Knowledge Ecosystems of Early Career Academics: A Grounded Theory of Experiencing Information Use for Learning in Developmental Networks

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Keywords

Informed Learning; Early Career Academics; Developmental Networks; Mentoring; Informal Learning; Knowledge Ecosystem; Knowledge Creation; Knowledge Use; Professional Development; Research Development; Higher Education; Experience Design.

Abstract

How do early career academics experience using information to learn? This study explores the informed learning experiences of early career academics while building their networks for professional and personal development. Themes from current literature of human relationship building and developmental networking in the context of the growing use of social, collaborative technologies blended with traditional communication methods, suggest an increasingly complex experience particularly for the beginning university academic. The notion that information and learning are inextricably linked via the concept of 'informed learning' is used as a conceptual framework to gain a clearer picture of *what* informs early career academics while they learn and *how* they experience using that which informs their learning within this complex practice: to build, maintain and utilise their developmental networks.

This research employs a qualitative framework using a constructivist grounded theory approach (Charmaz, 2006). Through semi-structured interviews with a significant sample of early career academics from across two Australian universities, data were generated to investigate the research questions. The study used the methods of constant comparison to create codes and categories towards theme development. Further examination considered the relationship between thematic categories to construct an original theoretical model.

The model presented and discussed in this thesis is a 'knowledge ecosystem', which represents the core informed learning experience. The model consists of informal learning interactions such as relating to information to create knowledge and engaging in mutually supportive relationships with a variety of knowledge resources found in people who assist in early career development. The general model is explored in spaces where developmental networks are commonly formed and maintained including programs, courses, events,

community, home and social media. Findings are discussed with implications towards strategies for empowering early career academics and their support networks through human-centred learning experience design.

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Statement of Original Authorship

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signature: QUT Verified Signature

Date: April 2014

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CHAPTER ONE

Introduction

1.0 Introduction

This chapter will outline the background context, key concepts and significance of the study. This is followed by a description of the research problem, the research question and objectives, the research methodology employed to investigate the research question and the limitations of the research approach. The chapter also describes the original contribution to knowledge, which this research aims to provide.

1.1 Background

Recent research into the higher education workforce in Australia indicates a need to attract, develop and retain new academics to replenish the academic workforce (Coates et al, 2009). This issue has obvious implications for the future of universities, both in Australia and internationally, and is an issue that needs to be addressed over the next decade and beyond. Key studies have suggested that mentoring is one way to assist this group of academics and to help solve the problems of staff shortages and turnover (Coates et al, 2009; Sutherland & Petersen, 2010). However, these reports have not specified the actual nature of mentoring and other support for early career academics, that is or could be occurring within higher education contexts, only suggesting that senior academics could potentially be mentoring junior academics. At present, reports do not

take into account the theory and practice of 'developmental networks' that is emerging from the United States and growing in acceptance internationally (Higgins & Kram, 2001; Molloy, 2005) and its experience in higher education, among doctoral students and early career academics (Baker Sweitzer, 2009; Hopwood, 2009; Hopwood, 2010).

A key factor in the successful development of universities is the quality of its support system, particularly for early career academics (Coates et al, 2009; Foote, 2010; Greene et al, 2008; Sutherland & Petersen, 2010). For this group of academics, it is increasingly being recognised that the quality of their research and teaching outcomes, in establishing themselves as professional academics, is largely dependent on their ability to effectively build and make use of a 'developmental network' (Higgins & Kram, 2001) involving supportive, learning relationships with a range of people in both professional and personal contexts (Baker Sweitzer, 2009; Hopwood, 2010; Kenway, Epstein & Boden, 2005).

The focus of this investigation is to develop an in-depth understanding of how early career academics (ECAs) use information to learn as they build, utilise and maintain their developmental networks. This study focuses specifically on the experiences of early career academics, who have had significant professional or industry work experience before joining academia. This study has an additional focus on the idea of the 'research-teaching' nexus, or the potential balancing and/or relationship between research and teaching roles of a new academic, hence the use of the term 'early career academic' as opposed to 'early career researcher'.

