Widening access to postgraduate study in data science and artificial intelligence: Advice from the sector

In September 2019 we held a roundtable discussion with a group of sector representatives with expertise in tackling inequality of opportunity to postgraduate study. We wanted their advice on how we might attract people from underrepresented groups to postgraduate conversion courses in data science and artificial intelligence. The information below summarises their feedback.

As we identify more evidence and other examples of effective practice we intend to update our resources webpage. If you have, or are aware of, examples of effective practice on this subject please contact PGconversion@officeforstudents.org.uk.

Successful conversion courses are designed to meet the needs of students

The conversion courses are designed to attract graduates from different disciplines. These students will have different needs, and skills, to the students traditionally recruited onto data science and artificial intelligence courses. Our experts recommended that providers need to find out what those needs are, and consider how to adapt both the curriculum and teaching practices to support a wider variety of students.

For example, many students lack confidence in relation to their maths skills, so finding innovative ways to teach these skills can help to support students. The QStep programme was mentioned as an initiative that has successfully and creatively embedded quantitative skills in social science curricula. The professional accounting body, the ACCA, was also highlighted for having no numerate entry criteria for its qualifications and no separate maths module.

Flexible learning

The pilot engineering conversion courses found that flexible formats (weekend and evening provision) recruited well, attracting a new audience of mature learners who can find it difficult to juggle their existing lives or work commitments around full-time study.

Low confidence is an issue

The pilot Engineering and computing postgraduate conversion courses in data science recruited a high number of mature students who were returning to higher education after a break in their education. These "returners" can have lower levels of confidence about their abilities, especially when studying a new subject.

Advice from our panel included acknowledging this and putting in place strong pastoral support and peer to peer support which can have a positive impact on student success. Removing any stigma around learning support and setting the expectation that everyone will need to use it at some point can also be helpful.

Be clear about eligibility for financial support and entry requirements

Students will want to understand any financial commitment they will need to make. That includes upfront clarity around any financial assistance, the amount and frequency of payments whether this outgoing payment as in student loans or incoming as in scholarships. This then enables them make fully informed decisions.

If scholarships are available, students want to know whether they will be eligible before making an application to the course. They also find it helpful to see at the same time whether other forms of financial support might be available, either through the provider, or public funding such as being eligible for a master loan.

One provider told us that timely payments are important for continuation, and that early drop outs can be minimised if the first payment, in particular, is paid within the first eight weeks of the course starting.

Students may also be unaware they can study data science and artificial intelligence with a degree in a non-STEM subject. Students from the target groups are likely to discount themselves quickly, so it can be helpful to communicate entry requirements and market the courses with this in mind.

We know that students from the target groups can be deterred from applying if there are extensive entry tests or interviews. Providers may want to consider alternative ways to assess potential. Strengths based testing has been successful in degree apprenticeships, for example.

Provide real life examples and job prospects

Data science and artificial intelligence may be abstract concepts, so providing real life examples of how these topics feature in everyday life are one way providers could appeal to underrepresented groups. When promoting the pilot course Birkbeck University found their short student videos were viewed thousands of times on YouTube.

Explaining the range of jobs that graduates from conversion courses may end up in and the employers that recruit these skills may appeal to potential students. Another way to capture attention may be to give statistics on the demand for these skillsets, the current availability of jobs and average starting salaries.

Reach underrepresented groups through existing community groups and networks

Rather than trying to reinvent the wheel the panel suggested reaching target students through relevant community groups and established networks, or through alumni. This can be an effective way to reach potential students that are no longer in education, and therefore may be more difficult to find and market to. Community workers and group leaders can play an important role in delivering information, advice and guidance to those outside the educational system.

Inter-disciplinary outreach

Students and staff may be unaware of postgraduate opportunities outside their own discipline or department. Sector representatives highlighted the importance of working across disciplines to ensure students are made aware of all the potential opportunities available to them. Using real life examples of what a career in data science or artificial intelligence could look like, will help students to make an informed decision.

A sense of belonging is directly linked to student success

Feeling a sense of belonging is an important factor in students reaching their potential. Awareness is building that some groups of students and staff can be on the receiving end of micro-aggressions, bullying and harassment which may go unseen by the majority. This hidden culture can make people feel they don't belong somewhere and can affect student continuation rates, academic attainment and their outcomes after the course.

This is a live issue for higher education. The Equality and Human Rights Commission (EHRC) report on racial harassment in universities found that 24 per cent of ethnic minority students have experienced racial harassment on campus. Two thirds of students who had experienced racial harassment said that they had not reported the incident to their university. Less than half of all staff who had experienced racial harassment, said that they had reported it to their university. Students and staff said they did not come forward because they had no confidence that the incident would be addressed.

We know that computer science generally, and specifically, data science and AI academic departments and workplaces lack diversity. Beyond higher education, the turnover rate is more than twice as high for women as it is for men in the tech industry. To ensure the success of female, black and disabled students you have recruited it cannot be an afterthought to ensure your teaching or working environment is inclusive. Without this, a diverse range of students may enrol but may be less likely to complete their courses.

Highlight the valuable skills students already have

Academics teaching on the pilot courses observed that students from other disciplines can possess valuable skills that traditional computer science students may lack. The experience, knowledge and skills gained through other subjects such as social science and business studies are in great demand. These skills help to inform understanding of how data science and artificial intelligence may be applied and used in society, as well as the complexity of some of the moral considerations.

Highlighting to students the skills they already possess, and the benefit these will bring can help non-STEM students to seriously consider making an application, and if these skills continue to be acknowledged as valuable whilst on the course too it can add to that critical sense of belonging.