

# ACHIEVING DOCTORATENESS: IS SOUTH AFRICAN HIGHER EDUCATION SUCCEEDING WITH GRADUATE ATTRIBUTES?

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## ABSTRACT

This article applies findings from the recent national review of South African doctoral qualifications to examine ways in which universities interpret the formulation of, and apply in the context of a differentiated higher education system, the graduate attributes established in the qualification standard, in order to achieve the characteristics of “doctorateness”. The article explores the concept “graduate attributes” itself, the extent to which it is manifested in institutional, supervisory and examination practices, and how the concept is conveyed to and understood by students. National review findings indicate inconsistencies in conceptualisation and application both between and within institutions. In this article, emphasis is placed on the primary need of developing in the doctoral graduate the capacity to enter, as a deep-thinking researcher, into a community of practising peers, whether in the academy or in a profession.

**Key words:** graduate attributes, doctoral qualification, differentiated higher education system

## BACKGROUND

During 2020–21 the Council on Higher Education (CHE) conducted a national review of South African doctoral qualifications. This was the first comprehensive national evaluation of the doctorate ever conducted. The review culminated in the *Doctoral Degrees National Report* (CHE 2022). The Report summarised findings by CHE-appointed peer review panels of self-

evaluation reports of doctoral qualifications submitted by 23 public and five private higher education institutions.<sup>1</sup> This article explores aspects emerging from the Report, with particular emphasis on characteristics of doctoral graduates, expressed as graduate attributes.

Prior to the national review, much recent critical debate on doctoral studies had been published. Topical emphasis tended to focus on the national government's aim of substantially increasing South Africa's doctoral output to match, at least, numbers produced by our BRICS partners.<sup>2</sup> This has been leading to a relative massification of studies at the doctoral level. The number of graduates in 2010 nearly doubled by 2017, and the 2030 target means another doubling over a relatively short period. Within twenty years the number would rise from 54 to 100 graduates per million citizens (Department of Higher Education and Training 2020, 2). Admirable though this quest is, alarm bells have sounded. Prioritising quantitative targets can compromise the maintenance, let alone enhancement, of quality. An over-emphasis on throughput rates alone runs the risk of "trivialising" doctoral education, reducing it to "a mere exercise of technical competence and completion" (Waghid 2015, 1), with under-preparedness of students and excessive dependence on novice supervisors being among the constraining factors (Waghid 2015, 6). Concerns have tended to focus on the *means* to qualification, such as examination administration (Schulze and Lemmer 2019, 181) and the effectiveness of supervision (Cekiso et al. 2019, 10), rather than on the *impact* of qualification.

Global growth has brought about an increasing diversity among the student cohort in both background and preparedness, as well as increased student mobility, which has led to attempts at a trans-national level to set doctoral benchmarks. The 2020–21 national review established, as a benchmark for qualitative adequacy in doctoral studies, the *Qualification Standard for Doctoral Degrees* (CHE 2018). The Standard was based on principles established in the *Framework for Qualification Standards in Higher Education* (CHE 2013). While the *Framework* took into account earlier work on the drafting of attributes, such as the Dublin Descriptors influencing the *European Qualification Framework for Higher Education* (European University Continuing Education Network 2007), there are differences in that, while the Dublin Descriptors were neither meant to be prescriptive nor representative benchmarks, the South African Doctoral Standard established a threshold, a set of minimum requirements that all awarding institutions would need to meet. The Standard focuses on the graduate, the culminating issue of a doctoral journey: how the graduate attributes represent the purpose of the qualification, and how evidence of achievement is assessed. Impact is measured, not merely by the completion of an acceptable thesis, but by the extent to which "scholarship in, and stewardship of a field of study" (CHE 2018, 11) is propagated: the emergence of a researcher capable of gaining and holding a place in the company of an established research and

development community of practice.

