

Article

Support Systems for Early-Career Postdoctoral Researchers' Professional Learning and Career Development in an Open Distance eLearning Institution

Bongani Nkambule ^{1,*}, Sindile Amina Ngubane ¹, and Mbongiseni Mdakane ²

¹ Institute for Open and Distance Learning, University of South Africa, Pretoria 0003, South Africa; ngubasa@unisa.ac.za (S.A.N.)

² Department of Psychology, University of South Africa, Pretoria 0003, South Africa; Emdakam@unisa.ac.za (M.M.)

* Correspondence: nkambbi@unisa.ac.za (B.N.); Tel.: +27-76-918-3334

Received: Mar 11, 2026; **Revised:** May 19, 2026; **Accepted:** May 20, 2026; **Published:** Sep 29, 2026

Abstract: Following UNESCO's call for African higher education institutions to do everything in their power to transform into research centers of excellence, South African universities have begun appointing vast numbers of postdoctoral research fellows (postdocs), among other research personnel, to make this mission a reality. This qualitative study, situated in an interpretivist paradigm, examined the responsiveness of professional learning and career development support systems for 10 postdocs at an Open Distance e-Learning (ODEL) institution. Theoretically, the study adopted Nowell et al.'s (2020) professional learning development framework, which posits that, for postdoctoral training to be ideal, it should encompass four main aspects: professional socialization, professional skills, academic development, and personal effectiveness. Several findings emerged from the study, the first of which showed that postdocs rated highly the experience gained by supervising master's and doctoral students' research projects and by publishing articles in reputable journals under mentorship. It was also revealed that the institutional culture fostered collegial relationships at both the departmental and college levels, thereby enhancing postdocs' sense of belonging. Furthermore, there were areas of concern raised by the postdocs, namely: (1) inadequate provision of essential technological hardware and software tools; (2) lack of recognition and rewards for exceptional performance; (3) lack of participation in teaching and curriculum development; (4) international conference attendance budgetary constraints, with only a select few approved to travel abroad; (5) restricted opportunities for personalized learning tailored to their developmental objectives and career aspirations; and (6) protracted processes for research ethics review and approval. The study recommended that the institution update its postdoctoral research policy to remove restrictions that prevent postdocs from accessing personalized or tailored professional learning and comprehensive career development support.

Keywords: Postdoctoral research fellows; Open distance e-learning; Professional learning; Career development; Early-career researcher; Precarity; Marginalization

1. Introduction

The United Nations, through section 9.5 of the Sustainable Development Goals (SDGs), recognizes the role of higher education institutions (HEIs) in developing countries in championing their national development through research production. It, however, states that in their process of producing impactful research, they must do so without second-guessing teaching and skills-transfer responsibilities (Clegg, 2012; Maiyo, 2015). Essentially, producing impactful research improves HEIs' national and international rankings, positions them as key contributors to the national development agenda (Ocholla et al., 2013), while also helping them to generate financial incentives to enhance their teaching capabilities, student services, and enable them to re-invest heavily in equipment, facilities and the hiring of personnel to support and sustain the effectiveness of their operations (Rosowsky, 2022). To motivate academics and researchers to increase their research productivity, HEIs offer various incentives. These incentives, in conjunction with other benefits designed to reward research and innovation, foster among academics a commitment to setting up extensive collaborative networks with researchers from other institutions, both nationally and internationally. Hence, there is presently an "unprecedented worldwide expansion of research collaborations" and a renewed commitment by HEIs to upscaling research and knowledge production (Baker & Powell, 2024, p. 1). In 2020 alone, records show that 3 million scientists had their research published in over 9,000 high-impact scientific and technical journals (Baker & Powell, 2024). A significant portion of these publications is derived from collaborative work among researchers at institutional, national, and international levels.

In accentuating the role of research in society, Atieno et al. (2021, p. 97) point out that it facilitates the discovery of “answers to unknown or lesser-known problems through scientific application of procedures”. Yet despite the benefits that research yields for national development, research productivity in most HEIs on the African continent is not at a desired level (Maiyo, 2015). A global assessment of research and development expenditure indicates that most African countries allocate less than 1% of their GDP to research and development (Karimi, 2015). The only exception is South Africa, which has the highest percentage of GDP dedicated to research and development programs (Cowling, 2022). As of 2022, its research budget was drawn from 0.85 per cent of GDP and is projected to increase by 0.01 percentage points annually until it eventually reaches the required 1% threshold (Cowling, 2022). Its government, guided by the National Development Plan (NDP, 2012), encourages research-intensive HEIs to produce a future generation of skilled and globally competitive emerging researchers. Presently, the country’s 26 research-intensive HEIs provide postdoctoral research training to several local and international individuals. The National Research Foundation’s Postdoctoral Guidelines (2024) stipulate that the functions of postdocs must be tied to the goal of advancing institutional, national and global research and innovation. This fellowship program is a non-employment award, typically in the form of a stipend, eligible for tax exemption under South African law (Unisa Postdoctoral Research Fellowship Framework, 2025). Admission to the program requires candidates to hold a doctoral degree, preferably no more than 5 years old, and to demonstrate potential for research writing.

An analysis of global postdoctoral trends shows that South Africa’s postdoctoral fellowship program saw a 143% increase from 2010 to 2019, rising from 1,180 to 2,867 participants (Prozesky & Van Schalkwyk, 2024). This growth rate is comparable to Finland’s during the same period (ibid).

Postdocs join the program to acquire professional experience and research expertise under the guidance of experienced mentors. To formalize their relationship, both the postdoctoral researcher and the mentor pledge their commitment to the program by signing a contract outlining the expectations, terms, and conditions set by the HEI that hosts the program. Formalizing this professional relationship between both parties, at least for postdocs, creates an expectation that mentorship can aid their professional development, often in preparation for careers in academia. Evidence indicates that postdocs who have successfully transitioned to full-time, permanent employment attribute their professional competence to skills and practices learned during postdoctoral training (Guccione, 2019). In sum, Mothapo (2021) states that postdoctoral training offers the opportunity to gain teaching experience, acquire practical and theoretical training in research supervision, engage in industry partnerships, and contribute to the development of novel ideas and scholarly work concepts. Ideally, this training should encompass mentoring junior academics, novice researchers, and undergraduate students; writing grants; publishing; reviewing others’ scholarly work; taking part in communities of practice; teaching; and presenting papers at local and international conferences (ibid).

The responsibility for ensuring that the fellowship meets these expectations rests on the mentor and the host institution (Association of American Medical Colleges [AAMC], 2017). However, given concerns about the quality of postdoctoral research training in Africa (Kariuki, 2019), the paper investigates support systems for early-career postdoctoral researchers’ professional learning and career development within an ODeL institution. According to Dlamini et al. (2024, p. 54), “mentoring in the ODeL context as compared to the traditional model, in institutions of higher learning, can be very challenging for academics.” Although being a postdoc in an ODL institution presents unique flexibility, it also presents distinct challenges aggravated by restricted face-to-face contact and limited access to traditional research support and feedback mechanisms. Across many African countries, postdocs lack mentorship from senior academics and are not guided on how to navigate systems and processes that govern their professional learning environments (Kumwenda et al., 2017). Heavy teaching workload, submission deadlines and administrative duties are among factors resulting in senior scholars in African ODeL institutions to neglect mentoring early career researchers (Dlamini et al., 2024). These challenges affect the postdoc–mentor relationship in many ways, including their knowledge consumption level and their sense of worth, morale and motivation (Hokanson & Goldberg, 2018a). Consequently, postdocs within these professional learning ecologies rely on self-generated initiatives and peer support systems to navigate to learn the ropes of their occupation.

In some HEIs, mentorship programs are not tailored made to match the developmental needs of early career researchers and the success of such programs is not evaluated by relevant structured (Mgaiwa & Kapinga, 2021). This is despite, Wild et al. (2017) cautioning ODeL institutions to prioritize mentoring early career researchers to ensure that when they eventually leave the HEI system, they leave behind a formidable academic workforce and productive research machinery. In the same vein, Salihu Shinkafi (2020) asserts that by not prioritizing mentorship and succession planning, HEIs lose large numbers of potentially fine postdocs to other sectors of the economy that appreciate their skills and talents the most.

Moreover, in South Africa, much of the information about postdocs is based on anecdotal evidence (Council on Higher Education [CHE], 2022), warranting the need for research that qualitatively explores postdocs’ experiences of professional learning. Authors reviewed pertinent literature to determine what has already been empirically been projected about postdocs’ job satisfaction levels (Van Benthem et al., 2020), psychosocial resilience (Dorenkamp & Weiß, 2018; Woldegiorgis, 2025), mobility (Cantwell,

2021; Coda Zabetta & Geuna, 2026), employability (Fahnert, 2015; Prescott, 2023; Woldegiorgis, 2025), role in academia (Jiao & Wu, 2025), gender based inequity (Wang et al., 2025), recruitment inequalities (Herschberg, 2019), identity formation (Yadav & Seals, 2019) and professional development (Gater, 2019). The paper not only provides novel insights into postdocs' experiences in an ODeL environment but also offers guidance on improving support conditions for postdocs. Although there is an increasing body of literature documenting the experiences of postdoctoral researchers across various HE settings (Mahome & Mphahlele, 2025), there has yet to be a study specifically addressing their experiences of professional learning within an ODeL environment. In that sense, the paper shines a spotlight on how work conditions in academia—when not carefully monitored—especially in the context of neoliberalism, contribute to the commodification of postdocs for institutional gain, often with little regard for their wellbeing and career goals. It prompts critical questions about the responsiveness of researcher development frameworks in both local and international ODeL contexts. Additionally, the paper underscores the imperative of understanding the unique challenges associated with pursuing postdoctoral training in these environments, while also emphasizing the importance of embedding autonomy and self-regulation in the training process. Lastly, the paper seeks to enhance awareness within the academic research community regarding the politics of professional learning in academia, and it aids prospective researchers in identifying existing knowledge gaps in this field. To that end, the following research question undergirded the study.

