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Link: <https://www.findaphd.com/advice/blog/6141/how-my-masters-course-helped-prepare-me-for-phd-research>

How My Masters Course Helped Prepare Me for PhD Research

Are you thinking about doing a Masters or MPhil degree? Maybe you are not sure why you might benefit from doing one if you already know you want to go on to do PhD research. Although a Masters degree might not be a requirement to get a PhD position, having one can certainly help you! Read on to learn how my Masters degree at the University of Amsterdam helped me in my academic career.

I gained valuable skills in project management

In the Netherlands a Masters degree in a natural or physical science always takes two years, so there was plenty of time for bigger research projects. I chose the most flexible Masters programme that allowed me to spend almost all of my credits for the two years on two research projects, each lasting around eight months. Just like during my undergraduate project, I now had my own project but it was a lot bigger, and I got the chance to use more techniques. A bigger project requires better organisation in terms of organising your literature, planning and documenting your experiments, managing your data, and keeping track of your results. This means that you have to find a system that works well for you.

The supervisor of my first Masters project suggested that I create a new Word document for each experiment that I perform. In that document I should come up with a title, a small introduction, a materials and methods section, insert my results, and a conclusion. Preparing and analysing your experiments in such a way forces you to think about what you want to do and why. This may help you realise that you don't really know why you want to do a specific experiment, which should make you rethink doing it. Documenting experiments in such an organised fashion also helps you decide which experiments belong together, and if you also keep a spreadsheet listing each experiment date and title, you can easily find the right experiment even years later.

In addition to managing experimental details, you will need to find a way to organise your files and data. It's no good to use inconsistent ways of naming your data files and saving them in random places on your computer, or even worse: on computers attached to lab equipment or in the library only! It's therefore really important you carefully think about file naming and where to save your files before you are deep into your project.

If I had to still learn or vastly improve these key skills at the start of my PhD I think I would have wasted valuable time, especially considering my PhD was only going to take three to four years.

More time in the sandbox to help you make up your mind and build confidence

During your Masters project you slowly get more responsibilities compared to undergraduate research: this allows you to learn at a steady pace. If you were to go to PhD research straight from undergraduate education, you may struggle more because you are used to being heavily supervised and to only working on something for a few months. However, PhD research requires a lot of independence and more maturity. Moreover, it is a commitment for three or more years depending on where you go. Some students with only a Bachelors will make the transition to PhD just fine, but other students might feel they have been thrown into the deep end and are struggling. Starting off your PhD feeling like you are not ready can really make your confidence take a hit.

Especially if at the end of your undergraduate degree you are not yet sure that you want to do PhD research, doing a Masters will give you time to think more and will also give you the experience you need to make the right decision. You might find that although you enjoyed your undergraduate research project, once lab work is all you do for six to ten months you just can't stay motivated. Maybe you like switching between different activities, or perhaps you easily get bored with a particular topic and want to move on to something else. If you become aware of these traits in yourself, you should consider not doing a PhD but instead explore employment options for after you finish your Masters. There is nothing wrong with 'only' having a Masters degree and not also getting a PhD.

Perhaps you figure out that you are more interested in becoming a teacher, or that you want to start making actual money instead of living on a stipend for several more years (which is what you will be doing in many places when you do PhD research). A Masters degree will be beneficial for many industry jobs as well as teaching jobs so you did not waste your time pursuing it. Or maybe doing a Masters confirms that you love science enough to want to continue to PhD research, and in this case you will have more experience over PhD applicants who only have an undergraduate degree.

I found my PhD topic during my Masters

For my Masters degree I had to write a literature thesis on a topic within the field of medical biology. I didn't yet have a strong preference for any particular area of research but wanted to learn more about Kuru and Creutzfeldt-Jakob disease (human diseases similar to mad-cow disease), so I chose to write about

them. Through writing this thesis I became fascinated by the topic and it made me consider choosing this field for PhD research.

If I had to pick a topic for PhD research at the end of my BSc degree I would not have had a clue. Of course in that scenario I would have forced myself to investigate opportunities towards the end of my BSc. However, I think the extra time to do lab research and explore topics during my Masters really helped me make a good decision with regards to a research topic for my PhD.

Having a Masters made me a stronger candidate for PhD applications

When I was ready to apply for PhD positions I think I was a strong candidate because I was already familiar with some of the key research groups working on the topic through the literature study I did during my Masters. I had also learnt about the main techniques by reading about them online, and I knew I had enough interest in the topic to want to commit to it for several years. The fact I also had over two years of postgraduate experience when I applied for PhD research will also have helped because it showed I know my way around a lab better than someone who's only been in the lab for a few months.

If for your Masters you do a research project in a group you like, on a topic you like and you do well, the principal investigator (PI) might be keen to take you on as a PhD student over an outside candidate. I know several people who did just that and it worked out well for them. Moreover, having done their Masters research on the same or a similar topic meant they hit the ground running when they started their PhD project!

In addition to working on your research project during your Masters, you could use some of your spare time to get involved in extracurricular activities you enjoy and that bolster your CV! Some examples are:

- Working or volunteering as a teaching assistant or tutor
- Writing about your research area for your university's newspaper or blog
- Helping to organise a symposium
- Being active in a student union or society
- Being involved in outreach

A few hours here and there can help you get a taste of what these activities are like and can help you figure out what kind of job you might want in the future. Moreover, doing something else than just your research project shows future supervisors and employers that you have some other interests and skills outside of the lab too. This might make you stand apart from other good applicants.

To conclude . . .

A Masters degree isn't just a hoop to jump through to be considered for (prestigious) PhD positions. Studying for one or two years more after obtaining your undergraduate degree can help you get a better taste of what it is like to do lab-based research full time. It will also teach you valuable lab skills, and you will become more independent and gain confidence to work in a lab environment. You may also find the right lab for your PhD research or at least figure out what you want to do your PhD research on.

Don't see a Masters as a waste of time, but consider the ways getting this degree can be beneficial for you and your future career!