Research Article https://doi.org/10.12973/ejmse.1.1.15



# **European Journal of Mathematics and Science Education**

Volume 1, Issue 1, 15 - 24.

ISSN: 2694-2003 https://www.ejmse.com/

# Bachelor of Education Honors Students' Attrition in Mathematics, Science and Technology Education

Benard Chigonga\* University of Limpopo, SOUTH AFRICA

Received: February 12, 2020 • Revised: April 7, 2020 • Accepted: May 28, 2020

Abstract: This paper represents a revolutionary advancement in our knowledge of postgraduate education which is of increasing significance to national knowledge systems. South African universities produce 26 doctoral graduates for every one million citizens. This means that the low doctoral graduates' throughput is a huge challenge in South Africa and needs to be addressed. The paper investigated the challenges experienced by postgraduate students (Honors) at an institution of higher education in Limpopo province of South Africa. The group studied consisted of postgraduate students (Honors) from the Department of Mathematics Science and Technology Education, Faculty of Education. Using a qualitative approach, open-ended questionnaire and interview data were collected from eight participants. Data were analyzed thematically and the results revealed that students find it difficult to walk the landmine-infested postgraduate education road without means to shield themselves from the subsequent explosion. The study recommends aspects that improve postgraduate programs' performance in the Department of Mathematics Science and Technology Education.

**Keywords:** Attrition; doctor of philosophy degree; postgraduate; teaching profession.

To cite this article: Chigonga, B. (2020). Bachelor of education honors students' attrition in mathematics, science and technology education. European Journal of Mathematics and Science Education, 1(1), 15-24. https://doi.org/10.12973/ejmse.1.1.15

#### Introduction

Student attrition has been a problem in the higher education system the world over. As graduate programs experience unprecedented growth, high attrition rates are problematic (Ewing et al., 2012). In South Africa, the development of postgraduate education have been identified as a national priority. This is pertinent to the nation's endeavor to nurture a new generation of black researchers and intellectuals (Department of Education, 2001). Hence an effort to increase the number of postgraduate students is apparent (National Research Foundation, 2011).

However, in the context of South African universities, postgraduate studies take place after completion of the four-year undergraduate degree. These postgraduate studies include honors, masters and doctoral degrees. Despite the explicit drive to grow postgraduate education, the high level of attrition for postgraduate programmes across South Africa (Herman, 2011) is thwarting the endeavor. South African universities have some of the worst attrition rates in the world (Letseka & Maile, 2008), both at undergraduate and postgraduate level. According to Mouton (2011), while attrition rates vary by discipline and level of study, the overall rate of attrition is 46% in South African universities. Furthermore, undergraduate programmes make up the bigger proportion of university studies when compared with postgraduate programmes. However, Bunting et al. (2010) observed that in 2008 the undergraduate comprised of 86% of total university enrolment, whereas postgraduate comprised only 14%. Department of Higher Education and Training (2013) revealed that the number of successful doctoral graduates declined from 1637 in 2011/2012 to 1576 in 2012/2013. Meanwhile, the contour of global higher education is evolving to include more doctoral programs worldwide and doctoral studies are increasing (Sampson et al., 2016). Worryingly, the Academy of Science of South Africa (2010) attest that South African universities produce 26 doctoral graduates for every one million citizens. This value is far below other countries (Brazil: 52 per million, Korea: 187 per million, Australia 264 per million, and Sweden:

Benard Chigonga, University of Limpopo, Department of Mathematics Science and Technology Education, South Africa. ⊠ benardchigonga@gmail.com



<sup>\*</sup> Correspondence:

427 per million) (Samuel & Vithal, 2011). This means that the low doctoral graduates' throughput is a huge challenge in South Africa and needs to be addressed (Mda, 2013). All higher education institutions in South Africa, therefore, need to focus on the causes of low throughput by considering the input-output of graduates to identify the levels of attrition (Paideya & Bengesai, 2017).

The attrition problem in postgraduate education programmes is experienced at the first level of postgraduate studies-Honors. Students who graduate with Honors enter to master's programme and consequently to PhD. The challenge is that there are few PhD candidates and this could be because there is attrition at honors and masters levels. At times there is more attrition at honors than at master's level and this limits masters and finally PhD candidature. Hence it is important to examine the causes of attrition at honors level.

Honors in the Department of Mathematics, Science and Technology Education (DMSTE) program at the University of Limpopo reveals that out of 123 enrolled students for 2014-2017, only 52 (42%) completed and the attrition accounted for 71 (58%). The attrition was 55% in 2014 and it progressively increased to 63% in 2017 (Table 1).

