

Doctoral Education in South Africa: An overview

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Part 1

1.1 History

Research on the history of the doctorate in South Africa is scant, although there have been recent notable attempts at providing an overview in this regard (the most recent notable and focused account probably that of Herman, 2015). The history of the doctorate can be summarized as follows:

- The first doctorate (in Law) in South Africa was conferred in 1899 by the University of the Cape of Good Hope (UCGH), which was considered a privileged British colonial university.
- Higher education as a whole, and doctoral education in particular, in South Africa has been strongly influenced by the country's colonial past – with British and Dutch influences most evident – which continued to have structural and systemic influences even after independence 1910.
- In addition, the discriminatory national policies of separate development under the apartheid rule that followed shaped the structure, quality and demography of the national education landscape, including that of doctoral education, resulting in a very low participation and success rate of blacks.¹
- Since the onset of democracy in 1994, the policy, funding and structure environment of higher education has changed significantly. These initiatives were aimed at redress of past injustices, and making higher education (including doctoral education) more accessible to all. Yet, decades of unequal access to education and wide variation in the quality of education, as well as problems around policy implementation and ensuring quality in basic education post-1994 has hampered equal participation and success in doctoral education.

1.2 Size and demography

There has been notable growth in both doctoral enrolments and graduations, from 1188 graduates in 2005 to 3057 graduates in 2017 (257% growth). The most recently available enrolment and graduation rates are:

- Enrolment in 2017 – 22572 PhD candidates – 45% female
- Graduation in 2017 – 3057 PhD Graduates – 43% female

Given the history discussed above, it is also necessary to reflect on the demography of the doctoral graduates by race (see Table 1 below).

Table 1 – PhD graduates -2017 by race

Race	No of graduates	%
White	971	32%
African	1661	54%
Coloured	131	4%
Indian	196	6%
No information	98	3%
Total	3057	

A major policy imperative in doctoral training and building research capacity, which might be unique to South Africa, is linked to the transformation agenda for the higher education system. This is mainly focussed on redressing the skewed racial and gender imbalances of the apartheid era. Two decades after the transition to democracy, doctoral training changed from being exclusively dominated by white males to being more diverse and inclusive. By 1990, 93% of PhD graduates were white while by 2017 whites comprised only 32% of PhD graduates. It is, however, important to note that the increase in the number of African students is linked to the

¹ Note that in South Africa, the racial categorisations constructed under apartheid persist to this day, as the country tries to redress the injustices of the past. Nomenclature varies but the current dominant categories are Black (capitalised) or African, coloured, Indian and white. The generic term for all categories other than white is 'black' (lower case).

increase in the number of international students especially from the South Africa Development Community (SADC) countries and others from the rest of African. In 2017, 43% of the doctoral students in South African universities were international students.

1.3 Time to degree

According to Cloete et al. (2015), the average time for completion of the PhD in South Africa is close to five years which compares favourably with international benchmarks. Currently, there is pressure on universities, which is linked to funding, to ensure a three-year completion time for PhDs.

Completion rate of PhD studies was about 45% for the 2007 cohort after six years, with vast discrepancies between institutions and disciplines. For example, University of the Western Cape had a 60% completion rate, while UNISA (University of South Africa, Distance mode) had a 25% completion rate (Cloete et al., 2015).

1.4 Purpose

According to the Higher Education Sub-Qualification Framework (HESQF) (CHE, 2013) two types of PhD can be awarded in South Africa – a so-called traditional PhD, and a professional doctorate. The traditional PhD,

... provides training for an academic career. It requires a candidate to undertake research at the most advanced academic levels culminating in the submission, assessment and acceptance of a thesis. However, candidates may also present peer-reviewed academic articles and papers, and, in certain fields, creative work such as artefacts, compositions, public performances and public exhibitions in partial fulfilment of the research requirements. Coursework may be required as preparation or value addition to the research, but does not contribute to the credit value of the qualification. The defining characteristic of this qualification is that the candidate is required to demonstrate high level research capability and to make a significant and original academic contribution at the frontiers of a discipline or field. The work must be of a quality to satisfy peer review and merit publication....” (CHE, 2013:40).

whereas the professional doctorate,

... provides education and training for a career in the professions and/or industry and is designed around the development of high level performance and innovation in a professional context. Candidates are required to undertake a combination of coursework and advanced research leading to the submission, assessment and acceptance of a research component comprising an original thesis or another form of research that is commensurate with the nature of the discipline or field and the specific area of enquiry. The research component should comprise at least 60% of the degree. Professional Doctorates may also include appropriate forms of work-integrated learning. The defining characteristic of this qualification is that in addition to the demonstration of high level research capability it requires the ability to integrate theory with practice through the application of theoretical knowledge to highly complex problems in a wide range of professional contexts.” (CHE, 2013:41).

