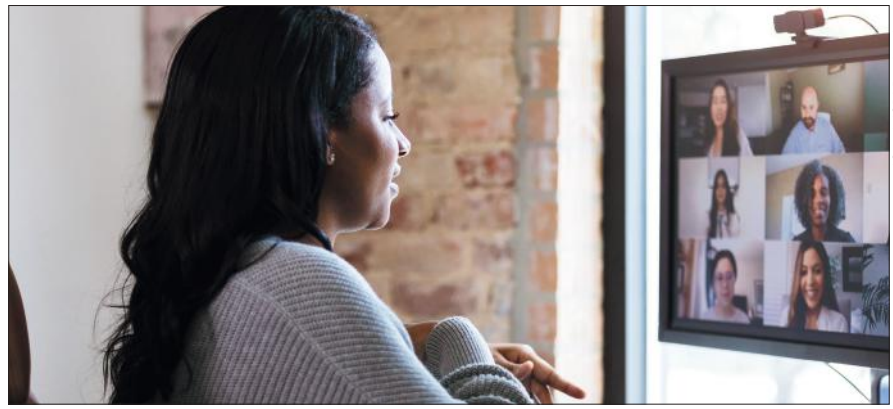
Careers

Advice for post-COVID careers



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COVID-19 has changed some aspects of the world of work forever, but others have stayed much the same. **Andrew Hirst** and **Veronica Benson** look at how physics students can prepare for careers in the post-pandemic world, and what universities and employers can do to help them

As offices, labs and workplaces begin to reopen, it is clear that the COVID-19 pandemic will have a lasting effect on ways of working across industry and academia. It might even alter the careers landscape, in terms of the numbers and types of opportunities available. But the key factors dictating whether physics students will get the jobs they want after university remain broadly the same: access to work experience and professional-skills development, engagement with careers support and informed career-decision processes.

These points are central to the debate about the role of higher education and the growing need for universities to demonstrate that their graduates are getting good, well-paid jobs. An important way of doing so is through career-oriented activities that help them develop "work-ready" skills and learn how they can "fit" their degree to the workplace. Such activities should be designed with the current and future jobs market in mind.

Labour market data suggest that before COVID-19, graduate vacancies that were "hard to fill" included programming, software development and engineering-related roles. The good news for physicists is that these are all career areas that they typically go into. But the reason why these roles are hard to fill, according to a report by the graduate careers organization Prospects, is that applicants often lack relevant technical and practical skills, including advanced problem-solving related to a specific situation, complex numerical or statistical understanding, and role-specific specialist skills. So it's important that physics students make the most of the practice that their degree offers them to improve in these areas.

While these job opportunities will remain, the growing trend towards online and virtual working might prompt employers to change their priorities when assessing candidates. According to Prospects, businesses want to adapt by placing greater importance on digital skills like effective online communication and the ability to work autonomously using various online platforms. Employers are also increasingly valuing creativity, critical thinking, interpersonal communication and leadership abilities. So if you're a physics student, developing these competencies, as well as more technical skills, could help you stand out in future applications.

Employer input

Even companies that haven't been affected much by the pandemic so far are reconsidering their criteria in hiring decisions. This was a point that came up at a one-day physics careers education webinar held last year by the White Rose Industrial Physics Academy and the South East Physics Network – two organizations that support physics students in their transition to graduate-level work. During the webinar, a panel of representatives from defence firms AWE, BAE Systems and Ultra Energy, along with deep-tech company MeVitae said that, although COVID-19 has had a minimal impact on their businesses, it will affect their future needs. That's largely because it has accelerated the trend towards flexible working. Recruiters will therefore place even more emphasis on qualities such as adaptability, resilience and high-level communication skills.

To ensure that graduates become competent in these areas, it is essential that employers tell universities what sort of people they are looking for, and that institutions adapt their degree programmes accordingly in response. For example, Keele University's chemistry department worked with industrial partners to redesign its degree course after receiving feedback that its graduates had limited reporting skills.

To teach scientific report-writing to first-year students, the department introduced a new assessment process featuring iterative assessment-feedback cycles. In the first term students analyse an example report, deconstructing it into the constituent parts from the introduction through the experimental phase to the conclusion. They also compare this with "real" published scientific papers.

In the second term, students draft a full lab report and take part in a peer-review workshop and group discussion. This approach enables students to improve their teamworking skills and self-awareness, as well as their scientific reporting. We think such collaborations are vital to help universities understand the changing needs of industry and shape their programmes so that students have the abilities to thrive in future job markets.

The graduate perspective

But it is not only employers whose decision-making will be altered by the lasting impact of COVID-19; graduates themselves might start to make different careers decisions too.