## **CONCEPTUALISATION OF GRADUATE ATTRIBUTES**

Most literature on the conceptualisation of graduate attributes focuses on their development in the early stages of higher education, specifically an initial Bachelor degree. In the case of the doctorate, the challenge is to translate the concept into “research-type” graduate attributes (Jenkins 2009, 3), in this case at the highest level of research.

Globally, the development of graduate attributes emerged from a neoliberal shift in higher education to an increasing alignment of business, government and the academy (Hill, Walkington, and France 2016, 155). Twenty-first century universities and the higher education sector in general have been challenged by changing conditions including the expectations of stakeholders outside academia to ensure that students have attained the required outcomes when they complete qualifications. Responsibility for creating a skilful cohort of employees, traditionally assigned to vocational education, has become assigned to higher education (Cook 2018, 57), and learning has been equated largely with job-related needs of the economy. Literature on the subject of graduate attributes “issues many warnings about the need for theoretical perspectives that go beyond technical-rational assumptions” (Winberg et al. 2018, 236). Graduate attributes encompass more than employability; a balance needs to be maintained between developing thinkers – an intellectual enterprise – and an instrumental approach to knowledge with a focus on business (Hill et al. 2016, 156). Besides that, there is a need to develop knowledge and skills adaptable to the contingencies of a rapidly-changing world: preparing graduates “as agents of social good in an unknown future” (Bowden et al. 2000, 15).

The focus on employability might suggest that doctoral graduates are emerging with knowledge and skills that are out of kilter with business and the economy, and struggle to find employment. Recent data suggest that, in South Africa, this is not the case (Mouton and Van Lill 2022, 2). The authors reported that as many as 60 per cent of doctoral students study part-time while they are employed, and the majority remain with the same employer after graduation. Only two to three per cent could not find any employment, but the concerning finding is that 18 per cent (close to one in five) could not find employment in their field of study, most of them in the fields of the social sciences and humanities. This last finding is indeed disturbing. While it may suggest an imbalance in the supply-demand ratio in those fields, it may also suggest that there exist gaps in what doctoral graduates require, to thrive in a “super-complex and uncertain future”. The data suggest that such gaps may be more prevalent in social sciences and humanities than in other fields.

Higher education institutions that have developed their own sets of graduate attributes

have conceptualised them in a variety of ways (Barrie 2004, 265–266). What follows is a brief summary of the four conceptual frameworks Barrie identifies, with comments on how they may relate to doctoral studies in the South African context.

### **Precursor conceptions of attributes**

In this approach graduate attributes are separate from disciplinary knowledge, and are undifferentiated foundational skills, such as academic literacy and numeracy: precursors to learning at a particular level. While students are expected to have these attributes on enrolment, when they do not they are provided through additional courses, workshops, or similar support. They are wholly generic.

For doctoral studies, a precursor conception would imply that students will have attained the expected graduate attributes from prior studies leading to a master's degree, which, in all South African higher education institutions, is a prerequisite for admission to doctoral studies (apart from cases of admission via recognition of prior learning). If research at master's level is regarded as simply foundational training for progress to doctoral studies, a kind of proto-doctorate, then a distinction between the graduate attributes appropriate to each level can become fuzzy. The doctorate can become simply “more of the same, but somewhat longer” than a master's dissertation, with insufficient attention paid to what ought to be a significant development in research capability.

### **Complementary conceptions**

In this approach graduate attributes complement, or embellish, disciplinary knowledge; they are additional generic features, functional and atomistic, but distinct from core curriculum outcomes. They may be catered for by an additional learning unit, a series of lectures or a task set for students.

This view is more appropriate for an initial (Bachelor) degree than for postgraduate studies. For a general doctorate, the notion of additional modules does not apply. Yet, as will be discussed later, a question arises as to whether, in the doctoral journey, graduate attributes are assumed to be developed through a process of implicit “osmosis”, or, at institutional, departmental or individual supervisory level, there is organised inculcation for students of any such complementary attributes.

