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PROFESSIONAL EDUCATION & TRAINING | RESEARCH ARTICLE

Objectivity of the subjective quality: Convergence on competencies expected of doctoral graduates

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Abstract: This study assessed the competencies expected of doctoral graduates. Twelve purposefully sampled education experts provided the data. A case study design within a qualitative approach was adopted. Data were gathered through interviews and thematically analysed. Member checking ensured data trustworthiness. Factors affecting the quality of a doctoral graduate were said to be embedded in characteristics of universities and doctoral students. Competencies expected of doctoral graduates included being autonomous researchers and knowledge producers and consumers. Measures to enhance competence of doctoral graduates comprised implementing rigorous institutional mandates and creating doctoral collaborative communities. The study recommends higher education institutions to pragmatically capacitate supervisors and implement rigorous institutional doctoral transformation programmes.

Subjects: Information & Communication Technology (ICT); Social Sciences; Education; Humanities

Keywords: doctoral graduates; competencies; supervisors; higher education institutions

ABOUT THE AUTHORS

Authors of this manuscript have published in peer-reviewed journals in the areas of *Psychology of Education, Educational Management and Policy, Comparative Education and Equity education*. Reynold A. Sonn is a professor and seasoned academician who has extensive publication; supervision and mentorship record, whereas Israel Kariyana and Newlin Marongwe are postdoctoral fellows in their second years being mentored by Sonn. We have international conference presentation experiences and novice researcher mentorship programmes and experiences at our individual capacities. Due to rising higher education tuition and the recent decline in national governments' funding of higher education institutions, this article should assist prospective and graduated doctoral students, universities and governments in adopting compliance measures towards recruitments for doctoral education arising out of expectations from being a doctoral graduate. Information can also benefit the wider society as doctoral education would become a more worthwhile investment.

PUBLIC INTEREST STATEMENT

Countries have globally taken vested interests towards promoting doctoral education with such higher education investments having a worldwide optimism of dealing with individual countries' societal challenges. Being the most sought after and highest education level, this study set out to establish some of the competencies expected of a doctoral graduate irrespective of territorial acquisition of the qualification. Data were gathered from purposefully selected information-rich professors and doctors from selected universities in South Africa. It emerged that variations in the quality of doctoral graduates arose out of institutional systems and student dispositions. Competencies expected of doctorates worldwide include their capacity for self-government, research autonomy and knowledge production; and that would be enhanced through pedagogic change and effective supervisor capacitation. Awareness of these competencies would assist governments in promoting national investments, sovereignty and socio-economic advancement through strategic implementation of global standards for developing highly competent doctoral graduates.

1. Introduction

The PhD is the summit of formal educational achievement all around the world (Group of Eight, 2013). Various authors have individual descriptions of the PhD, for instance, it is viewed as the pinnacle of academic success (Nyquist, 2002), or the zenith of learning (Lovat, Monfries, & Morrison, 2004). Such descriptions indicate that the doctorate as a degree has certainly come of age, and it sits proudly at the top of the ladder of academic qualifications in most countries (Green & Powell, 2005). The PhD is the most prestigious—and the most international—of academic degrees (Bernstein et al., 2014). The doctorate is, therefore, the research degree of choice for most people (Park, 2005). In this study, the terms research doctoral, doctorate and PhD were synonymously used.

Research doctoral graduates represent an institution's finest students. They are also the ones most likely to become tomorrow's world leaders. The PhD prepares leaders for careers in academia and research but also increasingly for a broad range of careers in other sectors and across international settings (Bernstein et al., 2014). This is in line with the dramatic expansion in volume, scope and complexity of international activities of universities (Altbach & Knight, 2007). Great expectations and effectiveness pressures are directed at doctoral education and the doctors, at the same time the doctoral students' multi-dimensional individuality is easily lost (Maunula, 2015). Doctoral writing fulfils a dual role—that of writing to know and knowing how to write (Aitchison, 2010).

Employers express concerns about the skills and knowledge that PhDs possess. This is leading to a broad debate about the role, effectiveness and quality of PhD education and the number of PhD graduates that universities should produce (Group of Eight, 2013). In clinical studies, despite differences in curricular approach, educational and professional impact of doctorates; the relationship between doctoral education and practice opportunities remain poorly understood (Seegmiller, Nasypany, Kahanov, Seegmiller, & Baker, 2015). PhD students could be assigned three roles: as producers of knowledge; as channels for the transfer of knowledge between the academy and industry; and as agents for the formation and maintenance of network ties between universities and industry (Thune, 2009).

1.1. Global trends in and drivers of doctoral education

Doctoral studies have become more popular and commonplace globally (Maunula, 2015). This universal massification of doctoral graduates remains a cause for concern for stakeholders arising from its bearing on issues of professionalisation and quality. Andres et al. (2015) note that in the last decade, doctoral education has undergone a sea change with several global trends increasingly apparent. Drivers of change include massification and professionalisation of doctoral education and the introduction of quality assurance systems.

