

Can we improve postgraduate degree throughput rates?

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Student throughput rates have become a much debated topic, not only in the South African academic environment but in many parts of the world. Of particular concern are Master's and PhD degrees: how many years should students take to complete them? Universities are taking completion times very seriously, as they should, and faculties are being urged to improve their average throughput rates based on statistics that are generated annually.

My experience from discussions with academic decision-makers and leaders in the South African science system is that understanding of what these statistics actually mean is poor. Mark Twain quotes in his autobiography that 'There are lies, damn lies and, statistics'. This statement of course does not imply that statistics are based on lies. However, not understanding the data from which they are generated can lead to misunderstanding what statistics actually mean. It is for this reason that I have thus been trying to better understand what the current throughput rate statistics really mean. My goal has been to answer the question: how can we improve postgraduate degree throughput rates?

I began this process last year by taking the curriculum vitae of one of the most prolific scientists at the University of Pretoria and determining how long the PhD students he had supervised had taken to obtain their degrees. In addition, I examined whether there were reasons why particular individuals had taken longer than the expected 3–4 years to complete the degree. Evaluating the details for about 60 students proved to be considerably enlightening. More than 80% of the students who completed their degrees in 2–3 years were full-time students. More than two-thirds of the students who completed their degrees in 4 years were full-time students. The remaining third were either part time, or alternatively had been faced with some extenuating circumstance as to why their degree had taken somewhat longer to complete than desirable. About half of the students who took 5 years to complete were studying part time, or they had some other reason why their studies had taken longer. Of those who were full-time students, many had produced a number of excellent research articles and thus the additional time could be fully justified in terms of human capacity development. Extenuating circumstances could be applied to all the students whose PhD studies had taken more than 6 years to complete. These reasons were most commonly that they were part-time students, they had accepted employment prior to completing their PhD studies, or they were female students who had one or more pregnancies during their PhD studies.

Identifying the details pertaining to a single individual highlighted in my mind that it is necessary, when dealing with postgraduate students, to consider that one typically is dealing with young adults who are at the start of their careers. Importantly, this is a time when their personal lives are in flux. Postgraduate studies often coincide with people making commitments to life partners. In South Africa, we are experiencing a serious skills shortage, and postgraduate students are likely to be excellent prospective employees. I have personal experience of the fact that 'life happens during postgraduate studies': I was six months pregnant when I registered for a PhD, and 6 months pregnant when my degree was awarded. My children are now 21 and 25 years old. I clearly took longer than the 'desired' minimum period to complete a PhD, yet I believe that I have been able to contribute significantly to the academic system in South Africa. The question one must ask is should South African academics (and the universities they serve) be penalised as a result of poor throughput rates based on simple and interpreted statistics?

Considering the throughput statistics of the PhD students of a single supervisor – albeit someone who has educated many students – is in itself not statistically meaningful. With the assistance of a number of departments in the Faculty of Natural and Agricultural Sciences at the University of Pretoria, I have set about obtaining a larger set of data using MSc, MAgric and PhD degrees. The departments that contributed the data were Biochemistry, Mathematics, Food Science, Plant Science, Zoology and Entomology, and Statistics.

The results of this larger data set are presented in Figures 1 and 2. What is immediately obvious is that the Masters students in this sample are also taking longer than the proposed ideal number

of years to complete their degrees. However, some of the students reflected as having taken 3 years to complete their degrees in fact have taken only an additional six months. My view emerging from examining these data is that it is simplistic to reflect completion rates based on whole years – they should rather be examined in number of months to completion.

The result for the PhD students largely reflects what was observed from my pilot study using the curriculum vitae of a single individual – that students who complete their degrees in 3–4 years are typically full-time students; and that most students who take longer than 4 years to complete their degrees have studied part time. Alternatively, they are students who have accepted employment or have some other extenuating circumstances that caused them to extend their studies. These circumstances include pregnancy; difficulties in obtaining data such that experiments need to be repeated over consecutive years, and students spending time on activities not directly related to their research.