How well does the support given to early-career postdoctoral researchers align with their professional development needs?

The research question posed above was instrumental in generating the study's findings. The structure of the paper takes several forms: literature review, theoretical framework, methodology, findings and discussions as well as conclusion.

2. Literature Review

2.1. Postdoctoral Training as a Precarious Identity Formation Process

In a professional setting, the term precarious connotes “a situation of generalized insecurity resulting from the disappearance of full-time, predictable, unionized, and stable livelihoods” (Means, 2022, p. 1360). This term aptly captures the uncertainty associated with a postdoctoral position, at least in most HEIs. What runs through the minds of postdocs when they commence their training is the prospect of building a professional identity, which would greatly help them navigate their academic careers with ease once they secure tenured positions. Li and Xue (2022) underscore that professional identity shapes postdocs' social capital and learning agency within the HE ecosystem. However, the development of these invaluable traits depends on the evenness of power dynamics in the relationship between a postdoctoral appointee (mentee) and their mentor. This relationship should be reciprocal and characterized by mutual idea sharing and sense-making, in which both parties communicate respectfully and recognize that unity and a common vision are essential to achieving maximum success (AAMC, 2017). Ideally, postdoctoral mentors should “be approachable, available, and willing to share knowledge; listen and communicate effectively; provide encouragement and constructive criticism; and offer expertise and guidance” (AAMC, 2017, p. 3). However, as López (2020) points out, in most HEIs, research and academic mentors typically view themselves as too knowledgeable to be advised by mentees and naturally control the relationship by unilaterally imposing action plans. Institutional processes also enable mentors to maintain the status quo unchallenged, leaving mentees with little influence over the skills they yearn to develop and master. Ultimately, by the end of their training, instead of developing a broad set of professional skills, they become products of a narrow-focused postdoctoral training program (Kerr, 2022b). There is thus a sentiment that these challenges are aggravated by the misrepresentation of their role in academia, which unfortunately leaves them feeling sidelined and out in the cold by the very institutions meant to support their professional growth.

Having studied trends in postdoctoral training in a South African HE context, Hlatshwayo (2025, para 11) concludes that postdocs “occupy the liminal space of instability and confusion”. In some HEIs, they are regarded as postgraduate students assigned as research supervisors, while in others, they are considered contract employees given up to two years to achieve specific research goals (ibid). Mthombeni (2023) notes that in the Global South, postdoctoral fellowships have yet to translate into permanent employment, even amid academic staff shortages, because HEIs do not use them as incubator schemes to identify well-trained individuals and absorb them permanently. Their status as neither students nor employees makes them vulnerable to exploitation, disrespect, and social marginalization (Prozesky & Van Schalkwyk, 2024). Taken together, these institutionally embedded factors dampen postdocs' motivation to learn, their capacity to shape their professional identity, and, more broadly, deepen their precarity in academia.

2.2. Conditions of Service Affecting Postdocs' Learning Agency and Self-Regulation

Although celebrated as the nucleus of research, their experiences paint a different story, one characterized “by financial precarity, systemic opacity, and overlooked well-being” (Thomas, 2025, para. 2). Their status as neither students nor employees

means they may not join trade unions or access bargaining councils. In the absence of professional protection, postdocs work under immense pressure, treated as research “mules” above all else (Hlatshwayo, 2024a). HEIs’ preoccupation with research production implies that their training is predominantly rooted in research activities, accounting for 92% of their time (CHE, 2022), while other aspects of their career development are overlooked (Mahome & Mphahlele, 2025). Focusing too much on research often leaves little time for teaching and postgraduate supervision, which negatively affects postdocs’ career prospects and job readiness, since both teaching and supervision are prerequisites for a permanent academic career and are highly valued in academia (National Academies, 2000). In that sense, the forfeiture of time dedicated to teaching and research supervision results in an incomplete training process. Micromanaged postdocs face limitations in developing the skills sets required for their next career step (Laudel & Glaser, 2008).

Despite the shortage of academics with doctoral degrees in Africa’s HEIs, there is still limited awareness of how postdocs can boost PhD production and help achieve Vision 2030 of the National Development Plan, which aims to increase PhD graduates to 100 per million people (Mothapo, 2021). Instead, most HEIs use the “publish or perish” rule to assert their authority and tie postdocs to research-related activities at the expense of other aspects of their development (Mahome & Mphahlele, 2025). Their survival is left at the mercy of their mentors and the institutions that host them, which evaluate their legitimacy to secure the next contract based on their visibility at research-oriented events and their research publication record. Their plight is compounded by a host of other factors, including the obstinacy of top-down decision-making (Mahome & Mphahlele, 2025), low remuneration, financial distress (Prozesky & Van Schalkwyk, 2024), and in some instances, sexism, patriarchy (Hlatshwayo, 2024b), and (for international postdocs) tedious immigration services (Thomas, 2025). Furthermore, being subjected to temporary contracts, often lasting only one or two years without benefits, leaves postdocs in a constant state of uncertainty and career apprehension (ibid). In her study, Kerr (2020) ascertained that while in some academic departments, postdocs may have the flexibility to supervise postgraduate students and teach modules, more often than not, when they are asked to do more than what is stipulated in their contracts, they are not remunerated for these duties, even when remuneration policies dictate otherwise. Not only can one or a combination of these unfriendly conditions of service leave postdocs stuck between a rock and a hard place, forcing them to ponder whether to complete their contract or leave early, but they also undercut their ability to learn and develop holistically.

2.3. Factors Engendering the Marginalization and Serialization of Postdocs in Academia

Postdocs play a crucial role in the country's research community by contributing to knowledge production and dissemination (Jadavji et al., 2016), identifying societal problems, suggesting remedial actions, and informing future policy (Mitchell et al., 2013). They are trained in neoliberal HE systems where legislative frameworks and operational processes are result-oriented and demanding. Within these systems, certain scholarly works suggest that the marginalization of postdocs primarily results from legislative, operational, or environmental inefficiencies, or a combination thereof. A point of reference is Kerr (2020), who notes that, often, holding a fellowship does not guarantee permanent employment, even for diligent postdocs who publish impactful research, and there seems to be no structured career progression system for their transition into permanent employment. Edge and Munroe (2015) found that while a few postdocs secure permanent positions relatively quickly, most spend 6 to 7 years in postdoctoral roles at one or more universities. To characterize the anxiety and frustrations experienced by one study’s participants, Hlatshwayo (2024a, p. 33) ascertained those postdocs felt like “workhorses who are metaphorically useful for lifting the rankings of the university, without any permanent employment security”. The above is corroborated by Edge and Munroe (2015), who explicate that fewer than 20% of postdoctoral fellows obtain permanent, tenured academic or relevant positions. Therefore, fearing unemployment, they explore further postdoctoral training opportunities elsewhere, whether locally or internationally, after their contract ends.

Engaging in back-to-back postdoctoral training in the absence of permanent or more stable employment opportunities engenders what Prozesky and Van Schalkwyk (2024) refer to as “the serialization” of postdoctoral training. These scholars describe serial postdocs as “ones who accept one or more postdoctoral positions after [the end of] their first fellowship [at a particular HEIs]” (Prozesky & Van Schalkwyk, 2024, p. 2). The knowledge base of serial postdocs is attractive to HEIs. In South Africa, for example, HEIs flout postdoctoral recruitment procedures by conveniently appointing candidates outside the stipulated age range of 33 to 41 years (CHE, 2022) as opposed to the official age range of 41 to 50 years (Prozesky & Van Schalkwyk, 2024). Mouton et al. (2021) extrapolate that ‘the serial postdoc phenomenon’ is fueled by the belief that time spent on fellowships at different institutions has significantly honed their research skills and acclimatized them to working under pressure. These prospects are seen in HE as a quick fix for staffing and research output problems.

2.4. Theoretical Framework

Various contemporary scholars investigating different facets of postdocs’ professional development base their research on different theoretical frameworks. Jiao and Wu (2025) used role theory to analyze the roles of postdoctoral researchers in China’s

HEIs. Woldegiorgis (2025) employed multiple theoretical perspectives, including neoliberalism, intersectionality, and precaritization, to scrutinize the fairness of institutional policies governing the appointment of postdoctoral researchers in Germany. Wang et al. (2025) applied the glass ceiling theory to investigate the obstacles faced by female postdoctoral researchers in their advancement careers across several Chinese HEIs. Furthermore, Mahome and Mphahlele (2025) employed Greenberg's (1987) organizational justice theory as a framework to understand the nature of the precarity and organizational dynamics confronting postdoctoral researchers at a South African full-contact university.

