

Diversity among postgraduate students belonging to a South African community of scholars

Abstract

This preliminary interpretive study investigates diversity among master's and doctoral students belonging to a closed WhatsApp group. Based on the notion that the research-world of postgraduate students is isolated and chaotic, this study contributes to an improved understanding of diversity among postgraduate students. A review of recent literature provides theoretical underpinnings for the study, informs the content of the mobile interviews and validates the following research question:

What is the nature of the diversity noted among postgraduate students who belong to a community of scholars and who contribute to a closed WhatsApp group?

Three data collection methods were implemented to investigate the research question. Firstly, a brief thematic analysis of posts to the closed WhatsApp group was undertaken. Then, structured, mobile interviews were conducted digitally among purposively-selected, group members. Finally, the researchers contributed their own reflections.

Thematic analysis of textual data collected from literature sources, WhatsApp posts and mobile interviews was analysed thematically using a CAQDAS tool, *ATLAS.ti V8.0*. The iterative development and application of a custom-designed codebook presents a view of diversity with respect to four foci: communities, communication, climate and confines where a total of twelve sub-themes are defined.

Key words: Chaos, Community of scholars, Diversity, Isolation, Microblogging, Research productivity

1. Introduction

Despite the benefits of rapidly advancing and ubiquitous digital technologies, researchers experience a shortfall in digital skills used to enhance research activities. They experience a call to grasp and apply personal a philosophical paradigm and differing research methodologies paralleled by isolation, chaos and diversities.

The conceptual model for this study relates to four core foci, namely communities, communication, climate and confines and the manner which these concepts link to diversity. An emergent conceptual model expressed in tabular format is presented as Table 3 in the concluding section of the study. It represents "the current version of the researcher's map of the territory being investigated" (Miles & Huberman, 1984: p. 33).

Microblogging tools such as WhatsApp support collaboration (Ng, 2015). They have the potential to enhance interactivity and reduce isolation within *communities* of post graduate students. Wireless connectivity facilitates *communication* where short textual messages are exchanged via WhatsApp, a microblogging and messaging platform. The current digital *climate* has the potential to support convenient, quick and easy communication between postgraduate students and their supervisors. However, WhatsApp group members are equally aware of *confines* which govern digital capabilities, boundaries and processes necessary for effective online socialising, multitasking and information sharing.

This study is influenced by Reigeluth (2004: p.13) who suggests:

Chaos theory and the sciences of complexity can help us to understand our present systems of education, including (a) when each is ready for transformation, and (b) the system dynamics that are likely to influence individual changes we try to make and the effects of those changes.

In a search for balance in new and evolving digital research systems, there is merit in the development of an understanding of “the dynamics of these new processes” (De Waard *et al.*, 2011: p.95) and their diverse complexities.

The study poses the following research question:

What is the nature of the diversity noted among postgraduate students who belong to a community of scholars and who contribute to a closed WhatsApp group?

By exploring what a select group of postgraduate students do, others may understand their diversities and feel scaffolded. Instead of feeling isolated, postgraduate researchers may become active contributors to lifelong collaboration by learning from and with each other.

2. TERPS – a diverse population

The population comprised a community of postgraduate scholars led by a supervising professor. He mentored and motivated masters and doctoral group members at various levels of study ranging from proposal preparation to readiness for graduation. The group communicated in diverse ways. Face-to-face, group-based research conversations were supplemented digitally via Skype meetings with local and international students who linked to sessions from outlying South African venues and occasionally from international locations e.g. Sweden and Ghana.

Sharing sessions are typically scheduled for Monday evenings and extend throughout the week via WhatsApp posts to a closed WhatsApp group entitled TERPS (Technology in Education Research Postgraduate Students). TERPS was initially established as a social messaging platform, a microblogging mechanism rather than as a social networking tool. This approach aligns with Kaplan and Haenlein (2010: p.66) who suggest: “social media are all about sharing and interaction”. Electronic communication platforms support the generation of content affording the exchange of data by networked researchers.

Students met each other academically when they collaborated both on- and off-line, reviewing research proposals, preparations for defence, conference papers, journal articles and thesis chapters for each other.

Group membership fluctuated during the period covered by this study: February 2016 to December 2017, increasing from the original member count (n=21). Thirty-seven new members joined while 16 of these members subsequently left the group. One of the original members withdrew in 2017 leaving a final balance of the 42 members comprising the Professor and 41 postgraduate students.

