

Can a Multi-Student Research Project Deliver a High Quality Learning Experience at Masters Level?

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Project allocation

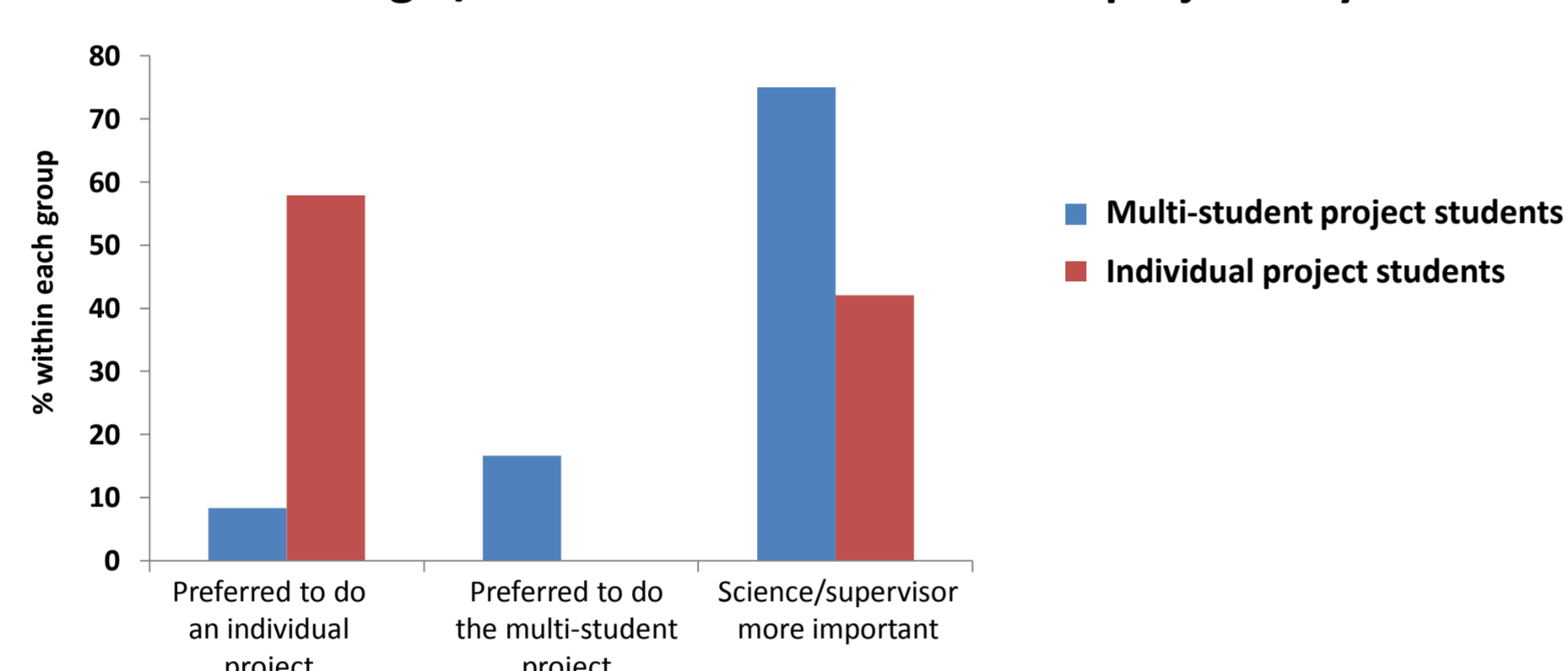
- 40 MSc Cancer Sciences students were offered the choice of different individual projects in research labs, or a multi-student project.
- Each student ranked their top 5 project choices, and 15 included the multi-student project in their list.
- 17 students participated in the multi-student project, with 23 undertaking individual projects.

Multi-student project setup

- Each student had a different cell line with a different knock-in mutation sourced from the company Horizon Discovery. Students investigated survival of these lines in response to different targeted cancer therapies, and used western blotting to determine whether the drugs had inhibited their intended targets.
- Seminars from clinicians, working on related stratified medicine clinical trials, added a translational interest to the project.
- Lab work was carried out in the MacGregor building under the supervision of two academics (KLW and TS) and one senior postdoc (MW).
- Evaluation methods: paper questionnaire for all students; focus group discussion with 9 of the students doing the multi-student project. Data are categorised by whether each student did an individual or multi-student project (KLW and JR).