In this study, however, the professional learning development (PLD) framework by Nowell et al. (2020) was adopted to conceptualize and capture the lived experiences of postdoctoral researchers at a South African open distance e-learning (ODEL) HEI. This framework postulates that postdoctoral training is effective when it is all-encompassing, that is, when it delivers four key domains: professional socialization, professional skills, academic development, and personal effectiveness. The following diagram provides graphic overview of the key domains of postdoctoral professional development.

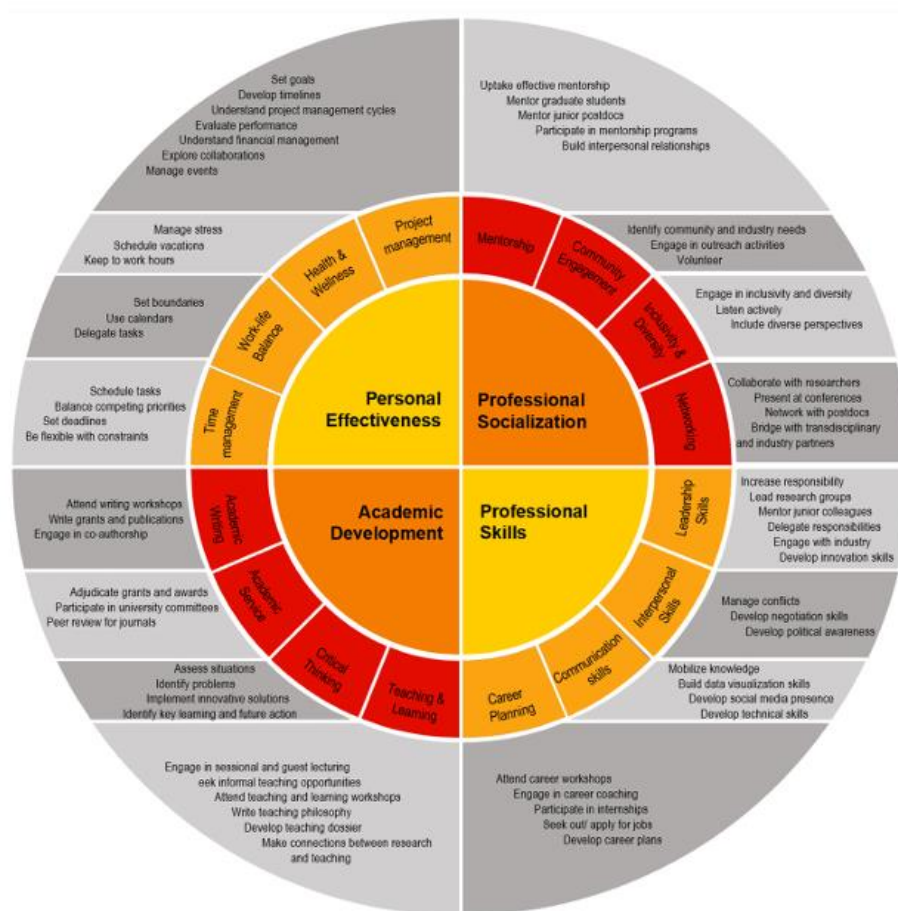


Fig. 1. Professional learning and development framework for postdoctoral scholars.

The framework postulates that when postdoctoral training delivers these domains with the same level of intensity, it is sure to transfer multidisciplinary skills and knowledge that will carry postdoctoral trainees beyond their training days, making them versatile and highly competent researchers and academics.

In the context of the paper, professional socialization is about learning new ethos and unlearning misguided or obsolete practices. Within the context of ODeL, professional socialization, as Weidman et al. (2001, p. 4) point out, ensures influences or molds individuals “to assimilate and reflect the value dimensions of a given profession.” This happens through mentorship, community engagement and networking (Nowell et al., 2020). It requires that postdocs should take part in research projects and attend knowledge sharing events such as seminars, symposia, etc.

Secondly, the framework advocates for professional learning that cultivates one's development of professional skills such as career planning skills, interpersonal skills. Acquisition of these skills requires that individual postdocs are oriented to understand best practices, lead projects and communicate strategies. This can be plausible through events planning, observation and career coaching.

The third component of the framework is academic development. Academic development is envisaged to yield multidimensional competencies. In ODeL settings, this connotes acquiring skills that support one's understanding of pedagogical tools, learning management systems and student support mechanisms in addition to research writing. Steen et al. (2021) ascertained that scheduling context-specific and intensive professional development programs for postdocs improves their self-perception of multiple skills. Hokanson et al. (2019) established that synchronous, online development workshops were important to self-reflective and skill-building practices for graduate students and postdocs. Also worth mentioning is that competence, particularly in the context of ODL, is also contingent on the provision of sufficient resources including technological tools and access to facilities.

Academic development is reliant on the creation of opportunities to allow postdocs to experiment with research co-supervision, teaching, research grant proposal development and being thrust in activities that propel the application of critical thinking. It may be presented as a structured formal learning and informal training aimed at aligning one's preparedness for the profession. In due course, they develop the intelligence to understand the boundaries of their autonomy as well as the boundaries of exercising their right and freedom to decide on investigation topics, research objectives, research methods and research execution with minimal interference (Niemczyk & Rónay, 2023).

Personal effectiveness is the final component of the framework and entails knowing how to use time wisely, maintain a reasonable work-life balance, and understand the methods of securing one's health and wellness (Nowell et al., 2020). In certain instances, harnessing personal effectiveness depends on the level of autonomy the mentor gives to the mentee to regulate their own learning.

The authors adopted this framework because they held a belief that integrating all four domains into postdoctoral training can yield significant outcomes. This integration ensures that trainees (postdocs) benefit from: 1) autonomy, which enables them to take an active role in shaping their career development; 2) competence, as they develop critical skills aligned with their future career goals; and 3) relatedness, which cultivates a sense of value, belonging, and enjoyment through collegial relationships during their experiential learning journey (Deci & Ryan, 2012).

3. Methodology

This study adopted a qualitative research approach situated within the interpretivist paradigm, which assumes that reality is socially constructed, and that meaning is generated through individuals' lived experiences and interactions (Teherani et al., 2015). An interpretivist stance was appropriate because the study sought to gain an in-depth understanding of how postdoctoral researchers perceive and experience institutional support in relation to their professional development needs. A qualitative descriptive design was employed to understand how early-career postdoctoral researchers make sense of the support structures available to them. The guiding research question was: How well does the support provided to early-career postdoctoral researchers align with their professional development needs? The study was conducted within the College of Education at a selected ODeL institution. The setting was purposefully selected for its structured postdoctoral program and its uniqueness as one of the few ODeL HEIs that host postdoctoral research fellows on a full-time basis. The studied HEI is recognized as one of the institutions at the forefront of improving postdoctoral service conditions, making it an ideal research setting. Most notably, in 2024, the institution hosted delegates from several South African universities at a National Postdoctoral Research Forum to establish nationwide communities of practice and facilitate knowledge exchange, to strengthen postdoctoral support systems within the national HE system (UNISA, 2024).

To draw the data, a sample of ten postdoctoral researchers was selected.

Table 1. Demographic background.

Participant Code	Gender	Country of Origin	Affiliation
PDRF1	Male	Nigeria	College of Education
PDRF2	Female	South Africa	College of Education
PDRF3	Male	Nigeria	College of Education
PDRF4	Male	Zimbabwe	College of Education
PDRF5	Female	South Africa	College of Education
PDRF6	Female	South Africa	College of Education
PDRF7	Male	Botswana	College of Education
PDRF8	Male	South Africa	College of Education

Participant Code	Gender	Country of Origin	Affiliation
PDRF9	Male	Zimbabwe	College of Education
PDRF10	Male	Nigeria	College of Education

As illustrated in Table 1, the participants originate from four African countries. The number was deemed sufficient to yield rich, in-depth insights within the study's defined scope. A purposive sampling strategy was employed to ensure that participants possessed direct experience relevant to the research question. Inclusion criteria required participants to:

- Be formally affiliated with the College of Education,
- Be registered as postdoctoral researchers within the institution, and
- Have participated in the program for a minimum of six months to ensure sufficient exposure to institutional support systems.

Data were collected through semi-structured individual interviews, which allowed for flexibility to probe participants' experiences while remaining aligned with the research objectives. Semi-structured interviews were conducted via Microsoft Teams and lasted approximately 45–60 minutes, and they were audio-recorded with participants' consent. The sample frame was considered sufficient once data saturation was achieved. Data saturation was reached when the researchers felt confident that no additional participants would provide new insights to the themes and categories of the study (Glaser & Strauss, 2017). The researchers believed that feedback from the ten participants was substantial enough to create a narrative that thoroughly addressed all aspects of the research question.

To cement the credibility of data reporting, data triangulation was used. Specifically, literature review was employed as a data triangulation exercise in terms of which commonalities and contradictions between the interview data and extant literature were cross checked. Thus, a critical reader/independent auditor reviewed the paper and offered comprehensive review of all sections of the paper including its findings. Through reviewing the paper, a critical reader/independent auditor assessed the accuracy and evaluated whether or not the findings, interpretations and conclusions are supported by the data (Creswell, 1998). In addition, the findings of the paper were presented in a conference and were critiqued by conference participants whose input moderated elements of bias and exaggerations (Ogunbodede et al., 2023). After subjecting their research to these processes, the researchers were satisfied that these measures would minimize data bias and ensure that the findings were dependable and transferable to similar research contexts. In terms of data reporting, thick descriptions were provided to depict the research setting, participants characteristics, data collection and analyses processes. From a methodological point of view, using multiple data sources and collection methods can enhance the richness and comprehensiveness of the data, providing a more robust basis for considering transferability (Creswell, 1998). Dependability was achieved through basing data reporting on the actual interview data, which were recorded and later transcribed and stored safely for future reference or verification purposes.

