Mentorship and sustainable research output

A case study of the University of Johannesburg

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Abstract: *Higher education institutions (HEIs) in South Africa are facing challenges arising as a result of the shift from traditional teaching activities to a combination of research and teaching. Increasing emphasis on research, an integral part of this transformation of higher education, has required HEIs to develop and implement capacity development strategies to enable those new to research to engage in research output; and mentorship is a strategy that is enjoying increasing popularity. This article explores the challenges faced in the implementation of a formal research mentorship programme (REMP), using the University of Johannesburg as a case study. A quantitative approach was adopted to obtain the perceptions of academic staff of REMP as a strategy for building research capacity. The findings reveal that whilst the REMP is strongly favoured by academics as a means of guiding novice researchers, key factors need to be addressed to ensure its success. This article examines the challenges for both mentors and mentees and suggests actions to help mentorship programmes make sustainable contributions to the development of research capacity.*

Keywords: *mentorship; research output; mentorship programme; research capacity; South Africa*

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The fast-paced advancement of knowledge production has had a significant effect on human resource capacity in higher education institutions (HEIs) as they strive to maintain competitive advantage in teaching, learning and research. In the context of HEIs in South Africa, this has been acknowledged by the Higher Education Act 101 of 1997 (South Africa, 1997, preamble) which states that HEIs and their programmes need to be

transformed to respond adequately to both local and international development needs. This has necessitated the development of new practices and procedures required for the development, transfer and management of knowledge in the context of dynamic learning environments.

The White Paper on Education and Training (Department of Education, 1995, p 7) emphasizes that education and training are critically important elements of human resource development. In a knowledge-driven environment, multi-faceted approaches to education and training are needed to ensure there is appropriate responsiveness to the dynamic learning environment. Because research has become a focal point in the transformation of higher education, strategies have been developed to drive the generation of knowledge through research activities. Meeting such strategic objectives is, of course, dependent to a large extent on the research capacity of HEIs.

Mentoring, it can be argued, can make a significant contribution to the development of skills and competencies necessary for successful research output. Mentorship is often considered to be a viable means by which the research capacity of new researchers can be supported and increased. However, to achieve this the environment must be favourable if any mentoring strategy is to achieve its intended outcomes. Mentoring as a capacity development initiative to promote research output therefore needs to take into consideration the potential challenges that the mentor and mentee will face. This article explores the challenges inherent in mentoring as a strategy and identifies areas of particular importance for mentorship programmes if such programmes are to make sustainable contributions to the development of research capacity.[1]

According to Shelton (undated, p 143) there is a lack of evidence on the success of formal mentoring programmes in South Africa. As such, it is suggested that the outcome of this present study can make a significant contribution to the literature on mentorship and that the findings will be of value not only to the University of Johannesburg (UJ) but also to all HEIs.

Imperatives driving research output

The key functions of HEIs are teaching and research. While in South Africa there is a significant focus on teaching, there is also an increasing shift toward promoting research in HEIs. The imperative to engage in research is largely related to the existence of an environment of learning underpinned by the new, knowledge-driven society (Ramrathan, 2007). It is therefore now expected that every member of academic staff at HEIs should be engaged in research. The

Ministry of Education (2001, p 61) states that the importance of research lies in the creation of scholars who build collegiality and networks across geographic and disciplinary boundaries. This contributes to the global accumulation of knowledge and development of a culture attuned to innovation. O'Brien (2008, p 1) regarded research as an integral component of a well-rounded academic culture in any HEI, because research output contributes significantly to the knowledge base and career prospects and development of the individual researchers.

The increasing globalization of higher education has made it inevitable that HEIs in South Africa should measure themselves against the best in the world. In that context, academic publications are considered a benchmark for research quality (Gevers, 2006, in Lategan and Wessels, 2007, p 59). Waghid and le Grange (2003, p 6) point out that if HEIs in South Africa are expected to make any notable contribution to research they will need to produce researchers who have published high quality academic articles in high impact journals and in books and to have presented papers at international conferences. Accredited journals have a higher value in this context than research reports or publications in non-accredited journals. Allocation of funding for research and development is now output driven and academic publications are very important outputs of research activity because they not only disseminate new knowledge but also influence decisions on funding for higher education. Publication in accredited journals attracts funding in the form of a subsidy from the South African Department of Higher Education and Training (DHET, 2010); and it is therefore important for HEIs not only to develop capacity to promote research output but to also to promote research output itself in order to attract this funding. Furthermore, academic publication is used as a criterion by the National Research Foundation (NRF) to evaluate and rate researchers. NRF evaluation and rating is a benchmarking system that uses reviews by subject experts; and these experts base their judgements on the quality and impact of the research output and achievements of each applicant (NRF, 2007a, p 16).