1.2. Massification of doctoral education

Worldwide, the number of doctoral students and the number of doctoral degree holders has increased significantly (Andres et al., 2015). The massification of higher education across the globe has also influenced the boundaries of postgraduate education and supervision, forcing traditional boundaries to expand (Frick, Bitzer, & Albertyn, 2014). University World News (2009) reports that since 1982 when China's first doctorates were awarded to six of the 18 first PhD students in 1978, enrolment in PhD programmes has grown by some 23.4% annually and by the end of 2007 China had awarded 240,000 doctorates. But the number of qualified professors needed to supervise doctoral programmes has not kept pace, raising fears that quantity is not being matched by quality. Andres et al. (2015) further note: (1) In the US, although most formal educational institutions expect their researchers to have earned PhDs, it is not universally mandated. Nevertheless, the breadth of the doctoral experiences, primarily those involving research doctorates, do not always transfer to professional doctorates that in some national contexts may often focus on more local priorities, and (2) Massification of doctoral education has been driven by the needs of a knowledge economy and national innovation policy and has been promoted systematically by the Ministry of Education and Culture that provides the primary source of funding for the universities in Finland.

1.3. Professionalisation of doctoral education

While there are variations between countries in the requirements for achieving a PhD qualification, a central element is always the need for independent research that makes a significant contribution to new knowledge (Group of Eight, 2013). The defining characteristic of a doctorate is that the candidate is required to demonstrate high-level research capability and 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. The degree must be earned through pure discipline-based or multi-disciplinary research or applied research (Department of Education, 2007). Given that research skills are also now seen as being valuable to a broad range of employment sectors, a current driver is therefore the perceived need to better prepare doctoral students to work outside of academia through emphasising more strongly the acquisition of “generic skills” in doctoral education (OECD, 2012); Frick et al. (2014, p. 3) note, “Knowledge questions and doctoral education” pushes knowledge boundaries in understanding doctoral education as more than simply research, but as pedagogy.

PhD graduates are expected more and more to make effective contributions on the global stage. Regardless of where someone earns the doctoral degree, countries look to their most educated and capable citizens to bring their knowledge, their ability to innovate, and their best practices back home and then apply them to the most pressing economic, technological, and social concerns of the day and to those anticipated for the future (Bernstein et al., 2014). Many PhD students and supervisors experience the PhD project as “learning by discovery” (Sonneveld, 2009). It is, therefore, the work of all parties involved that such a system is in perfect harmony in order to improve the quality of education and training status of stakeholders (Fardoun, Cipres, Al-Ghamdi, & Zafar, 2013).

The Task Force on Higher Education and Society (2000, p. 22) reports, “Participation in the knowledge economy requires a new set of human skills. People need higher qualifications and [the capacity for] greater intellectual independence ... Without improved human capital, countries will inevitably fall behind and experience intellectual and economic marginalization and isolation”. Doctoral programs are now called upon to do more than prepare students to conduct research. The education of competent researchers—that is, researchers who not only can conduct research but also can communicate and contextualise their work and provide leadership in addressing the problems and needs of their regions—is an essential element of the rationale for advancing doctoral education in developing countries (Bernstein et al., 2014). Professional doctorates are based on development projects which result in substantial organisational or professional change and ... a significant contribution to practice (Lester, 2004).

Bernstein et al. (2014) established that PhD graduates ought to develop technical and contextual intelligence. Contextual intelligence means the ability to synthesise and integrate specific research into the context of existing knowledge (Terenzini, 1993). Collinson (1998) has noted in recent years that the UK doctorate has been reconceptualised as a training period for future researchers, rather than a piece of work that changes the course of human knowledge. The ability to make a contribution through original research rests on the knowledge and analytical intelligence needed to conceptualise, design and implement a substantive original research project (Australian Qualifications Framework Advisory Board, 2007; Terenzini, 1993).

In the knowledge economy, three categories of competencies have been considered key: (1) the ability to act autonomously, (2) the ability to use tools interactively, and (3) the ability to function in socially heterogeneous groups (Organisation for Economic Co-Operation & Development, 2002; Rychen & Salganik, 2001). Bernstein et al. (2014) termed these transferable skills. Nyquist (2002) summarises the views of hundreds of stakeholders in doctoral education, the core competencies reported as being sought by employers and students alike include commitment to a chosen career on the basis of an understanding of varied opportunities and paths; teaching competency; understanding of the global economy; ability to assume, as a responsibility of leadership, the roles of mentor and scholar-citizen; understanding of ethical conduct in all roles; effective communication; ability

to work in teams, and ability to translate expertise for understanding by public audiences and policy-makers.