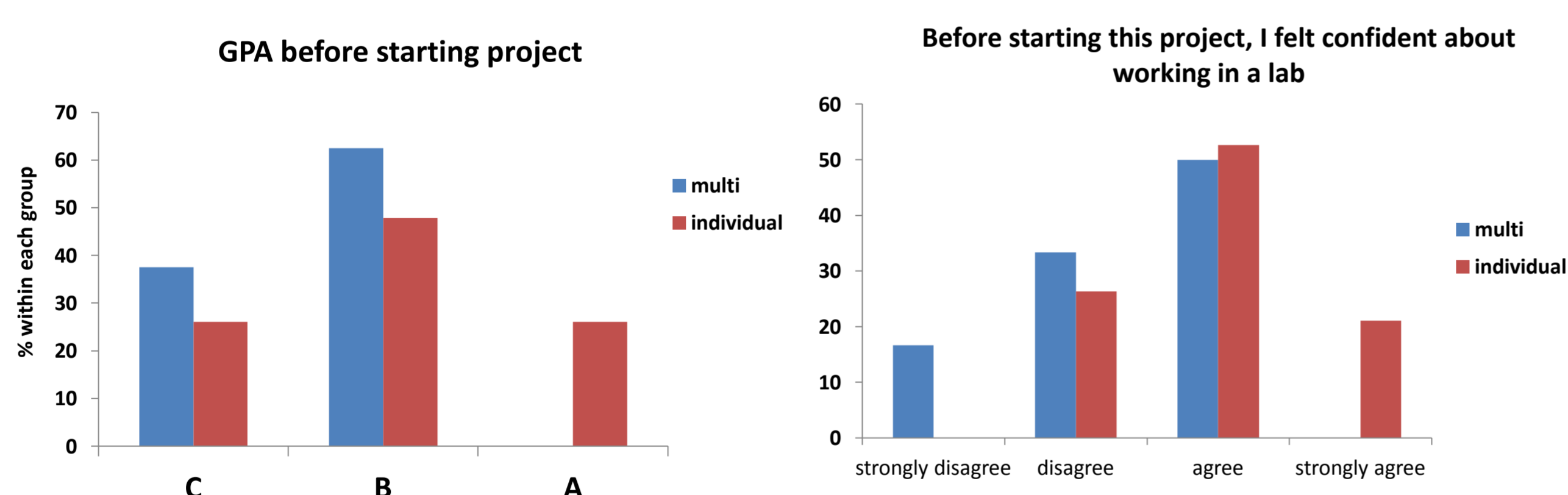
1. Offering a multi-student project would attract some students but not all

Q: How important was the single/multi-student nature of the project to you?