### **Translation conceptions**

Attributes are “clusters” of personal, cognitive and skills-based features. While they are separate from disciplinary knowledge, they are not wholly independent of it. This approach

envisages students using and applying disciplinary knowledge. The attributes “interact with, and shape, disciplinary knowledge”. By way of example, abstract or context-specific disciplinary knowledge may be applied to the world of work, or to societal issues. Rather than being generic, attributes are competences that are shaped to address the needs of a particular discipline or field of study. Students would identify with them through engagement with a particular field of research.

Contextual specificity may apply to a number of domains: regional, national or local priorities; institutional mission and strategic plan; a research initiative; economic or technological imperatives; a field of study – or a combination of these domains. In terms of this “translation” approach, an important question is around who, or what, does the shaping of the attributes, whether the shaping is an integral part of the student’s research development, or it is imposed, either explicitly or subtly, by managerial influences at institutional or supervisory levels, thereby compromising the student’s research autonomy – an essential attribute. What the findings of the national review suggest is that, in our institutions, there is a lack of understanding or, in some cases, negligence with respect to graduate attributes – as will be discussed later – that is more of a concern than any conscious shaping of them.

### **Enabling conceptions**

Here graduate attributes are regarded, not as “clusters”, but “interwoven networks” of such clusters. This interweaving generates “a particular perspective or world-view”. They comprise the skeleton on which the flesh of disciplinary knowledge is constructed. From this point of view, certain advantages emerge. The attributes may “outlast” the knowledge and the contexts in which it was acquired. They also provide a pattern for the acquisition of new knowledge. In this sense, they transcend the context in which disciplinary knowledge was originally acquired.

When graduate attributes are conceived as developing a world view, the question must be asked: whose world view is being developed? While the view may be typical of the higher education sector as a whole, or characteristic of the institution awarding the doctorate, or of a field of study or discipline, care needs to be taken to guard against any approach that prioritises specific cultural values or alienates one or other cohort of students, whether based on nationality, demographics, gender or any other feature. “Being an independent thinker may (for some) be life-threatening or culturally difficult in their home contexts ... graduate attributes that are culturally specific may not cater to student diversity” (Cook 2018, 58).

Barrie (2004, 266) suggests that these different approaches to attributes are hierarchical: “enabling strategies subsuming and being supported by translation strategies, which in turn are supported by complementary and precursor approaches”. The approaches are not discipline-

specific. Supervisors in very different disciplines may share similar approaches, while those in the same discipline may differ significantly (Barrie 2004, 264).

The extent to which these scenarios and approaches are evident in our context, based on findings from the national review, will follow.

## **GRADUATE ATTRIBUTES IN THE STANDARD DOCUMENT**

The *Framework for Qualification Standards in Higher Education* (CHE 2013, 19) proposes a view that graduate attributes have a number of points of reference. One is the higher education sector as a whole, nationally and globally. This reference point refers to attributes – or aspects of the attributes – that are shared without distinction by all doctoral graduates, irrespective of country, institution, field of study or discipline. A second point of reference emanates from the specific mission, strategic plan and ethos of the awarding institution. Taking into account the differentiated nature of South African universities – traditional, comprehensive and universities of technology – and the offering of doctoral qualifications by a small number of private higher institutions, there is scarce evidence of the application of differentiated attributes: a crafting of the attributes to align them with institutional characteristics. This is linked to a third point of reference, which is the field of study and discipline in which the research is conducted. While, arguably, all graduate attributes must be demonstrated irrespective of the field/discipline, the Qualification Standard does not posit them in any kind of hierarchy. However, there is reasonable ground for applying a flexible hierarchy, an order of prominence varying from one field of research to another, along a spectrum of research approaches ranging from highly conceptual to more contextually-based research fields and topics – especially in fields with a professional orientation.

An associated question relates to the uniqueness of doctoral attributes: how they are distinguished from, on the one hand, generic institutional graduate attributes and, on the other, attributes related to another research qualification, such as a master's degree. This refers not only to distinction between a dissertation (a term for research output at master's level) and a thesis (research output for a doctorate), but also to the distinction between the identity of the respective graduates. We need to consider whether the National Report found evidence that the originality of doctoral output is universally understood and applied.