During the apartheid era, 80% of South Africa's indexed research publications were generated in five institutions – the 'White' universities of Cape Town, Natal, Pretoria, Stellenbosch and Witwatersrand (Study South Africa, 2007, pp 1–2). In the post-apartheid period, the desired transformation of all HEIs is articulated in the *Education White Paper 3: A Programme for Transformation of Higher Education*, as follows:

'Production, acquisition of new knowledge: national growth and competitiveness is dependent on continuous technological improvement and innovation, driven by a well organised, vibrant research and development system which integrates the research and training capacity of higher education with the needs of industry and of social reconstruction.' (Asmal, 2001, p 1)

The White Paper therefore emphasizes that research is a vital tool for creating new knowledge, which is disseminated through teaching, while developing academic and research staff through training and development. HEIs such as UJ advocate that research should remain a top priority of the university, because research is a source of new knowledge and promotes the development of distinguished scholarship, the collective outcome of which must be teaching excellence (Research Top Priority at UJ, 2007, p 1). Although UJ is ranked in the top ten of universities in South Africa, in 2005 the total research output was only 4.53%, low in comparison to the top five universities where outputs were between 10.57% and 15.29% (Venter, 2007, p 1). It is the primary intention of UJ to establish itself, within the next four to six years, as a research-focused institution. This is supported by the university's strategic plan which states one of its goals to be '...to establish the UJ among the top research universities in the country in terms of nationally and internationally accepted research criteria' (UJ, 2009, p 1).

While other HEIs have adopted a similar strategy to that of UJ, research output at many institutions is relatively low. Geber (2005, p 1) highlighted the concern expressed by the Commission on Higher Education (CHE) about the publication profiles of academics in South Africa. The CHE 2002/3 report showed that there were 15,000 academic and professional staff in HEIs but that only 2,000 (13.5%) were actively engaged in research and producing publications. Geber (2005, p 1) also showed that academics between the ages of 35 and 40 were producing fewer publications and that there was an ageing population of staff active in research (45% were over 50 years old and 50% of A-rated scientists were over 60 years old). The need for younger academics to become more active in research is critically important given the pressure that exists from university management and funding agencies to produce high levels of performance in and outputs from research. There is therefore an imperative to use sustainable mechanisms that will enhance and support the research capacity of academics, in an endeavour to promote and increase research output.

A survey in 2005–2006 carried out by the Human Science Research Council (HSRC) indicated that South Africa at that time had 1.5 FTE (full-time equivalent) researchers per 1,000 total employment, marginally down from 1.6 FTE in 2004; and compared to countries such as Australia, Japan, Russian and Spain, the numerical value of this indicator of human resource potential for research is relatively low. There is a need to monitor this closely because the research capacity of South Africa has a significant influence on the nation's potential for research and development output (Department of Science and Technology, 2007, p 14). The National Commission on Higher Education (1996, preamble, p 1.1) cites the need for South Africa's higher education system to develop capacity in research in order to achieve high research output that can match global levels. If HEIs are to be regarded as research-intensive then at least 25% of their academic staff needs to be NRF-rated (National Research Foundation, 2007a, p 5).

Research output therefore needs to be accelerated if these HEIs wish to represent the leading edge in research output. However, this is not a goal that can be achieved overnight: it will require large amounts of recognised research output, in the form of accredited publications in journals, books, peer-reviewed conference proceedings and the acquisition of patents. There is thus a need to develop programmes such as those involving mentorship, to improve research output.