In the UK, professional doctorates enable the practice of research in ways that have wider benefits. Universities are becoming more flexible about what constitutes doctoral programs and how they are conducted (Evans, 1997). Researchers are expected to participate in turning scientific discoveries into patents and innovations. Hence, fostering an entrepreneurial culture by instilling the skills and attitudes needed for creative enterprises is suggested to be a central part of twenty-first-century researcher competence (OECD, 2010). This is driven by (1) an increased number of doctoral students, (2) an agenda to create “free flow of knowledge”, (3) accountability demands, such as reducing the time spent earning the degree and (4) the goal of lowering levels of attrition among doctoral students (Andres et al., 2015).

The development of doctoral education in Denmark is part of a wider European trend of more closely aligning research and doctoral education at the local universities with national and international “policy-making and regulation through qualifications framework, benchmarking and evaluation” (Fortes, Kehm, & Mayekiso, 2014, p. 100). In Denmark, the Ministry urges universities to ensure that their doctoral programs promote interdisciplinary training and the development of transferrable skills, thus meeting the needs of the wider employment market (Gudmundsson, 2008, p. 77). The need to provide a highly skilled workforce for labour markets and the need to improve the quality of doctoral education has led to increasing professionalisation of doctoral education (The Graduate School Working Group, 2012).

1.4. Quality assurance and socio-economic relevance of doctoral education

Doctoral education worldwide is necessitated by several societal demands yet the attempts to achieve such societal challenges have their unique complications. Andras (2011) argues that the impact of global competition has resulted in a greater emphasis on evaluating the quality of research. The concept of quality is used in all fields, and education is no exception to this rule, especially university education (Manea & Iatagan, 2015). Quality assurance has resulted in the burgeoning of global ranking schemes that have contributed to the intensification of institutional hierarchies. Also, the role of strategic alliances and competitive advantages—among market areas, countries, universities, and even individuals—has become an increasingly important asset in research. As knowledge producers, doctoral students are recognised as increasingly important societal and economic assets (Andres et al., 2015). Extremely structured doctoral programmes may not give space to heterogeneity as well as innovative and creative strategies (Baptista, 2016).

Globally, research and researchers are viewed increasingly as critical to social and economic competitiveness and societal health (European Commission, 2014; UK Council for Science & Technology, 2007). A more comprehensive and wider approach is justifiably sought after for doctoral education. Doctoral education is between the new and the old in many ways: the society, working life and the universities’ visions have expectations for the doctors’ expertise (Cumming, 2010). Doctoral degree holders are considered to have the potential to contribute to economic growth, advancement, and diffusion of knowledge and technologies, and to solve societal and environmental problems (Auriol, Schaaper, & Felix, 2012).

Managers of higher educational institutions are required to consider their students as primary customers when providing services (Rasli, Danjuma, Yew, & Igbal, 2011). University quality is believed to be one of the key drivers for a successful professional career of university graduates. This is especially true for PhD students. Attending a better university is likely to improve the quality of a student’s dissertation and will provide students with superior skills and contacts. As a result, students obtaining their PhD from the best universities often have the most successful careers later in life (Waldinger, 2010). While university quality matters, we also argue that the quality of a supervisor sits among the strong predictors of the quality of a PhD graduate.

“Quality is the difference between customer expectations and perceptions about the services and activities provided by the company” (Wang & Shieh, 2006, p. 195). Judgement of the quality of a supervisor should not be a daunting task at PhD level due partly to the external assessment of the thesis conducted by independent experts in that particular field of study. So long the external reviewers would be selected unbiased, then the outcomes of such assessments ought to be among the best gauging parameters of PhD supervisors’ qualities. Sonneveld (2009) however, argues that while PhD students need to evolve within a hierarchical relationship into independent scholars, the supervisors of PhD students consistently lack the time to provide proper supervision and can expect neither proper preparation for their first supervision assignment nor support through intervention.

According to Sonneveld (2009), the micro-sociology of the relationship between PhD students and supervisors is characterised by a few “essential tensions” which may be both productive and cause temporary dissatisfaction among PhD students. The author argues that this relationship comprises the following structural features: compensation for the time associated with supervision is a serious problem nearly everywhere in the world; except for a few countries, supervisors receive very little training indeed in how to perform their supervision duties; rarely are supervisors offered inter-vision opportunities in which they are able to discuss their approach and impressions with experienced colleagues; although we are unable to make quantitative statements about this occurrence, we imagine that supervisors are regularly assigned to supervise PhD students that they have not personally selected. In fact, they supervise PhD students without being fully convinced of their abilities, and the other side to this story is that in several countries PhD students embark on their PhD journey without proper preparation in previous stages of their education. In some cases, supervisors therefore wind up as “remedial teachers”.

Holligan (2005) notes that received wisdoms about supervision have implications for intellectual originality and the nature of research-based knowledge production. At present, the universities do not have a system to improve the curriculum of the students from the college courses taken and the real work needs to be found (Fardoun et al., 2013). There are significant differences among countries with respect to doctoral candidates’ exposure to critical thinking and independent learning, two competencies that are essential indicators of research capacity. These differences, like those related to the required number of years of prior education, reflect the nature of the particular country’s system of secondary and undergraduate education. Doctoral programs need to be able to evaluate an applicant’s ability to think critically and learn independently, and programs must, as necessary, support further development of these competencies (Bernstein et al., 2014).