## **THE STANDARD: SUMMARY OF THE GRADUATE ATTRIBUTES**

Graduate attributes may be distinguished from learning outcomes in this respect: whereas outcomes are fundamentally retrospective (what has been achieved on graduation), graduate attributes are both retrospective and prospective (the extent to which retrospective outcomes

have prepared the graduate for ongoing contribution within a field of research). That is why, in the Qualification Standard, the purpose of the qualification states that, within a field of knowledge, a graduate “should assume a role as its custodian and steward” (CHE 2018, 11). The qualification serves both intrinsic (personal) and extrinsic aspects, the latter including but not limited to employers, and takes into account the product (the thesis) and the process: ongoing development of an effective researcher (Wellington 2013, 1492).

The Standard identifies two categories of graduate attributes that must be achieved and evidenced in order for the doctoral qualification to be awarded (CHE 2018, 13–14). The first category – Knowledge Attributes – relates to the original contribution of a doctoral study, the extent to which this contribution is integrated within existing literature and academic debate, the extent to which the graduate is able to demonstrate expert and highly specialised knowledge within a specific area of research, the ability of the graduate to identify the interconnectedness of their work with other fields of study and practice, and the extent to which the graduate is able to demonstrate ethical awareness and research integrity. In addition, doctoral students are expected to understand the epistemological process of giving meaning to empirical observation through hypothesis (where appropriate), from which the research questions may be derived.

The second category – Skills Attributes – relates to the selection and application of the most appropriate research approaches and methods to answer or solve the research problem, the extent to which the graduate is able to work independently, substantiate and defend their findings and conclusions, reflect on the various stages of the research process critically, and demonstrate critical and analytical thinking in a clear, coherent and logical manner. The graduate also has an advanced level of communicative competence relevant to the field of study, is able to disseminate research findings among expert and non-expert audiences alike, and can defend them amidst intellectual contestation. Much like the acquisition of the knowledge attributes, the development of the skills attributes commences during the proposal development phase.

Our view is that the graduate attributes in the Doctoral Standard are a combination of the translation and enabling conceptions described above. They comprise a cluster of personal, cognitive and skills-based features, and may be shaped to address the characteristics of a particular field of study, with adaptability to contextual identities. They provide a particular perspective, and a formative pattern for new knowledge and the associated research techniques. But they do not seek to develop a particular world-view, cognitive ideology or cultural bias; they focus on a qualification level – being “doctorable”, with heightened levels of conceptual thinking, moving from the descriptive to the conceptual (Bitzer and Matimbo 2017, 3).

## **ON THE POINT OF REFERENCE: THE HIGHER EDUCATION SECTOR**

### **GLOBALLY**

In its summary evaluation, the National Report recognises that, currently, South African institutions are at different stages of complying with the Qualification Standard – and, by implication, of adequately demonstrating graduates’ achievement of all the required attributes. While those doctoral qualifications that meet the Standard are in general at a level equivalent to the international standard for doctoral qualifications offered elsewhere, “there are a number of institutions currently offering doctoral qualifications that do not meet the threshold” (CHE 2022, 105). Among the reasons cited was, in many cases, a lack of awareness of graduate attributes: their purpose, scope and applicability to the research development of the student. While the review did not go beyond an institutional aggregated level of investigation, and was thus constrained in its capacity to probe inconsistencies in graduate attribute achievement *within* institutions, review panels mentioned, in some cases, that there were in fact inconsistencies within institutions and between faculties and departments.