Research capacity development in higher education

Boyd and Fresen (undated, p 12) define capacity development as 'enhancing skills to achieve specific results'. Developing countries face significantly greater challenges in a global environment that affects and influences the purpose of higher education. HEIs are expected to provide capacity development, to support economic growth and reduction of poverty in society at large (Salmi, 2006, p 4). This is underpinned by the rapid rate of change in technology which highlights the challenge to acquire knowledge and skills that will enhance ability and capacity in all sectors. The generation of research outputs and associated knowledge, and the pursuit of responsive, knowledge-based community service, democracy and development, will be hindered in the absence of HEIs producing knowledgeable and skilled graduates.

Development focuses on the construction and application of knowledge, the enhancement of human capacity and the provision of research opportunities that make possible the manifestation of the potential of critical, inquisitive individuals (Hanlyn, 1998, p 44, in

Waghid and le Grange, 2003, p 5). This contributes to the production of 'knowledge interests' and thus advances academic research and the construction of knowledge for social relevance (Waghid and le Grange, 2003, p 5).

Building research capacity in HEIs is dependent not only on the availability of resources but also on the development of an academic environment that promotes research (Ministry of Education, 2001, p 62). Research capacity is a means by which performance and production efficiencies can be improved. According to Breen *et al* (2004, p 430), capacity building is not the sole responsibility of the researcher but a responsibility shared with the institutions that promote research.

In South Africa, the transformation of the higher education landscape demands the presence of a cadre of professional academic and development staff, and support staff, able to meet the demands of capacity building. HEIs should provide resources and incentives for staff to enable them to meet their professional goals and, thus, contribute to the fulfilment of institutional missions. Research capacity development should be an integral part of an institution's human resource development capacity.

Various initiatives for research capacity development are commonly used to promote research skills, such as proposal writing, academic and publication writing skills, computer literacy, data analysis, referencing, supervision, writing research reports and mentorship programmes. The NRF has developed the South African Research Chair Initiative to retain and attract qualified research scientists in an attempt to reverse the decline in the country's research output, to focus on capacity in publicly funded HEIs and to contribute to stimulating strategic research across the knowledge continuum. It is envisaged that the Initiative will promote growth in high-level research capital and production capacity in higher education (NRF, 2007b, p 12). The NRF has also implemented the Thuthuka (TTK) programme which focuses specifically on accelerating the development of young, Black and female researchers (NRF, 2006, p 4). The capacity development unit of the Human Sciences and Research Council (HSRC) focuses on research and human capital development, to address the need to develop individual and institutional research capacity for social and human sciences (Kongolo, 2008, p 1).

According to Thulstrup *et al* (2006, p 4), merely establishing capacity is insufficient: it must also be used to create development. Higher education research and development must be useful to society, to lead to employment opportunities. With 'knowledge sharing' becoming a key demand, those with useful knowledge must be able to share it with those who are in need of it.

The importance of HEIs in this regard is supported in a report by Higher Education South Africa (HESA) (2007, p 2) which highlighted this impact of research:

'Providing skilled workers to the economy, generating and supporting scientific communities that enable innovation'.

Because HEIs are bound, by a variety of accountable mechanisms, to centrally determined policy and funding guidelines, academics have been warned that they must 'publish or perish' (Gawe and de Kock, 2002, p 39). Chetty (2003, p 13) contends that the demand for publication and the tension arising from the need to publish for the sake of survival in academia have resulted in negative consequences, because there is a strong focus on the publication of research rather than its impact. This has created the belief that '...the more publications produced the better, the more words written the better, the more times the paper is cited the better, single authorship is preferable to multiple scholarships and academic journals read by researchers are more valued than professional journals' (Bassey, 1995, p 128 in Chetty, 2003, p 13). Despite this – albeit contentious – belief, HEIs continue to be challenged to develop research capacity. This present study explored mentorship as a possible, sustainable initiative for promoting and increasing research output.

Mentoring and developing research capacity

According to Mentoring Works (2007, p 1), mentoring is '...a synergetic relationship – two or more people engaged in a process that achieves more than each could alone'. Mentoring can be used as an initiative for capacity development, with a focus on improving the research output of individual researchers. According to Cooney (2008, p 1), mentoring is '...a brain to pick, an ear to listen, and push in the right direction'. Mentoring provides a framework for growth, development and succession planning, as skills and knowledge are passed on. The University of Leeds agrees that mentoring should be a developmental process which can also be more informal and on-going, occurring as part of day-to-day research activities and interactions between colleagues whilst being available throughout a researcher's career and adapted to the individual's experience and expertise (University of Leeds, 2007, p 2).