According to Dorweiler and Yakhou (1998), the concept of quality of education can be defined as the fitness of educational outcome and experience for use. Fosu and Owusu (2015) argue that measuring students’ assessment of service quality is an important exercise that helps to determine students’ level of satisfaction and possibility of continued enrolment. In an increasing competitive higher education market, higher education institutions should be held accountable for effectively meeting or exceeding students’ expectations regarding the quality of service offered. In today’s world of global competition, rendering quality service is a key for success, and many experts concur that the most powerful competitive trend currently shaping marketing and business strategy is service quality (Firdaus, 2006).

The importance of academics in developing the next generation of national thinkers, leaders and business people has served to underlie the vital significance of PhD training. This is because the quality and effectiveness of PhD training and the attributes it can and should develop in PhD candidates provide a necessary foundation for the effectiveness and quality of the future higher education system (Group of Eight, 2013). The doctorate is considered not only a landmark in the development of highly skilled professionals to work inside and outside academia, but also a product that will give the economy, society, and culture important outputs. This latter idea highlights that the doctorate is embedded in a paradigm that gives a great importance to the development of social relevant

research. Thus, doctoral studies and research are rooted in ideals such as originality, creativity and innovation (Baptista, 2016).

The desire for strong postgraduate students in South Africa has seen selected universities' efforts to strengthen their undergraduate programmes, and that has direct and indirect bearing on post-graduate programmes including the doctoral degree. Jacobs and Strydom (2014) note a number of initiatives at South African universities, such as the Grounding Programme at Fort Hare University; the new core curriculum module at the University of the Free State, and at Stellenbosch University, such an initiative took the form of a signature learning experience. Given these various demands on the sector, there is undoubtedly a need for a "theoretically sophisticated, empirically applicable approach" (Maton, 2005, p. 688) to self-reflection, as would be expected in a doctoral programme (McKenna, 2014). McKenna (2014, p. 6) further notes:

The second reason for the development of the programme was the idea that there was a need for more systematic, rigorous higher education research in South Africa. In South Africa, higher education is frequently constructed as having a particularly key role to play in the economic development and social transformation of the country.

Industry–university partnership at doctorate level is a growing worldwide phenomenon which has been influenced by various factors. These include the expansion and diversification of the student body; the diverse career paths available to graduates whereby many doctoral students seek employment outside academia; changes in the understanding of knowledge creation, and dissatisfaction with traditional models of doctoral education and training (Herman, 2013). It was argued that doctoral graduates as bearers of the crucial high-end qualifications are essential drivers of the economic and growth needs of the country (Council on Higher Education, 2009).

1.5. Comparisons in benchmarking doctoral education training

Doctoral education is currently high on the higher education policy agenda in Europe to the extent that further links between higher education institutions and other sectors, where research is promoted and carried out, should be developed to achieve a coherent and strong Europe of knowledge (Baptista, 2016). In reviewing developments in research training in England, Coate and Leonard (2002, p. 24) noted a view among the Research Councils that "the PhD provides neither a rigorous enough methodology training for those who go into academia, nor an appropriate initial and continuing professional development for those who go outside". Research Councils UK however, developed a comprehensive list of the skills to be acquired by PhD students. Thirty-six skills were identified, including seven having to do with personal effectiveness (willingness to learn, creativity/originality, open-mindedness, self-assessment, self-discipline, awareness of support, and self-reliance), three related to teams and/or networking (networking, working in teams, and acquiring feedback skills), and four pertaining to career management (professional development, career management, development of transferable skills, and ability to promote oneself). Quality Assurance Agency for Higher Education (2004) introduced national guidelines regarding the frequency of doctoral supervision meetings, who can be a doctoral supervisor, the monitoring of student progress, and use of completion rates as a quality assurance measure.

Bernstein et al. (2014) notes that since 1998, the government of Australia has required all Australian universities to provide statements of the attributes expected of graduates of all degree programs. For example, according to the University of Melbourne's statement, doctoral education at that institution seeks to develop graduates who demonstrate academic leadership, increasing independence, creativity and innovation in their research and to encourage the acquisition of a wide range of advanced and transferable skills. Professional doctoral studies also provide advanced training designed to enhance professional knowledge in a specialist area. Furthermore, the qualities and skills are expected of doctoral graduates include: Advanced ability to initiate research and formulate viable research questions; demonstrated capacity to design, conduct, and report sustained and original research; the capacity to contextualise research within an international corpus of specialist

knowledge; advanced ability to evaluate and synthesise research-based and scholarly literature; advanced understanding of key disciplinary and multidisciplinary norms and perspectives relevant to the field; highly developed problem-solving abilities and flexibility of approach; the ability to analyse critically within and across a changing disciplinary environment; the capacity to disseminate the results of research and scholarship through oral and written communication to a variety of audiences; the capacity to cooperate with and respect the contributions of fellow researchers and scholars; profound respect for truth and intellectual integrity, and the ability to formulate applications to relevant agencies, such as funding bodies and ethics committees.