It is important to note that this study is occurring during a period of change within the higher education sector on both national and international levels, specifically in relation to changing government research policies and an increasing output-oriented culture for universities. Recent studies have examined the complex impact of these changes on the workloads and work

practices of academics in general (de Boer, Enders and Leisyte, 2009), particularly an apparent growing trend in conducting teaching and research as separate activities on a practical level, despite a continued belief in the ideal of a 'research-teaching nexus'. Such tensions related to the complexity of the changing context of universities, will have major implications for early career academics as they learn their roles and attempt to establish their professional identities (Billot, 2010). Recent literature in the higher education field has seen the emergence of themes of creating supportive and positive learning and working environments in universities (Foote, 2010; Nakamura et al, 2009). In a broader sense, such environments are essential to fostering cultures of creativity in higher education and promoting the conception of universities as sources of creativity and innovation that are critical to the development of the global knowledge economy (Peters et al, 2009).

1.2 Research Problem

A shift in focus from the individual experience to a 'relational' experience is reflected in the literature from the fields of human resource development (Dutton & Heaphy, 2003; Higgins & Kram, 2001), education (Arnold, 2005; Baker Sweitzer, 2009; Edwards & Darcy, 2004; Hopwood & Sutherland, 2009), information behaviour (Miller & Wallis, 2011; Mills, 2002; Nahl & Bilal, 2007;) and information literacy (Bruce, 1999; Bruce, 2008; Lloyd, 2007). This finding prompts a need for further research into affective and relational dimensions of information, learning and social networks (Schultz-Jones, 2009) in a range of contexts, to complement and enhance the dominant cognitive perspectives that frame our current understanding.

Themes of human relationship building (Cross & Sproull, 2004; Hopwood, 2010), high quality connections (Dutton & Heaphy, 2003) and developmental networking (Baker Sweitzer, 2009; Higgins & Kram, 2001) in the context of the growing use of social, collaborative technologies

blended with traditional communication methods, suggest an increasingly complex information practice (Miller, 2008, Miller & Wallis, 2011) particularly for the beginning university academic.

This study focuses on relationships, which are significant to a person's 'career growth and personal learning', as opposed to those relationships that are merely social, but not connected to this goal. Such relationships are both interpersonal, and with aspects of a person's informational or life worlds. The theory of developmental networks has originated from the literature and research on mentoring and the changing nature of the mentoring experience from traditional one-on-one 'dyadic' mentoring relationships (Mullen, 1994; Nakamura et al, 2009), to a 'constellation' of formal and informal mentoring and learning relationships potentially beneficial for career and professional growth, satisfaction and success (Higgins & Kram, 2001).

Developmental networks theory has emerged as a response to the changing work and technological environment, where careers have been become more mobile, flexible and 'boundaryless' (Molly, 2005). Several purposes and benefits of establishing and nurturing a mentoring and developmental network have been identified in the literature including: access to multiple mentors within one's organisation and beyond and other learning partners for different purposes within a career (Crocitto et al, 2005; Higgins & Kram, 2001; Molly, 2005), development of confidence and self-efficacy in employees (Chandler & Kram, 2005), establishing a professional identity (Baker Sweitzer, 2009; Chandler & Kram, 2005), career development and access to job opportunities and career path advice (Crocitto et al, 2005), development of learning organisations and social capital (Emmerik, 2004).

This theory appears to be growing in recognition and is being used in studies into a range of professional and learning experiences (Baker Sweitzer, 2009; Molly, 2005), particularly in the corporate contexts.

However, studies that incorporate developmental networks theory into educational contexts, including higher education and university settings, are scarce. Recent studies conducted by Baker Sweitzer et al (2009) remain the only studies to use developmental networking theory to explore the doctoral experience in higher education and calls for further interdisciplinary research into the doctoral and early career academic experience from a developmental networking perspective to enrich the existing and growing body of literature.

Similarly, mentoring as a broader topic has received little attention in the higher education context, in comparison to the literature in human resource development. Nakamura et al (2009) attempt to explore mentoring experiences in higher education, conceptualising mentoring as "maintaining a pattern of culture" and "the transmission of values, practices, knowledge and other memes (or units of information) across generations". However, this work focuses on 'dyadic' (one-on-one) relationships between mentors and protégés and does not attempt to integrate developmental networks theory, even though Kram's early work is referenced. Research into the mentoring experience in higher education could benefit from broader perspectives that view mentoring as a practice of networking, rather than a single relationship between two people.

The relationship between doctoral candidates and their research supervisors and pedagogies to support this has been researched by Bruce & Stoodley (2009). This work is relevant as some ECAs who participated in this study are also doctoral candidates. Their study provides invaluable insight into the research supervisory experience and processes from both student and mentor perspectives. However, as the Bruce & Stoodley (2009) study focuses on learning relationships for research purposes only, incorporating the 'informed learning' concepts as developed by Bruce (2008), it provides only one piece of a larger picture. A holistic view of

support for the early career academic experience, from an informed learning perspective is needed.

