
Growing the TVET knowledge base in the south: South African postgraduate output, 2008–2018

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ABSTRACT

The Third International Conference on TVET (technical and vocational education and training), held by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in Shanghai in 2012, resolved that growing research on TVET had to be an integral part of the overall strategy to strengthen the sector. Historically in South Africa, much of the targeted TVET research has been conducted by agencies outside of the university, but the last ten years have seen an increase in the number of TVET studies being undertaken by postgraduate students at universities, largely due to national policies that have encouraged higher education to take a greater interest in TVET research and development. Given the policy focus on TVET and the increased support for research in the field, this article reflects on the growth of postgraduate research on TVET in South Africa in the past ten years. Government targets for postgraduate outputs have prioritised doctoral studies, and, while TVET-related doctoral graduates are relatively few in number, there are signs of an emerging community of researchers and also of an expanding, though localised and highly contextual, knowledge base on TVET. The authors identify a number of aspects observed across the research outputs which could aid further reflection on the kind of contribution that postgraduate TVET research is making. Finally, attention is drawn to the nascent cadre of TVET intellectuals who can – indeed, must – provide much-needed supervisory capacity in this field.

KEYWORDS

Technical and vocational education and training (TVET); master's, doctoral, postgraduate research

Introduction¹

Technical and vocational education and training (TVET) globally has found renewed significance in the past decade. After its marginalisation in the global education and development discourse under Education for All and the Millennium Development Goals, the arrival of the Sustainable Development Goals has seen TVET return to the international stage of development policy. This global acknowledgement of TVET's importance reflects a continuing focus on the area, with research driven by funding from regional development banks and many national governments (Powell & McGrath, 2019).

Historically in South Africa, much of this targeted research has been conducted by agencies outside of the university domain (Wedekind, 2008), but the last ten years have seen an increase in the number of TVET studies being undertaken by postgraduate students at universities. This is largely due to national policies that have opened up the TVET college sector to scrutiny (Papier, Sheppard, Needham & Cloete, 2016). By 1998, shortly after the first democratic elections in South Africa in 1994, new policies for education and training that included public TVET and industry-based skills development were established, as well as a national qualifications framework. In the two decades that have followed, expenditure on TVET, including that on new bursaries for public college students, has risen exponentially in tandem with increasing participation (DHET, 2019).

The Third International Conference on TVET, held by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in Shanghai in 2012, resolved that growing research on TVET had to be an integral part of the overall strategy to strengthen the sector (UNESCO, 2012). Against this global background, there has been a parallel development in South Africa: the national strategy to increase postgraduate output, a trend that will be returned to below. Through the research initiatives of both the NRF's South African Research Chairs' Initiative (SARChi) and the sector education and training authorities (SETAs) funded by the national skills levy, new research chairs in the broader field of post-school studies, including TVET, have been established at universities in the past five years. These brought with them funding for postgraduate students in the under-researched domain of TVET.

The appointment of SARChi chairs in post-schooling fields related to TVET is particularly significant, given the status and funding of these chairs that could be sustained over a period of between five and 15 years, subject to satisfactory progress reports being submitted. In addition, the University of the Western Cape in 2017 established the academic, peer-reviewed *Journal of Vocational, Adult and Continuing Education and Training* (JOVACET) with support from the national Department of Higher Education and Training (DHET) and

1 This work is based on research supported wholly or in part by the National Research Foundation (NRF) of South Africa (Grant Number 110640). The opinions expressed and conclusions arrived at are those of the authors and are not necessarily to be attributed to the NRF.

the European Union – a necessary step towards building the academic standing of TVET as a field worthy of research scrutiny.

Given the policy focus on TVET and the increased support for research in the field, we considered it an opportune moment to reflect on the growth of postgraduate research into TVET in South Africa, both to map the number of studies and to gauge the scope of the issues that are being studied. As will be detailed below, we used an accessible national digital library to collect data on South African master's dissertations and doctoral theses relevant to TVET that were completed between 2008 and 2018. We take the view that the master's dissertation, with its emphasis on getting to grips with research methodology, is important as a training ground for researchers, but that the doctoral thesis, with its emphasis on contributing to knowledge, is what ultimately expands knowledge of a particular field. The Higher Education Qualifications Framework (HEQF), within which the doctoral qualification is located, holds that the doctoral graduate has to 'demonstrate high-level research capability and make a significant and original academic contribution at the frontiers of a discipline or field' (DoE, 2007:29). Because we are particularly concerned with the growth of the TVET knowledge field in the south, we comment briefly on the master's research output but focus more specifically on TVET-related doctoral theses completed in the past ten years. Given the historical paucity of academic scrutiny and the lack of incentive to conduct research in this area, we take a closer look at the growth of the knowledge base in respect of TVET and the manner in which this is occurring.