In the United States, with greater numbers pursuing doctorates than ever before, the notion of a traditional research PhD is expanding (Andres et al., 2015). Although most formal educational institutions expect their researchers to have earned PhDs, disciplinary bodies are beginning to acknowledge that the status quo of research doctorates solely for the purpose of preparing learners to continue on to academic rather non-academic careers is problematic (Neem, 2014). The 2014 report of the Modern Language Association of America (MLA) has as its first recommendation the need to redesign doctoral programs away from only academic careers. The goal of the MLA is to “align [careers] with the learning needs and career goals of current and future students and to bring degree requirements in line with the ever evolving character of our fields” (MLA, 2014, p. 13).

In Finland, to promote the attractiveness and predictability of researcher careers, a four stage researcher career model. The first stage of the research career is the completion of doctoral training and doctoral thesis. This is followed by the postdoctoral stage, which lasts from two to five years. Successful completion of the postdoctoral stage paves the way to the third step of the research career that is the independent researcher. Professors, Research Directors and Academy Professors represent the fourth step of the research career. This academic research career path is just one example of how to build a successful career in research (Academy of Finland, 2010). In Nigeria, allegations of the poor quality of graduates churned out from Nigerian Universities, arising from poor infrastructural facilities for teaching and learning, proliferation of programmes, inadequate manpower, among others had affected the reputation of Nigerian Universities over the years (Alaneme, 2010).

Governments, South Africa included, speculate that a world-class research university will transfer knowledge to local organisations and particularly to industries. This new knowledge must be effectively disseminated and absorbed if innovations and economic growth are to proceed from it (Nerad, 2012). Centre for Higher Education and Trust (in Khodabocus, 2016) criteria indicate that for a university to perform as a research tool for development, 50% of its core academics must have earned a PhD, enabling them to provide a high level of teaching and learning as well as generating more PhDs for the development of the knowledge economy. Lack of supervisory capacity poses a significant challenge to the achievement of this target (Academy of Science of South Africa, 2010). Wilson-Strydom (2016) argues that it seems the main purpose of the doctorate is framed as contributing to building the knowledge economy and to economic development in South Africa, and Africa. Alternate models of doctoral research teaching and learning pedagogy could address the challenge of under-productivity of doctoral graduands in the South African higher education system (Samuel & Vithal, 2011).

2. Statement of the problem

The globalisation process has brought with it opportunities and challenges in all sectors of the economy at country levels. Opening up of such opportunities and addressing the challenges thereof generally calls for intellectual thinking. The production and reproduction of such intellectual thinkers is widely expected to be one of the mandates of universities especially through churning out high-quality doctoral graduates. Forsaking the subjective nature of the term “quality”, at least there should be unequivocal characteristics of doctoral graduates emanating from the fact that they are all expected to be driving the economies during and especially after their studies. Nevertheless, the general belief is that quality doctoral graduates are abundant in developed economies with most prospective doctoral students from developing countries having seen to opt for abroad higher education institutions at the disposal of such opportunities. The question is: Are there common defining

characteristics expected of doctoral graduates given the nature of this qualification irrespective of time and space? In an attempt to gain a better understanding on this issue, the current study sought to identify the competencies expected of doctoral graduates in pursuit of justifying the surging government expenditures towards funding PhD programmes.

3. Purpose of the study

The purpose of this study was to ascertain if there could be unequivocal characteristics of the quality of a doctoral graduate. Fong (2014) is of the view that it is generally argued that doctoral education is a key means for improving education research.

4. Methodology

The study adopted a case study design within a qualitative approach. This was deemed suitable for this study since it allows researchers to study things in their natural settings, attempting to make sense of or interpret phenomena in terms of the meaning people bring to them (Denzin & Lincoln, 2008). The qualitative paradigm consists of a set of interpretive material practices that make the world visible (Babbie & Mouton, 2010), hence adopted for this study.

In this study, unstructured interview schedules were used. The interviews allowed respondents to provide the word-perfect data. The purposeful sampling technique was utilised in this study since the researchers were concerned with selecting information-rich respondents dealing directly with the case under study. Respondents were professors and doctors across different disciplines of Education who had supervised and graduated an average of six PhD students in their careers. For the purpose of this study, 12 respondents were sampled to participate in the individual face-to-face interviews which lasted an average of 90 min.

To ensure data trustworthiness respondents were provided with feedback on the transcriptions of their individual responses to confirm whether the transcriptions were a true reflection of their views. Thus, they had an opportunity to provide their opinion regarding the accuracy of the interpretation of the transcriptions. The large amounts of data gathered were thematically analysed. Beginning with content analysis the researchers sought to extract themes and metaphors to organise and make sense of the data obtained. Responses were put into categories on the basis of the meaning they conveyed (Kariyana & Sonn, 2014). Permission to conduct the study was sought from the respondents who were assured of anonymity and confidentiality after the purpose of the study was briefly and clearly presented. Their consent was sought without compulsion.