Mentoring is commonly considered to be a key method for transferring skills and supporting continuous learning, especially when skills are scarce. The literature on mentorship indicates that although not a new concept

it still has to gain momentum in South Africa, especially in HEIs. At UJ, strategic research development has gained pace. With regard to increasing research output, a draft policy sought to provide incentives and support for researchers to achieve greater productivity (Auf de Heyde, 2008, p 5). The University of Stellenbosch (2007, p 1) has proposed the establishment of a mentor programme for new lecturers at the university, with the aim of facilitating and enhancing the teaching and research profile of inexperienced academics. The University of Witwatersrand has secured funding for three years for a Mellon Retiree Mentorship Scheme, which engages as mentors those academics reaching the end of their formal careers, in an attempt to enable the academics to pass on their skills to the next generation of researchers (Burns, 2006, p 1). The University of Cape Town has established an Emerging Researcher Programme offering support to those starting out in research and thus building new capacity and sustaining existing research excellence (Research, 2003 and 2008, p 1). The NRF piloted a mentoring programme for its TTK grant-holders which sought to contribute to the development of research capacity by establishing a research culture in which mentees could practise, remain focused and structure their research (NRF, 2006, p 12). Internationally, the following mentoring programmes were investigated.

- The University of Melbourne has established a strategic research initiative fund to support priority projects that encourage intensive cross-disciplinary research. The university recruited a group of so-called 'Future Generation Professors and Fellows' to lead collaborative research (University of Melbourne, 2007, p 1).
- At the University of Leeds (2007, p 4) the School of English provides mentoring for new, junior academic staff as part of a probation process, but with an emphasis on the continuity of research and the way in which it co-exists with the demands of teaching and administration.
- The University of Oxford (Oxford Learning Institute, 2006–2007, p 2) has a career accelerator programme for postgraduate research which links Oxford alumni working at other universities with postgraduate research students at Oxford.
- Cleveland State University (2006, p 1) has a statistical mentoring network, providing mentors and mentees with opportunities for possible research collaboration.
- The Research and Training Centre at Portland State University has an Underrepresented Researchers Mentoring Project aimed at non-white students and those with disabilities. The programme is designed to encourage students to pursue an interest in research and to acquire a variety of research skills and experience (Jivanjee, 2006, p 1).
- The mentoring programme at the American College of Nuclear Physicians (2006, p 1) seeks to help nuclear medicine trainees to develop their professional career fully by means of a support system that provides guidance by using nuclear medicine residency programme directors.

The following trends in mentoring can be identified from the examples cited above.

- Resources may be applied by using outside experts, those who have retired, or existing, suitably experienced staff;
- Cross-border or cross-disciplinary mentor–mentee relationships can be established, linking alumni working at other universities with postgraduate research students;
- Mentoring may be aimed at a specific component of research, such as statistical analysis, or it may be aimed at personal and professional development or achieving equity; and
- Mentoring may be used as a tool to develop leadership skills in students.

The mentoring programmes seem to have a common objective of equipping individuals with the necessary skills to meet their personal and professional goals, as well as addressing organizational needs. However, it is important that recognition is given to the following matters before implementing such programmes: a clear definition of programme objectives; determining the internal availability of skilled human resources; the use of incentives to attract mentors; identifying the specific needs of the mentee; development and use of a review process; the availability of funding; that mentoring should be voluntary and non-threatening; and establishing trust and open communications.

It is imperative that any mentoring programme considers the responsibilities and attributes required to sustain capacity development. Because the mentor is someone who takes a special interest in helping to develop another person, the mentor should have the following responsibilities and attributes (TDL IRT 2005 Mentoring programme, 2005, p 7): transferring skills to the mentee; counselling, by providing advice and suggestions for problem solving; facilitating the mentee's professional development and growth; supporting and encouraging the mentee; monitoring progress and providing feedback and providing information, guidance and constructive comments; having the ability to listen and be open and committed; being knowledgeable in their field; being honest and able to offer constructive advice; having the ability to

motivate and demonstrate leadership; and being a good self-manager.