Even though the latter form is now possible within the country, it remains uncommon.

The purpose of the doctorate in South Africa is primarily seen as,

- the provision of a future supply of a future supply of academic staff (particularly relevant in the SA context, where productive cohort of academics is aging, in addition to the relatively low and slow ‘production’ rate of doctorates nationally);
- the development of high level skills for the knowledge economy; and
- a mechanism for upward individual socio-economic mobility (of relevance in a country where there is a very unequal distribution of wealth and a very unequal education system).

Part 2

2.1 National policies

There are a number of national policies that have and are relevant to the doctorate at a national level. These include,

- the Framework for Transformation of higher education (National Commission of Higher Education, 1996);
- the White Paper 3 on the Transformation of Higher Education (Department of Education, 1997);
- the report Towards a New Higher Education Landscape: Meeting the equity, quality and social development imperatives of South Africa in the 21st century (Council on Higher Education, 2000);
- the National Plan for Higher Education (NPHE) (Department of Education, 2001);
- the White Paper on Post-school Education and Training (Department of Higher Education and Training, 2013); and
- the draft National Plan for Post-School Education and Training (NPPSET) (Department of Higher Education and Training, 2017).

There are notable policy shifts from equity and redress, towards greater efficiency and vocationalisation of the higher education sector as a whole. The rather narrow definition of and strong focus on skills development in the NPPSET is problematic particularly in reference the postgraduate domain universities occupy. Yet this kind of policy discourse is also evident elsewhere, such as in the recent ACOLA report on researcher education in Australia (2016), to which there has been some similar critique as offered above (see Frick, McKenna & Muthama, 2017). This shift in policy focus is particularly evident in the extent to which the NPPSET addresses issues of funding. It seems to leave little room for future-oriented, high-risk and unpredictable research that may have less potential of immediate application, but potentially more value in terms of future academic reputation, excellence and quality – which is of course a key concern within doctoral education.

The NPPSET does refer to investigating new models of doctoral education (which assumedly refers to both doctoral programme formats such as the professional doctorate, and modes of supervision such as cohort supervision). These are useful points of departure for transforming the postgraduate higher education environment, but the NPPSET remains vague on the specifics thereof beyond improving postgraduate student funding, and incentivizing, rewarding and professionalizing supervision (which then becomes key issues in terms of staff development). How this may happen is not specified beyond providing earmarked grants; this draws attention to improving postgraduate throughput and research output without considering some of the underlying issues in the system. Herman (2012) furthermore points out that at least in South Africa the doctorate is still largely perceived as an academic pursuit. Given the already limited supply of supervisory capacity in South Africa (where only two universities have a staff complement with doctorates of over 60%, coupled with a dangerously close to retirement cohort of supervisors overall) (ASSAf, 2010; DHET, 2015), one might ask who will be responsible for not only supervising the current growing numbers of PhD candidates, but also the whole new species of candidates set to enter the doctoral arena?

The forthcoming national review of the doctorate (2019-) may address some of these issues, and it will be interesting how the outcomes of this review feed into the NPPSET.

2.2 Funding

South Africa subscribes to a funding framework in which costs are shared between the government and direct beneficiaries of university education. The government uses a block grant system which is supplemented by fees from the students. A report by Universities South Africa (USAF, 2016) indicates that universities are underfunded and that government subsidies to universities have declined in real terms by over 30% in the last two decades. This decline has put pressure on the other two sources of income available to universities, namely, tuition fee income, which is currently contested by the “fees must fall” movement in South Africa, and third-stream income (typically research grants, contract income, donations etc.). The no-fee increase granted to students in 2015 and the student protests that characterised most of 2016 have exacerbated the situation. The government also provides direct funding to poor students through a funding program managed by the National Student Financial Aid Scheme (NSFAS).

Government funding of research at universities takes place through “block grants“, which include the *research output grants* (New Funding Framework [NFF], DoE, 2004). These funds are allocated according to the number of research master’s degrees, doctoral degrees and accredited research publications that an institution produces each year (weighted 1:3:1). The research output grants encourage institutions to improve their share of research

outputs and also their doctoral graduation rates which carry the greatest weight. The measurement of research output is done centrally and is controlled by the DHET (DoE, 2003). This subsidy framework for postgraduate research has a significant impact on the production of PhDs whereby some universities directly give incentives to supervisors to encourage their productivity.

