

Impact of Covid-19 on PhD students

The current covid-19 situation has taken its toll on the working population in Europe, and PhD students are no exception to this norm. With social-distancing the order of the day, an increasing number of PhD students are being encouraged to 'work from home'. While this might seem easy to undertake for doctoral students, who usually have flexible working conditions, things are not as trivial as they seem. This is primarily due to a wide spectrum of doctoral research projects across Chalmers, that further involve a variety of stakeholders who impose additional conditions. Thus, the PhD student population at Chalmers faces a huge challenge in balancing expectations with this 'new-reality' of remote working. Some of these pressing challenges are highlighted below –

Difficulties with setting up a remote work-flow:

Albeit there are few difficulties encountered while setting up a remote work environment, there are still some perceived challenges with this. For doctoral students relying on numerical/simulation driven work, excessive cluster queues are a daily occurrence (due to increased load). Moreover, difficulties in logging into a remote server due to heavy network traffic is also an unavoidable consequence. Finally, technical difficulties with setting up remote meeting clients such as zoom etc. can also hamper a remote work-flow. Most of the issues raised here might seem trivial at face value, however, they have the potential to create an inefficient working environment.

Inefficient work-flow:

Working remotely can be a challenge for several doctoral students. It could be a lot more inefficient and stressful due to the extra layer of complication created by virtual networking. In many cases, working from home can be a lot more exhausting due to lack of a distraction-free work environment (meaning one has to expend more time and energy for a task that can usually be completed quickly under regular conditions). Moreover, as most students are anyway working on their own time-schedules, planning collaborative efforts can be a lot more challenging.

Delays in experimental work/results:

With fewer personnel (support staff) engaged in lab-based work during these times, doctoral research that rely on experimental or lab-based work would eventually be delayed. Moreover, the inability to hire Master's or undergraduate students to help out with such work, further increases the pressure on doctoral students leading to further delays. **Many doctoral students conduct research 'on the field' with companies, which the current situation also hinders.** These could have a serious impact on the overall progress of the doctoral education, particularly those who are nearing

completion, or those who are currently dependent on data collection.

For groups who rely heavily on lab work, the risk of having more people at work is higher, which can cause a feeling of being unsafe. The only requirement given so far from managers and supervisor is to “work in the lab when you have to”. This is **not** sufficient, as people relying on lab work to get data and write papers spend most of their time in the lab, which justifies that almost all work is “necessary”, increasing the amount of people having to work. This might not be a big issue in small labs, but it is more of an issue in bigger groups, where labs are just a bit bigger but much more crowded. This makes many people having to choose between an experiment or their well-being. Another point is that the recommendation from managers to keep a 2 m distance when doing lab work is irresponsible and shows a lack of sufficient caring to create a safe working environment. Keeping a 2 m distance is literally impossible as soon as there are just 3-4 people in the lab as most equipments are placed on common areas and requires people to interact when using these. Some labs have been very proactive in creating strict schedules in order to minimize the number of people sharing the same equipment or being in the same room, but in other labs this has not been done and the reason has so far been “we are too many people this would be difficult to maintain”.

Cancelled conferences and/or research visits:

During these tough times several conferences and research visits have been cancelled/or postponed leading to increased uncertainties in the timelines for licentiate and doctoral dissertations. Additionally, there are instances of doctoral students stranded in other parts of Europe due to lock-down, completely rendering these research visits wasteful. In such cases, the doctoral student is at risk of losing valuable time from his/her research, which can be disastrous for doctoral students, particularly those who are close to finishing their studies.

Cancellation of conferences in the last year of PhD studies can also have a huge negative impact on our career, as such conferences would be ideal to increase your network and look for your next position or job.

Complete/partial shut-down of industrial partners:

Several industrial stake-holders in research projects have declared a partial or complete shut-down of operations. This has a direct impact on doctoral students who rely on data from industrial partners to carry out their research. Several projects that closely work within such conditions could be delayed indefinitely, leading to uncertain timelines for completion.

Supervision and teaching:

Regular follow-up meetings with supervisors are now held remotely. In most cases, this could work, however certain discussions are a lot more fruitful when held face-to-face. Further, informal discussions with the supervisor and/or research group during lunch or fika are absent, leading to an increased feeling of 'alienation' from the research group. Teaching using remote means is also a daunting task needing additional preparation and training (which in some cases are not available).

Psycho-social impacts:

Social-distancing has left most doctoral students lonely. The complete lack of social contact with colleagues and fellow doctoral students has created an increasing sense of disconnect from the working environment. Further, PhD students who have just started, miss out on the invaluable 'ice-breaking' conversations with their colleagues which help them settle in easily.

Safety concerns in labs:

In certain cases when students are permitted to use lab facilities, there is an increased risk of contamination. Under such circumstances, it is important to prioritize lab-work and develop a clear schedule to ensure that a sufficient personnel isolation can be maintained. This is especially critical in labs that are very busy. If this is not well-organized, which it is not in many labs, then people who decide to prioritize their well-being will have a lot of work being postponed, which can be stressful for PhD students wanting to do their lic or close to finishing.

Some probable solutions to address these challenges

- Clearly defining the guidelines for remote supervision, for instance specifying the nature and regularity of supervisory meetings.
- Developing alternate realistic strategies to efficiently utilize this period, for instance focusing on paper/thesis writing.
- Be prepared for the worst-case scenario i.e. extended periods of remote-working. Come up with plausible plan B's to satisfy the research requirements.
- Clearly documenting the work done during this period in the ISP, including the primary reasons for deviations or delays. This can be used in the future to motivate for possible extensions in the employment later.
- Clearly defining lab-safety guidelines to prevent over-crowding in busy labs.

- Virtual fikas and/or other remote gatherings to stay in touch with the research group and other colleagues.
- Create opportunities for peer-review seminars within divisions