Equally, as an inexperienced person on a journey of self-development, the mentee must be prepared and able to take advantage of the opportunities offered by the mentor; to develop good listening and communication skills; to take the initiative in the mentoring relationship by developing discussion points; to ask pertinent questions and seek relevant information; to use networks offered by the mentor; and, specifically and importantly, to keep appointments (University of Southern Queensland, 2006, p 1). To fulfil their role in the relationship, mentees should work hard and challenge themselves, be flexible and willing to accept criticism, be resourceful and prepared to take the initiative, be honest and unafraid and be patient with the process (University of California, Berkeley, 2005).

If mentoring is to be considered a viable strategy for achieving personal, professional and organizational goals, the requirements of the various stakeholders must be clearly defined: failure to do so is likely to have negative consequences.

Benefits of mentoring

The literature on mentoring of researchers demonstrates that mentees, mentors and organizations all benefit from mentoring relationships. When a mentor–mentee relationship succeeds behaviours and attitudes change for the better. Mentees are often more articulate, skilled, focused, positive and sensitive. They are also more open to differences of opinion and better able to recognize opportunities (Nigro, 2003, p 240).

The benefits for the mentee were evident in the case of a meta-analysis undertaken in 2004 based on 43 studies (Simmering, 2007, p 2). Individuals who had been mentored had better career outcomes from both career-related and psycho-social mentoring and were more satisfied with and committed to their careers. If mentoring is an additional duty then, according to a study by McKenna (2004, in Gray, 2005, p 2), mentors feel a sense of pride in transmitting the skills of their profession to the next generation, are rejuvenated, challenged and reinforced in their own professional identities, analyse their own skills and feel important when asked for advice. Equally, the organization benefits from mentoring: it promotes a positive image of the organization and reflects employee-centred values; it improves morale and develops greater career satisfaction for the mentee and mentor; it enhances the competence of the mentee and mentor, which directly affects organizational efficiency; and it increases employee commitment and loyalty (Schalekamp, 2005, p 1).

According to *Mentor* (Mentor, 2006, p 1), the benefits derived from a mentoring programme are largely dependent on the presence of clearly defined programme objectives. For South Africa it is imperative that such objectives are aligned to the government goals of producing knowledge and innovation through skilled labour, whilst also acknowledging the social needs of the country. According to Blunt and Connolly (2006, p 196), mentoring in South African HEIs is a powerful instrument for retaining and encouraging postgraduate students to become the new generation of university academics and researchers, in the context of competition for employing such students from the public and private sectors. However, because it is an evolutionary process that requires time and effort to develop, mentoring must be well-managed in order to generate development of research capacity. This is an important consideration, given the limited evidence available on the impact of mentorship programmes for researchers aimed at improving research output; and this lack of evidence makes it difficult to benchmark the success of existing programmes. However, the argument in favour of the need for mentorship programmes as an initiative for developing research capacity in HEIs in South Africa is reinforced by the literature which confirms that, globally, research development and research output are at comparatively low levels, with a lack of substantial funding and human resources for research programmes being evident.

Research methodology

A case study was used to present a holistic account of experiences and results regarding an REMP: it was conducted at the University of Johannesburg. The advantage of a case study approach is that it not only allows the use of a variety of research methods but also fosters the use of multiple sources of data which, in turn, facilitates the validation of data (Denscombe, 2003, p 38). A combined quantitative and qualitative data approach was used.

Data collection

Data were collected by means of a survey, using a written questionnaire and interviews. The survey method was used because it provides a quick and easy means of reaching a large group at relatively low cost and in a short space of time (McNeill and Chapman, 2005, p 28). The questionnaire was designed to elicit information from staff on their perceptions, attitudes and preferences regarding a formal REMP at UJ. Interviews were conducted with executive and senior members of

staff empowered with the task of promoting research. In addition to the primary data, an analysis of documents provided secondary data.

Sample size

The target population consisted of all academic staff (1,544 individuals) in nine faculties. Questionnaires were e-mailed to permanent academic staff (788 individuals) in four faculties. Purposive sampling was used because the four faculties concerned – Engineering and Built Environment, Humanities, Management and Sciences – had large numbers of students and staff.

Data analysis

Quantitative data from questionnaires completed by 144 respondents were analysed. The survey instrument was analysed using the SPSS for Windows, Version 17 (a proprietary statistical analysis program) and a basic descriptive analysis was undertaken using frequencies and cross tabulation data.