In this paragraph, the authors account for how reflexivity underlined their conduct and methods of handling the interview data. Since Author 1 had served as postdoc at the studied college, while Author 2 had been a postdoc mentor at the studied institution, it was prudent for reflexivity to be conducted. Qualitative researchers conduct reflexivity to infuse rigor, transparency, and ethical robustness in their research (Canosa et al., 2018). However, as a chief data collector, Author 1 exercised their own mechanisms to infuse reflexivity in their interactions with data. After every coding session, Author 1 made notes, for example, in one instance, they documented that:

“Participants 1 and 3 mentioned things that I experienced during my postdoc tenure. I remember saying *iya iya* and nodding in agreement with them. Therefore, in the next interview I need to be vigilant with how I react to what the participants allude to, even if they mention things I have gone through”.

Making notes helped the researcher reflect on their bias and the consequences their behavior might have on the outlook and credibility of the findings. By implication, Author 1 acknowledged that they carried their own pre-formed biases and conclusions, while an outsider may be more objective and freer from such personal bias, which carries fewer inaccuracies into their findings and accounts (Brannick & Coghlan, 2007). It was for that reason that Author 3 was brought in to infuse impartiality by using their outsider perspective as a currency to moderate power dynamics and data biases, owing to them not having prior affiliation with the postdoc program, either as a mentor or a mentee. Author 3 was mainly responsible for keeping tabs of data reporting processes. Where applicable, Author 3 challenged Author 1 and 2's interpretations and pointed out blind spots. In that process, “the insiders' strengths became the outsider's weaknesses and vice-versa” (Liu & Burnett, 2022).

All interviews were transcribed verbatim to ensure accuracy and preserve participants' voices, after which they were analyzed using Braun and Clarke's (2006) six steps of thematic analysis, namely: 1) familiarizing oneself with the interview data by reading the transcript repeatedly, 2) coding of data by identifying and highlighting features of the texts (data) bearing elements of interest to the researcher, 3) synthesizing various codes into potential themes., 4) reviewing themes by deciding whether or not the initially developed data patterns (or preliminary) themes captured the core essence of the study, 5) naming the themes taking into cognizance the objectives of the study, and 6) compiling a thematically organized findings report.

An inductive approach was primarily employed, allowing themes to emerge from the data rather than imposing predefined categories. Initially, the researchers held preconceptions about the study, shaped by their observations and a review of existing literature. However, after analyzing the interview data, their understanding became more context-specific and intersubjective, ultimately reinforcing the theory of the research. Lodico (2010, p. 10) points out that “inductive reasoning is often referred to as a “bottom-up” approach to knowing, in which the researcher uses observations to build an abstraction or to describe a picture of the phenomenon that is being studied.”

Given the importance of researchers conducting themselves ethically while engaged in social or human-focused research, several protocols and conduct guidelines were observed. First, ethical clearance was obtained from the relevant institutional ethics committee prior to data collection. Second, participants were informed of their right to withdraw at any stage without penalty. Third, principles of confidentiality and anonymity were ensured by using codes instead of participants’ real names (e.g., PDRF1, PDRF2, and PDRF3) and by removing identifying information from the transcripts. Lastly, the audio recordings and transcripts were securely stored on password-protected devices accessible only to the researchers. This was a step taken to protect the confidentiality of the conversation between the participants and the researchers.

4. Findings and Discussion

The study drew data from 10 postdocs within the College of Education in the South African ODeL institution. The data analysis process of the interview data yielded the following eight themes.

4.1. Theme 1: *Experiences of Research Capacity Development*

Research is tied to the financial viability of HEIs. Annually, DHET subsidizes HEIs relative to their research output ratio. In research intensive HEIs, a substantial portion of research subsidies is reinvested in upscaling early career researcher development and postdoctoral research training (Taghipour, 2025). From a development perspective, exposure to appropriate research and grant writing training constitutes the professional learning needs of postdocs. As such, the ODeL institution studied appears to be intensely focused on improving its research output ratio and quality. This was evidenced by the fact that most participants reported attending and participating in research-related skills development activities. PDRF1 inferred that (responses presented verbatim) “I have made significant progress in my writing skills, and I hope to publish more papers soon”. This sentiment was echoed by PDRF5, stating that “I have become a more confident researcher. I can now convert my thesis into articles, and I understand data analysis better than I used to when I was doing my thesis.” Through professional guidance, the participants report that they can now independently convert their doctoral theses into publishable articles and have acquired additional research skills including exposure to postgraduate supervision, which gives them a sense of accomplishment. Shukla et al. (2019) concurs that learning to publish in accredited journals is cherished by postdocs as it aids their development while increasing their confidence levels and commitment to the academic project. This finding supports the conclusions of Mahome and Mphahlele (2025) and Omari et al. (2019), who stated that no aspect of postdoctoral training is as important as research.

However, in the context of liberalism, there is a segment of scholarly research that is skeptical of the so-called ‘gesture of training postdocs out of pure goodness and no-strings attached.’ For example, Holley et al. (2018) contend that while hiring and training large numbers of postdocs may seem like a commendable gesture, it is HEIs that ultimately benefit the most from this arrangement, particularly as permanent faculty members are too overloaded with teaching and administrative duties, which impede their ability to effectively generate substantial revenue for their institutions through research publications. It is from that point of departure that Kerr (2020) argues that it is prudent not to rule out the possibility that the rising demand for postdocs may be influenced by revenue growth, given that each published article generates approximately R100,000 for the host institution. It can therefore be argued that the foregoing argument interrogates Pillar Two of the institution’s growth strategy, which speaks to propelling research and innovation through upscaling the development of potentially fine early career researchers.

Despite that, other participants were more appreciative of the opportunity to co-supervise Master’s and Doctoral students alongside their mentors. PDRF2 commented, “Supervision opportunities are rich and supportive. I also have the opportunity to learn from my mentor by co-supervising.” In the same breath, PDRF6 said, “I am co-supervising two students with my mentor, and I have learnt a lot in the process”. Grossman and Crowther (2015) have observed that pairing a novice research supervisor with a seasoned research supervisor helps the former grasp discipline-specific best practices, teaches them to work collaboratively and consolidate feedback, and also orients them to a common understanding of co-supervisory roles and responsibilities.

This mentoring model aligns with the midpoints of the professional learning development framework, which postulates that authentic postdoctoral learning is that which is mounted on the intensity of mentees’ engagement in relevant activities, experiments, contextualized guidance and mentorship.

4.2. Theme 2: Characterization of Access to Technological Tools

Infrastructure Global Limited (2024) reported that the use of educational technology resources and the availability of technology are the most impactful factors driving student success in South Africa. Such tools are a lifeline of teaching, learning, research production and augmentation of institutional knowledge repository (Mncube et al., 2024). When asked to share their thoughts about the provision of technological tools in their institution, the participants commented, “I was promised a new laptop for almost two years to no avail. When I enquire about it, they beat around the bush. I have even given up now” (PDRF 6). PDRF4 added, “granting postdocs access to certain technological tools and software applications would support their research journey, more especially, access to Turnitin is paramount”. Similarly, PDRF1 inferred, “I was promised a computer, but they have been promising since February, and it's affecting my research output. The process of getting a technological tool is a long process”. Confirming the point previously made by other participants, PDRF2 revealed that “Access has been more difficult than anticipated. More responsive IT support and better integration of institutional platforms would streamline workflow. Librarian support is very inconsistent.” Among the technological tools the participants yearned to have access to, the most sought-after are laptops, Turnitin software, and efficient library support.

These tools are essential for accessing online databases and search engines to extract information for research and safeguard the credibility of their research (Cuff, 2014). Moreover, postdocs rely on technological devices to sustain collaborations and communication with scholars from other institutions locally and abroad. Van Schalkwyk (2024) recommends that the aforementioned technological tools should be coupled with office space, equipment, regular meetings and feedback in order for the postdoctorate to meet the agreed-upon expectations. From a networking point of view, access to information and communication technologies is cost effective as it diminishes the cost of associated with physical meetings and travelling. The professional learning development framework posits that access to material and tools promotes personal effectiveness by not disturbing the flow of postdocs’ multidisciplinary work based learning and self-regulation (Nowell et al., 2020). To that end, Burgio et al. (2020) illuminate that being a postdoc in an ODeL institution often entails working primarily remotely; therefore, lacking appropriate technological tools diminishes social interaction, collaborative learning, and self-regulation.