Year	Enrolment	Graduates	Did not graduate
2014	31	14 (45%)	17 (55%)
2015	36	16 (44%)	20 (56%)
2016	29	12 (41%)	17 (59%)
2017	27	10 (37%)	17 (63%)
Total	123	52 (42%)	71 (58%)

*Table 1: The DMSTE B.Ed. honors enrolments and graduates (2014-2017)* 

It seems that the DMSTE has challenges to minimize attrition of postgraduate, the B.Ed. Honors students. However, nothing is known about factors contributing to this problem of attrition although high levels of attrition experienced in 2017 may signal underlying problems in the department, university, or discipline.

However, students' academic competencies for successful degree completion are: time management, learning skills, self-monitoring, technology proficiency, motivation, and research skills (Mah & Ifenthaler, 2017). This mean that, for example, by motivating students and by showing transparent academic requirements (Ifenthaler et al., 2016), students will know what is expected of them and thus develop the academic competencies needed for higher education right from the beginning. It is important, therefore, to provide postgraduate students with academic support at the beginning of their studies (Tinto, 2012). Thus, academic competencies are prerequisites for success at postgraduate studies and should be supported through personalised intervention and adaptive services (Mah & Ifenthaler, 2018). Personalised intervention and adaptive services offer the opportunity to meet learners' individual needs, for example with regard to traditional and non-traditional students (Wyatt, 2011). For this reason, the attrition problems in the B.Ed. Honors program in the DMSTE need to be investigated to establish factors contributing to the problem of attrition. Hence the current study tries to document the views of B.Ed. Honors students on the causes of attrition and what they perceive to be the obstacles to the completion of the degree. Therefore, the question that this study sought to answer is: What factors influence attrition among the Bachelor of Education Honors in Mathematics, Science and Technology students?

#### Theoretical framework

Weiner's (2010) attribution theory was used as a lens to explain B.Ed. Honors attrition. Fiske and Taylor (1991) explain that attribution theory "is concerned with how individuals interpret events and how this relates to their thinking, motivation and achievement" (p. 23). Accordingly, "attributions are the causal explanations people give to events that happen to and around them" (Fiske & Taylor, 1991, p. 23). To understand the attrition concept, three conceptual dimensions: stability, locus of causality, and controllability are discussed (Weiner, 2010). Stability dimension depicts people skills and abilities as stable, while their efforts are unstable. The locus is the explanations provided for the actions taken or not taken and the controllability is when actions taken are within the perceived ability of an individual. Therefore, skills and ability are uncontrollable and stable, while effort is unstable and controllable in one's schema (Fiske & Taylor, 1991).

According to Letseka and Maile (2008), one of the concerns in tertiary education in South Africa is the rate of student attrition whose causes are multifaceted. Students tend to attribute causes of attrition to the institution, while faculty members tend to attribute them to the students (Johnston et al., 2016). The DMSTE as an institution of higher learning experienced an unprecedented student attrition in the B.Ed. Honors programme in 2017. The researcher contends that the attribution theory will act as a lens to the causes of attrition. This is based on the argument that the factors which upshot attrition in some students may also be viewed as obstacles for those who persevere (Golde, 2005). Therefore,

based on the assumption that the attributions they make for their successes or failures (Golde, 2005) can affect their attrition rate.

### Methodology

#### Research Goal

The study used phenomenological research design to understand the Bachelor of Education Honors Students' Attrition (Giorgi, 2009) and to describe the experiences during their study period at the DMSTE.

#### Sample and Data Collection

The participants were selected using criterion-based sampling method (Heppner & Heppner, 2004). The criterion in this study was: Each participant must have withdrawn from the DMSTE B.Ed. programme during 2017 (Golde, 1998). The participants were eight (n = 8, 5 males and 3 females) majoring in Mathematics, Science and Technology at an institution of higher education. Berg-Weger et al. (2001) suggest that a number between 5-8 is good enough for a qualitative study. Therefore, the researcher considered this sample to be adequate for the study. The participants ranged in age from 25 years to 28 years and all experienced burnout in the middle of the year during the B.Ed. Honors study.

A researcher made open-ended questionnaire and a semi-structured interview schedule (Nieuwenhuis, 2007) both consisting of the same six open -ended questions was used in the study. For content validity (Carter & Porter, 2000), three experts in Mathematics, Science and Technology Education were used to examine the open-ended questions. Their recommendations were effected before piloting with six B.Ed. Honors students to add value and credibility (van Teijlingen & Hundley, 2001; van Wijk & Harrison, 2013). The pilot study determined whether the questions covered all concepts (Berg-Weger et al., 2001) and that the data collected would provide meaningful interpretation (van Teijlingen & Hundley, 2001).