Findings

The success or failure of a mentoring programme is dependent upon the responses of mentors and mentees to such a programme. It is therefore important to gauge their perceptions because mentors and mentees can either stifle or promote an REMP. The analysis of the data revealed the following in terms of challenges inherent in mentorship programmes:

Increased workload

While the majority of mentors indicated that mentoring facilitated self-reflection on their research and professional development, they also indicated that it increased their current workload (52%) and was financially unrewarding (35 %), as shown in Figure 1.

Research capacity

Knowledge of the attributes of potential mentors is necessary in order to determine whether the institution concerned has the capacity to implement an REMP. An analysis of mentors' profiles (Figure 2) in terms of age (36.1% were aged between 35 and 44 years), qualifications (52.10% were Doctorates) and permanent employment (84.4%) indicated that UJ did have the capacity to sustain a mentorship programme. This is further supported by the results shown in Figure 3, which highlight the fact that 20.1% of the mentors had more than six years of experience of mentoring.
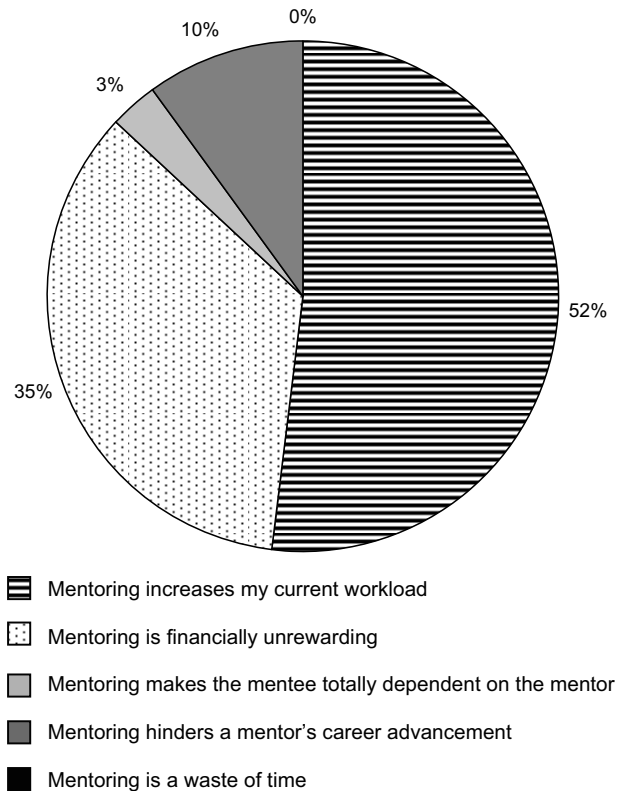
**Figure 1.** Views of academic staff on mentoring.
Source: Nundulall and Reddy (2011).

Career advancement of mentors

Mentors are generally expected to continue with advancing their careers whilst acting as a mentor. The data gathered indicated that only 9% of mentors were NRF-rated. With the majority of mentors (52%) indicating (Figure 1) that mentoring increased their workload, this could have an affect on mentors advancing their careers and, possibly, could be one of the reasons for the low percentage of NRF-rated researchers. It might be argued that the emergence of a demand for NRF-rated researchers would affect academics in choosing to advance their career in preference to acting as mentors, because an important concern is that 35% of the mentors found mentoring to be financially unrewarding and that it tended to make the mentee totally dependent on the mentor (Figure 1).