First, however, we review the policy context of postgraduate research in South Africa that has given impetus to doctoral studies and within which the growth of TVET studies is located; then we devote the empirical part of this article to responding to the following questions:

- What is the size and shape of the TVET research field (according to the distribution of researchers across universities and to the topics, methods and scale, as revealed by the research questions)?
- Who or what is the research directed at (e.g. institutional leaders, policymakers, practitioners, and national, African or global scholarly communities)?
- What contribution is it making to the existing body of knowledge?

We turn now to a broader view of doctoral research in South Africa and the issues that are endemic to it.

The doctoral degree in South Africa

As stated earlier, our emphasis in this article is on research undertaken into TVET, and more so the doctoral degree, given this degree's potential to advance knowledge of TVET. While the doctorate might not produce 'new knowledge' per se, it is required to contribute fresh perspectives, albeit on questions that may already have been asked but not have been answered sufficiently or definitively.

It is therefore appropriate to sketch the state of postgraduate output in South Africa, more especially doctoral output,² since this forms the academic context in which TVET-specific research is situated. As stated earlier, we focus here on the doctorate as a contributor to the national and international knowledge base of whatever field such research is being undertaken in.

A policy focus on quantity and equity

The imperative to increase doctoral production can be traced back to the national Department of Education's White Paper on Higher Education (DoE, 1997) that set an imperative to increase enrolments (section 2.24):

... at the master's and doctoral levels ... for social and economic development and to provide for the needs of the academic labour market.

The National Plan for Higher Education (DoE, 2001), too, recommended increased numbers of master's and doctoral graduates and related research output. This was followed shortly by a new funding model for public universities that linked policy objectives to academic output. According to this model, grants to universities became based on enrolments in programmes, and institutions would be funded not only based on their output of research papers, but also on their output of master's and doctoral graduates. The doctoral degree immediately became a high-stakes achievement for universities owing to the high value of the funding attached to it (Mouton, 2011).

As a result of South Africa's racialised history, though, it also meant that historically advantaged and well-resourced universities would continue to turn out larger numbers of postgraduate students (Herman, 2011). With this in mind, national incentives were created to attempt to correct the imbalances. Thus, targeted bursary funding was made available to increase the numbers of African black³ and women students in postgraduate studies, and especially in the sciences (Herman, 2011). For instance the Department of Science and Technology's Ten-Year Innovation Plan (2007) aimed to set up strategies to increase the number of doctoral graduates for a global knowledge economy. In addition, the National Research Foundation's PhD Project (NRF, 2007) stated its intention to increase the number of PhD graduates and to increase their diversity. The Ten-Year Innovation Plan set ambitious targets (relative to the numbers at the time) for PhD production to grow fivefold over a period of ten to 20 years.

This policy backdrop goes some way towards explaining the steadily increasing postgraduate enrolments since 2001, with the majority of students (44%) being in the humanities and a sizeable proportion in the education field (Mouton, 2011). The doctoral degree showed the

2 We acknowledge here the extensive work done in this regard by Prof. Johan Mouton, Director of the Centre for Research on Evaluation, Science and Technology (CREST) at Stellenbosch University.

3 The term 'African black' refers to South African nomenclature in descriptive statistics for the purposes of equity targets.

greatest growth rate, and, in terms of output, there was an average of about 1 200 doctoral graduates annually between 2007 and 2009. This can be attributed to the revised university subsidy policy of 2005 that undertook to subsidise the output of master's and doctoral graduates – this resulted in universities acting quickly to ensure there would be graduates as soon as possible after the new funding policy came into effect (Mouton, 2016). The highest growth rate in doctoral intake and graduations occurred between 2008 and 2013: from 1 182 graduates in 2008 to 2 051 in 2013 – a growth rate higher than any other university degree level at the time (Mouton, 2016:53). But the steep growth rate was not without efficiency challenges, as a tracking study of three separated cohorts showed that, on average, 46% of doctoral candidates took seven years to complete their degree (Mouton, 2016:59).