A total of 758 snippets were posted to TERPS. The posts were numerically categorised and are analysed below as Figure 2.

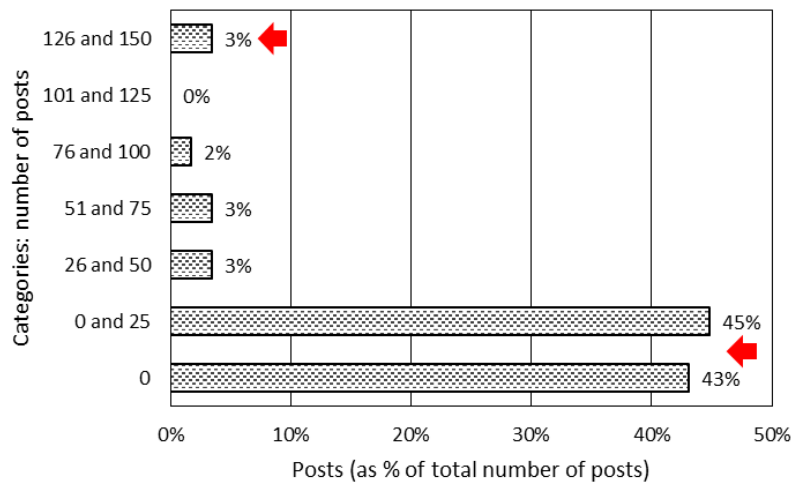


Figure 1 Analysis of posts made by TERPS members

Diversity is demonstrated in Figure 2 which shows 87% of contributors posted less than 25 posts during the investigation period. Paradoxically, the greatest number of posts relate to 3% of the group where two members each posted between 126 and 150 snippets.

The authors observed that the group was characterised by the following multiplicities:

- Career paths
- Design and method
- Domain/focus/discipline
- Local vs international
- Masters vs Doctorate
- Part-time vs fulltime
- Publication experience
- Research philosophy
- Digital skills
- Stages: proposal, middle, finalisation, completed
- Topics
- University registrations

3. Theoretical underpinnings:

In the sub-sections that follow, literature sources are reviewed with respect to the four foci outlined in the introduction and given as: communities, communication, climate, and confines.

Communities

Wenger (1998: p. 2) suggests a community of practice (COP) is informally bounded, offers peripheral or core membership and incorporates both belonging and participation. Wenger indicates three useful dimensions of COPs, all of which relate to this study: a COP is “a joint enterprise” – group members understand its negotiations and transforms; characterised by “mutual engagement” – it is a socially-bound entity; and denoted as a “shared repertoire” – artefacts result from its existence. A legitimate COP is characterised as “a place for sharing and creating knowledge” where “recognised experts need to be involved in some way, even if they don't do much of the work” (Wenger, 1998: p. 7).

In supportive environments, communities of different academics review their diverse pieces of work for each other. The community supports academic achievement however, successful publication also requires isolated authorship (Reyes *et al.*, 2016). Thus, synergistic processes of togetherness characterised by informal collaboration and isolation contribute to professional development.

Pyhältö *et al.* (2009) suggest scholarly communities are capable of functioning as learning communities. Results show great students perceive community experiences in differing ways. Communities of scholars should aim to

attract members who fill active, collaborative roles. Membership of a community of scholars is not enough – other planned and specific activities such as provision of training for PhD students, are suggested (Pyhäntö *et al.*, 2009).

Finally, Wenger (1998) indicates communities of practice evolve developmentally through stages and phases where members interact with each other, in a manner different to network relationships.

Communication

Some universities monitor student progress via formal report-based communication. These management tools operate as both administrative and policing mechanisms, securing feedback on the status of postgraduate research outputs (Mewburn *et al.*, 2014). However, they warn that doctoral experiences are complex, calling for a new communication approaches based on collective energy. Contrarily, Trafford and Leshem (2009) promote a more official and formal doctoral communication involving the delivery of specific components. Supervisors are encouraged to communicate the basic research process and components for academic success. In a similar vein, Gardiner *et al.* (2012) suggest quality writing can be coached and advise supervisors to incorporate effective writing is important for professional development.