## **ON THE POINT OF REFERENCE: INSTITUTIONAL TYPOLOGY**

The National Report makes the following observation:

“Although the official differentiation in terms of institutional types is generally blurred at doctoral level, the differences in conceptualising graduate attributes in a doctoral qualification by the different institutional types were noticeable in the Panel Review Reports and SERs [Self-Evaluation Reports]. For example, the attainment of disciplinary knowledge attributes, with specific intention of deepening the candidates’ knowledge of the area of specialisation (to enable them to make an original contribution to their respective fields), was more pronounced in some institutions, especially traditional universities, than in others. This could be attributed to the fact that traditional universities tend to focus more on the production of disciplinary knowledge compared to UoTs [universities of technology] that focus more on applied specialist disciplines that are more associated with (and draw from) the world of practice.” (CHE 2022, 6.2, 36).

What does this suggest? A bleak interpretation is that it implies a distinction between the development of thinkers and the training of technicians, and this scenario implies falling short of one of the fundamental aspects of graduate attributes: their conceptualisation as fundamental to the identity and development of the doctoral student (CHE 2022, 103). One notes that this, furthermore, implies a qualitative differentiation based on institutional typology.

There is a different interpretation possible. Institutional types adopt different graduate attribute hierarchies. In one case, deepening specialisation knowledge, as an attribute, ranks slightly above “analytical thinking for problem-solving” or dissemination of research findings to experts and non-experts alike. In another case, the reverse ranking prevails. The problem

reported, however, is that very little typological differentiation was found between statements of alignment of doctoral priorities with institutional missions, visions and typological identities (CHE 2022, 23). An opportunity was missed by individual institutions for staking clear claims, at the level of this apex qualification, for distinctive institutional roles in the generation of a diverse cohort of emerging researchers capable of addressing the range of “pure” and “applied” specialisation that can adequately address the full spectrum of conceptual, social, moral, political, economic, scientific and technological challenges facing the nation and the globe.

Despite the relative absence of explicit institution-type distinction by the individual institutions themselves, there was evidence, in some cases, of subtle differences in respect of specific graduate attributes. However, most institutions were silent on such nuances, and it was review panels that brought them to light.

### **ON THE POINT OF REFERENCE: FIELDS OF STUDY AND DISCIPLINES**

The National Report notes comments, mainly from academics interviewed during the virtual site visits to institutions that accompanied the review, that the same set of graduate attributes cannot be applied to all fields of study or disciplines. Yet the nature of a qualification standard means that they must be common to every graduate. A more feasible view is that they not only can be, but must be, equally yet differentially applicable in the interchangeable hierarchy referred to above – concept transforming context; and context reinterpreting concept. For example, the ways of demonstrating the achievement of graduate attributes would differ between research into the ethics of vaccination and laboratory development of a new vaccine. Such difference may reflect the distinction suggested in the quotation from the National Report above between conceptual knowledge production and knowledge applied in the context of practice – in essence, an intellectual duet between science and technology. Or, in the minds of proponents of a Mode 2 type of knowledge production, symbiosis between disciplinarity, homogeneity and autonomy on the one hand, and trans-disciplinarity, social accountability and immediacy of knowledge distribution on the other (Gibbons et al. 1994, 93–104) – a duality that has both champions and disparagers.

There are views, however, that complex, contextual and urgent contemporary transdisciplinary issues such as climate change (Thorén and Breian 2016) need researchers with a special blend of attributes, insight into the topical interconnectedness with cognate fields being one of the priorities, in such cases perhaps more than in some single-discipline research. In the case particularly of trans- or multi-disciplinary research, consideration needs to be given to the possibility that some knowledge may be tacit or intermediate, “and the fact that knowledge is not made explicit or is not defined by a ‘field of work or study’ does not mean it

is not present, or is not of a high level” (Lester 2015, 166). This suggests that there may be differences, among diverse disciplines, between the ratios of explicit and tacit knowledge.

In the context of the graduate attributes for doctoral qualifications, an example of the way institutional identity and field of study may, according to the National Report, influence interpretation of the attributes, is provided in its comments on one of the crucial attributes: originality of the contribution, showing evidence of innovative thinking. Originality may include a number of manifestations: a new invention; a new way of thinking (identifying knowledge gaps and proposing ways of filling them); a contribution at the level of professional practice; a contribution to theoretical and methodological approaches to knowledge in a geographical or historical context (CHE 2022, 40–41) – and this may include cultural contexts as well. There are many ways of showing originality (Wellington 2013, 1496), and it is incumbent on supervisors and assessors to ensure that this attribute – as with most others in the Standard – is interpreted in a way that is appropriate for the field and topic of research.