4.3. Theme 3: Teaching and Curriculum Design

Teaching constitutes a critical component of higher education and is fundamental to any academic career and highly valued in academia, particularly because it enhances the researcher’s communication and sensemaking skills (The National Academies, 2014). For that reason, most HEIs find postdocs with teaching experience very appealing (CHE, 2022). The researchers probed the participants on their involvement in ODeL-mediated teaching and curriculum design matters, to which they responded: “Postdocs should be exposed to these skills since they are being prepared as academics (PDRF4).” However, as stated by PDRF3, “this is totally absent, as it is stated in the contract that post-doctoral fellows do not have permission to teach and work with faculty on curriculum design”. In addition, PDRF6 said, “Apparently, we are not here to teach but to conduct research. Yet teaching takes place when we supervise students. This does not make sense and does not do service to our skills profile”. PDRF9 “Teaching is equally important as research. I am unhappy that no teaching is allowed in this program”. These inferences reveal that postdocs at the studies ODeL institution are not permitted to carry out teaching and curriculum development duties. They are excluded from teaching and curriculum design activities even though their involvement could lessen full-time academics’ workload and allow them time to publish research (Kariuki, 2019). This position is outlined in Section 4.2.6 of the institution's policy on Research Professors, Endowed Research Chairs, and Postdoctoral Fellows (Unisa, 2020). It clearly states that postdoctoral researchers are not permitted to engage in teaching or related administrative duties unless they have received special permission from the Vice Principal for Research, Postgraduate Studies, and Innovation (ibid). Meanwhile, Kerr (2020) argues that when postdocs are deprived of teaching responsibilities, they feel they are missing out on skills that dovetail with their career ambitions.

Because they are being primed to overvalue research, often at the expense of everything else, when they secure a permanent position that includes teaching responsibilities, they are often unprepared to design and deliver a curriculum (Kreeger, 2002). As a result, they may lack critical skills including grounding their teaching in digital literacies and systems, developing Massive Open Online Courses (MOOCs), creating Open Educational Resources (OER), designing online assessments, and integrating Open and Distance Learning (ODL) theory in teaching practice and assessment processes. Having a limited or non-existent teaching opportunities implies that power dynamics and institutional ethos preclude postdocs from acquiring the skill they deem critical to their development (Borlee, 2011), which as enunciated in the professional learning framework, erodes their autonomy to regulate their experiential learning, and harness their professional readiness and knowledge application. This finding makes it conceivable to conclude that the status quo engenders apprehension among postdocs, as they might as well hold a view that lack of teaching experience jeopardizes their chances of securing permanent employment in academia.

4.4. Theme 4: Collegiality beyond the Mentor-Mentee Relationship

Just like any other faculty member, postdocs long for a sense of belonging and enjoy being around faculty members who are receptive to their presence and willing to work with them. In sharing their lived experiences, PDRF1 said, “Yes, there is a good relationship in my unit and the College in general”. Other participants said, “Personally, I have had the privilege of being welcomed into the institute by colleagues and made to feel at home and supported” (PDRF2). The collegiality among staff in the department has been cordial as we work together (PDRF3). “This is in top gear in the department. Most times, you may not be able to differentiate between a staff and a postdoc because of the cooperation that exists” (PDRF4). I consider myself fortunate to have people around me who mind their own business but still care to make me feel at home (PDRF10). A collegial setting allows individuals to contribute meaningfully while feeling valued and heard. This type of environment not only enhances productivity and creativity but also promotes satisfaction by creating a positive and supportive atmosphere where postdocs feel welcome. Similarly, Craig et al. (2025) found that collegiality among researchers of different seniority creates a professional and academic space that enhances research creativity and meaningful research collaborations, which, in turn, yield high-impact research outputs. The views ventilated by the participants provide evidence that they enjoy collegial relationships with staff members within their respective academic departments and the college hosting them. From these inferences, it can be deduced that being in the company of friendly and supportive personnel ameliorates the effectiveness and willingness of postdocs to remain at the institution beyond the prescribed contract period (Hokanson & Goldberg, 2018b). The manner in which the sampled postdocs are treated echoes the imperatives of the professional learning framework, which theorizes prudence of creating professional environments that accelerate postdocs’ relatability to the institutional/departmental culture and rules of engagement.

4.5. Theme 5: Recognition and Rewards

Organizational development research has long held a view that employees or trainees who are recognized and rewarded are more likely to apply their newly acquired skills on the jobs, making a direct link between training and performance (Mendez et al., 2019). This can help increase employees/trainees’ confidence in their abilities to perform at the highest peak. The researchers probed the participants on this subject matter, to which one of them responded: “There is a need to recognize and reward excellence to motivate any postdoc that performs exceptionally” (PDRF4). PDRF3 said, “This does not exist as I am not seen as an employee. No award is granted or received. Recognition is low; this does not give room for any recognition or award”. PDRF7 concluded by stating that “It can be very discouraging when your hard work goes unnoticed. We know we are not entitled to extra money for publishing articles, but it would be nice to receive a congratulatory message from staff occasionally or a prize at the end of the year for improving research publication in the department”. It became apparent that the participants valued and yearned for rewards and recognition, which in their college are only earmarked for permanent members of staff and temporary staff on contracts with full benefits. The participants reported that rewarding performance would serve to motivate them to perform optimally. This finding is supported by Melwar (2023), who concluded that the lack of reward and recognition structures drives postdocs into despondency, complacency, and marginalization. Correspondingly, Dorenkamp and Weiß (2018) found that rewarding postdocs remedies the pressure associated with intense work schedule and job dissatisfaction, which often culminate in them leaving academia before the end of their contract term. Thus, in their framework, Nowell et al. (2020) caution that not having systems that encourage and recognize excellence can potentially diminish postdocs’ relatability with the systems and processes governing their professional learning. The overarching sentiment derived from this finding is that in the minds of postdocs, the rewarding of excellence shows HEIs’ acknowledgement that the institution is committed to their growth and appreciates those who go the extra mile.

4.6. Theme 6: Participation in Conferences

An academic conference is a formal gathering where researchers, scholars, and professionals from a specific field come together to present and discuss their work. Organized by universities, research institutions, or professional associations, these conferences typically include presentations, panel discussions, keynote speeches, and networking opportunities. The primary purpose of such events is to facilitate intellectual exchange, foster collaboration, and drive advancements in various disciplines. Hauss (2021) states that conferences bring together a complex network of academic and nonacademic professionals to discuss and disseminate new knowledge and can be a viable source of collaboration and professional relationships among researchers.

Within this premise, the researchers invited the participants to air their views on their participation in conferences and system in place to support their attendance of such events. There were mixed emotions concerning this point; some participants were happy with the status quo. For example, two participants respectively stated, “The College of Education, at one time or another, organizes and gives opportunities to postdoctoral fellows to attend conferences both within and outside the country” (PDRF1). Similarly, the other participant stated, “I have good opportunities to present my work internationally, and I am learning from my mentor and

colleagues about their experiences with international conferences” (PDRF2). By contrast, PDRF3 explained, “these had been poor as the process does not favour me throughout my period as a post-doctoral fellow. I do not participate in any international conference under the sponsorship of the university, as the only international conference I attended is self-sponsored”. Meanwhile, PDRF4 added, “I only presented at one conference virtually, held in the US, because I was informed that as a postdoc, I do not have access to attend an international conference”.

It is evident that, while participants can attend national conferences, bureaucratic obstacles prevent them from obtaining funding for international conferences. Considering that some participants are eligible to attend international conferences while others are not, there appear to be double standards and inconsistencies regarding attendance at these events. The inconsistency or double standards in the distribution of opportunities for postdocs is clearly discussed in Kerr’s (2022a) study, which highlighted the lack of uniform mechanisms to professionalize postdoctoral research fellowships and integrate social justice into their running. From a theoretical perspective, Nowell et al.’s (2020) framework asserts that institutional dynamics that perpetuate unequal power dynamics and inconsistent application of policies (as is the case with some being permitted to attend international conferences while others are not) may negatively impact postdocs’ confidence in institutional processes and personal effectiveness.

Based on the authors’ observations, much of what contributes to the status quo is that the studied ODeL institution prioritizes permanently employed academics, and to a lesser extent those on fixed term academic contract, for international conferences. This is despite the institution’s Policy on Travel Accommodation and Related Expenses (Unisa, 2018) not stipulating any information regarding exclusion of postdocs and temporary staff for conference attendance. Therefore, based on the views of the participants, there is a sense that some mentors use their influence to manipulate policy loopholes to privilege their mentees. This leads to a situation where other postdocs are sidelined.

4.7. Theme 7: Developmental Support and Career Planning

Employability of postdocs is hinged on their exposure to a variety of knowledge and skills imparted during postdoctoral training (Guccione, 2019). However, given the extensive learning they need to undertake in a limited time frame, it is vital that postdocs discuss a plan with their mentors and host institutions to map out a developmental strategy that aligns with their learning needs. This sentiment is mirrored in the study participants’ comments. This is the sentiment of the Centre for Research on Evaluation, Science and Technology (Van Schalkwyk, 2024), which mandates that every postdoc should produce an Individual Developmental Plan (IDP) detailing their training needs to their mentor, who in turn, must ensure that their mentee’s developmental needs are catered for as per their IDP. PDRF10 expressed that, “I have already completed a three-year postdoc program in a South African university. By now, I am a confident article writer and conference presenter. All I need is what I did not have in my previous postdoc position is the opportunity to co-supervise three master’s students and maybe one doctoral student. But instead, I am given only one master’s student.” Accordingly, PDRF7 remarked, “Customized training is important. The mistake they are making here is not allowing us to submit our career plans. For instance, I was going to include grant writing and public speaking training among the skills I need the most. For now, it’s research and nothing else”. Fetzer (2008) ascertained that scarcity of customized or tailor-made context-specific postdoctoral training is a commonly mentoring challenge that curtails postdoc advancement.