The NRF, as the main individual provider of postgraduate bursaries, offers a range of bursaries and scholarships for doctoral education in South Africa (SARUA, 2012). It offers so-called free-standing PhD bursaries on merit for any applicant, provided that the applicant has already been accepted by a South African university for doctoral study. The amount allocated for these bursaries by the NRF in 2017 is R70 000 per annum (about \$5 000) for a period of three years. In cases where grant holders are linked to the Scarce Skills Development Fund (SSDF) and the DST research priorities, the bursaries have a monetary value of R120 000 per annum (\$8 750). Both these amounts are inadequate for students who have to support themselves and a family. These bursaries and scholarships are mostly awarded to South African citizens with a small percentage being allocated to non-South African and disabled students. In 2015, there were about 2 000 free-standing NRF bursaries for PhD studies.

The NRF also provides funds to support PhD training and research capacity, especially in areas of production that are aligned with the national priorities through other programmes. These include the Thuthuka Research Grant, the NRF incentive fund for rated researchers; the Knowledge, Interchange and Collaboration (KIC) initiative that supports researchers to attend local and international conferences. Funding is also provided by the other science councils such as the Medical Research Council (MRC), the Agricultural Research Council (ARC), the Human Sciences Research Council (HSRC) and the Council for Scientific and Industrial Research (CSIR). Another source of funding is by the DTI which funds activities focused on commercialisation of research.

Universities also receive funding from industry and international collaborators. The latter includes the Erasmus Mundus programme and Horizon 2020, both funded by the European Union. Some of these programs have a specific focus. For example, the Gates Foundation's focuses on malaria research, while others focus on capacity development training. There is an argument that international funds are restrictive and that universities will benefit more if they are given the flexibility to allocate them to support their specific priorities. At some universities funds are needed to invest in the pipeline and support undergraduate studies, to develop mentorship programmes and mentorship for early career researchers, while other funds may be earmarked to address societal needs such as HIV/AIDS and poverty alleviation.

South African universities tend to offer bursaries or scholarships from their own institutional funds (first- and second-stream income) for doctoral studies on the basis of merit or on the basis of student need, with the value of these bursaries varying substantially between institutions. These bursaries are usually awarded for a period of three years (SARUA, 2012). Universities also fund PhD research indirectly by fee waivers and offering accommodation, as well as by providing temporary employment for candidates as junior lecturers or laboratory assistants.

Bursaries and scholarships for doctoral education are also awarded by South African universities from earmarked third-stream funds. These funds usually originate from donations, investments and entrepreneurial activities of the universities. It is usually the historically advantaged universities that have the finances to offer these types of bursaries. The size and conditions of these bursaries vary considerably. Most funding received from corporates or state-owned companies is meant for Engineering, Health, Finance and Education students (HRDC, 2013). The main strategy that universities employ for attracting more funds is by responding to calls for grants. However, these calls can be restrictive or have co-funding expectations that some institutions are not able to meet. Universities with a strong research focus are able to attract a higher percentage of private funds, while other institutions may have limited third-stream income.

2.3 Quality assurance

The higher education landscape in South Africa is not differentiated in terms of PhD programme offerings. Any approved higher education institution can thus offer PhDs in different fields. However, there are stringent national

and institutional policies to ensure the quality of the PhD. The DHET determines the programme and qualification mix (PQM) at any institution as a quality control mechanism. It thus places limits on the range of doctoral programmes that institutions can offer. Nevertheless, merely being on the list of PQM cannot be taken as an indication of a subject's quality.

The CHE, through its Higher Education Quality Committee (HEQC), is responsible for quality assurance and quality promotion in higher education. Only programmes that are approved by the DHET, registered with the South African Qualification Authority (SAQA) and accredited by the CHE are funded by the DHET. According to the HEQC accreditation model, responsibility for doctoral programme quality rests on the institutions themselves. Universities are required to ensure that they conform to the standards stipulated by the Higher Education Qualification Sub-Framework (HEQSF) (CHE, 2013). This framework document stipulates the provisions for the offering doctoral degrees.