My conclusion from this broad analysis is that we can probably improve the throughput rates of MSc and MAgric students in South Africa. An average of 3 years of full-time study is inordinately long to complete this degree. This conclusion should, however, be balanced against the fact that a strong student could require additional time to complete a valuable piece of research. My experience has been that such work is hugely beneficial to students in terms of building their curricula vitae, and it is important in terms of scientific outputs (which in our country are poor compared to our GDP, even in comparison to some other countries in Africa).¹ Throughput rates for PhD studies are more complex, and I would suggest that little can be done other than providing these students with market-related full-time salaries. Even this solution is probably not going to reduce the time it takes for all students to complete their degrees, as the extension of the time taken to complete a PhD is not related only to employment, as the pregnancy example illustrates.

It would be a fair argument that the exercise that I have shared here should be undertaken with a larger sample size, for example, across faculties and universities. However, there are clearly important patterns of which we should be aware. The norms for postgraduate student throughput are being set in a simplistic way, often through benchmarking South Africa with other countries. A frustration I feel is that every Masters and PhD student is different. These students are adults with different academic, family and financial backgrounds. Some need greater levels of preparation to complete their degrees. Some choose to have children during the long years of postgraduate study and some take up employment opportunities. They also do not all register at the same time of the year, which is another factor that skews the data.

My closing question is whether a ‘one size fits all’ model is really appropriate to apply to postgraduate student throughput rates? We should rather more carefully

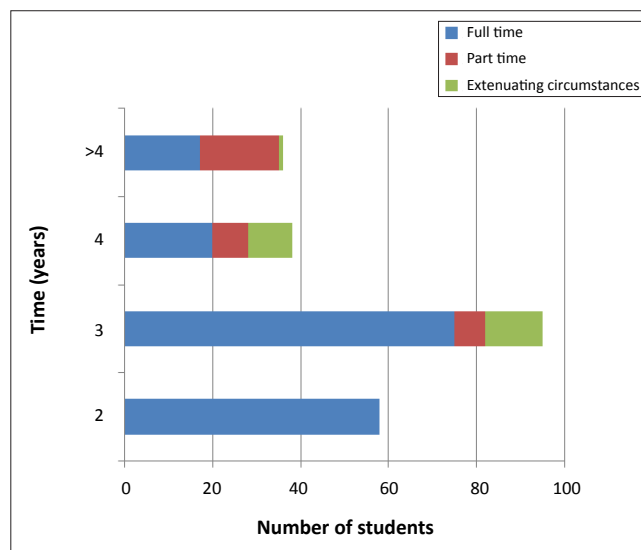


FIGURE 1: Throughput rate (years) of Master's degree students in the Faculty of Natural and Agricultural Sciences, University of Pretoria (2000–2011).

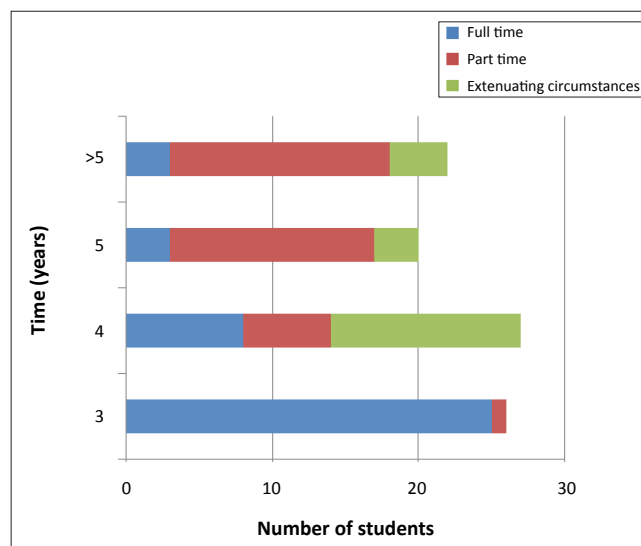


FIGURE 2: Throughput rate (years) of PhD students in the Faculty of Natural and Agricultural Sciences, University of Pretoria (2000–2011).

understand what exactly it is we wish to achieve and how best to reach this goal, rather than setting a rigid numeric that actually means very little. We must consider the diversity of our prospective students, their interests and personal situations and how we can produce the highest number of well-educated, well-rounded and experienced graduates. The last thing we need is ‘rushed job’ degrees or students who could have completed in that extra year, but have terminated their studies because of pressure to complete in a period inappropriate to them.

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