## **GRADUATE ATTRIBUTES AND INSTITUTIONAL ATTITUDES**

Because the generation of graduate attributes in a doctoral qualification is fairly new in practice, their formulation and implementation vary across the sector, between institutions, faculties and departments, and how they are aligned with institutional mission and vision statements. While the graduate attributes established by a national qualification standard are, in essence, generic, it is argued that they need to be adaptable to institutional, field and disciplinary characteristics, and that there needs to be an appropriate balance maintained between conceptual and instrumental attitudes to knowledge. Furthermore, the notion of doctoral graduate attributes needs to be acknowledged, understood and applied consistently, so that supervisors and students have them in sight throughout the doctoral journey.

As indicated in the National Report, not all parties – supervisors in particular – agreed that the graduate attributes in the national Standard or, indeed, any set of attributes, can be applied equitably and validly across the higher education sector. For some, graduate attributes are “not objective and neutral” (CHE 2022, 36). They need to be applied (and hence modified) by particular contexts of specific disciplines and acquired by students as unique social, cultural and psychological beings. This appears to be a view combining Barrie’s complementary and enabling conceptions. What was not clear was whether the lack of objectivity, or the absence of neutrality, were embedded in the graduate attributes themselves, or were a consequence of inconsistent application within an institution, or within the higher education sector.

Other respondents in the review expressed the opinion that only some graduate attributes can be assessed via a thesis; examples cited were breadth of knowledge, originality of a

contribution, appropriate methodology, and rigorous academic writing. The remaining attributes can only be assessed, as one supervisor had it, by “reading between the lines”. As Wellington has it, “This pretence to some sort of unspeakable yet discernible quality ... is helpful to no one: student, supervisor, examiner, fellow professionals or employers” (Wellington 2013, 1491).

A concern arising from the national review is that there were cases where it was apparent that supervisors take graduate attributes “for granted”, although this seemed to camouflage unfamiliarity with the attributes (among both supervisors and students), or lack of awareness of a supervisor’s responsibility for promoting them. The National Report stated, as one of its concerns, a “general lack of awareness and understanding of graduate attributes ... and how the attainment of graduate attributes is measured during as well as at the end of the doctoral journey of the student” (CHE 2022, 103). This could be, at least partially, ascribed to the newness of the Standard and the doctoral attributes, although the issue was generally linked to other concerns: a lack of institutional policy for formulating graduate attributes, or haphazard implementation.

Instances were also noted of a lack of clear assessment criteria and inconsistent monitoring of assessment. Many institutions discussed their approaches to graduate attributes by linking them with summative assessment (examination of the thesis), without much attention given to the gradual process of acquisition, during a long journey that for many doctoral students endures for three years or more. An associated point is that students may attain the attributes at different stages of the journey, on account of their different dispositions, backgrounds and life experience (CHE 2022, 95).

The Report recommends institutional awareness campaigns to familiarise supervisors, potential supervisors, examiners and students with the graduate attributes that are unique to the doctorate (CHE 2022, 95). It recommends, further, that account should be taken, when interpreting the attributes, of the frontiers of knowledge of different fields, and the structure of knowledge in each discipline (CHE 2022, 104). Institutions are also encouraged to foster complementary attributes, such as critical citizenry and recognition of social responsibility. Fostering the attributes needs to address national historical socio-economic imbalances, emphasising the notion of doctorateness as a “public good” rather than focussing exclusively on private good driven by private motive.