The notion that information and learning are inextricably linked (Bruce, 2008) via the concept of 'informed learning' deserves further attention in a complex information practice such as developmental networking for ECAs. The 'informed learning' concept proposed by Bruce (2008), a re-conceptualisation of information literacy, has an interdisciplinary foundation as it has emerged from previous research incorporating the fields of information literacy and learning. Literature in the mentoring and developmental networks field often refers to improving information and knowledge flow or exchange as essential for building such networks, however the central tenet of 'informed learning', the use of information to learn, in relation to the building of developmental networks has not been studied in depth. An in-depth study of this issue from informed learning perspective has the potential to contribute to the library and information sector in improving support services to early career academics and also to the higher education and human resource development sectors more broadly. Further study needs to be conducted to gain a clearer picture of how early career academics are using information to learn within this key information practice (Bruce, 2008): to build, maintain and utilise their developmental networks.

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1.3 Research Questions

The chosen qualitative research approach of constructivist grounded theory (Charmaz, 2006), as outlined in Chapter Three, recommends that researchers should start with no more than one broad and open research question, so as not to restrict the investigation. Therefore, this study began with the following research question:

How do early career academics use information to learn as they build their developmental networks?

During the first phase of the study, the research question was refined as:

How do early career academics experience using information to learn while building their developmental networks?

A second question arose from the first phase, which focused on identifying what was informing their learning:

What informs early career academics' learning while they build their developmental networks?

As the theoretical model started to develop, a further question was added which guided the analysis related to informed learning experiences in developmental networking contexts:

How are the key learning experiences enriched by focusing on interactions with knowledge and information resources?

This question arose from later reflection on how to begin to apply the knowledge ecosystem theoretical model to optimise key learning experiences for ECAs.

1.4 Implications

The knowledge gained through this research will then be applied to produce the following outcomes:

- A theoretical model of early career academics' use of information to learn how to create and utilise their developmental networks for the purposes of enhancing their research and teaching; and

- An empirical basis to inform academic development strategies and information development strategies to enhance mentoring, career development and networking training at universities for early career academics.

Both theoretical and practical implications could benefit the following groups and inform their policies and practice:

- Early career academics;
- Academic developers;
- Research development and research support staff;
- Research supervisors and mentors to early career academics:
- Career counsellors specialising in academic careers; and
- University management.

This research can benefit these groups by providing a conceptual framework for understanding early career academics' experiences of using information to learn while developmental networking. Working towards a holistic and shared understanding of the experiences and processes involved, from an informed learning perspective, can potentially enhance the development of early career academics and their key support services provided by the above groups.

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For early career academics, this research can help with conceptualising their own developmental networks and their everyday information use while learning how to be an academic. As this research aims to cover experiences related to both teaching and research roles carried out by an early career academic, support services such as academic developers (or educational designers), library and information services and research development staff can also benefit from the research by increasing understanding of ECAs' information use while learning through their teaching and research networks. This knowledge can assist in updating or designing professional development programs, orientations and ongoing learning for new academics, as well as designing information sources and services (both technology-supported and non-technology supported) related to teaching and research learning activities.

Key support people for ECAs such as research supervisors and formal and informal mentors can benefit from this research through improved understanding of the information practices of ECAs while developmental networking, from the perspectives of ECAs. This knowledge can assist in improving supervisory pedagogies and mentoring strategies, which are 'ECA-centred'. A relatively new group which can also benefit from this research is career counsellors who specialise in ECAs career development. For this group, this research can enhance the guidance and advice provided to ECAs. Knowledge from this research can also be useful in developing university policies for ECA development, both within universities, the higher education sector and at the government policy levels.

1.5 Methodology

This research employed a qualitative framework using a constructivist grounded theory approach, as developed by Kathy Charmaz. The constructivist paradigm emphasises personal, subjective making or construction of reality (Williamson, 2002) and a multiple

realities/perspectives approach (Charmaz, 2006; Patton, 2002). Closely related to this paradigm is symbolic interactionism, a perspective "which assumes that individuals are active, creative and reflective and that social life consists of processes." (Charmaz, 2006, p. 189). Charmaz' approach to grounded theory involves the use of a set of principles and practices, emphasising flexible guidelines. An important feature of grounded theory is that data generation and data analysis occur concurrently (Charmaz, 2006).

Mills, Bonner, and Francis (2006a, p. 9) outline three theoretical principles of constructivist grounded theory.