Ideally, postdoc training must encompass supporting and mentoring junior academics, novice researchers, and undergraduate students; writing grants; publishing; reviewing others’ scholarly work; participating in communities of practice; teaching; and presenting papers at local and international conferences (Mothapo, 2021). Yet the above inferences allude to insufficient exposure to a mix of tailored experiential learning aligned with each participant’s preferred developmental needs. The participants were not given the platform to outline and map exactly which skills they deem crucial to their employability and transition into academia.

In terms of accountability, postdocs at the studied institution report directly to their mentors. However, administratively, they are overseen by departmental chairs. These chairs are responsible for escalating reports and other relevant information to the head of research at the college level, before being cascaded to the research office for strategic reporting purposes.

Prozesky et al. (2024) reveal that excessive bureaucracy is a significant obstacle to the performance, wellbeing, and development of postdoctoral researchers in various aspects of their training. This excessive reporting structure implies that mentors are like small fish in a big pond. In many cases, postdoctoral mentors cannot fully meet the needs of their postdocs due to structural barriers, primarily: hierarchical reporting, rigid policies, academic politics, and scientific hierarchy (Lambert et al., 2025). As a result, even if they want to allow their mentees to participate in teaching and curriculum design, such actions come with risks. From that perspective, it can be concluded that the development of postdocs in the studied institutions is hindered by micromanagement, which makes it challenging for them to receive tailored training according to their individual development plans. Micromanaged postdocs face limitations in developing the skills sets required for their next career step (Laudel & Glaser, 2008). The micromanagement of postdocs in the studied institutions is further heightened by them being mostly viewed as ‘senior students’ rather than as early career academics. This is repeatedly mentioned in the institution’s website.

The tendency to underate the astuteness of postdocs transcends beyond the confines of the studied ODeL institution. Even though they are addressed by their doctoral title, in terms of worth they are perceived more as “learners, trainees, interns, and apprentices by organizations that have minimal plans to hire them, even though they benefit greatly from their highly skilled labor” (Kerr, 2020, para. 18). It is against this backdrop that Cai et al. (2022) caution that when postdocs lack social capital, particularly regarding the structure and direction of their academic and practical learning, they are likely to experience significant stress and fall into professional obscurity. Chen and Lalovic (2019); Woolston (2020) observed that failing to discuss a clear personal development pathway with individual postdocs creates a discord between their career expectations and professional readiness. The problem encountered by the study participants is not endemic to South Africa. In the US, a report by the National Center for Science and Engineering Statistics (2017) found that only 54% of postdocs had a formalized career development plan guiding their experiential learning and performance plans. In their study, Nowell et al. (2020) proposed a framework, which inter alia, cautions that inability to allow postdocs to negotiate their settlement in the program and silencing their voices, effectively takes away their autonomy to moderate their professional development. In the context of this finding, the framework postulates that quality of postdocs’ academic learning has fallen prey to a lack of appreciation for postdoc’s right to voice out how their training should be tailored.

4.8. Theme 8: Prolonged Ethical Review and Approval Processes

HEIs have ethical review boards, either at the college or faculty level, depending on the size and scope of their research activities. These boards evaluate research proposals to identify potential threats to human participants' lives and emotions, as well as compliance with institutional regulations. The participants explained that the ethics review and approval processes were “taking too long to provide feedback, and when one has made corrections as recommended by the committee, it takes more time before it approves it” (PDRF 8). This sentiment was corroborated by another participant who inferred that, “I applied for ethical clearance because I have exhausted my PhD topic; therefore, I need to have a project and collect data for it. But now it's been almost three months since I have been waiting for it. This affects my pace a lot and might result in me not securing a contract renewal for next year” (PDRF3). Ethical review boards and procedures under which they function continue to draw negative public perception owing to their cumbersome feedback mechanisms and sometime inconsiderate practices (Head, 2020). The participants reported experiencing long delays before receiving ethical approval to begin data collection for their projects. Similarly, Page and Nyeboer (2017) established that dissatisfaction stemming from the review process, particularly the timelines between submission of the proposal draft, communication of the decision (to either accept as is or revise some sections of the draft), and issuance of the certificate, is widespread in academia and frustrates both early career and established researchers across different research disciplines.

5. Conclusion and Recommendations

The study explored the professional development support and learning paths of postdocs at a South African ODeL institution. The results, presented thematically, show how well the postdoctoral fellowship addresses the developmental needs of postdocs, while also pointing out its gaps in fully meeting their professional learning needs. Specifically, the study's findings were twofold. Essentially, the First finding indicated that postdocs’ experiential learning provided core training in postgraduate research supervision and that they were maximally supported in publishing their research in both national and international accredited journals. They reported that these experiences improved their research writing skills, increased their self-confidence, and affirmed their relevance and participation in national and international knowledge production arenas. The study also found that participants valued the collegial relationships they built within their departments and across the college, which fostered a sense of belonging and teamwork beyond the mentor-mentee relationship.

The study's second key finding identified barriers to implementing postdoctoral experiential learning. These included the lack of access to essential technological hardware and software tools, insufficient recognition and rewards for excellence, restrictions on undertaking limited teaching and curriculum design responsibilities, inconsistencies in attendance at international conferences, where some participants were allowed to attend while others were not, no accommodation for personalized learning informed by individual mentees’ developmental goals and career aspirations, and lengthy ethics review and approval processes.

5.1. Recommendation for Prospective Researchers

Since the study qualitatively captured the voices of 10 participants from one college in an institution that, as of 2025, had 3800 postdocs spread across nine academic faculties, it implies that it would be difficult to generalize the findings institution-wide. As a suggestion for prospective researchers, particularly in view that the study was completed in mid-2025 before the studied institution launched its bespoke postdoctoral support framework in September 2025, they should consider conducting further investigations

using mixed methods research to qualitatively and quantitatively cover larger sample pools and to determine how the newly adopted framework could improve the professional learning trajectories of postdocs over time.

5.2. Recommendation for the Studied Institution

To ensure that postdoctoral appointees learn as much as possible, it is recommended that the studied ODeL institution provides appropriate technological, hardware, and software tools, recognizes and rewards excellence, allocates capped hours for teaching and curriculum design activities to interested postdoctoral trainees, ensures equitable access to conference attendance, accommodates requests for personalized training aligned with individual participants' career goals, and fast-tracks the ethical review and approval processes. In doing so, the fellowship is assured to provide experiential learning that enhances postdocs' development beyond just conducting research. The study further recommends that the newly adopted postdoctoral framework incorporate all aspects discussed.

Author Contributions: Conceptualization, B. Nkambule; methodology, B. Nkambule and S.A. Ngubane; formal analysis, B. Nkambule; investigation, B. Nkambule; data curation, B. Nkambule; writing-original draft preparation, B. Nkambule; writing-review and editing, S.A. Ngubane and M. Mdakane supervision, S.A. Ngubane and M. Mdakane. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted according to the ethical guidelines of the University of South Africa. Ethical clearance and institutional permission were obtained before data collection.

Informed Consent Statement: Informed consent was obtained from all participants involved in the study.

Data Availability Statement: The data of this study are available from the corresponding author upon reasonable request.

Acknowledgments: The authors thank the postdoctoral research fellows who participated in this study.

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Association of American Medical Colleges. (2017). *Compact between postdoctoral appointees and their mentors: A framework for aligning the postdoctoral appointee-mentor relationship*. Association of American Medical Colleges. <https://www.aamc.org/what-we-do/mision-areas/research/postdocs/compact>
2. Atieno, A. V., Onyancha, O. B., & Kwanya, T. (2021). Trends, patterns and determinants of research productivity at the Technical University of Kenya. *Information Development*, 38(1), 97–113. <https://doi.org/10.1177/0266666920983400>
3. Baker, D. P., & Powell, J. J. W. (2024). *Global mega-science*. Stanford University Press. <https://doi.org/10.1515/9781503639102>
4. Borlee, G. (2011). Where do all the postdocs go? *DNA and Cell Biology*, 30(8), 537–538. <https://doi.org/10.1089/dna.2011.2506>
5. Brannick, T., & Coghlan, D. (2007). In defense of being “native”: The case for insider academic research. *Organizational Research Methods*, 10(1), 59–74. <https://doi.org/10.1177/1094428106289253>
6. Burgio, K. R., MacKenzie, C. M., Borrelle, S. B., Ernest, S. K. M., Gill, J. L., Ingeman, K. E., Teffer, A., & White, E. P. (2020). Ten simple rules for a successful remote postdoc. *PLOS Computational Biology*, 16(5), e1007809. <https://doi.org/10.1371/journal.pcbi.1007809>
7. Cai, J., Yang, Y., & Zhang, C. (2022). A study on the relationship between organizational support and academic burnout among global postdoctoral fellows in the context of the epidemic: Evidence from 2021 Nature's Survey. *Renmin University China Education Journal*, 5, 43–60.
8. Canosa, A., Graham, A., & Wilson, E. (2018). Reflexivity and ethical mindfulness in participatory research with children: What does it really look like? *Childhood*, 25(3), 400–415. <https://doi.org/10.1177/0907568218769342>
9. Cantwell, B. (2021). Concepts for understanding the geopolitics of graduate student and postdoc mobility. In *U.S. Power in International Higher Education* (pp. 94–110). Rutgers University Press. <https://doi.org/10.36019/9781978820814-006>
10. Chen, C. P., & Lalovic, A. (2019). Career development for doctoral and postdoctoral trainees in Canada. *Australian Journal of Career Development*, 28(3), 167–173. <https://doi.org/10.1177/1038416219828087>
11. Clegg, S. (2012). Conceptualising higher education research and/or academic development as ‘fields’: A critical analysis. *Higher Education Research & Development*, 31(5), 667–678. <https://doi.org/10.1080/07294360.2012.690369>
12. Coda Zabetta, M., & Geuna, A. (2026). Postdoctoral mobility and returnees' careers in Italian academia. *Research Policy*, 55(4), 105456. <https://doi.org/10.1016/j.respol.2026.105456>