Climate

Specific knowledge and skills focus on constantly changing context and content (Bastalich, 2015) where academic spaces are mappings seen as multiplicities, deemed to be “emotional and affective knots” and “cartographies of academic spaces” (Charteris *et al.*, 2016: pp.32,42).

Confines

Postgraduate research is a journey with phases and transitions confined by boundaries (Benmore, 2016). Even though there are multivariate challenges such as research methodologies, the journey requires formal policies too (Hopwood, 2010). In addition, Peterson (2007) posits there are processes with inclusion and exclusion criteria that define the route. Diverse, non-formal learning occurs among students as support each other as journal evaluators (Hopwood, 2010).

4. Research strategy: design and methods

The research strategy included three data collection methods, applied as an exploratory case study (Yin, 2014) conducted between February 2016 to December 2017. In this study, triangulation comprised “rigorous techniques and methods for gathering high-quality data” (Patton, 1999: p.1190).

A thematic analysis of TERPS posts aimed to gather diverse peer-mentoring elements. However, in-depth, structured interviews sought specific feedback from a purposively selected sample of convenience (Oates, 2008) regarding the diverse nature of their digital toolkits. This sample excluded the authors. Of the ten selected group members who posted the largest number of posts to TERPS four members agreed to participate in structured interviews.

The design of a mobile interview protocol was informed by literature sources and administered identically among the four participating respondents. It comprised six sections of open-ended questions as follows: Section A General Demographics; Section B Writing Up Research Work; Section C Referencing and Citation; Section D Data Analysis; Section E Storage, Protection and Backup; and Section F Preferences and Limitations.

Table 1 Summary of mobile interview sample

Ref	Degree	Status	Place	Discipline
T01	D.Tech	Complete	Cape Coast, Ghana	Educational technology
T02	M.A.	Near completion	Table View, South Africa	Media - film
T03	M.Tech	In progress	Milnerton, South Africa	Public Relations
T04	PhD	In progress	Somerset West, South Africa	Information Technology

Respondents participated voluntarily and were guaranteed confidentiality and anonymity. Interviews were conducted via a mobile phone using WhatsApp, recorded via RecordMyCall – a mobile phone app and lasted between 25 and 45 minutes. This approach enabled the downloading and transcription of responses for analysis at a later stage. Table 1 provides an introduction to the four interviewed respondents who were all working, part-time students. It simultaneously highlights diversities relating to degree studied, status of studies, location and discipline of the study.

In accordance with methods proposed by Fries (2014) data analysis via ATLAS.ti, a CAQDAS tool mapped the four foci: communities, communication, climate and confines to open, axial and selective coding of textual extracts (Strauss & Corbin, 1994). This approach contributed to the evolution of a customised and synthesised codebook, cohesively extending the code list emerging during analysis of literature sources.

Finally, documented observations expressed as the researcher's voice constituted reflexivity (Creswell, 2014).

The qualitative report of this research is characterised in specific ways and takes cognisance of the guidelines suggested by Miles et al. (2013):

- It tells a very specific story sharing the nature of a case study;
- It is supported by historical anecdotes;
- The report communicates an understanding of steps taken, involved respondents and methods employed during the research; and
- The data are focused on coherently illuminating research conclusions while addressing the influence of context.

5. Findings and discussion

The findings and discussion reported in this section mirror the format applied in Section 3 Theoretical underpinnings defined by the four foci: communities, communication, climate and confines. Space allocations preclude a detailed discussion here. A subsequent publication will explore each of the four foci in greater detail. This section aims to briefly emphasise the nature of the diversities noted among postgraduate students who belong to a community of scholars and who contribute to a closed WhatsApp group.

Communities

TERPS posts identify the value of support when communities of scholars offer peer-based mentorship. The following elements emerged:

- Academic help requests
- Feedback provided
- Request for other help
- Allocated review work
- Motivation
- Research support
- Appreciation
- Offer of help
- Shared successes

Mobile interviews pinpointed that research students often show a need to understand the workings of diverse communities. Research topics indicated an avid interest in communities. T01 reported exploration of way students in high education contexts use technology - a comparative study, across four universities while T02 expressed a passion for the representation of female communities in film, addressing the assessment of gender equity. T04 professed curiosity concerning the teaching of business process management.

Researcher's voice: Some students struggle with the production of required research artifacts indicating a large range of research skills and digital capabilities is beneficial. During communal reviews of each other's work, peers provide motivation, support, and encouragement demonstrating healthy interactivity aimed at improving quality.