> *1. The creation of a sense of reciprocity between participants and the researcher in the co-construction of meaning and, ultimately, a theory that is grounded in the participants' and researchers' experience.*

> *2. The establishment of relationships with participants that explicate the power imbalances and attempts to modify these imbalances.*

> *3. Clarification of the position the author takes in the text, the relevance of biography, and how one renders participants' stories into theory through writing.*

These broad principles were suitably used within my study for the following reasons. The notion of co-construction of meaning and theory grounded in both the participants' and researchers' experiences added great value to the study, to generate new perspectives and concepts that genuinely represent the 'voices' of a somewhat under-studied group (i.e. early career academics). Being closely linked to the embryonic concepts of informed learning and developmental networking, means the methodology

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must allow for exploration of any connections and interactions between these broad areas. As the researcher has significant work experience in higher education alongside other ECAs and could also be defined as an ECA, a theoretical sensitivity from the researcher effectively facilitated the 'construction' of shared meaning or intersubjectivity.

This process began from the conception of the topic, through informal discussions with other academics, and most significantly, during the interviews where participants were guided by a set of broad questions selected by the researcher. Participants were given the opportunity to reflect on the questions themselves and what they might mean within their own contexts. Although a power imbalance may have existed between participants and researcher (i.e. length of service and types of expertise and professional knowledge of each participant and the researcher will vary), a shared understanding or intersubjectivity was a key goal during the interviews and subsequent interactions through interview transcript checking. Using these principles as guidelines, Charmaz' notion that codes are constructed from the generated data, rather than arising from the data, was of primary importance for this study. The methodology will be discussed in detail in Chapter Three.

Constructivist grounded theory has been successfully used as a methodology in previous studies about information literacy (Herring, 2010; Lloyd, 2004). The methodology has been valuable for broadening our understanding of information literacy and information practice and forming alternative conceptualisations of information literacy from the 'real life' perspectives of particular groups of learners and users of information. Theories that work towards explicating the research questions arising from such studies are the result of detailed reflections and theme development from analysis of interview data (Charmaz, 2006). This study has resulted in a similar outcome in terms of presenting detailed reflective prose, which explicates the process and experience of the concept

of informed learning in the higher education developmental networking context.

1.6 Significance

This is an under-researched area in both the information science and higher education fields. Information science researchers have explored areas related to social network theory, however there have not been any studies specifically examining the use of information to learn while building developmental networks, an area which focuses more on learning relationships and growth for career development and job satisfaction. Therefore, this study makes an original contribution to knowledge in the library and information science (LIS), higher education (HE) and human resource development (HRD)/career development fields. The research aims to provide both theoretical and practical outcomes to a range of stakeholder groups within the information science and higher education/human resources development sectors, as outlined in the above section 'Research Question'. The research aims to advance knowledge in the following areas:

LIS theory: the embryonic concept of 'informed learning' and theories in information literacy and information behaviour in the context of university academic development.

LIS practice: designing library and information sources and services for ECAs.

HE theory: early career academic development from holistic, networked and information/knowledge perspectives.

HE practice: designing professional development programs, enhancing supervisory and mentoring relationships in teaching and research for ECAs.

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HRD/career development theory: the under-researched area of developmental networking for professionals, particularly in the university academic context.

HRD/career development practice: designing career development initiatives and support services for ECAs.

1.7 Limitations

It is understood that this research examines early career academics' experiences within particular contexts across different universities. The research involves participants from several academic disciplines within different faculties of universities. This approach may limit the relevance of this study to particular disciplines. However, as the research aims to contribute to the larger research agendas of informed learning, early career academics and developmental networking, this approach can potentially deepen our understanding of how early career academics use information to learn. The availability of each research participant for more than one interview may limit the grounded theory approach, which often involves revisiting the initial interview to compare experiences and understanding with initial theory development (Charmaz, 2006).

1.8 Key Concepts

Four key concepts form the focus of this study. The following section provides brief definitions of these concepts:

Early career academic (or ECA): A beginning university lecturer, within their first five years of an appointment to a university Faculty, who engages in both teaching and research activities (ECAs and WIL, 2006).

Academic work: As stated by Star (2004) '*t*he work of an academic comprises a set of three important roles; research, teaching and service' (as cited in Hemmings et al, 2012).

Developmental network: A type of social network involving a range of people in professional and personal contexts that supports and advances professional growth and development (Higgins & Kram, 2001).

Informed learning: Using information to learn (Bruce, 2008).