Postgraduate students were provided with the questionnaire with open-ended questions (via e-mail) which they responded to within five days before personal interviews. As responses often do not provide enough elaboration to understand the respondents' point, face-to-face interviews were conducted to stimulate the needed level of elaboration sought (Hill et al., 1997).

Throughout March 2018, the researcher conducted personal interviews (Nieuwenhuis, 2007) to gain insight into students' attrition during Honors studies in the DMSTE. Bell and Bryman (2007) contend that semi-structured or unstructured interviews is the best explanatory qualitative study. Therefore, a semi-structured protocol was used to guarantee that the research question was covered in the interviews (see Appendix). The interview guide served as support for the researcher and that not all questions were not necessarily in a particular order. The researcher adapted the order and questions according to the responses of the interviewee (Bell & Bryman, 2007). In addition, the researcher asked probing questions to clarify some of the participants' responses (see Appendix). All interviews were audiotaped for 30 to 45 minutes for each participant (Creswell, 2013) and this time was considered appropriate because it imaged during pilot study that the duration of the interview was 40 minutes on average.

## Analyzing of Data

Data collected from interviews and questionnaire were transcribed and analyzed using 1) open coding where I read line by line (Giorgi, 1985, Strauss & Corbin, 1998) and significant statements were written down; 2) axial coding by putting together related statements and comparing each statement to generate sub-themes (Harry et al., 2005; Shank, 2006); and 3) selective coding where I related the sub-themes to each other and identified commonalities to form themes in relation to the purpose of the study (Shenton, 2004). In addition, individual descriptions were sent to the participants to validate the findings captured were a true reflection of their views (Colaizzi, 1978).

#### Trustworthiness

Addressing potential issues of credibility in the study design and research execution is important in qualitative research (Tracy, 2010). Therefore attention was paid to the researcher's role, informant selection, data collection and analytical strategies (McMillan & Schumacher, 1993). Kitto et al. (2008) write that the researcher's social relationship with the participants is an important aspect that must be identified in a study. In this study, one already had a social status within the participants, which posed a threat to the credibility of the study. Therefore, ensuring that preconceived ideas and knowledge did not result in bias regarding the interpretation of research data, the findings were corroborated by means of tape recorders and literal transcription of participants' responses. In addition, informants were purposively selected and are described as students who withdrew from the DMSTE B.Ed. programme during 2017. Also, a triangulation process to eliminate biases that might result from relying exclusively on one data collection strategy was done (Rubin & Babbie, 2008). In the study, the process entailed questionnaire and interviews. The statements from respondents with the information in the questionnaire and interview records were then matched. Finally, the statements were checked for consistency with the theoretical framework established earlier. Furthermore,

data analysis involved open coding, where significant statements were written down, followed by axial coding, where related statements were put together and compared to generate sub-themes and selective coding, where the subthemes were related to each other and commonalities were identified to form themes in relation to the purpose of the study. This reduced threats to both reliability and validity in the qualitative study. Thereafter, two procedures were conducted to ensure the trustworthiness of this study (Tracy, 2010). First, member checks were used to ensure that the study results had shared meanings between participants and the researcher (Guba & Lincoln, 2004). All participants agreed with the findings generated by the data analysis. A request was made by one participant to remove portions of text that were deemed to contain potentially identifying information. The request for change was made to the findings. Second, two external reviewers critically analyzed the findings. Both reviewers affirmed the findings stating that they were related to the participants' transcripts and did not flow out of researcher bias or misunderstanding.

#### Findings / Results

The study's aim was to reveal the challenges experienced by postgraduate students in the DMSTE focusing on the three areas of potential obstacles: supervisory arrangements; personal traits and; social support. An open-ended questionnaire and an interview protocol were administered to eight participants to obtain descriptions on the attrition experiences during their study period at the DMSTE. Thus, the study responded to the question: What factors influence attrition among the Bachelor of Education Honors in Mathematics, Science and Technology students? Reflection on the data revealed that participants encountered a negative experience termed Burnout emanating from the three areas of potential obstacles, namely, supervisory arrangements, personal traits and social support. The burnout phenomenon constitute a combination of barriers which we term landmines. This is informed by the study data which revealed two themes: 1) Students feeling neglected and left without a guide to navigate them through the research project they embark on and; 2) A combination of study and work pressures put many students in a dilemma in terms of striking a balance between the two. A discussion of these themes follows.