In most institutions, the doctorate thesis is assessed by peers who should include at least one international examiner. At most universities, carefully selected students need to prepare and defend a proposal before embarking on their doctoral research. Each institution and faculty has its own particular procedures for approving the research focus of a thesis. Usually research may not be undertaken without prior written approval of an ethics committee or other authorised committee. At most universities, supervisors cannot be the examiners of the same thesis whose production they supervised. Doctoral candidates are sometimes called upon for an oral defence (*viva voce*) of their theses, but this varies across institutions as not all institutions require an oral exam at the doctoral level. Usually the same examiners are appointed to assess the thesis and adjudicate its oral defence. Some universities also require students to submit an article based on their doctoral research for publication in an accredited journal, but this practice varies across institutions and disciplines (see for example De Jager et al., 2017; Odendaal & Frick, 2017; Frick, 2016).

There are, however, a number challenges concerning quality of PhD training and research in South African universities. These include poor preparation by students for doctoral studies, unrealistic expectations of doctoral students; the absence of mandatory course work in some programs; a funding formula that encourages institutions to increase PhD production; inadequate incentives for supervisors, the heavy burden of the supervision, lack of supervisors in certain disciplines (Cloete et al, 2015; Teferra, 2015; Waghid, 2015; Thaver & Holtman, 2015).

2.4 Career paths

Cloete et al. (2015) reported the results of three tracer studies which indicated that a vast majority of doctoral graduates who were not in employment during their studies managed to find employment quite quickly after graduation. Yet, Goneos-Malka (2018) report a relatively low uptake of doctoral graduates into the corporate sector in South Africa. The main career path for doctoral graduates in South Africa still seems to be the academic (or as professional or support staff within universities) route.

Part 3

3.1 Collaborations

With South Africa's transition to democracy, the process of internationalisation in its various forms expanded significantly (DHET, 2017). This included a commitment to regional policies and targets within SADC and the African region (e.g. 2010/2011–2014/2015 Strategic Plan of the DHET). There is accordingly a strong emphasis on the need for regional collaboration and partnerships and the establishment of regional networks for academic and knowledge exchanges that support South Africa's national priorities. There are multiple initiatives aimed specifically at upgrading staff qualifications and providing support for doctoral students. A report compiled for the Association of Commonwealth Universities (Harle, 2013) suggests that while there are many collaborations and initiatives to support African students, these are dispersed and relatively fragmented. A comprehensive list of these initiatives and their analysis requires consolidation.

Universities promote internationalisation by exposing staff and students to global developments and trends, by facilitating mobility exchanges and encouraging collaborative ventures such as co-supervision of students, co-

authorship of papers and joint applications for research grants. The NRF, on behalf of the DST, supports numerous inter-governmental agreements, programmes and strategic partnerships. These include bilateral and multilateral international agreements, agency-to-agency collaboration as well as special projects. The agreements and research activities target postgraduate students, especially PhDs, and an exchange of postdoctoral fellows within approved projects. For example, the The German Academic Exchange Service (DAAD) in partnership with the National Research Foundation (NRF) is able to offer scholarships for postgraduate studies at South African universities. The programme is co-funded by the German Federal Ministry of Economic Cooperation and Development (BMZ) and the National Research Foundation (NRF). The scholarship targets (i) young and rising candidates who aim to acquire masters and doctoral degrees, and (ii) support future academic staff sector demands for academically trained personnel, and staff members studying towards a doctoral qualification. Staff members studying towards doctoral qualifications should be enrolled for fulltime studies and be exempted from teaching.

According to the NRF Report of 2014/5, 52.4% of ISI² publications by South African authors are published jointly with international colleagues. This indicates the success of these partnerships and the positive impact they have on the South Africa NSI. Examples of recent partnerships and agreements include arrangements with the German Academic Exchange Service (DAAD); the Swedish Foundation for International Cooperation in Research and Higher Education (STINT), the Academy of Finland Partnership, the NRF/Newton Fund collaboration; the British Council; South Africa and South Korea Bilateral Relations; the China/South Africa Joint Research Programme; South Africa and the Joint Institute for Nuclear Research (JINR); and others. Institutions with low research capacity may find it difficult to forge international collaborations, as these are often directed at research-intensive institutions. In order to access international funds some universities like TUT have formed a consortium with other local universities to enable them derive more impacts from their collaborations with international institutions.

Recruiting international postgraduate students, especially from the SADC region, became an explicit national priority expressed in key South African policy documents such as in the National Plan for Higher Education (DoE, 2001:25) and the NDP 2030 vision (NPC, 2011). However, the sustainability of this growth in the number of international students is called into question by the protests of the past two years which have created uncertainty in the sector and could possibly lead to international students choosing other study destinations other than South Africa.