1.9 Structure of the Thesis

The following chapter presents an exploratory review of the literature to gain theoretical sensitivity towards developing a constructivist grounded theory. This is done through an initial general overview of the topic, to identify any gaps in the research area, identify and define the research problem and research question and to assist in designing the interview guide and concurrent data analysis. The third chapter describes the chosen research methodology, qualitative constructivist grounded theory, and the process for collecting and analysing data. Chapters Four and Five present the research findings and theoretical model related to developmental networking for early career academics and how they use information to learn in this context. This will be followed by a discussion of the findings and implications for key groups in Chapter Six, and a summary of how the findings work toward answering the research questions with recommendations for future research, in the conclusion chapter, Chapter Seven.

CHAPTER TWO

Literature Review

2.0 Introduction

This interdisciplinary study draws together theory from a number of fields including higher education, information behaviour, information literacy, human resource development, communication and social psychology. The role of the literature review in constructivist grounded theory research is to assist in the development of 'theoretical sensitivity' of the researcher, through gaining a broad understanding of the context of the topic (Charmaz, 2006).

The concept of 'theoretical sensitivity' refers to the "level of insight into the research area" possessed by the researcher (Mills et al., 2006b, p.4), such as the level of prior knowledge of the discipline and/or experience within the context being studied. In terms of prior theoretical knowledge, the role of the literature review in grounded theory methodology is often debated (Dunne, 2011), with the traditional argument that a literature review should be carried out following the initial data collection phase being challenged by proponents of interpretivist grounded theory approaches (Charmaz, 2006, Mills et al., 2006b). Proponents of constructivist grounded theory regard the literature review as part of the construction of knowledge, and that knowledge is woven into the project (Charmaz, 2006, p. 167). Constructivists posit that researchers are "part of the research endeavour rather than objective observers, and their values must be acknowledged by themselves and by their readers as an inevitable part of the outcome" (Mills et al., 2006b, p. 2). This means it is important for the researcher (and potentially the participants also) to reflect on, and make

explicit, their relevant prior background and experiences and how these might be influencing and informing the study. Thus, the purposes of this literature review are for the researcher:

- to gain an initial general overview of the topic;

- to identify any gaps in the research area;

- to identify and define the research problem and research question;

- to design the research interview guide; and

- to link and integrate themes emerging from the study with the relevant literature, as presented in Appendix B (first phase of study) and Chapter Six (analysis/discussion of main findings).

This chapter is divided into three sections. The first section will discuss the literature on early career academics in higher education, their support systems and key focus areas relevant to ECAs for this study. The second part will explore the literature on networking in academia in general, followed by developmental networking and mentoring or learning relationships for ECAs. The third section will discuss the informed learning concept and its relevance to developmental networking as an information practice, followed by affective dimensions of information, incorporating literature from both information literacy and information behaviour fields.

2.1 Early Career Academics

There are a range of definitions of an early career academic. In Australia, an 'early career academic' is generally defined as an academic within the first five years of a full time, part time or sessional appointment to a university faculty (ECAs and WIL, 2006), who may be a doctorate holder or doctoral candidate and who has an expectation to engage in both research and teaching duties (Hemmings & Kay, 2010). In the United States, the 'early

career academic' stage has been defined as the period spanning between the beginning of doctoral candidacy, throughout an appointment to 'assistant professor' and ends when the academic is promoted to 'associate professor'. This formative period could span between ten to thirteen years (Foote, 2010). This study focuses on full time permanent ECAs, in the Australian university context only, who have joined academia after gaining some industry/professional work experience.

Sutherland & Petersen (2010) provide a major literature review of all studies on issues related to success, retention, satisfaction, socialisation and influence of early career academics. Their findings suggest that successful ECAs have established research profiles, strong publication and grant winning track records, access to research networks, have a strong sense of self-efficacy and collegiality as well as a balanced attitude to work and personal satisfaction. Factors that influence the success of ECAs that are inter-related, include institutional support (supportive Head of School, colleagues, culture of openness and mentoring), prior experience (graduate school, mentoring by postgraduate supervisors and industry experience) and personal characteristics of the ECA (knowledgeable, up-to-date in new developments, collaborative, broad networks of support, resourceful in seeking support, help and guidance, resilience, committed, collegial and caring, self-disciplined and conscious of balancing work and home life).

