



How much time does it take to supervise a PhD student?

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In a commentary¹ published in this journal in 2010, I wrote that it might be reasonable to suggest that it takes 10 000 hours to complete a PhD. I have had a generally positive response to this suggestion and my colleagues and I have started to incorporate this concept into some of our student planning processes. One of the issues that have arisen as a follow-up to 'How long does it take to get a PhD?' is 'How much time should a supervisor devote to the supervision of a PhD student?' Of course, similar questions can be asked regarding the supervision of students registered for other degrees, but it is appropriate to focus on the doctorate, as it is the universally accepted qualification required for a research career.

The issue of how much time is involved in postgraduate supervision is closely tied to the capacity that universities in South Africa have to educate postgraduate students. Statistics that underpin this question are fairly easy to generate in the case of undergraduate students: one considers contact hours, time involved in preparation and curriculum development, the hours involved in developing notes, tests and exams and then finally the time involved in grading reports, tests and exams. In the case of undergraduate students, there is some economy of scale involved and there can be value in increasing student numbers – up to a point – to gain the most effective return on investment. The same economies of scale are not obvious for postgraduate students.

PhD students in the Departments of Genetics, Microbiology and Plant Pathology of the Faculty of Natural and Agricultural Sciences (University of Pretoria) were asked for what proportion of their degree they felt their supervisors might reasonably claim responsibility. The general consensus was that supervisors had involved themselves in nothing more than 10% of the process. Given that a PhD is the top ranking degree, this percentage might seem reasonable because a PhD student should surely have a very high level of ownership of their degree. But going back to the 10 000 hours benchmark, 10% would equate to 1000 hours, which is a rather large amount of time, given the many other responsibilities of academics. What is interesting is that 1000 hours equates quite well to the average number of postgraduate students most academics seem to be able to deal with at any time. If one follows the 1000 hours benchmark, this works out at 200–300 hours per year per PhD student, given that full-time PhD students take 3–5 years on average to complete their degrees. Master's degrees could be considered part of the 10 000 hours required for doctoral training: if completed first, most students should take 2 years for a master's and 3 years for a doctorate; if the student upgrades to a doctorate without completing a master's, students are expected to finish in 4 years. The average research-active academic² spends at least 50% of their time on postgraduate student supervision. It is easy to see that a normal working year of 1840 hours (based on a 40-hour working week and 46 working weeks per annum) would allow for the supervision of about three PhD students. Based on a quick assessment of scientists associated with my research group, the number of PhD students they are supervising seems to be in the range of 2–4 students. But because most supervisors are additionally involved in the supervision of honours and master's students, their capacity to supervise PhD students is reduced.

These statistics may illustrate the supervision potential of the average academic. Based on the above argument, the maximum supervision potential of an individual academic is three postgraduate students per year. If these students were all PhD students and they completed their degrees in 3 years, then the average academic has the maximum potential of training 27 PhD students in a 30-year career. But, again, not many academics in South Africa have the luxury of supervising only PhD students, so in practice have less time for PhD student training.

If the average supervisor can properly supervise only three PhD students, how is it that some academics are able to apparently supervise many more students? The answer is often that they draw on the co-supervision potential (official or otherwise) of co-workers, postdocs and senior postgraduate students. As an example, I have supervised 40 PhD students and 37 MSc students in my 23 years as an academic. I have had at least one other person involved in the training of every postgraduate student and sometimes we have been a team of up to four supervisors. If one



simplistically suggests that, on average, every student I have supervised has had three supervisors, one could say that I have been involved in training the equivalent of 13 PhD and 12 MSc students, had I been the sole supervisor. These figures equate to having about four postgraduate students in training every year during my academic career. The alternative – and less attractive – scenario is that some academics take on more students than they can properly supervise, in which case the students fail, or more commonly, drop out or take far too long to obtain their doctorate.

In the above argument, I have made some assumptions and used some rather simple arithmetic to reach my conclusions. The most important assumption that I have made is that the average research-active academic works only 40 hours a week. I certainly know of no successful academic who can claim to work so few hours. It is possible to alter some of the numbers that I have used and to modify the assumptions made, but, whichever way one considers this issue, postgraduate students take a huge amount of time to educate. Further, given the limited number of qualified academics in South Africa, the only way that we will be able to improve our capacity to train students will be to provide support for these academics in any and every way possible. Yet I constantly observe that the very precious time that our academics have, is siphoned away by other tasks, often times unnecessary and unreasonable. These include an ever increasing number

of meetings, review boards, questionnaires from granting organisations, inefficient and repetitive grant application systems and others. Alongside this, a crucially important task for academics is to publish high-quality papers, which is hugely demanding and time consuming. All of these activities are important to an academic career but they all take time. An academic thus needs to very carefully balance his or her activities or there will be little or no time to train any students.

My message to the administrators who read this commentary, is that every time a person or organisation establishes a questionnaire or a forum involving academics, they are potentially reducing the amount of time available to South African scientists to train postgraduate students (and of course do research and publish research results). The aim of research administrators, including myself as a Deputy Dean for Research, should surely be to develop as many mechanisms as possible to reduce the burden on academics such that their time is optimally dedicated to the education of postgraduate students.

References

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