Communication

Although TERPS was initially established to communicate notifications regarding forthcoming times and places for research sessions, a range of diverse mentoring and sharing among research peers was noted, including:

- Academic life
- Academic travel stories
- "Fees Must Fall"
- Humour
- Non-academic life
- Request for information
- Words of thanks

During mobile interviews, respondents were questioned about digital productivity, exploring the writing up of their research work, their use of referencing and citation techniques and approaches to data analysis. Table 2 offers a summary of the diverse digital productivity mechanisms and tools used by the sample.

Table 2 Diversity associated with digital productivity

Section	T01	T02	T03	T04
Writing up of research work – the toolkit	Recorder, smartphone, camera, laptop, iPad, Windows, MS Office – built-in Word styles, Gephi	Acer laptop and MacBook, iPhone, DVD player, Windows and Mac, Google Scholar, YouTube, very vaguely use built-in styles	Laptop and smartphone for recordings and camera, Windows, MS Office, MS Office – built-in styles,	Many devices, Windows and Mac, MS Office – built-in styles
Use of referencing and citation techniques	Digital - Mendeley	Although acknowledging that Mendeley is useful, she does not use it at all. Has a manual system.	Digital - Mendeley	Several digital applications: Mendeley, Zotero
Approaches to data analysis	Qualitative – Gephi, SPSS and qualitative - ATLAS	Quantitative – Excel for graphs only and qualitative – manually prepares themes	Qualitative – ATLAS, although has done it manually using colour-coding	Quantitative - SPSS and qualitative – ATLAS, Also paper-based analysis

Although Table 2 above highlighted the many ways in which research students (T01, T03 and T04) communicated being productive, T02 indicated some resistance to digital processes and acknowledged that this was possibly a mistake. Of great interest was the various responses to Q13: Have you preferred to handwrite your notes?

"... 1 book for fieldnotes, things to follow up, Prof's advice in class, record a number of articles to follow up, 1 book used exclusively for interview notes ..." [T01].

"I like writing things down, highlighting with colour, visualise it but printing on paper – on board, draw a lot – using arrows and circles to illustrate ..." [T02].

"All the time! Got two books full. Whatever comes first – convenient" [T03].

"I like writing – have books of notes = brain stuff is on paper. A number of books" [T04].

The comments listed above suggest research students still get benefit from handwriting aspects of their research. This feedback could form part of a valuable communication-for-research-productivity workshop.

Researcher's voice: Although postgraduate documentation has a fairly rigid and linear format which produces faster results, this approach does not necessarily communicate support for masters and doctoral independence. Collegial communication with like-mindedness is however a motivating influence. Forms of multiplicity are found to be fun-filled and rewarding, to solve issues immediately, and to enable a realistic and mobile way of reaching out to others.

Climate

TERPS posts indicated peer-based mentorship established an environment conducive to research output formats such as:

- Academic feedback
- Conferences
- Digital storage
- Presentations
- Publications
- Recordings
- Resources

WhatsApp comments made by TERPS members indicated appreciation for the heterogeneous group space, enabling students to request time during face-to-face sessions for peer-based reviews of pending submissions. The group provided a safe and trusted space for dry runs of slide presentations, outlines of proposals, and supervisor-led reviews of dissertation and thesis chapters. The group atmosphere enabled the expansion of one learning experience to encompass a climate for many to learn and benefit in tandem.

In a climate where much data is collected, stored and at risk of being lost or damaged, mobile interview questions sought details regarding data management patterns of TERPS members. These patterns included both techniques for dealing with sourced material such as cloud-based storage and habits associated with the protection of this data. Diverse feedback was received. Two respondents preferred a combination of Dropbox, Google Drive and Mendeley, indicating a concern for the safety of reference data (T01 and T03). Another respondent (T04) acknowledged the use of Google Drive as a safe cloud-based storage, adding he still preferred using Dropbox. A fourth respondent (T02) admitted using a folder on the desktop, where more than 100 versions were stored and mailing her thesis to herself and to her supervisor many times over. Copies were stored in at least five different places.

The habit of using anti-virus software seemed vaguer. Two respondents said it happened automatically, another indicated she knew nothing about it at all except that backups were done manually and the final respondent invested in MacAfee.