1) Students feel neglected and left without a guide to navigate them through the research project they embark on.

Burnout participants had progressed to the middle of the year in the B.Ed. Honors programme but were prevented from completing the Honors degree by a combination of barriers which we term landmines in this study. The landmine associated with this theme is supervisory arrangements.

Landmine# 1: Supervisory arrangement

All the participants (John, Maria, James, Denis, Dinga, Sophia, Arnold, Speke) spoke of the same basic attrition experience, which was termed Burnout. Burnout was the experience of barriers acting against the internal desire of the participant to obtain the B.Ed. Honors degree. Arnold characterized this experience when he stated,

At times one feels like the DMSTE does not want others to graduate, looking at the help you receive... I was made to feel like I am not worth completing the research project... It was just like I was there by myself....I asked for help, especially on how to write the discussion section of the write up, and it just didn't come....you are told it is your project...go and read... asking for help then was like whistling in the dark where no one will see you....a swim or sink situation indeed and I could not avoid drowning...

Each participant felt powerless in the face of the power of the landmine. Maria described her experience as follows:

Not finishing my proposal in time...failing to find information for the Literature review and analysis of data methods was my biggest challenge...besides, the various supervisory activities concerning proposal writing as a group didn't help me either. I never felt like I had any energy to move forward...

All the burnout participants reported lack of satisfaction with supervision. Neglected, and in some cases harassed, these B.Ed. Honors students were left without a guide to navigate them through the research project they had embarked on. Arnold reported feeling neglected by his supervisor. He stated,

As a group, we were told individually to find research topic relevant to the existing body of knowledge...it was Greek to me because I didn't understand the meaning... consequently it was difficulty for me to come up with a research topic... up to now I don't even know what comes first; finding research topic or identifying research problem....so the supervisor was just not helpful.

Sophia advocated for insistent research mentoring from the supervisor. She said,

I wonder what would have made a difference for me in my study....to say the least, the discussion section of the write up was the end of the road for me.... I didn't know where to start! .....but I think if there was somebody, a mentor, rather than someone who just say "go do it, it's your project", then I could have reached the finishing line ....unfortunately that mentor was missing for me.

2) A combination of study and work pressures put many students in a dilemma in terms of striking a balance between the two.

#### Landmine# 2: Feeling physically and emotionally drained

Burnout experience created negative emotional reaction. Burnout participants described their desire to obtain the B.Ed. Honors degree at the time of attrition and experienced negative emotions as they failed to complete. Speke described the shame and embarrassment of letting a former mentor down as a result of her attrition. She stated,

She's probably disappointed that I didn't finish. I think she is, and I'm too embarrassed to call her. I haven't talked to her since....I feel guilt about that.

Dinga described the shame and anger he experienced when he thinks about his attrition experience. He stated,

Feeling unable to complete my research project process, I turned to my career for feelings of power and belonging...and quitted...of course I felt ashamed of myself for not finishing the program... I also felt a great deal of anger toward my supervisor who was not helpful...In retrospect, I wish I would have pursued a complaint through the DMSTE...but then my thought at that time was I would just be victimized if I took that route...

# *Long-term emotional impact*

An unexpected finding emerged related to the negative emotions experienced by the Burnout participants. Some participants reported that the emotional consequences of Burnout were still fresh during the research interviews, even though the interviews happened some six months after Burnout. Perhaps because the locus of control was perceived by the Burnout participants as being outside of them, the emotions did not quickly, if ever, fade. Dinga carried the disappointment and frustration of Burnout with her some time and she did not stop trying to find a way forward. She stated,

Irritated with the idea of Burnout, It was months before I could even say to people, "I'm no longer studying my Honors programme"...desperate to make things work, I went to register B.Ed. Honors programme with another university. So I made an application and enrolled for the programme... And that was just this year....It was disappointment to have Burnout and I won't forget that in my life, but it was a relief registering because now I can move forward...

John, on the day of the research interview, was still struggling with regret over not completing his Honors degree. John stated, "If I had finished my Honors, then I would probably be doing my master's degree..." Maria, as well, was struggling with strong emotions during and after the research interview. Maria reflected on her emotions after the interview by saying, "I guess I ripped the scabs off some old, still painful, wounds. I wonder if I'll ever get over it. Probably not..."

