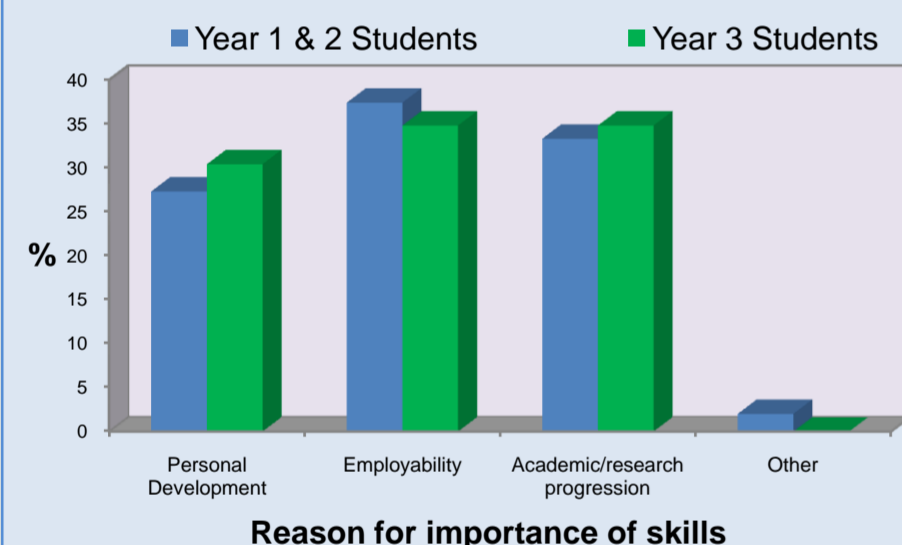


Figure 1. Main reasons for the importance of identified skills

The significance of the final year project in developing these skills is clearly identified at each stage of development, although 30% of 3<sup>rd</sup> years were unsure about its relevance. Alumni placed the greatest degree of importance on the project for employability skill development (Fig. 2).

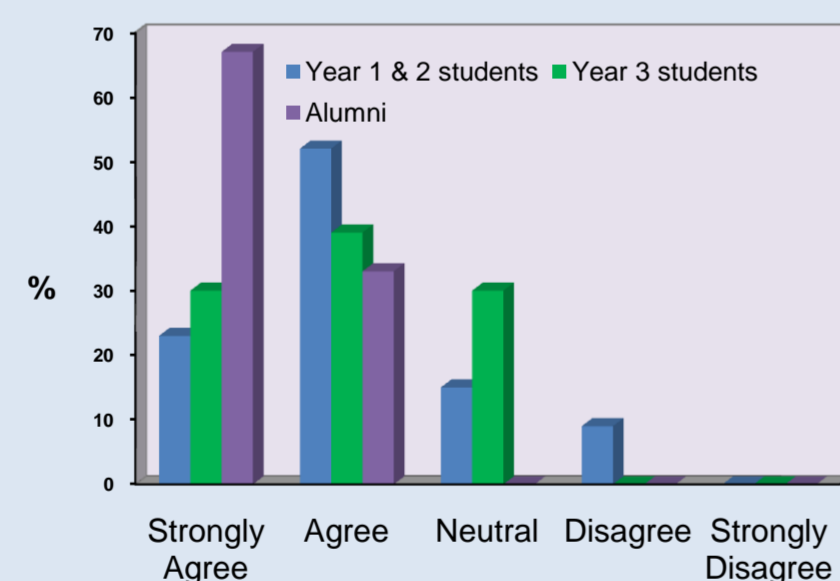


Figure 2. Student views about the importance of the project module in developing employability skills

## Staff Perspectives

The most important skills and attributes staff expected bioscience graduates to be able to demonstrate were:

- Communication skills
- Good subject knowledge
- Critical evaluation
- Teamwork
- Time management
- Data analysis

A number of key issues emerged when discussing the current final year project and its delivery, and possible alternative strategies. These are summarised in Table 2.

Table 2. Main responses of staff regarding current, and alternative, final year project options.

Issue	Main responses
Weaknesses of current project model	<ul style="list-style-type: none"> <li>• Puts a strain on resources, including money, staff time, student time and equipment</li> <li>• Exposes weaker research students and expects too much of them</li> <li>• Temptation for staff to rely on viable, rather than interesting, projects</li> </ul>
The need for alternative project models	<ul style="list-style-type: none"> <li>• Majority of staff believe alternatives are needed</li> <li>• Alternatives should be less pure research/lab based and more focussed on employability skills</li> <li>• Options could consider commercial applications; or have a more structured approach</li> <li>• A minority of staff felt that the existing model was fine and just required some flexibility</li> </ul>
Threats associated with a change to project delivery	<ul style="list-style-type: none"> <li>• Logistics: co-ordination, lab space, timetabling</li> <li>• Alternatives may be considered as a soft option</li> <li>• How to compare standards/assessment criteria of different formats?</li> <li>• Loss of independent research skills and experiences</li> </ul>
Opportunities associated with change to project delivery	<ul style="list-style-type: none"> <li>• Reduction of resource pressures</li> <li>• Opportunity to integrate science to commercial problems and outputs</li> <li>• Improvement to teamwork skills</li> <li>• Enhanced employability if exposed to 'real' challenges</li> </ul>

## Employer Perspectives

The most important skills and attributes employers expected bioscience graduates to be able to demonstrate were:

- Communication skills
- Practical/field skills
- Technical/subject knowledge
- Teamworking skills
- IT skills

Employers reported variable experiences of graduates actually presenting with these skills (Table 3). The most sought-after skill from an employer was **communication**, with positive and negative experiences being reported.

Table 3. The most frequently identified positive and negative employer experiences of graduate skills

Positive Experiences	Negative Experiences
Good IT skills	Lack of experience
Good communication skills	Lack of practical skills
Good surveying skills	Lack of data analysis skills
	Lack of problem-solving skills
	Lack of communication skills

The negative experiences reflected gaps in bioscience graduate skills that employers felt could be best addressed via:

- Extension of work-based learning and placement opportunities to more programmes, involving more external contacts and activities.
- More inquiry-based ('hands-on') research projects earlier in programmes.
- Integration of project assessments with employer-based development issues.
- Increased application of subject knowledge to the working environment.
- Projects that emphasise teamwork and communication skills.

## Emerging Themes

- The project module needs to enhance the standard of communication skills in our bioscience graduates. The importance of data analysis skills for future employability needs to be emphasised by staff prior to, or during the final year: these skills should be strengthened alongside or within the project module.
- Employers want students to have more 'real' or outward-facing employer experience and more problem-solving and data analysis skills, somewhere in the programme (not necessarily in project module). Strategies for project delivery could place a greater emphasis on developing team-working skills. Employers would like more active engagement with programmes.
- Staff are very cautious about any change that reduces the status of the final year project. However, there is a majority view that the traditional model needs to be modified to enable greater flexibility, or allow alternatives that are less focused on pure research.

## Conclusions

The involvement of multistakeholder groups in this study enabled a wide evidence base to be collated. There is a large amount of consensus regarding those skills which are most important for employability, and the relevance and importance of the final year project module for delivering those skills. The challenge remains to hold on to the strengths of the current project format but to incorporate a degree of flexibility that addresses wider employer issues. Bearing in mind the potential threats identified by academics, a flexible, outward-facing approach whilst undertaking personal research could facilitate a variety of requirements (including the Leitch agenda) whilst still maintaining academic rigour and subject quality. The changes already made to the project module at Plymouth may address the issues identified here. However, a full evaluation taking into account this study's findings with actual case studies should be undertaken once students have completed the new project format.

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## References

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