In spite of the growth in doctoral output, in 2007 there were only 1 274 graduates, which translates into 26 doctorates for every 1 million of total population, a statistic which placed South Africa 33rd out of a list of 34 countries for which data are available. This should also be compared with Portugal's 569 doctorates for every 1 million of total population (Mouton, 2011). The upshot is that, even with a boost in numbers resulting from enrolments of students from other African countries, South Africa is far short of its 2024 target of 6 000 doctoral graduates.

Dilemmas of expanded doctoral enrolment

Generally, across the higher education system, whereas doctoral enrolments have grown steadily, this growth has not been accompanied by a comparable growth in the number of supervisors (Mckenna, 2019). A significant element in increasing student targets is therefore the necessary increase in the number of supervisors, a requirement which faces its own set of difficulties. Studies have highlighted the challenge of limited supervisory capacity in universities, a limitation caused by the number of academics without PhDs who cannot supervise doctoral students. This issue can also be traced back to South Africa's apartheid history – universities established for designated groups limited along racial lines the qualifications that could be offered by racially defined institutions; therefore, the historically white universities were privileged to offer higher-stakes research-based qualifications, whereas those universities designated for other racial groups were restricted to more taught qualifications – for example in education. Attempts to restructure and differentiate the offerings of universities in 2001 according to their historical character therefore met with resistance, particularly from those universities that were still experiencing the legacy of unequal development, because differentiation was viewed as potentially entrenching the apartheid dispensation.

Of the 23 universities in 2008, 12 were yielding over 93% of all doctoral graduates, a double-edged sword as staff were being overburdened with a heavy supervision load (Mouton, 2011). Not only that, in some instances, staff were supervising outside of their area of expertise, giving rise to concerns about the quality of a thesis: a startling statistic revealed in Mouton's survey (Fourie-Malherbe, Albertyn, Aitchison & Bitzer, 2016:71) was that 45% of supervisor

respondents said that they had at times supervised students outside their areas of expertise, an issue we will return to below. Post-apartheid, some universities – such as the University of the Western Cape, for instance – have worked extremely hard to rebrand themselves as ‘research’ universities while maintaining some of their traditional high-enrolment programmes. But, in doing so, they have also had to improve staff qualifications and to incentivise their staff to attain doctorates in order to boost the numbers of doctoral supervisors. On the other hand, historically advantaged institutions with larger numbers of supervisors have continued to produce the bulk of the doctoral graduates.

In addition, there is a substantial attrition rate in doctoral studies that has negatively affected the official output targets. According to Cloete, Mouton and Sheppard (2015:72), ‘in South Africa, 48% of the 2006 doctoral cohort graduated after seven years’. In comparative studies, it has been determined that South African students do not take an uninterrupted pathway from undergraduate to doctoral studies (or even from master’s to doctoral studies); moreover, the majority study part-time while in employment owing to financial constraints. This also accounts for attrition owing to the pressure of balancing study responsibilities with family time, work responsibilities and the like. Doctoral graduates in South Africa take around five years to complete their degree and are on average older than their international counterparts in the United States, the United Kingdom and some European countries, although, in the field of education, this also appears to be a characteristic of doctoral graduates internationally. These differences have been linked principally to the issue of insufficient funding for full-time studies. Mouton (2016:61) summarises the difficulties of the doctoral candidate succinctly as follows:

... the larger proportions of students in the social sciences and humanities are enrolled part-time ... take longer to complete, are older and often struggle with the demands of their studies.

As can be gleaned from this section, the pressures on higher education with regard to increased doctoral output are multifaceted. Mouton (2011:22), in an earlier paper, referred to four competing discourses that exert pressure on universities and cause doctoral education to be held in tension: the competing demands for growth, transformation, efficiency and quality in higher education. The overriding model of doctoral supervision in South Africa, too, has proved to be a constraint on efficiency, as is outlined below.