#### Emotional impact on family members

The participants were not alone in their emotional reactions to Burnout. Denis's wife, Mary, refused to leave the room during the research interview because she wanted to share with the researcher how angry she was about Denis's attrition. She had walked through the fire with him and now she wanted a chance to vent her frustration toward the system that she perceived held her husband back. Mary's anger is evident in this exchange with the researcher:

Mary: And I was angry. I'm still angry at that process. Wouldn't you be?

Researcher: Tell me more about your anger.

Mary: That was the most frustrating thing I had ever witnessed in my life. I knew Denis and his character and behavior. I knew what he was capable of...but could not complete his degree...

Mary was angry and frustrated by how her husband was treated. Mary described it as follows, "It was hell for both of us and worse for me... it affected me when my mate was in such a situation."

# Discussion

The research journey entails selecting a topic, designing a feasible study, synthesizing empirical literature, collecting data, analyzing the data and report writing. Realistically, postgraduate students can be constrained by time limits, lack of research experience, communication challenges, and feelings of isolation during their research journey. At the first level of postgraduate studies at the DMSTE, B.Ed. Honors, it is when the novice researchers need to develop researchrelated skills, applying what they have learned from their coursework to research in their field of study. If the researchrelated skills are not acquired at this first level, then the transition to the next level of postgraduate study is constrained. For that reason, the B.Ed. Honors level of study is pivotal and it is envisaged that scaffolded learning assistance (Naidoo, 2015) is necessary for its successful completion.

However, guiding this study was the desire to describe the experiences the B.Ed. Honors students went through during their study period in the DMSTE and proffer possible solutions to stem the tide. As the study shows, a complex interplay of factors can make navigating the B.Ed. Honors program in the DMSTE elusive. As such, isolation is one factor that can impact negatively on B.Ed. Honors degree completion.

Golde (1998) found that attrition might be characterized by the experiences encountered in doctoral study rather than the stage at which attrition occurs. As such, attrition can occur at any stage of learning, be it at undergraduate or postgraduate. Nevertheless, negative experiences might lead to negative outcomes regardless of the stage of learning.

However, previous research depicts problematic student-supervisor relationship as an exclusively early issue (Golde, 1998). The findings of the present study suggest that the problematic student-supervisor relationship can occur even at an early stage or at the late stage of B.Ed. Honors degree study as a result of lack of support from the supervisor. Receiving support from the supervisor reduces feelings of isolation. On the other hand, lack of support and feedback from the supervisor is associated with a higher risk of student burnout (Vekkaila & Pyhalto, 2016) as this study has revealed. The study data show that some students lacked supervisor support at the final stage of write up of the dissertation and could not write the discussion section. I posit that, in any research activity, the discussion section of the dissertation is important. This is so because this is where you: interpret and describe the significance of the findings in light of what was already known about the research problem being investigated (demonstrating the ability to think critically about an issue); explain any new understanding or insights that emerged as a result of the study of the problem (developing creative solutions to problems based upon a logical synthesis of the findings) and; compare results with the findings from other studies (showing profound understanding of the research problem under investigation). It is also important to realise that the purpose of research in the social sciences is to discover and not to prove (Peltonen et al., 2017). For that reason, students need scaffolded learning support from their supervisors (Naidoo, 2015) as they need to consider all possible explanations for the study results, rather than just those that fit their hypothesis. Therefore, developing scholars who have the ability and confidence to produce research is a challenging endeavor (Rockinson-Szapkiw et al., 2017).

This study found out that the problematic student-supervisor relationship was a common theme related to Honors attrition. Previous research has described the negative impact of a problematic supervisor relationship on late-stage doctoral attrition (Bair & Haworth, 1999; De Valero, 2001; Girves & Wemmerus, 1988; Lovitts, 2008). The results of the present study support this previous finding. The link between student-supervisor relationship and attrition decisions among Honors students manifested either in the initial stage (proposal write up), or middle (collecting and analyzing data) or final (dissertation write up) of their studies. Dropping out participants all described how a problematic relationship with their dissertation supervisor played a significant role in their attrition. The dropping out participants felt that they were prevented from obtaining something they wanted, which resulted in negative emotions. Since the lived experience of attrition was related to their level of autonomy in the attrition decision, the dropping out participants felt that they no longer were able to complete their degrees and, thus, experienced positive emotions related to attrition.