## **ASSESSING THE ACHIEVEMENT OF GRADUATE ATTRIBUTES**

“Graduate attributes ... also encompass ... the capacity of a graduate to take what has been learnt beyond the site of learning” (CHE 2013, 19). In the words of the Standard, this entails the

development of “scholarship in, and stewardship of, a field of study ... that advances the frontiers of knowledge” (CHE 2018, 11). It assumes the ability to lead thinking in a broad range of sectors, from local to international, and “to seek benefit arising out of research for any community or social group that was the subject of, or participated in, the research”.

There is a widespread view that one of the challenges confronting doctoral supervisors is the articulation gap resulting in under-preparedness affecting many students admitted to doctoral studies (CHE 2022, 51). Appropriate research methodology is lacking; writing skills are under-developed. This is one of the reasons the National Report recommends a consequential national review of the master’s qualification (CHE 2022, 109), presumably preceded by development of a national qualification standard, to achieve two ends: one, to establish a qualitative threshold for award of the qualification as a prerequisite for admission to doctoral studies and, two, to distinguish clearly between the research-based attributes linked to the two qualifications. For many postgraduate students the master’s is a culminating qualification, and the required attributes need to take into account both outcomes: culmination and progression.

This issue is associated with review findings, in a number of institutions, of inadequate selection processes, leading to admission of unsuitable or underprepared candidates, with the likelihood of increased dropout rates (CHE 2022, 51). It seems obvious that one aspect of the selection process should be evaluation of a candidate’s potential to achieve the doctoral graduate attributes. This, in turn, implies an early familiarisation process between the institution, the supervisor and the student. While dropping out mid-stream will often be a consequence of financial constraint or work, or family, pressures, it could also be because of realisation by the student that the graduate attributes, as a suite of expectations, cannot be achieved in a reasonable period, either because under-preparedness is too extensive, or because the student becomes belatedly aware of the attributes.

The National Report notes the likelihood of unreadiness particularly in cases of a background master’s in coursework, or admission via the recognition of prior learning (RPL), where research background may be inadequate, and in cases when, as part of the admission process, the drafting of a research proposal is done with little or no support from the institution. The matter of selection based entirely on master’s results is complicated by the fact that, in many institutions, the majority of candidates are from other institutions, particularly foreign ones, and intimate knowledge of the standard of research competence achieved elsewhere may be lacking. Such lack can be addressed in cases where the student is required to have a research proposal approved before registration although, in most such cases, the actual registration status of the candidate is uncertain.

Preparatory skills training programmes are strongly recommended (CHE 2022, 55). Orientation to the expected graduate attributes should be included in such programmes. They are not self-evident, they anticipate development of a diverse range of competence, and they have higher expectations than the student will have experienced before. One example of the need is the finding that few institutions reported on training for students in research ethics beyond the administrative process of obtaining ethical clearance (Burton et al. 2022). Even in fields of human and animal research, there were cases where students' comprehension of, and compliance with, requirements were limited. There was scarce evidence of in-depth conceptualisation of fundamental issues relevant to ethics and research integrity. The need for such attribute orientation is accentuated by the use, due to increasing doctoral student numbers, of novice supervisors and external supervisors, both groups often with limited orientation, who may not be familiar with institutional vision and mission, and the way graduate attributes are – or should be – aligned with them.

An area identified as needing improvement is the extent to which students' progress in developing the graduate attributes is monitored and supported. There are proponents of the benefits of "peer support groups" to develop attributes specific to a research degree (Stracke and Kumar 2014, 616). The National Report found that, where institutions highlighted attention to graduate attributes, in many cases they focussed on their links with summative assessment, with less attention given to a formative process of inculcation throughout the doctoral journey. The Report commended instances where students were purposively encouraged to engage in self-assessment of their stages towards full achievement of the attributes. This was, in some cases, accompanied by a series of formative tasks that would identify and gauge the proximity of research milestones.