A conservative model of postgraduate supervision

The model of postgraduate training prevailing in most South African universities, particularly at the doctorate level, has also been identified as a constraining factor in growing new research capacity. Mouton (2011:26) distinguishes between what he calls the ‘thin’ model of doctoral training, where there is little structure and more hands-off, ‘laissez-faire supervision’, and the ‘thick model’ of supervision, which some universities in South Africa have been moving towards, where there is a level of structure and support in the programme, better screening

of candidates at enrolment, and some compulsory coursework components. However, the popular model of supervision still tends to be a conservative, one-on-one didactic model – which places the burden on individual academics – rather than the more innovative and shared models of supervision practice that can be seen in some institutions abroad. Many international universities include structured coursework, often non-credit-bearing, as part of the PhD process, but this is not the norm in South Africa and introducing this model would depend on individual academics' acquiring funding to implement and maintain it. In South Africa, as aptly summed up by McKenna (2019:np), 'the dominant approach to doctoral education in the humanities and social sciences remains the master–apprentice supervision of individual studies', a labour-intensive and limiting endeavour for the responsible supervisor.

With regard to models of provision, in the United States, the United Kingdom and Hong Kong, for instance, the dominant model among those in the education sector undertaking doctorates is through the Education Doctorate (EdD) route rather than the PhD, and a number of these graduates go on to become university lecturers in their career pathway. The EdD consists of two years' part-time taught classes and assignments and a half-length thesis, a model which appears to have numbers of successful graduates. As indicated above, most TVET practitioners in South Africa undertake part-time studies, but the prevailing part-time model for master's and doctoral degrees is that of the full thesis, which many practitioners find daunting. Few universities in South Africa favour coursework or structured or taught master's and doctoral degrees because the government subsidy funding tends to incentivise the full-thesis PhD route.

The quantity–quality debate

From time to time, concerns about the quality of the doctoral programme in South Africa have surfaced in the media and other forums, particularly regarding whether the national policy drive to increase postgraduate output is having a negative impact on quality. Gumede (2019), in a public media response to the doctoral review currently under way by the Council on Higher Education (CHE), argues that one should not hasten too readily to the inference that an increase in numbers is inversely proportional to quality of output. He highlights as mitigating factors the generally onerous internal quality assurance processes that PhD study entails: admission through approval of the research proposal, the various university committees that scrutinise the proposal and the ethical-clearance documentation, the requirement for external and international examiners of doctoral theses, and the reporting procedures required of supervisors. In addition, and in spite of constraints on their capacity, many universities have bolstered institutional structures and interventions to strengthen their doctoral programmes and support students in the successful conclusion of their research. Nonetheless, the national CHE review commenced in 2019 with institutional self-reviews, which will undergo national scrutiny by external panels. It is widely expected that this review of the doctoral degree will enable university introspection on the apex doctoral qualification in the interests of continuous improvement towards, among other criteria, meeting national policy imperatives.

Another perspective on quality is put forward by Jansen (2011) in an article that speaks to the significance of doctoral research, and which may be instructive to our survey of TVET research which we comment on below. Jansen (2011:141) holds (with regard to doctoral study) that

... when you can relate a specific problem to a broader class of problems you can then locate your study in the relevant literature and signal departures from, and an advance on, the existing knowledge in the field.

He cautions, too, that doctoral scholars should make modest claims rather than grandiose ones, because ‘the social and human worlds are a lot more complex than easy models can address ... therefore the quest [should be] for understanding first, before the rush towards practical application’ (Jansen, 2011:145). Finally, he concludes that significance of one’s study ‘rests principally on the foundations of prior research ... and that having a firm grasp of that literature [knowledge] makes the difference between routine research and significance in research’ (Jansen, 2011:146).

Given the sparseness of TVET research, and its early stage of development, it would be both short-sighted and foolish to be too critical of the quality and significance of the current state of such research in South Africa. In what follows, we refrain from detailed comment on specific studies and instead outline key issues across the output as a whole that may be of value in fostering the development of TVET doctoral research.

The state of TVET research in South Africa

The contextual realities of postgraduate research that precede this section were provided as a backdrop to understanding TVET research in South Africa. TVET-related research is a relative newcomer to the areas of interest in higher education research. This is largely because TVET provision and associated concerns have historically been outside the academic purview of universities. While we do not have previous work specifically examining postgraduate or doctoral research on TVET in South Africa, we do have existing knowledge about the state of TVET research in South Africa more broadly, through both national and continental surveys (cf Wedekind, 2008; McGrath, 2011; Powell, 2013; McGrath, Mulder, Papier & Suart, 2019). Overall, these reviews conclude that South African TVET research has been more concerned with the development and implementation of policy than with theorisation either nationally or internationally, although there are some important exceptions and there has been an increasing sense of criticality. Much of the work has been funded by external development organisations or national departments and agencies, and much has been conducted beyond the realm of universities. Most notably, it has been sponsored by semi-private organisations such as the Human Sciences Research Council, JET Education Services and the National Business Initiative, although the relative balance between think tank and university knowledge production on the subject of TVET has shifted towards the latter over time.