5. Results

The respondents' comments are clustered under the following three themes:

- (1) Factors that affect the quality of a doctoral graduate;
- (2) Qualities or competencies expected of a doctoral graduate, and
- (3) Measures that could be implemented towards producing competent doctoral graduates.

To ensure anonymity, pseudonyms were assigned to respondents, for instance, Prof 1 for Professor 1 and Dr 4 for Doctor 4.

6. Factors that affect the quality of a doctoral graduate

6.1. Pre- and during doctoral qualification experience

Respondents indicated that pre-doctoral experience especially at Master's Level, as well as during doctoral experiences which doctoral students undergo have great effect on building the ultimate individual. Phrases to support this view included, "Prior academic preparation and competence—research, writing etc", (Prof 3; Dr 2), "Collaboration, interaction with other doctoral students and interaction with post-doctoral students" (Prof 1). Prof 2 explicitly indicated:

There are so many issues that affect what happens in doctoral education and thereby the quality of the doctoral graduate. Primary is the socialisation experience during the PhD itself—is the scholar exposed to a community of researchers and provided with stimulating opportunities for intellectual engagement? Or is s/he simply guided through a fairly technical and lonely process focused on writing a thesis that will get the qualification?

The interviews' further held with respondents substantiated the above views. The interview excerpts further reflect that: "A doctoral study should provide evidence that the researcher has advanced to a level of competent, independent scholarship" (Prof 8); "The final product of a doctoral study must reflect extensive intellectual work that goes beyond the collation of literature content and empirical data" (Dr 4).

6.2. Doctoral institutional characteristics

Respondents pointed out that sometimes the traits of doctoral-awarding institutions also reflect in some of the graduates during and after their learning experience. For instance, "Whether accustomed to getting away with plagiarism and the use of technology" (Prof 3) during the study period, "Ensuring that a sound understanding of the logic of the argument is promoted" (Dr 4) and "The supervisor who aptly maintain the need to present the arguments for the research clearly and persuasively; to have a clear analytical framework that shows the candidate's understanding of the research process and design" (Prof 8).

6.3. Doctoral student characteristics

It also emerged that the traits of a doctoral student, including "having sound work habits, time management skills, being a self-starter, being a learner, having analytical and questioning skills, having high personal expectations, being teachable, being curious and being a voracious reader" (Prof 3) contributed much to moulding a doctoral graduate. It was also pointed out that "interdisciplinarity, literature review depth, publication of research papers in accredited peer reviewed journals as well as conference attendance to orally present papers or present posters" (Prof 1) had significant impact on the quality of a doctoral graduate. It also emerged that the student "Must indicate depth of understanding and to go beyond the superficial" (Prof 7) and "The doctoral student should unequivocally be a doctoral graduate prior graduation" (Prof 8).

7. Qualities or competencies expected of a doctoral graduate

7.1. Produce reflective theses

The following observations were made regarding the characteristics of a doctoral thesis: "Well written, clarity of thought and expression with clearly identified objectives" (Prof 5), "The discussion that pulls everything together and has sound pointers to future research" (Prof 8). "Clear arguments and sufficient evidence of primary material and intellect use of secondary material" (Dr 4), "A thesis that has made in-roads in creating an innovative model in the subject of research that is practical and operational in its application. Such innovation must be regarded as breaking new ground" (Prof 6). Dr 3 indicated the thesis should reflect, "Sufficient scope in terms of the literature reviewed, empirical research done, as well as conclusions, and explicit use of well-established theory is required". Prof 7 and Dr 2, respectively, agreed that, "A doctoral thesis is a distinctively original piece in terms of its conceptualisation" and "A doctoral study contributes to social upliftment (as in action research)". Prof 4 pointed that, "A doctoral thesis should be characterised by sufficient evidence of advanced scholarly craft and the research should yield an original contribution, the language should remain scholarly throughout and the author should refrain from using bureaucratic language and/ or informal registers, and a plausible argument is essential".

7.2. Autonomous researchers

Phrases like "independent researchers", (Prof 3), [the ability to conduct] "independent research (initiate, conduct, conclude)", (Prof 1) and "ability to design a piece of work independently" (Prof 2) all pointed to the view that doctoral graduates were expected to be self-governing persons. Also,

“identifying a researchable problem and expected outcomes and benefits; writing of technical reports for communities to benefit from research; writing a proposal for research and funding of research, and interpretation of results without bias” (Prof 1), as well as “generation of original and unique ideas” (Dr 1) were qualities expected of doctoral graduates.