However, Pifer & Baker (2016) attest that the postgraduate process is complicated and isolating, particularly when students have full-time employment off campus while completing their program of study. On the other hand, previous research has described the pitfall of full-time employment off campus for doctoral students (Abedi & Benkin, 1987; Bair & Haworth, 1999; Girves & Wemmerus, 1988). The results of the present study support this previous finding. All dropping out participants in this study were employed upon entering the B.Ed. Honors degree programme. Dropping out participants described how the presence of a full-time job created a refuge from the negativity of B.Ed. Honors degree study. Being employed gave dropping out participants an area of life in which they experienced fulfillment and success. In essence, full-time employment functioned as the only comfort left as they drop out from their B.Ed. study.

#### Conclusion

Certain conclusions regarding Honors dissertation supervisor qualities can be inferred from the study findings. Preferable qualities in a dissertation supervisor include the following: (a) the supervisor is familiar with the student's methodological preferences, (b) the supervisor shows an interest in the student's topic, and (c) the supervisor is actively engaged in research mentoring. Also, some common sense advice can be extrapolated from the study findings. Namely, plans should be put in place that not only offer assistantships early in Honors study but that also have a record of providing fellowship support to late-stage Honors students.

### **Recommendations**

This study responds to the DMSTE's attrition problem at the first level of postgraduate studies- B.Ed. Honors. As supported by the present research's finding, the following recommendations are posted.

1. Facilitate information sharing outside the constraints of time and place among a network of B.Ed. Honors students and supervisors

The phenomenon of students' perceptions of isolation by their supervisors has no straightforward solution. To provide for the distinctive needs of Honors students, the focus ought to change to psychosocial aspects of integration (Bolliger &

Inan, 2012). According to Bolliger and Inan (2012), this includes offering technology-based tools for students, enabling connection to create a sense of community. Therefore, there is need to use communication advances made possible by technology (Orellana et al., 2016) to enable the development of research skills for novice researchers and curtail attrition. Hence the use of both synchronous and asynchronous learning strategies to increase communication in the research environment (Coryell & Murray, 2014) is paramount. Modalities may include, discussion forums, group collaborations, peer review tasks, video clips followed by reflection questions, feedback videos from the supervisor (Canvas is designed to facilitate all of these), videoconferencing (virtual spaces like Zoom or Google Meet), email, and face-to-face meetings.

### 2. Election of supervisors by the students

In light of the findings related to a problematic supervisor relationship in Honors attrition, the choice of a dissertation supervisor might be the most important decision in Honors study. Prospective Honors students are encouraged to consider possible dissertation supervisors early in the Honors program. Honors students thinking through the choice of dissertation supervisor are encouraged to find recent Honors graduates from their program and ask for candid feedback about various departmental members' performance in the role of dissertation supervision. It is hoped that facilitating information sharing outside the constraints of time and place among a network of B.Ed. Honors students and supervisors and election of supervisors by the students may improve B.Ed. Honors process, retention and throughput.

#### References

- Abedi, J., & Benkin, E. (1987). The effects of students' academic, financial, and demographic variables on time to the doctorate. Research in Higher Education, 27(1), 3-14.
- Academy of Science of South Africa. (2010). The PhD study: An evidence-based study on how to meet the demands for high-level skills in an emerging economy- African Higher Education 2000-2008. Centre for Higher Education Transformation.
- Bair, C. R., & Haworth, J. G. (1999). Doctoral student attrition and persistence: a meta-analysis of research. In Proceedings of the Annual Meeting of the Association for the Study of Higher Education (ASHE). ASHE.
- Bell, E., & Bryman, A. (2007). The ethics of management research: an exploratory content analysis. British journal of management, 18(1), 63-77.
- Berg-Weger, M., Rubio, D. M., & Tebb, S. S. (2001). Strengths-based practice with family caregivers of the chronically ill: Qualitative insights. Families in Society, 82(3), 263-272.
- Bolliger, D. U., & Inan, F. A. (2012). Development and validation of the online student connectedness survey (OSCS). The *International Review of Research in Open and Distributed Learning*, 13(3), 41-65.
- Carter, D. E., & Porter, S. (2000). Validity and reliability. The research process in nursing, 4, 29-42.
- Colaizzi, P. F. (1978). Psychological research as the phenomenologist views it. In R. S. Valle & M. King (Eds.), Existential-*Phenomenological Alternatives for Psychology* (pp. 48-71). Oxford University Press.
- Coryell, J. E., & Murray, K. (2014). Adult learning and doctoral student research forum participation: Insights into the nature of professional participatory experience. International Journal of Doctoral Studies, 9, 309-327.
- Creswell, J. (2013). *Qualitative inquiry and research design: Five different approaches*. Sage.
- De Valero, Y. F. (2001). Departmental factors affecting time-to-degree and completion rates of doctoral students at one land-grant research institution. The Journal of Higher Education, 72(3), 341-367.
- Department of Education. (2001). National Plan for Higher Education. Department of Education.
- Department of Higher Education and Training. (2013). 2012/2013 annual report. Department of Higher Education and Training.
- Ewing, H., Mathieson, K., Alexander, J. L., & Leafman, J. (2012). Enhancing the acquisition of research skills in online doctoral programs: The Ewing Model. Journal of Online Learning and Teaching, 8(1), 34-44.
- Fiske, S. T., & Taylor, S. E. (1991). Social cognition. Mcgraw-Hill Book Company.
- Giorgi, A. (1985). Phenomenology and psychological research. Duquesne University Giorgi Press.
- Giorgi, A. (2009). The descriptive phenomenological method in psychology: A modified Husserlian approach. Duquesne University Press.
- Girves, J. E., & Wemmerus, V. (1988). Developing models of graduate student degree progress. The Journal of Higher Education, 59(2), 163-189.