Of the writers on TVET research listed in the previous paragraph, Wedekind (2008) drew attention to postgraduate studies. He observed that most studies since 1994 were either narrow case studies of the institution in which the student was employed as a staff member or broad perception studies covering a wide range of topics and lacking a clear theoretical or implementation focus. He also noted that the concentration of South African TVET research produced outside of universities did not contribute to the development of TVET researchers in the academy, because much of the capacity to supervise resorted outside the universities and was difficult to draw upon. Related to this, much of what was supervised within the academy was done by non-TVET specialists, with resulting negative effects on the grounding of neophyte researchers in the debates of the field. However, Wedekind (2008) envisaged a strengthened university focus on TVET research that would support the development of a postgraduate research tradition in the field and encourage 'the development of an internal research capacity within the college system itself, so that knowledge about the sector is generated from within' (Wedekind, 2008:16). It is perhaps this vision that shows promise in the study of postgraduate TVET output that is outlined below.

A survey of postgraduate TVET research output, 2008–2018

The Higher Education Management Information System (HEMIS) is an established information management tool of the DHET. It is a unit record database that requires obligatory input from universities before it is submitted to the DHET. The HEMIS data are then used by the DHET for the purposes of funding and planning, and for steering and monitoring the higher education sector. The data gathered can ultimately also be used comparatively across institutions. The information about students that is collected pertains to university qualifications, courses, subject majors and the credit values for which students have enrolled, together with demographic data such as race, gender, nationality and age. Data on university staff are another major category of data collection.

With regard to postgraduate output, HEMIS can record the numbers of graduating students and their institutions in nationally defined, field-specific categories, but it is not a repository for the actual theses or dissertations produced or disaggregated within a particular domain such as TVET studies, for instance. For this information, one would have to search individual universities' websites in order to obtain electronic thesis copies that are open-access (for various reasons, some have embargoes on downloading the full text), a potentially tedious exercise. What we found helpful in this regard was a national portal developed to house theses specific to South Africa and to support South African universities to develop such programs. The data presented in this paper were therefore extracted from the National ETD Portal of South African Theses and Dissertations (see <http://www.netd.ac.za>), which houses a searchable database of publicly accessible master's dissertations and doctoral theses. This repository provided an excellent starting point as a centralised database of master's and doctoral artefacts.⁴

4 The research assistance of Dr Gerald Vollenhoven in collating the relevant data is gratefully acknowledged.

Given that Wedekind's (2008) survey of the TVET research literature ran to about the year 2007, we decided to bracket our study between the years 2008 and 2018 and to confine our review to university studies only. As is the case with many universities, candidates may attain their master's or doctoral qualification either by means of a 'full thesis', which constitutes the entire basis of examination, or by means of a combination of compulsory coursework and a 'mini thesis'. In the case of a doctorate, there is also the option of achieving the qualification by means of published articles according to a set of conditions laid down by the university. For the purposes of reviewing similarly weighted research artefacts, we decided to include in our study 'full-thesis' master's dissertations and doctoral theses which were identifiable by their titles as research conducted in or about TVET institutions, that is, research concerning systems, input, outcomes, staffing, pedagogy, and/or students. The full texts, where available, were downloaded and initial summaries of each output were made against the following headings: Degree; University; Author; Date; Title; Research questions; Methodology; Scope/sample size; Theoretical framework; Summary of findings.

In all, 71 outputs were identified and summarised in this way; 70% of these were at the master's level, while 30% were at doctoral level. Doctorates were awarded by nine universities, with master's obtained from across 14 universities.

The national portal from which the data were gathered does not specifically mention the 'race' of the doctoral author and it would have been disingenuous to try to infer this from the available data on students and institutions. Our intention at the outset of this article was to shine a light on TVET-related postgraduate outputs, situated as these are within the broader picture of university output, and to attempt to describe the contributions to knowledge that are emerging. For this reason, this research is a first cut of the available data and there would need to be considerable cross-referencing with the HEMIS data on university graduates if one were to conduct a more fine-grained analysis of postgraduate demographics.