13. Council on Higher Education. (2022). *The 'Academic Precariat': Postdoctoral fellows in South African higher education*. Council on Higher Education.
14. Cowling, N. (2022). *Gross domestic expenditure on R&D as a share of GDP in South Africa, 2020-2022*. Statistics South Africa.
15. Craig, A. M., Harris, J. M., & Woodfield, R. (2025). Collegiality in the complex ecosystem of research in academia: An analysis of a research-intensive university in the UK. *Studies in Higher Education*, 50(12), 2996–3015. <https://doi.org/10.1080/03075079.2024.2448756>
16. Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five traditions*. SAGE.
17. Cuff, E. (2014). The effect and importance of technology in the research process. *Journal of Educational Technology Systems*, 43(1), 75–97. <https://doi.org/10.2190/et.43.1.f>
18. Deci, E. L., & Ryan, R. M. (2012). Self-determination theory. In *Handbook of theories of social psychology* (Vol. 1, pp. 416-436). SAGE.
19. Dlamini, N., Methi, L., Mkhize, T. R., & Chauke, T. A. (2024). Enhancing professional growth: Effective mentorship strategies in an open distance e-learning institution. *International Journal of Learning, Teaching and Educational Research*, 23(11), 53–69. <https://doi.org/10.26803/ijlter.23.11.3>
20. Dorenkamp, I., & Weiß, E. E. (2018). What makes them leave? A path model of postdocs' intentions to leave academia. *Higher Education*, 75(5), 747–767. <https://doi.org/10.1007/s10734-017-0164-7>
21. Fahnert, B. (2015). On your marks, get set, go!—lessons from the UK in enhancing employability of graduates and postgraduates. *FEMS Microbiology Letters*, 362(19), fnv150. <https://doi.org/10.1093/femsle/fnv150>
22. Fetzer, J. (2008). Roles and responsibilities of graduate students and post-docs. *Analytical and Bioanalytical Chemistry*, 392(7-8), 1251–1252. <https://doi.org/10.1007/s00216-008-2393-1>
23. Gater, C. L. (2019). *Postdoc satisfaction perceptions regarding mentoring, professional development, and the work environment* (Doctoral dissertation, Wilmington University).
24. Glaser, B., & Strauss, A. (2017). *Discovery of grounded theory: Strategies for qualitative research*. Routledge.
25. Greenberg, J. (1987). A taxonomy of organizational justice theories. *The Academy of Management Review*, 12(1), 2–22. <https://doi.org/10.2307/257990>
26. Grossman, E. S., & Crowther, N. J. (2015). Co-supervision in postgraduate training: Ensuring the right hand knows what the left hand is doing. *South African Journal of Science*, 111(11/12), 1–8. <https://doi.org/10.17159/sajs.2015/20140305>
27. Guccione, K. (2019, April 30). Postdocs can't supervise! Supervising PhDs. <https://supervisingphds.wordpress.com/2019/04/30/postdocs-cant-supervise/>
28. Hauss, K. (2021). What are the social and scientific benefits of participating at academic conferences? Insights from a survey among doctoral students and postdocs in Germany. *Research Evaluation*, 30(1), 1–12. <https://doi.org/10.1093/reseval/rvaa018>
29. Head, G. (2020). Ethics in educational research: Review boards, ethical issues and researcher development. *European Educational Research Journal*, 19(1), 72–83. <https://doi.org/10.1177/1474904118796315>
30. Herschberg, C. (2019). *Through the gate of the neoliberal academy: The (re)production of inequalities in the recruitment and selection of early-career researchers*. GVO Drukkers & Vormgevers.
31. Hlatshwayo, M. N. (2024a). You're brought in as a workhorse, and there's no real security here! Postdocs, precarity and the neoliberal university in South Africa. *Psychology in Society*, 66(2), 26-44. <https://scielo.org.za/pdf/pins/v66n2/02.pdf>
32. Hlatshwayo, M. N. (2024b). Women postdocs in a neoliberal higher education in South Africa. *Southern African Review of Education with Education with Production*, 29(2), 35-49. https://hdl.handle.net/10520/ejc-sare_v29_n2_a4
33. Hlatshwayo, M. N. (2025, April 10). Postdocs are the 'ice boys' and 'ice girls' of the HE sector. University World News (Africa Edition). <https://www.universityworldnews.com/post.php?story=20250409182324538>
34. Hokanson, S. C., & Goldberg, B. B. (Eds.). (2018a). *The postdoc landscape*. Academic Press.
35. Hokanson, S. C., & Goldberg, B. B. (2018b). *Proactive postdoc mentoring*. Academic Press.
36. Hokanson, S. C., Grannan, S., Greenler, R., Gillian-Daniel, D. L., Campa, H., III, & Goldberg, B. B. (2019). A study of synchronous, online professional development workshops for graduate students and postdocs reveals the value of reflection and community building. *Innovative Higher Education*, 44(5), 385–398. <https://doi.org/10.1007/s10755-019-9470-6>
37. Holley, K., Kuzhabekova, A., Osbaldiston, N., Cannizzo, F., Mauri, C., Simmonds, S., Teelken, C., & van der Weijden, I. (2018). Global perspectives on the postdoctoral scholar experience. In *The Postdoc Landscape* (pp. 203–226). Elsevier. <https://doi.org/10.1016/b978-0-12-813169-5.00009-4>
38. Infrastructure Global Limited. (2024). The importance of access to technology in determining student success. <https://www.instructure.com/en-gb/resources/blog/importance-access-technology-determining-student-success>
39. Jadavji, N., Adi, M., Corkery, T., Inoue, J., & Van Benthem, K. (2016). *The 2016 Canadian national postdoctoral survey report*. Canadian Association of Postdoctoral Scholars. https://www.caps-acsp.ca/wp-content/uploads/2016/11/2016_CAPS-ACSP-National_Postdoc_Survey_Report.pdf

40. Jiao, L., & Wu, R. (2025). Workhorse or precarity? Understanding the contested roles of postdocs in Chinese higher education. *Education as Change*, 29, 1–25. <https://doi.org/10.25159/1947-9417/19407>
41. Karimi, F. K. (2015). Academic programmes in universities in east Africa: A catalyst to development. *International Journal of Higher Education*, 4(3), 140–155. <https://doi.org/10.5430/ijhe.v4n3p140>
42. Kerr, P. (2020, May 31). Perverse incentives for universities are wasting the skills and work of postdoctoral fellows. <https://mg.co.za/education/2020-05-31-perverse-incentives-for-universities-are-wasting-the-skills-and-work-of-postdoctoral-fellows/>
43. Kerr, P. (2022a). Academic pipeline or academic treadmill? Postdoctoral fellowships and the circular logic of development. *South African Journal of Higher Education*, 36(3), 72–90. <https://doi.org/10.20853/36-3-5080>
44. Kerr, P. (2022b). Career development or career delay? Postdoctoral fellowships and the de-professionalizing of academic work in South African universities. *British Journal of Sociology of Education*, 43(4), 550–565. <https://doi.org/10.1080/01425692.2022.2045902>
45. Kreeger, K. (2002). At last, a chance for postdocs to learn how to teach. *Nature*, 415(6875), 5–5. <https://doi.org/10.1038/nj6875-05a>
46. Kumwenda, S., Niang, E. H. A., Orondo, P. W., William, P., Oyinola, L., Bongo, G. N., & Chiwona, B. (2017). Challenges facing young African scientists in their research careers: A qualitative exploratory study. *Malawi Medical Journal*, 29(1), 1–4. <https://doi.org/10.4314/mmj.v29i1.1>
47. Lambert, W. M., Nana, N., Afonja, S., Saeed, A., Amado, A. C., & Golightly, L. M. (2025). Addressing structural mentoring barriers in postdoctoral training: A qualitative study. *Studies in Graduate and Postdoctoral Education*, 16(1), 1–24. <https://doi.org/10.1108/sgpe-04-2023-0033>
48. Laudel, G., & Gläser, J. (2008). From apprentice to colleague: The metamorphosis of early career researchers. *Higher Education*, 55(3), 387–406. <https://doi.org/10.1007/s10734-007-9063-7>
49. Li, J., & Xue, E. (2022). “Sustainable or unsustainable” in higher education internationalization development: Exploring the post-doctoral system in the humanities and social sciences. *Sustainability*, 14(17), 11024. <https://doi.org/10.3390/su141711024>
50. Liu, X., & Burnett, D. (2022). Insider-outsider: Methodological reflections on collaborative intercultural research. *Humanities and Social Sciences Communications*, 9(1), 314. <https://doi.org/10.1057/s41599-022-01336-9>
51. Lodico, M. G., Spaulding, D. T., & Voegtler, K. H. (2010). *Methods in educational research: From theory to practice* (2nd ed.). Jossey-Bass.
52. López, C. A. (2020). Are letters of recommendation the ace under the sleeve of bully mentors? *Surviving bullying in higher education*. <https://www.mariecurialumni.eu/newsletter/top-tips-researchers-newsletter-november-2020>
53. Mahome, M. M., & Mphahlele, L. K. (2025). Advancing the career prospects of postdoctoral research fellows: An organisational justice perspective. *International Journal of Educational Development in Africa*, 10(Supplementary Issue), 1–26. <https://doi.org/10.25159/2312-3540/17536>
54. Maiyo, J. (2015). Education and poverty correlates: A case of Trans-Nzoia County, Kenya. *International Journal of Educational Administration and Policy Studies*, 7(7), 142–148.
55. Means, A. J. (2022). Precarity and the precaritization of teaching. In *Encyclopedia of teacher education* (pp. 1360–1364). Springer.
56. Melwar, P. (2023). Uncredited work and lack of recognition: A conundrum for Postdocs. <https://www.techexplorist.com/uncredited-work-lack-recognition-conundrum-postdocs/76983/>
57. Mendez, S. L., Tygret, J. A., Conley, V. M., Keith, R., Haynes, C., & Gerhardt, R. (2019). Emeriti faculty as mentors: The benefits and rewards of mentoring the next generation. *Mentoring & Tutoring: Partnership in Learning*, 27(4), 439–457. <https://doi.org/10.1080/13611267.2019.1649921>
58. Mgaiwa, S., & Kapinga, O. (2021). Mentorship of early career academics in Tanzania: Issues and implications for the next generation of academics. *Higher Education Pedagogies*, 6(1), 114–134. <https://doi.org/10.1080/23752696.2021.1904433>
59. Mitchell, J., Walker, V., Annan, R., Corkery, T., Goel, N., Harvey, L., Kent, D. G., Peters, J., & Vilches, S. (2013). *The 2013 Canadian Postdoc Survey: Painting a picture of Canadian postdoctoral scholars*. Canadian Association of Postdoctoral Scholars & Mitacs.
60. Mncube, S., Nkambule, B., & Ngubane-Mokiwa, S. (2024). ICT tools for open educational resources used in an open distance E-learning institution in the fourth industrial revolution era. *Mousaion: South African Journal of Information Studies*, 42(1), 1–19. <https://doi.org/10.25159/2663-659x/15200>
61. Mothapo, P. N. (2021, October 7). Improving the plight of the postdoc during COVID and beyond. *University World News*. <https://www.universityworldnews.com/post.php?story=20211004153510765>
62. Mouton, J., van Lill, M., Prozesky, H., Bailey, T., Duncan, M., Boshoff, N., Strydom, S., & Treptow, R. (2021). *A national tracer study of doctoral graduates in South Africa*. DSI-NRF Centre of Excellence in Scientometrics and Science, Technology and Innovation Policy.
63. Mthombeni, Z. M. (2023). The ‘Academic Precariat’: Towards professionalizing postdoctoral fellowships in South African higher education institutions. Paper presented at the African Research Universities Alliance Biennial International Conference, University of Lagos, Nigeria. <https://hdl.handle.net/20.500.11910/22720>