- Golde, C. M. (1998). Beginning graduate school: Explaining first-year doctoral attrition. New directions for higher education, 1998(101), 55-64.
- Golde, C. M. (2005). The role of the department and discipline in doctoral student attrition: Lessons from four departments. The Journal of Higher Education, 76(6), 669-700.
- Guba, E. G., & Lincoln, Y. S. (2004). Competing paradigms in qualitative research: Theories and issues. In N. K. Denzin & Y. S. Lincoln (Eds), *Handbook of qualitative research* (pp. 105-117). Sage.
- Harry, B., Sturges, K. M., & Klingner, J. K. (2005). Mapping the process: An exemplar of process and challenge in grounded theory analysis. *Educational researcher*, 34(2), 3-13.
- Heppner, P. P., & Heppner, M. J. (2004). Writing and publishing your thesis, dissertation, and research: A guide for students in the helping professions. Thomson/Brooks/Cole.
- Herman, C. (2011). Obstacles to success doctoral student attrition in South Africa. Perspectives in Education, 29(3), 40-52.
- Hill, C. E., Thompson, B. J., & Williams, E. N. (1997). A guide to conducting consensual qualitative research. The counseling psychologist, 25(4), 517-572.
- Ifenthaler, D., Bellin-Mularski, N., & Mah, D.-K. (2016). Foundations of digital badges and micro-credentials: *Demonstrating and recognizing knowledge and competencies.* Springer.
- Johnston, L., Sampson, K., Comer, K., & Brogt, E. (2016). Using doctoral experience survey data to support developments in postgraduate supervision and support. International Journal of Doctoral Studies, 11, 185-203.
- Kitto, S. C., Chesters, J., & Grbich, C. (2008). Quality in qualitative research. *Medical Journal of Australia*, 188(4), 243-246.
- Letseka, M., & Maile, S. (2008). High university drop-out rates: A threat to South Africa's future. Human Sciences Research Council.
- Lovitts, B. E. (2008). The transition to independent research: Who makes it, who doesn't, and why. *The Journal of Higher* Education, 79(3), 296-325.
- Mah, D.-K., & Ifenthaler, D. (2017). Academic staff perspectives on first-year students' academic competencies. Journal of Applied Research in Higher Education, 9(4), 630-640. https://doi.org/10.1108/JARHE-03-2017-0023
- Mah, D.-K., & Ifenthaler, D. (2018). Students' perceptions toward academic competencies: The case of German first-year students. Issues in Educational Research, 28(1), 120-137. http://www.iier.org.au/iier28/mah.pdf.
- McMillan, J. H., & Schumacher, S. (1993). Research in education: A conceptual understanding. Harper Collins.
- Mda, T. (2013). Growing researchers from the historically disadvantaged groups through internships. Perspectives in Education, 31(2), 92-101.
- Mouton, J. (2011). Doctoral production in South Africa: Statistics, challenges and responses. Perspectives in Education *29*(3), 13–29.
- Naidoo, M. (2015). Transformative remedies towards managing diversity in South African theological education. HTS Theological Studies, 71(2), 01-07.
- National Research Foundation. (2011). Scaling-up the South African Research Enterprise: 2011–2020. National Research Foundation.
- Nieuwenhuis, J. (2007). Introducing qualitative research. In K. Maree (Ed.), First steps in research (pp. 46-68). Van
- Orellana, M. L., Darder, A., Perez, A., & Salinas, J. (2016). Improving doctoral success by matching PhD students with supervisors. International Journal of Doctoral Studies, 11, 87-103.
- Paideya, V., & Bengesai, A. (2017). Academic support at the University of KwaZulu-Natal: A systematic review of peerreviewed journal articles, 2010–2015. Journal of Student Affairs in Africa, 5(2), 55-74.
- Peltonen, J., Vekkaila, J., Rautio, P., Haverinen, K., & Pyhalto, K. (2017). Doctoral students' social support profiles and their relationship to burnout, drop-out intentions, and time to candidacy. International Journal of Doctoral Studies, 12, 157-173.
- Pifer, M. J., & Baker, V. L. (2016). Stage-based challenges and strategies for support in doctoral education: A practical guide for students, faculty members, and program administrators. *International Journal of Doctoral Studies*, 11(1), 15-34.