It is common in such survey-based research for the data to be left to speak for itself, with the authors remaining in the background. Yet, data never do just speak for themselves – they are inevitably interpreted and reinterpreted by their beholders. For this reason, we intentionally comment on the data and on the field of research they represent, justified by our 30 years (individually) of research, teaching, interaction and participation in the field of TVET.

The national portal was thoroughly trawled for dissertations and theses which could be identified as falling within the ambit of TVET, and there were no deliberate exclusions, except for those documents which, for one or other reason, could not be downloaded. The task of analysing approximately 100 000 pages of postgraduate writing is clearly an onerous one without the support of sophisticated software. Nevertheless, we compared the initial summaries made by our research assistant against a random sample of dissertations and theses which we read fully in order to check for accuracy. And while we can attest to the latter, it is possible that our methodological approach had limitations and that unintended omissions occurred, or that some dissertations and theses were not submitted

by institutions to the database for uploading. Nevertheless, we felt that the search had been sufficiently exhaustive for the purposes of providing a baseline of information that could be periodically updated.

Findings of the survey

In this section of this article, we present the main results of our survey of the postgraduate artefacts found on the dissertations and theses database. As noted above, we found 71 studies: 50 at master's and 21 at doctoral level, all of them completed between 2008 and 2018 (inclusive), approximately a ten-year period.

Master's dissertations

Taking a brief look at the master's level, the graduates were from 14 institutions. Of these graduates, 28% were in disciplines such as Business and Information Technology rather than Education/TVET per se. Taken together, the master's dissertations were mostly concerned with students' attitudes (45%), mirroring Wedekind's (2008) earlier overview. Research dealing with lecturers (23%), curricula/programmes (17%), and institutional policies and leadership (13%) made up the bulk of the rest of the topics, reflecting the very real local concerns of the largely practitioner community of master's students in the field.

Scope and methodology

Master's dissertations are necessarily limited in scope and ambition, their aim being to enable students to get to grips with research methodology. Of the master's studies, 67% focused on one public TVET college, with only one study looking at the provincial level and none concerned with the national level. Methodologically, semi-structured interviews dominated, being found in 65% of the studies, with the number of interviewees varying from 3 to 42 (the latter being a very high number for a master's study). In the minority of cases, this was combined with focus groups, documentary analysis or classroom observations. Within the qualitative paradigm, most noteworthy was one study each that used photo elicitation, life histories and narrative interviews. Quantitative work was less frequent (33% of studies), sometimes in combination with some interviews. Most of these quantitative studies focused on small samples (<100) and on descriptive statistics about attitudes. Four drew on existing psychological scales and sampled above 100 respondents, while one used a small pre-test–post-test survey.

Doctoral theses

Regarding the 21 doctoral theses, and in contrast to the master's dissertations, students' attitudes are almost entirely absent from the doctoral studies, with only one study exploring experiences of personal transformation. Lecturers, too, are a much-reduced focus, again being at the core of only one thesis. The doctoral studies appeared to have a major emphasis on curricula and programmes (10/21), equally distributed between college and workplace foci.

If this is added to three studies focused on teaching and learning, then instructional concerns are at the heart of the doctoral corpus. Another two studies investigated college management, two considered aspects of national policy (one in relation to private TVET colleges), and one dealt with management information systems.

Quantitative versus qualitative approach

At the doctoral level, there were slightly more quantitative approaches, with 8/21 studies using survey methods. However, the use of statistics was almost entirely descriptive and the scale of the surveys relatively modest (apart from one study, the range was 100–450 respondents). Although the language of factors and causality was invoked in some theses, the data showed limited power for causal claims. Interviewing remained a major data-gathering method, being used in 12/21 studies. In most cases, the sample sizes here, too, were modest, with only three studies interviewing more than 20 respondents. At one extreme, for instance, a PhD study was based on only 10 semi-structured interviews, a dataset several times smaller than some other studies, while another (from the same institution and faculty) combined the largest questionnaire response (450) with 10 qualitative studies, all based on multiple interviews and documentary analysis. Two studies used only analyses of texts without any supporting interviews. Most of the theses' data-gathering methods were concerned with interviews and questionnaires, with one reference to ethnography and another the use of the Delphi method standing out as unusual in sample terms, although not internationally. There appeared to be a wider range of methodological approaches in the master's dissertations than in the doctoral theses.