We know that for many graduates, finding a job in a specific location is more important than finding a particular type of job. After analysing 1.87 million records of students who graduated from UK universities between 2011 and 2017, Alastair Buckley of the University of Sheffield found that physics graduates behave in the same way as other graduates in terms of their work mobility. Approximately 85% of all students choose to study and later find jobs

within 100 km of their domiciled address (the address they state as their permanent address, which, in most cases, is their parents' home). Furthermore, around 65% of all UK graduates, including physicists, end up working within 20 km of their domiciled address.

There is a particularly noticeable divide between the north and south of England, with very few students who are domiciled and study in the south going on to work in the north or vice versa. One exception is London, which sucks graduate talent from the rest of the UK.

This idea that many graduates prioritize location in their career decisions is sometimes called "emotional geography", and relates to the level of connection they feel towards their home, as well as the influence of family and social networks, and future life plans (see "There's no place like home" October 2019). One study carried out by researchers at the University of Leeds investigated this through interviews with eight undergraduate physics students completing a physics degree between the years 2016 and 2018. The students were interviewed three times throughout their final year of university and once again six months after graduating.

These interviews showed that, when making career decisions, students think about their individual situation, accounting for both personal and professional elements, and that these don't necessarily lead them on a linear path from university to a graduate job. This supports the idea that "emotional geography" plays a significant part in many physics graduates' decision-making, and therefore needs to be taken into account when offering them career support. One way that physics departments could do this is by looking at the skills that local employers need and designing their curricula to help students develop those skills.

However, it could be that businesses reduce office space post-COVID, and that a higher proportion of employees remain working from home. In this case, London might become less of a draw as there will be more opportunities to work remotely. This could enable job-seekers to place more emphasis on the specific role they are looking for, and lead to a more geographically distributed graduate workforce. Nevertheless, the extent to which businesses permanently increase their home-working practices remains to be seen.

The "science ego"

Another interesting finding from the physics students who were interviewed in the Leeds study is that they all were very confident that their degree would enable them to easily find a job after graduating. Like all physicists, the Leeds students strongly identified with being "a physicist" and were often told that many career opportunities would be waiting for them when they had finished their studies. In other words, physics students possessed what the authors of the study called a strong "science ego".

But this strong ego can sometimes work against physics graduates, because not all possess the additional skills and attributes needed to make a successful transition from academia to the world of work. In fact, having a science ego can reduce the perceived need to engage with career-development and job-seeking activities. To put it bluntly, physics students are told they can do anything but often don't know where to start looking. Students who then struggle to find work can be left confused when turned down for roles and this can lead to them experiencing a lack of confidence and a feeling of "imposter syndrome".

Evidence also suggests that a "science ego", along with a lack of confidence or awareness of their skills, can cause many physics students to avoid work-based learning opportunities, such as summer internships and years in industry, which are an important way of developing work-ready skills.

Fortunately, we feel there is a lot that physics departments can do to address this problem and all the other challenges discussed above, from incorporating timetabled employability activities within degree courses to setting up alumni mentoring programmes. Employers can also help students transition to the world of work, not only by communicating their needs to universities, but also by understanding how to write job adverts in such a way that all qualified graduates feel confident to apply. This emphasizes the importance of continuous dialogue between industry and universities to ensure that people leaving higher education are prepared to enter the world of work, whatever that might look like.

What universities can do

Students face many challenges in transitioning from university to employment, but there are lots of ways in which physics departments can help them to prepare for the world of work. Here are some practical examples:

- Engage students with employability activities through timetabled modules – preferably accredited
- Ensure students build a portfolio of experiences from first to final year to provide them with evidence of personal development and a tangible track record of performance
- Maintain alumni contact through student mentoring
- Understand and minimize the additional invisible barriers to employment facing disabled, BAME and female students
- Challenge academics on their perception of professional skills and their value
- Build students' confidence and help them understand what transferable skills they have and how they can be applied in different job markets
- Make students aware that employers don't all want extroverts. They value diversity and students with different abilities
- Make students realize that employers don't expect them to hit the ground running, but rather encourage them to learn from failures
- Help students understand that having technical knowledge is not enough. They also need to demonstrate in an application and interview that they have the ability to apply their technical knowledge, often a key quality to set them apart from others

What employers can do

One factor that can hinder graduates' confidence when searching for jobs is a lack of certainty around what employers expect from them. Recruiters can address this by doing the following:

- Ensure job adverts are clear and specific, as physics students can be put off applying for jobs where information is unclear, for example being asked to apply "as soon as possible". A higher proportion of physics students have certain disabilities, such as dyslexia, autism/social communication disorder, and struggle with ambiguity
- Be aware that female students are less inclined to apply for jobs if they don't feel they have all the skills/experience outlined in the job description
- Use inclusive language in job adverts. Textio is one handy example of a tool to check adverts meet acceptable standards for inclusivity and clarity

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