7.3. Knowledge producers and consumers

Respondents utilised such terms as “theoretical depth and conceptual breadth” (Prof 2) and “able to clearly communicate research theoretically and conceptually” (Prof 3). Nevertheless, graduates were supposed to be “critical research consumers and critically reflective and competent writers” (Prof 3), be able to “write and publish research papers in accredited peer reviewed journals” (Prof 1) and being able to conduct “oral and poster presentations at conferences” (Prof 1, Dr 3). “The ability to participate in knowledge production beyond the immediate focus of their own topic” (Prof 2) and “coming up with models that should be tested and pass the test of time” (Dr 1) were also hailed.

7.4. Leaders and managers

Irrespective of their fields of specialisation, respondents highlighted the following of the qualities expected of doctoral graduates: “able to give intellectual leadership, analytical and questioning capabilities, a person of integrity, humility, a strong work-ethic, a servant attitude, a lifelong learner and use of research technology- data bases etc” (Prof 3). The need to be “critical and being a vivid and tireless team-player” (Dr 3) was also acknowledged.

8. Possible measures towards producing competent doctoral graduates

8.1. Implement rigorous institutional mandates

It emerged that “adequate funding of doctoral research studies, providing technology resources: computers, connectivity, software etc., [providing] proposal writing workshops to train doctoral students” (Prof 1), “instigating a range of research workshops” (Dr 2), “stringent selection of doctoral candidates, clear marketing, [creating] a period of pre-registration to allow potential candidates to prove their PhD readiness or lack thereof, grow your own timber—encourage strong masters students to continue with a PhD” (Prof 3) and “alternative doctoral pedagogies are needed to provide the kind of breadth and depth of support needed to change this” (Prof 2). Providing opportunities to “participate in lecturing/tutoring” (Prof 3) was further acknowledged.

8.2. Enhancing supervisors’ roles

Phrases used in this regard included “capacity building workshops for supervisors” (Prof 1), “no spoon feeding, rapid supervisor feedback/turnaround times and set demanding expectations with respect to reading and writing, including referencing” (Prof 3). “As mentors of international products, both internal and external supervisors need to uphold high academic standards” (Prof 8). Prof 2 indicated:

We also need far more supervision development as many supervisors are unclear on their roles and responsibilities and can feel quite isolated. Courses such as the Strengthening Postgraduate Supervision course should be made regularly available at all institutions.

8.3. Orientate students on their obligations

Respondents highlighted the need for “conference attendance and participation of doctoral students” (Prof 1, Prof 3), “ensure, as much as possible, [that] candidates are aware of the demands of a PhD, ensure candidates are aware of the support the university offers, such as library, academic writing, post-graduate centre, funding etc. as well as participation in post-graduate seminars and workshops” (Prof 3). “Intra-university workshops or seminars should resemble platforms of inter-university academic critique in order to produce competent students” (Prof 6).

8.4. Create PhD collaborative communities

It was viewed as critical the need to provide “shared facilities for doctoral students and post-doctoral fellows to foster peer interaction” (Prof 1). Prof 3 emphasised the need for “participation in a community of PhD scholars”. Prof 2 noted:

More collaborative programmes in which scholars work together, more supportive structures along the way. Need to move away from reliance on traditional apprenticeship model of supervision and look for collaborations that provide both scholars and supervisors with the needed support and engagement. Many of our PhDs are shallow quality and narrow scope and they do not lead to publications or to graduates able to work at this level.

9. Discussion

9.1. Institutional systems

It emerged that the socialisation experience during pre-doctoral studies as well as during doctoral experiences which doctoral students undergo have great effect on building the ultimate individual. The study also found that sometimes the traits of doctoral-awarding institutions also reflect in some of the graduates during and after their learning experience. This is consistent with Bernstein et al.'s (2014) findings that some applicants, even at the graduate level, have been educated in systems that allow students to rely on rote learning. These students have not been encouraged to challenge teachers or book-based knowledge, and as graduate students they often find it difficult to deal with the demands of a research degree programme that requires them to critically evaluate what they learn, to challenge the old, and to develop “new” knowledge. This also ties with the observation by Nerad (2012) that governments speculate that a world-class research university will transfer knowledge to local organisations and particularly to industries. This new knowledge must be effectively disseminated and absorbed if innovations and economic growth are to proceed from it.

9.2. Student dispositions

The study found that the traits of a doctoral student, including having sound work habits, time management skills, being a self-starter, having analytical and questioning skills, having high personal expectations, being teachable, being curious and being a voracious reader contributed much to moulding a doctoral graduate. This is supported by Rychen and Salganik (2001) and Organisation for Economic Co-Operation and Development (2002)'s argument that in the knowledge economy, three categories of competencies have been considered key: (1) the ability to act autonomously, (2) the ability to use tools interactively and (3) the ability to function in socially heterogeneous groups. Collinson (1998) has noted in recent years that the UK doctorate has been reconceptualised as a training period for future researchers, rather than a piece of work that changes the course of human knowledge.