To return to our interest in how the knowledge base of TVET is advancing, which was the impetus for our survey, the fundamental assessment question for a doctoral thesis is whether it is making a significant 'contribution to knowledge'. In attempting to qualify that general question somewhat, we asked two further questions, namely: What aspect of knowledge is the thesis seeking to contribute to (e.g. academic, practitioner, policy) and What is the scale of the knowledge claim (e.g. local, national, continental, global)?

Research questions and key findings

A comparison of research questions and key findings revealed a very strong focus on practice in several of the theses. These included findings that were intended to improve the curriculum and its implementation, for instance in areas such as Plant Production, Civil Engineering and Office Management. Equally, the theses sought to investigate improving e-learning, management information systems and the language of instruction as features of college programmes. Some were more targeted at the level of national policy, contributing, for instance, to debates about the way that private TVET provision is treated; how TVET college leadership is conceptualised at a system level; and how workplace learning for college students can be improved.

A few posited more open, and perhaps too generalised, research questions, such as 'Which employability skills are important in the workplace?' and 'What is the nature of psychological

violence?'. They could be considered too open and generalised when one compares their key findings with their research questions:

- In the first case above, the findings showed that the study was focused on improving the vocational curriculum of Namibia, and,
- in the second case, the focus was on the work environment (college) of South African public TVET lecturers.

In sum, the principal knowledge contribution of almost all of the doctoral studies could be said to be directed at the local knowledge base of TVET research rather than broader learnings applicable further afield. A possible exception was a thesis on private TVET that offered a typology of institutional types that the student argued to be of relevance and significance across the African continent.

Scale-of-knowledge claim

Turning to the scale-of-knowledge claim, one study was as small as an individual who sought to 'develop ... facilitation of transformative learning in leadership development in the TVET sector in South Africa', whereas others investigated a narrow curriculum area in an institution without seeking to apply the learnings of that focus to the vocational curricula in South African TVET more generally, or to vocational curricula in other parts of the world. Similarly, there were those that had a regional or a provincial focus (Gauteng, KwaZulu-Natal; Addis Ababa) but that did not use the findings to make wider claims about national or international systems. In spite of the implicit assumption that doctoral studies (should) seek to make a contribution to international debate and scholarship, few of the studies we perused made a claim about an impact on African or global TVET research debates, when there is certainly a need to engage empirically and theoretically with TVET knowledge emanating from the north. Part of the explanation for this may lie in the dearth of academic vehicles for such engagement from the south, for instance the relatively small TVET academic community and a historical absence in South Africa of credible journals for TVET research.

Our view is that this matter of wider significance, particularly for doctoral studies, is one that should be taken up robustly by institutions and academics who are supervising postgraduate research in TVET, and which the institutionalisation of the new journal (JOVACET) could work towards contributing to.

Conclusion

Our comments on the focus and methodology of the TVET studies that were surveyed should not be construed as negative judgement or criticism, because the graduates concerned all met the national criteria of their institutions for achieving their qualifications. Rather, our observations in this article are aimed at strengthening what is clearly an emerging body of TVET research and researchers and at stimulating institutions to direct a more critical gaze at what could potentially be groundbreaking contributions to the wider pool of TVET knowledge.

To summarise the findings of our survey, the key aspects we noted were these: In the main, the research questions were practically and locally focused rather than theoretically and internationally oriented. The methods were dominated by semi-structured interviews and questionnaire-based studies, with relatively modest sample sizes and an overemphasis on descriptive statistics. None of the dissertations/theses claimed to be contributing to methodological development or furthering the boundaries of established methodologies (even though, with some effort, they might indeed have claimed to do so). The intended audience was typically local, often limited to an immediate subject-lecturer cadre or to the national or regional public TVET college sector, with little evidence of talking to national or international academic communities. Finally, theory was applied conservatively, with the doctoral students making little attempt to engage in the discussion of education contexts as illustrative sites for answering wider social science questions.