Local and international agencies and funders have initiated a number of programmes to increase PhD production and research capacities in the previously disadvantaged institutions. Some examples include the pre-PhD project organised by the Programme Support for Pro-Poor Policy Development (PSPPD) and funded by the European Union (EU), which conducted workshops at University of Limpopo. The other one is the VLIR-UOS Project which supports partnerships between universities in Flanders (Belgium) and the South looking for innovative responses to global and local challenges. South African Universities also explore links with other foreign universities which offer opportunities for split-site doctoral studies. For example, the French South African Technical Institute (F'SATI) has established a *cotutelle* doctoral programme with University of the Western Cape. Similarly, University of Limpopo and Stellenbosch University have entered into agreements with universities in Europe to offer joint or double doctoral degrees. There was also evidence of collaborations between South Africa's research-intensive universities and their counterparts with low research capacities based on funding support from various government agencies. For example, the University of Stellenbosch has developed training programmes for new supervisors and doctoral students which is supported by NRF funding. The program has benefited several other institutions. However, there is a view that the allocation of funds based on institutional research outputs creates competition among institutions and stands in the way of collaboration. The following interviewee expressed a strong view that collaborations among higher education institutions in South Africa need to be enhanced through a different funding mechanism.

3.2 Equal opportunities

² Currently ISI Web of Knowledge

The National Research Foundation (NRF) provides targeted funding for women and black academics and students, as well as for people living with disabilities.

3.3 Digital transformation

Though we are not aware of any coordinated or national initiatives of this nature on a national level, the current president has recently formed a presidential committee investigating how South Africa will meet the challenges of the Fourth Industrial Revolution. The recommendations put forward by this committee might have interesting implications for doctoral education in South Africa as the highest level of formal education aimed at extending the boundaries of scientific inquiry and innovation.

Most South African universities are now using blended learning (at least at the undergraduate level) and have an online presence, indicating a strong digital transformation. The well-resourced institutions are more technologically aligned, but there is evidence of poor connections in previously disadvantaged universities, as well as rural universities.

3.4 Most important aspects for your country

3.4.1 Doctoral production (numbers)

In comparison to other countries (even countries with comparable GDPs), South Africa is still underperforming in terms of the numbers of doctoral graduates per population size per year and overall. The low and slow throughput rate are key concerns.

3.4.2 Diversifying the doctoral cohort in terms of access and success

As discussed under the preceding sections, South Africa is still plagued inequalities across the whole education system, and doctoral education in particular. Although there has been a notable increase in gender and racial diversity within the doctoral education nationally, black (and particularly female) South Africans are still underrepresented. In addition, underrepresented groups are not only disadvantaged in terms of access, but also success (which is evident across all levels of higher education in the country). Cloete et al. (2015) provides a detailed analysis of the situation at the doctoral level.

3.4.3 Quality

Whilst the national emphasis on doctoral access and success, as well as increasing the number of doctoral graduates are valid concerns, Waghid (2015) warns that the emphasis on doctoral production rates pose a real risk to ensuring the quality of doctoral education and doctoral work/qualifications, while in the same publication, Teferra (2015) caution against the production of mediocrity at the doctoral level in South Africa. International comparability of the South African doctorate remains a key concern, especially given the disparity of educational systems from where doctoral candidates hail.

3.4.4 Supervision capacity

There still seems to be the prevailing notion that obtaining a postgraduate qualification automatically also enables a person to supervise in pedagogically sound ways, although both international and local literature has proven otherwise (see for example Manathunga, 2005 and Manathunga and Goozée, 2007). Not only are there too few supervisors in the South African context, the supervisors themselves are often ill-prepared for their task and have to rely on the example set by their own supervisors. Given the evident relatively low doctoral production across the continent (UNESCO, 2015), there seems to be a need for capacity building not only through doctoral education itself, but also through building the capacity of supervisors. How well does the doctorate prepare early career academics for the multiplicity of academic practice? Findings from one small scale cross-national study found that whilst the doctorate is seen as a good preparation for research endeavours, it often fails to adequately prepare early career researchers for the multiplicity of academic practice beyond research (Frick et al., 2016). In 2014 only 43 per cent of permanent academic staff had PhDs in 2014, with proportions ranging from 11 per cent to 67 per cent. (Breier & Herman, 2017)

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