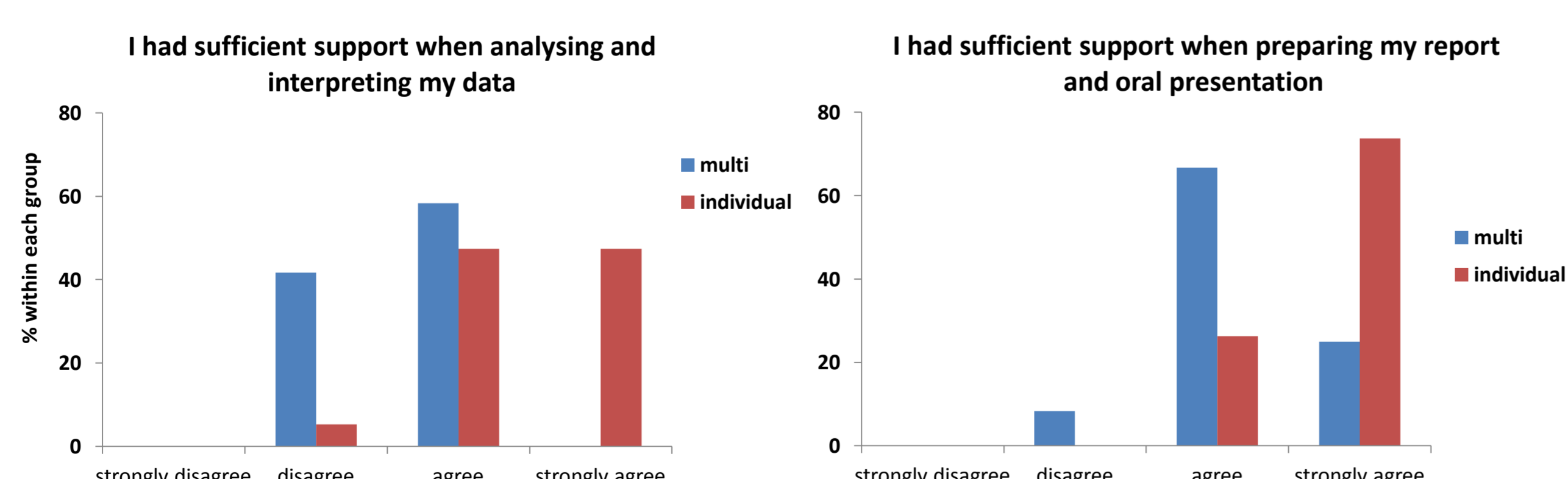


- 38% of all students surveyed said that it was important to them to do an individual project.
- Multi-project students said that the topic and supervisor choice was more important than the project format.
- Students thought this type of project develops team working skills in a multicultural environment, so would attract students interested in working in industry. It would also attract those who prefer to work co-operatively.

2. Students choosing the multi-student project had a lower GPA and less lab experience when starting the project



3. Students on the multi-student project were less confident about obtaining feedback and support from staff



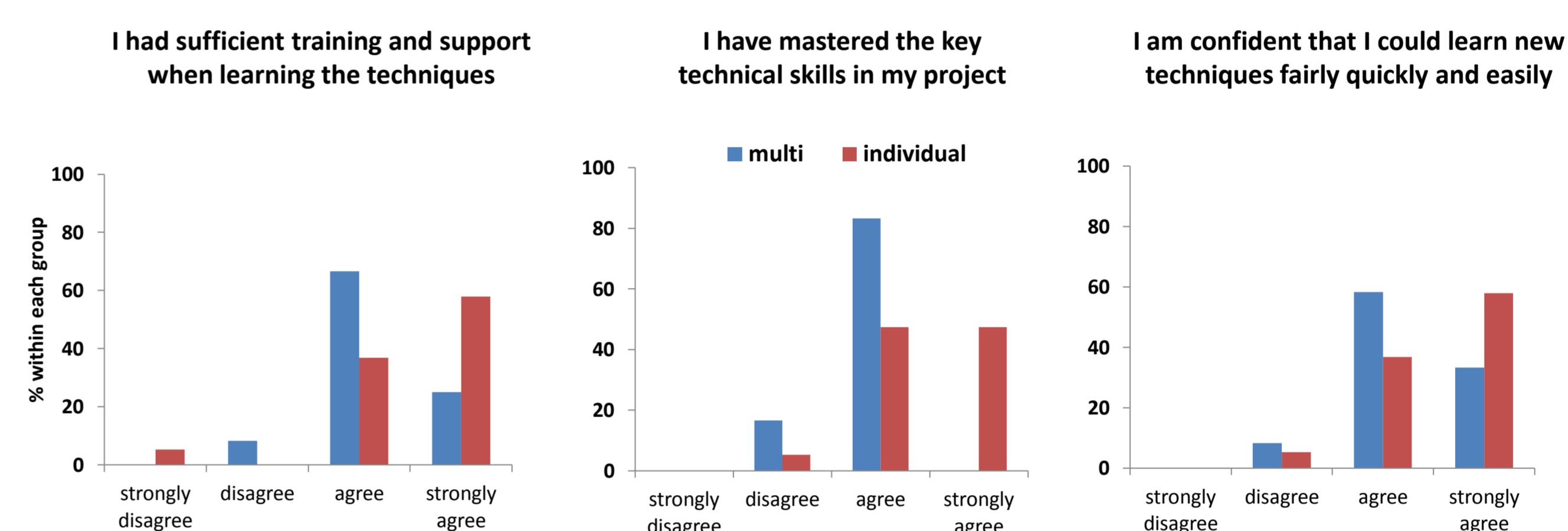
Staff thought many opportunities were provided for students to discuss their data and ask for feedback on their reports and oral presentations, but many students did not take advantage of these opportunities.

Students felt that it was up to the student to approach the supervisor and to be proactive and claim ownership of their project. Not all students felt confident about doing this, although they commented that all three supervisors were highly approachable and very involved with the project.