Researcher's voice: The establishment of a climate of some freedom juxtaposed with some order provides the best of both worlds. In this way, students embrace the implications of a personal philosophy and accept differences. The use of many aligned tools negates non-linear fears whilst ensuring a research environment comprising linearity, flexibility and space for creativity. However, researchers seem vague about the necessary and purposeful safety measures needed for a secure research climate.

Confines

Besides the messaging of notifications of times and venues – the initial purpose of TERPS, posts of members offered unexpected and varied characteristics other than the confines of the group's original intention.

- Appreciation
- Digital options
- Encouragement
- Motivation
- Researcher snippets
- Successes
- Supervision

Finally, mobile interviews explored aspects that represent boundaries – digital preferences and limitations. Aspects reviewed in the search for the nature of diversity included: the most valuable research tools, the biggest limitations experienced, and the improvement of skills.

Whilst one researcher (T01) indicated the use of many differing tools suited to varied purposes, another respondent (T02) suggested she had no specific tools and could not refer to definite functions except search engines. The third respondent (T03) said her most valuable tools were Mendeley and ATLAS. The fourth respondent doted on Zotero as all research resources were safely stored there and were easily accessible.

When questioned about their biggest limitations, respondents provided diverse factors such as: no Internet access coupled with a huge need for self-tuition (T01), the inability to access books reviewed on Google Books due to budgetary constraints (T02), learning to use ATLAS as the weighing up of results seemed both frustrating and time-consuming (T03), and overcoming own personal skill limitations with gratitude to YouTube for self-directed lessons (T04).

Finally, respondents indicated that if they had the opportunity to improve their skills they would expand the development of analysis skills (T01), focus on the use of MS Word to improve research productivity (T02), improve time management skills and interview management strategies (T03), and work on the ability to write literature reviews (T04).

Researcher's voice: Postgraduate study often includes non-linear searches confined by linear literature methodologies. However, the abundance of online literature, although confusing and overwhelming, may be controlled with a selection of inclusive, exclusive criteria. Once the seeming chaos is tamed, a reverse engineering process has the capacity to manage change and restore order in the middle of diversity. Overwhelmingly, respondents indicate they would love to improve their research skills. Sadly the confines remain in place if proactive steps are avoided.

6. Limitations, conclusions and future research

Although this study contributed to the understanding of the chaotic elements of postgraduate researcher diversity, the study was limited in several ways. It focused on case study data collected within a particular, bounded context – a closed WhatsApp group called TERPS which comprised a group of Masters and Doctoral Researchers. The study is interpretive and as such the findings cannot be generalised. The authors are part of the group and hence there is a risk that subjective judgement will have affected the understanding and interpretation of the collected data. The mobile interview sample size is small and although it gathered rich and thick data (Creswell, 2014), it explored multiplicity and this is exactly what the findings revealed – the nature of the diversity manifested by the TERPS posts, the mobile interview responses and the researcher's voice.

Table 1 below concludes the paper by summarising the findings of the paper. Twelve sub-themes emerged from three sets of data, synthesised during the collective analysis of WhatsApp posts and mobile interviews and from the researcher's voice. It simultaneously illustrates the complex nature of the diversity manifested by postgraduate students and answers the following research question posed in this study:

What is the nature of the diversity noted among postgraduate students who belong to a community of scholars and who contribute to a closed WhatsApp group?

Table 3 Foci and related sub-themes that emerged during the study

	Emergent sub-themes linked to diversity		
Foci	WhatsApp posts: peer-based mentorship	Mobile interviews: digital toolkits	Researcher's voice: digital research contexts
Communities	Support	Demographics	Informal social learning
Communication	Sharing	Digital productivity	Collaborative interactivity
Climate	Research output	Data management	Linearity and flexibility
Confines	Digital conversation	Preferences and limitations	Reverse engineering

The four foci illustrated above, namely: communities, communication, climate and confines reflect a rudimentary investigation of the concept 'diversity'. These foci and associated sub-themes offer starting points - platforms for further, in-depth research which adopts meaningful strategies to implement the textual research advocated by Plowright (2011).

Further research into the complex and diverse components of personal research environments indicated in Table 3, may contribute to the scaffolding of research productivity in differing research domains and circumstances. The unique community of scholars outlined in this paper provides a platform for an evaluation of the dimensions proposed by Wenger (1998: p. 2) and given as "a joint enterprise ... mutual engagement ... and shared repertoire". The diversities outlined in this study and mediated by digital platforms such as WhatsApp beg for an answer to the question: how do the diversities identified in this paper relate to the dimensions proposed by Wenger?