- Rockinson-Szapkiw, A. J., Spaulding, L. S., & Lunde, R. M. (2017). Multiple identities and doctoral persistence: A model for understanding how online, female doctoral candidates effectively negotiate identities. International Journal of Doctoral Studies, 12, 49-72.
- Rubin, A., & Babbie, E.R. (2008). Research methods for social work. Thomson Brooks/Cole.
- Sampson, K. A., Johnston, L., Comer, K., & Brogt, E. (2016). Developing evidence for action on the postgraduate experience: An effective local instrument to move beyond benchmarking. Higher Education Research & Development, 35(2), 337-351.
- Samuel, M., & Vithal, R. (2011). Emergent framework of research teaching and learning in a cohort-based doctoral programme. Perspect Education, 29(3), 76-87.
- Shank, G. D. (2006). Qualitative research: A personal skills approach. Pearson Merrill Prentice Hall.
- Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. Education for information, 22(2), 63-75.
- Strauss, A., & Corbin, J. (1998). Basics of qualitative research techniques. Sage publications.
- Tinto, V. (2012). Completing college: Rethinking institutional action. University of Chicago Press.
- Tracy, S. J. (2010). Qualitative quality: Eight "big-tent" criteria for excellent qualitative research. Qualitative Inquiry, 16(10), 837-851.
- Van Teijlingen, E. R., & Hundley, V. (2001). The importance of pilot studies. Social Research Update, 35, 1-4.
- Van Wijk, E., & Harrison, T. (2013). Managing ethical problems in qualitative research involving vulnerable populations using a pilot study. *International Journal of Qualitative Methods*, 12(1), 570-586.
- Vekkaila, J., & Pyhalto, K. (2016). Doctoral student learning patterns: Learning about active knowledge creation or passive production. *International Journal of Higher Education*, 5(2), 222-235.
- Weiner, B. (2010). The development of an attribution-based theory of motivation: A history of ideas. Educational Psychologist, 45(1), 28-36.
- Wyatt, L. G. (2011). Nontraditional student engagement: Increasing adult student success and retention. The Journal of Continuing Higher Education, 59(1), 10-20.

# Appendix

B.Ed. Honors Attrition Interview Protocol

- 1. Describe your decision to begin B.Ed. Honors study.
- 2. What emotions did you experience as you began?
- 3. Describe your experience in B.Ed. Honors study.
- 4. When did you begin to think about not finishing? When did you decide you would not finish?
- 5. Describe the experience of withdrawing from B.Ed. Honors study.
- 6. What was the major obstacle you faced in B.Ed. Honors study?
- 7. How far along in the program were you when you withdrew?

The following are probing questions designed to ensure that all three areas of potential obstacles (supervisory arrangements; personal traits; social support) are covered.

- 1. Where there any personal traits that factored into your decision to withdraw from B.Ed. Honors study? (e.g., procrastination, perfectionism- meticulousness).
- 2. Did you feel prepared for the research aspect of B.Ed. Honors work?
- 3. What problems did you experience on the research proposal state?
- 4. What about your social support; did you ever feel unsupported in relation to your B.Ed. Honors work (e.g., by family, friends, community, non-school peers)? Was that a factor in your withdrawal?
- 5. Speaking of social support, what was your relationship like with your peers in the B.Ed. Honors program? Was that a factor in your withdrawal?
- 6. Where finances ever a factor in your decision to withdraw from B.Ed. Honors study? Did you receive any type of financial aid for your B.Ed. Honors work?
- 7. What was the supervisory arrangements of your program like? Was it ever a factor in your decision to withdraw from B.Ed. Honors study?
- 8. What was your relationship with the DMSTE like? Was it ever a factor in your decision to withdraw from B.Ed. Honors study?