4. Students thought the multi-student project was a valuable experience

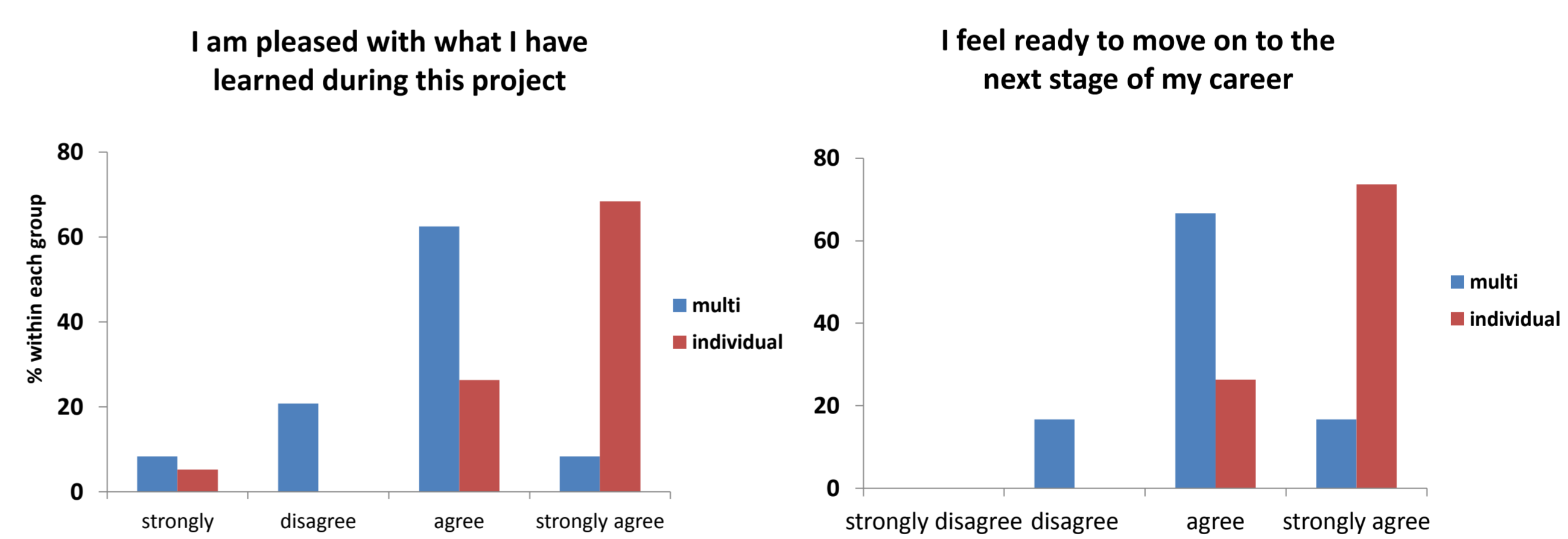
- Many of them would recommend a multi-student project, and would choose the same type of project again.
- Students said that the main advantage of the project was the camaraderie; many students felt that they had made life-long friends during the project, something they felt would not have happened during an individual project.
- They thought they learned valuable team work skills, and found peer learning very useful, particularly when troubleshooting technical problems.
- Students felt that they had time to grow and learn at their own pace and were comfortable taking risks in the multi-student format.
- They found that the peer learning they received through informal student-student feedback made them more confident to take risks and take more ownership of their projects than they felt they would have on an individual project.

5. Most students felt they were able to master the key technical skills



However, students on the multi-student project felt they received less support and were less confident in their acquired skills than those on individual projects

6. Overall, both sets of students were satisfied with their projects



Most students on the multi-student project were pleased with what they had learned and felt ready to move on to the next stage of their career. However, students who had undertaken individual projects were more satisfied with their progress and more confident about their future career.

Recommendations

Multi-student projects are not a way to save money

Costs: £11,000 of the £25,500 bench fees (17 x £1500) was used to pay a level 5 technician for four months.

This left £853 per student for experimental costs. We actually spent over £1100 per student, resulting in an overspend of £4300.

Choose a research question that is going to be successful

A multi-student project must have a good chance of scientific success. It is much easier to change the direction of an individual student's project in a well-resourced lab than it is for a large group of students in a lab with limited resources.

Specifically, a big issue with the project was that the cell lines from Horizon did not behave in the way we expected. For instance, the cells did not die when treated with drugs, so the students did not have "interesting" results, which reduced their confidence, and made it harder for them to write their final reports.

Good organisation of students, staff and resources is important

Organising the students into sub-groups, having strict booking systems for equipment, and keeping a very close track of reagent stocks are important for good organisation.