7. References

- Bastalich, W. 2015. Content and context in knowledge production: A critical review of doctoral supervision literature. *Studies in Higher Education*. pp. 1-14.
- Benmore, A. 2016. Boundary management in doctoral supervision: How supervisors negotiate roles and role transitions throughout the supervisory journey. *Studies in Higher Education*. 41(7). pp. 1251-1264.
- Charteris, J., Gannon, S., Mayes, E., Nye, A. & Stephenson, L. 2016. The emotional knots of academicity: A collective biography of academic subjectivities and spaces. *Higher Education Research & Development*. 35(1). pp. 31-44.
- Creswell, J.W. 2014. *Educational research: Planning, conducting and evaluating quantitative and qualitative research*. Essex, UK: Pearson Education Limited.
- De Waard, I., Abajian, S., Gallagher, M.S., Hogue, R., Koutropoulos, A. & Rodriguez, O.C. 2011. Using mlearning and moocs to understand chaos, emergence, and complexity in education. *International Review of Research in Open & Distance Learning*. 12(7).
- Friese, S. 2014. *Qualitative data analysis with atlas.Ti*. 2nd Edition. Thousand Oaks, CA: SAGE Publications.
- Gardiner, M., Kearns, H., Newsom, G., Dent, E., Newnham-Kanas, C., Irwin, J. & Schmitt, N. 2012. The abcde of writing: Coaching high-quality high quantity writing. *International Coaching Psychology Review*. 7(2). pp. 247-259.
- Hopwood, N. 2010. Doctoral students as journal editors: Non-formal learning through academic work. *Higher Education Research & Development*. 29(3). pp. 319-331.
- Kaplan, A.M. & Haenlein, M. 2010. Users of the world, unite! The challenges and opportunities of social media. *Business horizons*. 53(1). pp. 59-68.
- Mewburn, I., Cuthbert, D. & Tokareva, E. 2014. Experiencing the progress report: An analysis of gender and administration in doctoral candidature. *Journal of Higher Education Policy and Management*. 36(2). pp. 155-171.
- Miles, M.B. & Huberman, A.M. 1984. *Qualitative data analysis: A sourcebook of new methods*. Thousand Oaks, CA: SAGE Publications.
- Miles, M.B., Huberman, A.M. & Saldaña, J. 2013. *Qualitative data analysis. A methods sourcebook*. 3rd Edition. Thousand Oaks, CA: SAGE Publications.

- Oates, B. 2008. *Researching information systems and computing*. London: SAGE Publications.
- Patton, M.Q. 1999. Enhancing the quality and credibility of qualitative analysis. *HSR: Health Services Research*. 34(5). pp. 1189-1208.
- Petersen, E.B. 2007. Negotiating academicity: Postgraduate research supervision as category boundary work. *Studies in Higher Education*. 32(4). pp. 475-487.
- Plowright, D. 2011. *Using mixed methods: Frameworks for an integrated methodology*. Thousand Oaks, CA: SAGE Publications.
- Pyhäntö, K., Stubb, J. & Lonka, K. 2009. Developing scholarly communities as learning environments for doctoral students. *International Journal for Academic Development*. 14(3). pp. 221-232.
- Reigeluth, C.M. 2004. Chaos theory and the sciences of complexity: Foundations for transforming education. *annual meeting of the American Educational Research Association, San Diego, CA*.
- Reyes, V., Masters, Y., Clary, D., Betlem, E.C., Jones, M.A., Charteris, J., Kivunja, C., Rizk, N. & Sigauke, A. 2016. Writing for publication group: Professional development situated in the interstices of academia and performativity. *Reflective Practice*. 17(4). pp. 444-455.
- Strauss, A. & Corbin, J. 1994. Grounded theory methodology. *Handbook of qualitative research*. 17. pp. 273-285.
- Trafford, V. & Leshem, S. 2009. Doctorateness as a threshold concept. *Innovations in Education and Teaching International*. 46(3). pp. 305-316.
- Wenger, E. 1998. Communities of practice: Learning as a social system. *Systems thinker*.
- Yin, R.K. 2014. *Case study research: Design and methods* Thousand Oaks, CA: SAGE Publications.