The limitations that we perceived in the corpus of postgraduate work between 2008 and 2018 could perhaps serve usefully as areas to be considered as the field expands and matures. Principally, TVET research in South Africa will need to have a better balance of goals and audiences. Tackling practical and policy issues is enormously important, but there is a clear need for a greater focus on making a recognisable contribution to scholarship beyond TVET in South Africa which is of wider importance to African and international audiences, and, indeed, to the social sciences. Other elements of a growing maturity of the research field will include methodological innovation and greater theoretical risk-taking.

This said, it is heartening that the number of TVET-related outputs produced by South African universities since 2008 has been growing steadily. But the stark reality is that the national output over ten years in this field is still comparably less than the output of a typical, established TVET research centre in those nations where the TVET research output is considered major. Seen in the light of official attempts at the national level to increase doctoral graduates as outlined in this article, there is reason to be hopeful. What remains to be seen is whether the number of TVET specialist university academics who are able to supervise within their area of expertise will increase noticeably.

It is important to emphasise that these are early days in the development of TVET as a field in South Africa. And while there are some established research organisations that have conducted TVET research historically and which possibly comprise knowledgeable and experienced researchers, these researchers are not academic supervisors at universities where such capacity might be sorely needed, and they remain outside the formalised knowledge-production arena. In view of the relative immaturity of the field in South Africa, the creation of pockets of concentrated resources for building postgraduate teaching in TVET is vital, not just for the reproduction of the field in universities but because the wider ecosystem of think tanks and policy forums has very limited capacity at this time.

A factor that may contribute to research that pushes the boundaries of knowledge more aggressively is that of an active specialist community with recognisable champions or scholars

in the field. It would appear that several of the doctoral candidates included in our survey were not located in active TVET research communities with associated scholars, and that the candidate was or is the sole researcher (or one of very few) in a field which was or is not the major focus of the institution. It should be noted that the very recent investment by government in the national research chairs initiative is yet to feature in this data. But this investment does signal a potentially faster acceleration of TVET postgraduate research output in the country. The initial indications are that around 30 or so postgraduate students are engaged in TVET-related research currently, most of whom are funded students, across five or six universities. National funding has bolstered research in a number of cases, leading to the creation of new, secure academic posts and postdoctoral appointments that will further reinforce the field's development and support the development of a TVET research community.

Engagement as a community is crucial to building the TVET knowledge base. Examples are the communities fostered by the establishment in 2017 of JOVACET and also by the first national TVET research seminar for postgraduates held in Cape Town in late 2019. Both constitute important steps in this direction. Expanding upon and sustaining these spaces will be important for the health of the field in future, and so, too, is building the community to include supervisors and students across more institutions and wherever TVET research capacity needs bolstering. For instance, experts in the TVET domain outside of universities present a valuable resource and could perhaps be invited to be part of university supervisory teams. Furthermore, publications arising out of postgraduate studies could be encouraged to use JOVACET as a vehicle for emerging scholars, subject also to the rigours of the peer-review process.

While we would not wish to be prescriptive about a South African TVET research agenda, we will offer some thoughts on current research gaps, drawing both on our own reflection on these and the gaps as identified by the DHET in their ongoing large research investment in the sector. One priority is new research on TVET lecturers, focusing both on the *how* and the *what* of the curriculum and the pedagogy they deliver; and also on questions related to their work and lives that pertain to the health, improvement and sustainability of the workforce. Another priority is more and better research on students. The policy focus here is on access, retention, pass rates, and destinations, all of which are important. However, there also needs to be work that looks carefully at where learners come from, including the experiences of many of them of multidimensional poverty; why they enrol, which goes beyond simple economic calculations; and how they experience college and make decisions about whether to continue with their studies or leave.

Clearly, TVET research needs to focus much of its attention on preparation for the world of work, but there is room here for going further to consider what desirable work futures might look like and what TVET should be doing to support developments in those directions. This would include thinking about TVET responses to the 'Fourth Industrial Revolution' but also to the challenge of sustainable futures. There are also research gaps at the institutional

level. In addition to a focus on standard topics of leadership and management, there is a need to link such questions to the other research concerns listed here in order to ask what institutional forms, systems and cultures are required to make public TVET colleges better meet their mandate. Moreover, there is a need to build a stronger research culture about other aspects of the TVET system.

Our survey of ten years of postgraduate TVET research outputs, notwithstanding its limitations, illustrates that there is growing research interest in the field. It also reveals an emerging intellectual cadre that should surely be harnessed to boost the supervisory capacity among academics in higher education where a shortfall exists in this domain.

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