Time constraints

Although mentees benefit in terms of acquiring new knowledge, access to research networks and achievement of research goals, some 16% of the mentees were of the opinion that mentoring was a time consuming process. In addition, mentees also expressed concern about constraints relating to work–life balance, inadequate funding, lack of available mentors and the
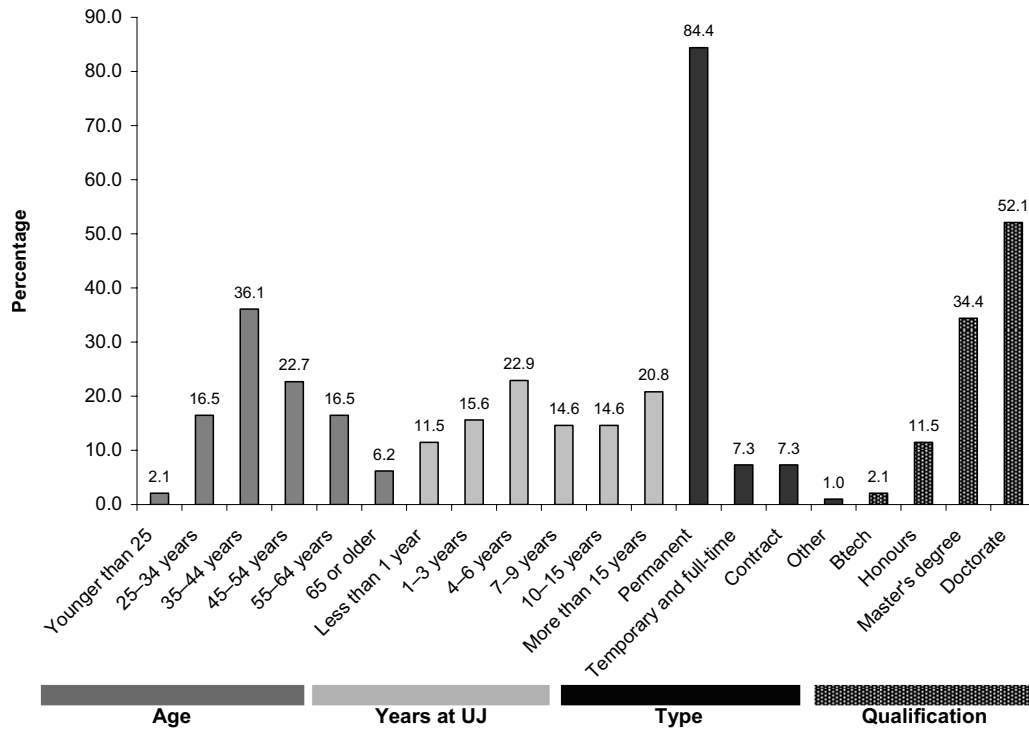
Figure 2. Profile of mentors.
Source: Nundulall and Reddy (2011).

level of commitment needed. Findings from the NRF-piloted TTK mentoring programme revealed that lack of funding to enable temporary staff to be employed to help the mentees affected the impetus of the mentees to seek publication of their work. Mentees were expected to engage in research whilst also continuing with teaching, supervision and administration duties (NRF, 2006, P 13). Time constraint was also a challenge, as shown in the study by Schulze (2009, p 41) which stressed the need for time being available for efficient mentoring. By taking into consideration the time needed, during the process
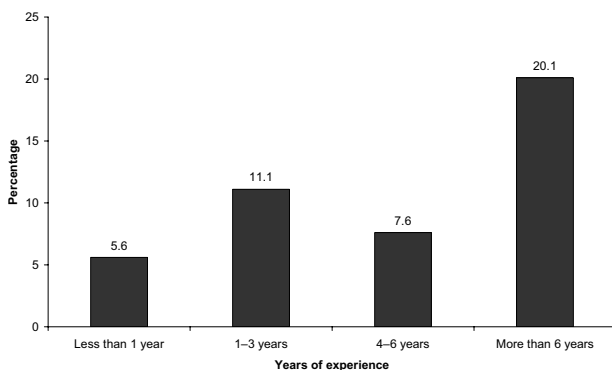
Figure 3. Mentors' experience.

of allocating workloads, the accessibility of mentors and mentees can or may be improved.

Mentorship skills

Schulze's study (2009, p 41) indicated that research knowledge and skills are important characteristics of a mentor; equally, experience, knowledge and successful research output are vital to enable someone to act successfully as a mentor. Although the findings of this present study revealed that mentors had the necessary capacity to provide mentoring services, in terms of their age, qualifications and experience (Figures 2 and 3), it seems that mentors may lack mentorship skills: 42.2% were of the view that mentors lacked the necessary competencies. Van der Walt (2010, p 2) suggested that an important component of a structured REMP programme should be the development of mentoring skills, as part of the formalized training of mentors.