Where a lack of supervisor orientation to the attributes exists, and the concomitant problem of a student's lack of adequate alignment, it can be aggravated in the traditional one-to-one supervisory practice, especially in cases of inter-disciplinary research (CHE 2022, 65). This is why the National Report commends innovative practices making doctoral supervision more collegial and inter-dependent, such as the use of cohort models, supervisory panels, and inter-disciplinary supervision teams. A further recommendation is the use of dedicated postgraduate centres, where the specific doctoral attributes are distinguished from generic graduate attributes of the institution.

Attempts by institutions to ensure the achievement, and demonstration, of all the attributes include the expectation that a student will, prior to graduation, produce a research article, or articles. In some cases an article must be submitted, in others accepted, while in a few a conference presentation will suffice. The Report commends the practice, as it provides some

evidence that the student's work has been accepted into a research community, thereby showing the attribute of communicating research findings effectively to expert audiences and disseminating them in appropriate forms (CHE 2018, 14). Some cautions are noted: possible delays in graduation, opportunistic use of poor-quality publications and predatory journals, ghost-writing, and over-dominance of the supervisor.

Another beneficial approach is the use of oral examination (CHE 2022, 82). While the Doctoral Standard does not make it compulsory, it is applied in many institutions, in varying forms: uniform practice in some cases, in others optional for instances where there is some doubt whether all graduate attributes have been accomplished. There are cases where the "oral" takes the form of a celebratory presentation, a rite of passage. While the Standard does not insist on oral examination as part of *summative* assessment, it is incumbent on an institution to ensure that, at some stages of the doctoral journey, there are opportunities for the student to demonstrate capacity "to defend [findings] in the context of intellectual contestation, and to disseminate them in appropriate forms" (CHE 2018, 14). There are various ways in which this can be done: conference presentation, seminars and colloquia with participation by fellow-students, supervisors, even internal examiners.

There is also the need for the graduate to "arrive at defensible conclusions and solutions" and to show "intellectual competence for problem-solving in diverse contexts, both familiar and unfamiliar" (CHE 2018, 14) – to show value in the research contained in the thesis. Some institutions have well-developed innovation and commercialisation initiatives which may assist in the development of patents, or partnerships with technological enterprises. Others emphasise the concept of engaged research and community outreach, thus addressing the aim stated in the Doctoral Standard of, where relevant, seeking benefit arising out of the research for any community or social group that was the subject of, or participated in, the research. This stresses the aim of the graduate attributes to relate not only to retrospective qualities, as demonstrated in a thesis, but also prospective qualities embedded in assuming a future role as "custodian and steward" of a field of knowledge, confirming graduates as "agents of social good in an unknown future", as Bowden et al. describe them (Bowden et al. 2000, 15).

## **CONCLUSION**

The aim of this article has been to explore, according to findings emerging from the recent national review of doctoral qualifications, the extent to which South African higher education institutions have been offering and awarding doctoral qualifications that meet the national Qualification Standard, with particular focus on the achievement of the prescribed graduate attributes. There were institutional cases of above-threshold excellence in this aspect, but the

review found that compliance across the sector was uneven, between institutions and also within institutions. An intended outcome is to ensure improvement in the sector as a whole, so that every student, of whatever institution, emerges with similar graduate attributes, at the same level of achievement, which will stand up to international comparability. An area of concern on which we have focussed, in this article, involves cases where knowledge, application and evaluation of the threshold graduate attributes were either unfamiliar to, or inconsistently applied by, faculties, departments and supervisors, resulting frequently in ignorance on the part of students. A crucial need is to ensure that institutions give attention to ensuring that all supervisors, examiners and students alike have been adequately familiarised with, fully understand, share in support for, and ensure both formative as well as summative assessment of progress towards achievement of the attributes. They relate not only to what has been accomplished on graduation, but also how they indicate the capacity of the graduate to take a place in a community of practice as a deep-thinking researcher and, where it applies, as a contributor to professional excellence.

## NOTES

1. The review excluded three universities that were not yet offering doctoral qualifications: Sol Plaatje University, University of Mpumalanga, and Mangosuthu University of Technology.
2. BRICS: A group of emerging market economies comprising Brazil, Russia, India, China and South Africa.

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