9.3. Self-government

The study found that doctoral graduates were expected to be self-governing persons capable of conducting autonomous research, writing of technical reports for communities; writing a proposal for research and funding of research, and interpretation of results without bias. Also, it was established that irrespective of their fields of specialisation, respondents highlighted that doctoral graduates should be intellectual leaders and managers with analytical and questioning capabilities, be persons of integrity, have strong work-ethics, a servant attitude, and able to use research technology. Nyquist (2002) has argued that the goal of producing researchers and scholars, while critical, is not sufficient by itself, and one of the core competencies expected of doctoral graduates is the ability to see oneself as a scholar-citizen who will connect his or her expertise to the needs of society. Aitchison (2010) argues that doctoral writing fulfils a dual role—that of writing to know and knowing how to write.

9.4. Producing knowledge

Respondents held views that the qualities of doctoral graduates should transcend geographical and economic boundaries. It also emerged that doctoral graduates ought to be knowledge producers and consumers with abilities to clearly communicate research that have theoretical depth and conceptual breadth. Nevertheless, graduates were expected to be critically reflective and competent writers, write and publish research papers in accredited peer reviewed journals, conduct conference presentations, and participate in knowledge production beyond the immediate focus of their own topic. Group of Eight (2013) holds a similar view by arguing that while there are variations between countries in the requirements for achieving a PhD qualification, a central element is always the need for independent research that makes a significant contribution to new knowledge. This also corroborates Lester's (2004) finding that professional doctorates are based on development projects which result in substantial organisational or professional change and ... a significant contribution to practice. Thune (2009) notes PhD students could be assigned three roles: as producers of knowledge; as channels for the transfer of knowledge between the academy and industry; and as agents for the formation and maintenance of network ties between universities and industry.

9.5. Resources and pedagogy

There is also need to adequately fund doctoral research studies, provide necessary resources and training workshops, stringently select doctoral candidates, and utilise alternative doctoral pedagogies to provide the kind of breadth and depth of support needed to change this. A similar view is held by Frick et al. (2014) when noting that "Knowledge questions and doctoral education" pushes knowledge boundaries in understanding doctoral education as more than simply research, but as pedagogy. Nevertheless, Fortes et al. (2014, p. 100) report that the development of doctoral education in Denmark is part of a wider European trend of more closely aligning research and doctoral education at the local universities with national and international "policy-making and regulation through qualifications framework, benchmarking and evaluation".

9.6. Supervisor capacitation

Furthermore, students ought to produce all-in-one theses and Higher Education Institutions (HEIs) should enhance supervisors' roles through capacity building workshops as well as more supervision development as many supervisors are unclear on their roles and responsibilities and can feel quite isolated. Sonneveld (2009) argues that while PhD students need to evolve within a hierarchical relationship into independent scholars, the supervisors of PhD students consistently lack the time to provide proper supervision and can expect neither proper preparation for their first supervision assignment nor support through intervision. Holligan (2005) notes that received wisdoms about supervision have implications for intellectual originality and the nature of research-based knowledge production.

9.7. Engagement opportunities

Respondents highlighted the critical need for HEIs to implement rigorous institutional mandates such as a period of pre-registration to allow potential candidates to prove their PhD readiness or lack thereof, creating PhD collaborative communities to provide shared facilities for doctoral students and post-doctoral fellows to foster peer interaction. Furthermore, the need to move away from reliance on traditional apprenticeship model of supervision and look for collaborations that provide both scholars and supervisors with the needed support and engagement. Similar views include "... the development of a community of scholars engaged in the field would be beneficial" (McKenna, 2014, p. 6). Many students have reported that simply listening to others talk in collaborative programmes about their own studies is never a neutral phenomenon. Listening is an act not just of hearing, but of comparison and seeking compatibility about what one already knows or does not know (Thune, 2009), as many PhD students and supervisors experience the PhD project as "learning by discovery" (Sonneveld, 2009). McKenna (2014) also recommends the need for more systematic, rigorous higher education research in South Africa as higher education is frequently constructed as having a particularly key role to play in the economic development and social transformation of the country.

10. Conclusion

- There are both institutional and individual student characteristics that affect the quality of a doctoral graduate.
- Competencies of doctoral graduates include emerging as autonomous researchers, knowledge producers and consumers and having sound leadership and managerial skills.
- Not all institutions of higher learning implement rigorous transformation programmes, capacitate supervisors, orientate doctoral students as well as manage collaborative platforms.
- There are initiatives at various stages of development by selected South African universities to enhance the quality of doctoral students and other postgraduate students.

11. Recommendations

- (a) Higher Education Institutions (HEIs) should pragmatically capacitate supervisors for them to implement stringent quality assurance mechanisms during their supervisory roles.
- (b) There is need to implement pre-doctoral registration programmes where potential students demonstrate their competence before finally accepted.
- (c) HEIs ought to orientate recruited doctoral students about the available opportunities to pave competence as well as the threats of incompetence.
- (d) There is need to create collaborative platforms to facilitate intra- and inter-disciplinary learning.
- (e) The Department of Higher Education and Training should monitor the implementation and management of rigorous HEIs' transformation programmes.

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