The way forward

The imperative to restructure and transform programmes and institutions that are able to respond better to local and global knowledge transfer and knowledge management has necessitated a focus on research production (South Africa, 1997, preamble). In HEIs the promotion of research output through capacity

development initiatives is important with regard to enabling researchers to become NRF-rated researchers, attract DHET subsidies and to be able to compete nationally and globally.

It is important to emphasize that capacity building is not the single responsibility of the researcher but, rather, is an integrated responsibility involving the institutions that promote research (Breen *et al*, 2004, p 430). While the analysis revealed a commitment to developing research capacity, with a view to the UJ becoming a research-focused HEI, institutional management was of the view that 'red tape' (the bureaucratic processes and procedures) should be reviewed and more administrative support should be provided to researchers to engender an enabling research environment (Research Report, 2008, p 3). Coldwell and Herbst (2004, p 442) add that the responsibility and commitment of all role players, setting of clear goals and a sharing of the theoretical framework guiding the mentoring programme can significantly influence the outcome.

Overall, the evidence from this study suggests that a formal REMP would enhance staff morale, especially for novices who may suffer from low self-esteem (because they do not have sufficient knowledge or experience of engaging in research), increase the recognition of established and senior researchers and establish a focus on research development career paths. This is supported by a report from the DHET (DHET, 2010, p 6) which stated that just seven HEIs in South Africa produced 74% of all research publications, an output ratio of 0.76 units per staff member, while the remaining 16 institutions generated the residual 26% of publications, a ratio of 0.28 units per staff member. In fact, the DHET advocated the need for staff development, infrastructure, structural development and policy and institutionalizing a research culture at the 16 institutions.

While the implementation of a formal REMP to assist HEIs to achieve their research output goals is recommended, it is important that the challenges hindering the success of the REMP are taken into account. Institutional support in the form of administration, finance, promotion of a research culture, avoidance of excessive bureaucracy and diminished centralized decision making are important contributors to the success of a formal REMP. The findings from the NRF's piloted TTK programme (NRF, 2006, pp 14–15) identified the lack of institutional commitment as a major factor that hindered progress.

The depletion in the numbers of senior researchers in the long term, arising because the majority of the individuals concerned are close to retirement, could be addressed by increasing the formal retirement age of

scientists. According to Nyide (2005, in Wanzala, 2008, p 20), early retirement undermines the development of science in any country, because anecdotal evidence suggests that many scientists seem to start publishing significant work when they reach the ages of 45 to 55 years. Interventions that incentivize and support researchers in achieving greater productivity should incorporate reduced workloads, financial incentives and implementation of a formal REMP within official working hours. According to Schulze (2009, p 44), mentorship needs to be part of the workload allocation so that mentors can support more than one group of mentees and thus form mentoring communities; and mentoring should be rewarded, financially or otherwise. These considerations can help address and overcome the problem of heavy workloads and the (current) lack of financial rewards. This is important given the lack, in some faculties, of capacity that is necessary for managing a formal REMP. Failure to address the issue of capacity can compromise the need to deal with training and development for research.

In terms of future research, the following aspects could be explored.

- Pursuit of a process of informal mentoring of academics as researchers within departments;
- Determining the effectiveness of informal mentoring in terms of research output;
- Determining how informal mentoring can be translated into a formal REMP;
- Identifying ways of retaining expertise for sustainable mentoring to promote research output; and
- Implementing a pilot REMP.

Conclusions

Research production is increasingly becoming a focal point in the transformation of higher education. HEIs face various challenges, one of which is making the change of their primary function being purely teaching to that of a combination of research and teaching. While novice researchers – that is, those individuals training to become researchers – are expected to develop capacity by engaging in research, the aim of capacity development is to enable young researchers – that is, those who are developing a profile as researchers – to publish in high impact publications, which outcome tends to attract funding in the form, in South Africa, of subsidies from the DHET. The manner in which HEIs promote research output through capacity development initiatives is important for attracting funding. As a result, academic staff need to be developed in terms of the skills and competencies required of researchers.

Mentorship can be considered as a possible vehicle for promoting research capacity among academics. While the findings of this study support the establishment of formal mentorship programmes, it is important that the problems likely to hinder the possible success of such programmes are also recognised and addressed.

Notes

[1]Other, broader aspects of this research project have been published elsewhere, see Nundulall and Reddy (2011).

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