This section is for Early Career Researchers. Please send suggestions for questions or topics you would like to see covered to newsletter@lms.ac.uk.

Boosting Job Prospects

"Dear X, I am a PhD student / postdoc and I'll be moving onto my next position in the next year or so. I'd like a job outside academia. Can you suggest things I can do in the next few months to enhance my CV?"—We invite five professionals to comment.

Ashley Pitcher is an Engagement Manager at QuintilesIMS in London, with a DPhil in mathematical modelling and optimal control of constrained systems from the University of Oxford.

The first thing I would recommend is to decide in which industry you are most interested. Then I would try to gain some basic knowledge of that industry if it is not related to your current research. For example, one of the areas I work in is health economics. We are constantly looking for new hires with great technical skills and understanding of mathematics and statistics. However, it is crucial for applicants to demonstrate some basic knowledge and interest in the area of application. This could be through taking a short course offered through a university or even through a free online course. I would also try to get in touch with any alumni from your university who are already working in that area. A lot of employers have employee referral schemes so applying for a job via an alumnus is the best way to ensure your CV doesn't get overlooked, and they may be able to give you some helpful advice too.

Robert Leese is Chief Technical Officer at the Smith Institute for Industrial Mathematics and System Engineering, and a Fellow of St Catherine's College, Oxford. He has a PhD in mathematical physics from Durham.

Employers like problem-solvers. Mathematicians are often natural problem-solvers, and as a soon-to-be PhD it's a reasonable assumption that you have solved a few problems along the way. However, the problems you've solved have probably been well-posed and you've probably had time to consider everything very carefully and assemble just the right set of tools for the job. The real world is different. Problems arise unexpectedly, and you may have to tackle them without time to do any homework or gather the tools that you would ideally like to use. An employer is unlikely to doubt your ability as a mathematical problem-solver, but more open to question will be your ability to solve problems that crop up "in the wild". Be ready to demonstrate improvisation in problem-solving to a prospective employer. Consider what experience you have in solving problems outside mathematics, especially where there is pressure of time or resources, and where the outcome needs to be "good enough" rather than perfect. Maybe your outside interests will help. Some years ago, I was interviewing a prospective colleague (and still a colleague) at the Smith Institute, who had been involved in the improvised rescue of an injured hiker who had fallen into a cave. "That must have been stressful?", we asked. "Well, nobody died", she replied. The outcome on this occasion was good enough for all concerned!

Ceri Fiddes is Assistant Head at Millfield School, having previously been a Head of Maths for eight years. She got her PhD in Group Theory from Bath University.

Teaching is a great career path to follow if you want to continue to fill your days with conversations about mathematics, the added bonus is that you are regularly provided with captive audiences to talk to. No two classes are ever alike and no two days are the same.

There are a variety of routes into teaching, from a university-based PGCE course to school-centred initial training. Many schools will accept applications from untrained prospective teachers and then undertake to provide training, usually in association with a university or other ITT (Initial Teacher Training) provider. If you are interested in any of these routes you need to make sure that your CV highlights some key skills and experiences. One of the most important things is a passion for mathematics (hopefully not an issue for you) and a genuine desire to inspire this passion in others. You will already be an attractive prospect due to your high level of academic ability, but you will need to convince prospective employers that you also have the necessary (absolutely vital) people skills.

Any experience that you can get working with young people is valuable, not just for your CV but also for the skills that it will develop. Things like working at a summer camp, coaching a team, running masterclasses all look good. The best experience you can get is visiting a school. Most schools will be happy to have a voluntary classroom assistant for a period of time, so get in touch and ask if you can help out. Even better if you can visit a selection of schools and see pupils in a number of settings.

The young people that you inspire will remember you for ever and you may well even shape the rest of their lives. They will be grateful that they happened to end up in your classroom, and you will be grateful that you found a career where you can make such a positive impact.

Adrian Waller is a Thales Expert at Thales UK. He gained a PhD from Royal Holloway, University of London, writing his thesis on graph theory.

As an employer, I would suggest that your knowledge and abilities in mathematics will be taken as given at this stage. In other words, getting that extra paper done or an improved research result will not matter too much. We would be interested in evidence of your understanding of the context in which your work could solve our customers' problems. Importantly, your ability to communicate this to others with a focus on the impact of your work will serve you well. An engineering company like Thales will use some form of demonstration to convince our customers that we understand their problem and can address it. You could consider doing this for your current work or at least a worked example of how it would apply to a real-world use case. This could show potential employers evidence of software, simulation or other relevant skills, but most importantly the ability to put yourself in the mind of those whose problems your work will solve. Believe it or not, many people in industry will not have much mathematical knowledge and in a lot of cases have no interest in the technical details! They will however be very interested if they can understand how it can solve a real world problem, and ultimately add value to their business.

Brian Taylor is a Statistician in a Chemical Development Department at AstraZeneca Pharmaceuticals. He has a BSc in Applied Statistics for Business and Industry from Northumbria University.

The fundamentals you learnt at degree level are your greatest asset. These allow you to apply concepts and learn new techniques relevant to business sectors where you may only have a limited knowledge. Although statistical analysis may interest you in itself, in Pharma, like in many industries, the business is interested in the decisions you make from the analysis, how confident you are in the decision, and the extra business knowledge acquired. The analysis should be as complex as is needed, but no more complex than that. To plan and execute a 'fit for purpose' analysis (i.e., one for making good decisions) you have to be aware of your subject matter. As well as reading about the area, we re-locate and work side by side with subject experts. We work in multidisciplinary teams and no-one is an expert in all areas. A great finding is useless unless you can convey the importance to others so they can apply it. It is important to develop your skills in conveying your expertise and findings so that non-experts understand you. Practise this!

Many businesses now realise the value in applying statistics. However, statistics is still not a normal way of working in the business world so you will need to develop your influencing skills to persuade people to operate in a way unfamiliar to them. You will also need to support them through the process. Your CV should ideally demonstrate examples or at least indicate skills in these capabilities to allow businesses to get the most benefit out of your technical skills.