64. National Academy of Sciences, National Academy of Engineering, and Institute of Medicine. (2000). *Enhancing the postdoctoral experience for scientists and engineers*. National Academies Press. <https://doi.org/10.17226/9831>
65. National Academy of Sciences, National Academy of Engineering, and Institute of Medicine. (2014). *The postdoctoral experience revisited*. National Academies Press. <https://doi.org/10.17226/18982>
66. National Center for Science and Engineering Statistics. (2017). *Early career doctorates survey*. National Science Foundation.
67. National Research Foundation. (2024). *Postdoctoral guidelines*. <https://www.nrf.ac.za/wp-content/uploads/2024/03/NRF-Postdoctoral-Fellowships-2025-Application-and-Funding-Guide.pdf>
68. Niemczyk, E. K., & Rónay, Z. (2023). Roles, requirements and autonomy of academic researchers. *Higher Education Quarterly*, 77(2), 327–341. <https://doi.org/10.1111/hequ.12403>
69. Nowell, L., Ovie, G., Kenny, N., Hayden, K. A., & Jacobsen, M. (2020). Professional learning and development initiatives for postdoctoral scholars. *Studies in Graduate and Postdoctoral Education*, 11(1), 35–55. <https://doi.org/10.1108/sgpe-03-2019-0032>
70. Ocholla, D., Ocholla, L., & Onyancha, O. B. (2013). Insight into research publication output of academic librarians in Southern African public universities from 2002 to 2011. *African Journal of Library, Archives and Information Science*, 23(1), 5–22.
71. Ogunbodede, K. F., Okechukwu, B., & Uchendu, H. I. C. (2023). *Research methods for university scholars*. Katapuno Prints.
72. Page, S. A., & Nyeboer, J. (2017). Improving the process of research ethics review. *Research Integrity and Peer Review*, 2(1), 1–7. <https://doi.org/10.1186/s41073-017-0038-7>
73. Prescott, H. (2023). Beyond the data: Navigating the struggles of post-PhD employability. In *The SAGE Handbook of Graduate Employability* (pp. 45–60). SAGE Publications Ltd. <https://doi.org/10.4135/9781529791082.n5>
74. Prozesky, H., & Van Schalkwyk, F. (2024). The profile of postdoctoral research fellows in South Africa: Trends over the past two decades. *South African Journal of Science*, 120(1/2). <https://doi.org/10.17159/sajs.2024/15898>
75. Rosowsky, D. (2022). The role of research at universities: Why it matters. *Forbes*. <https://www.forbes.com/sites/davidrosowsky/2022/03/02/the-role-of-research-at-universities-why-it-matters/>
76. Salihu Shinkafi, T. (2020). Challenges experienced by early career researchers in Africa. *Future Science OA*, 6(5), FSO469. <https://doi.org/10.2144/fsoa-2020-0012>
77. Shukla, D., Tripathi, M., & Devi, B. I. (2019). Conversion of thesis to peer-reviewed publication. *Indian Journal of Neurosurgery*, 8(2), 93–99.
78. Steen, K., Vornhagen, J., Weinberg, Z. Y., Boulanger-Bertolus, J., Rao, A., Gardner, M. E., & Subramanian, S. (2021). A structured professional development curriculum for postdoctoral fellows leads to recognized knowledge growth. *PLOS ONE*, 16(11), e0260212. <https://doi.org/10.1371/journal.pone.0260212>
79. Taghipour, A. (2025). *The value of research: Benefits for universities, scholars, students and society*. PSB University of Cambodia.
80. Teherani, A., Martimianakis, T., Stenfors-Hayes, T., Wadhwa, A., & Varpio, L. (2015). Choosing a qualitative research approach. *Journal of Graduate Medical Education*, 7(4), 669–670. <https://doi.org/10.4300/jgme-d-15-00414.1>
81. Thomas, R. (2025, September 30). From promise to precarity: The plight of international postdocs - When will academia act? *Front Matter*. <https://doi.org/10.54900/w8z54-zq587>
82. University of South Africa. (2020). *Research professors, endowed chairs and postdoctoral fellow policy*. University of South Africa.
83. University of South Africa. (2018). *Travel and accommodation policy*. University of South Africa.
84. University of South Africa. (2024). *The 3rd National Postdoctoral Fellowship Forum, 3-5 July 2024*. University of South Africa.
85. University of South Africa. (2025). *Postdoctoral research fellowship framework*. University of South Africa.
86. Van Benthem, K., Nadim Adi, M., Corkery, C. T., Inoue, J., & Jadavji, N. M. (2020). The changing postdoc and key predictors of satisfaction with professional training. *Studies in Graduate and Postdoctoral Education*, 11(1), 123–142. <https://doi.org/10.1108/sgpe-06-2019-0055>
87. Van Schalkwyk, F. (2024). *New guidelines for the appointment, retention and development of postdoctorates*. Centre for Research on Evaluation, Science and Technology. <https://www0.sun.ac.za/crest/wp-content/uploads/2024/07/Postdoctoral-Guidelines-2024.pdf>
88. Wang, L., Jing, Z., Li, R., Xinzhui, H., & Hedi, Y. (2025). Gender barriers and career advancement challenges: A qualitative study of female postdoctoral researchers in China's higher education. *Education as Change*, 29(1), 18475. <https://doi.org/10.25159/1947-9417/18475>
89. Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students in higher education: A perilous passage?* Jossey-Bass.
90. Wild, L., Canale, A. M., & Herdtklotz, C. (2017). The power of many: Mentoring networks for growth and development. <https://eric.ed.gov/?id=EJ1145735>
91. Woldegiorgis, E. T. (2025). Precarity in the ivory tower: Exploring the challenges of postdoctoral researchers in German higher education. *Education as Change*, 29(1), 1–24. <https://doi.org/10.25159/1947-9417/19341>
92. Woolston, C. (2020). Pandemic darkens postdocs' work and career hopes. *Nature*, 585(7824), 309–312. <https://doi.org/10.1038/d41586-020-02548-2>

93. Yadav, A., & Seals, C. (2019). Taking the next step: Supporting postdocs to develop an independent path in academia. *International Journal of STEM Education*, 6(1), 15. <https://doi.org/10.1186/s40594-019-0168-1>

Publisher's Note: IIKII remains neutral with regard to claims in published maps and institutional affiliations.



© 2026 The Author(s). Published with license by IIKII, Taiwan. This is an Open Access article distributed under the terms of the [Creative Commons Attribution License](https://creativecommons.org/licenses/by/4.0/) (CC BY), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.