Early career academics' development of self-efficacy is an emerging theme in this area. Self-efficacy is a psychological concept that relates to the level of confidence a person has in completing a task; in this context, it relates to the building of confidence in an early career academic over this 'formative' period, that he or she can perform the required tasks independently and competently (Hemmings, forthcoming). Developing self-efficacy and identifying the sources of confidence building for ECAs have been studied in the specific contexts of research development and research productivity

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(Hemmings, forthcoming; Hemmings & Kay, 2010) and for performing academic tasks and duties in general (Major & Dolly, 2003). Often, self-efficacy of academics for a range of tasks is mentioned as a key outcome of mentoring, research supervision and other professional development programs (Bruce & Stoodley, 2009; Nakamura et al, 2009; Sutherland & Petersen, 2010).

2.1.1 Theories of 'Support System' for Early Career Academics

Recent literature in the higher education field has seen the emergence of themes of creating supportive and positive learning and working environments in universities (Foote, 2010; Nakamura et al, 2009). In a broader sense, such environments are essential to fostering cultures of creativity in higher education and promoting the conception of universities as sources of creativity and innovation that are critical to the development of the global knowledge economy (Peters et al, 2009).

The conception of a 'support system', most relevant to this study, is explored by Greene et al (2008) who used data from an online survey of new academics in American public universities to develop a comprehensive support system model for new faculty. A key research question for this study was: What kind of support system(s) need(s) to be in place to assist new faculty in balancing teaching, research and service expectations? Greene et al (2008) points to a need for further empirical research into effective practices in mediating the challenges that new faculty face. The model developed focuses on improving the following areas: research support, mentor support, limited responsibilities, clear expectations, open communication and a collegial and welcoming environment. While participants reported varying degrees of need and experienced success

within these areas, the researchers provide a general conceptual model that can be tailored for use within universities of all types worldwide.

It is noteworthy, however, that Greene et al does not clearly distinguish between the terms 'support' and 'mentoring'. Further clarification of the terms may be useful as attempted by Gibson (2005). As Greene et al implies with their model, the term 'support' in the context of early career development for university academics, is broader than 'mentoring', with mentoring identified as one potential way of providing support.

Identifying the types of support and support services to early career academics, i.e. people/departments that constitute a 'support system' may be potentially useful for this study. Greene et al (2008) also investigated the types of formal support (i.e. institutional and administrative) and informal support (i.e. socialisation among colleagues, peers and friends) that are available to new academics during their progress toward tenure. Foote (2010) introduces the concept of a 'community of support' for ECAs in the geography field, which broadly relates to fostering collaborative and supportive cultures in universities. Using current research and experience to draw attention to an apparent disparity between the graduate training and real work expectations of geography academics, Foote argues for a need to improve the quality of training to prepare early career academics for balancing the challenges they will face in a range of spheres, in both their professional and personal lives.

Foote (2010) argues that a change in the attitudes of some senior academics, who believe that the ECA period is about testing whether the new academic can 'survive' the expectations on their own, is necessary and that a more supportive culture may need to be developed. Another emerging theme is that of making the knowledge needed to be successful in

an academic career explicit, rather than implicit, as it has been in the past, and incorporating this explicit knowledge into graduate and professional development programs for ECAs. This would assist in breaking down the barriers between those who have privileged access to this knowledge and those who do not, thus assisting in successful outcomes for all ECAs and promoting a less competitive and more equitable and collegial culture (Foote, 2010). Similarly, Coates et al (2009) highlight the link between fostering 'environmental support' within the work environment of ECAs and improving the attractiveness of the academic profession both in Australian and overseas institutions.

Foote (2010) raises an important point that for an ECA support system or community to be genuinely 'supportive' then the ECAs, who reportedly do not often ask for assistance for a variety of reasons, may need to be encouraged to ask for help and also need to know how to make informed decisions on which source of support to choose at the right time and for a particular purpose. The building and usage of networks of supportive people is discussed by Foote, as a way of easing the isolation that ECAs can often feel and that training in this area for ECAs is regarded as an essential strategy for empowering new academics. In the same way, more experienced academics may need to undergo further training alongside less experienced academics, to upgrade their professional, research and curriculum development knowledge.

Foote (2010) points to a need for further research into two main areas: 1) longitudinal studies into the usefulness of particular professional development programs in preparing ECAs, among other academics, and 2) the development of support for doctoral students and ECAs who choose to work outside of academia (business, government or NGOs).

In summary, this review is beginning to reveal that the key focus areas relevant to ECAs for this study are:

- Research support for publication and grants development (Hemmings et al, 2009; Greene, 2008; Sutherland & Petersen, 2010);

- Mentoring (Foote, 2010; Greene et al, 2008; Nakamura et al, 2009);

- Building and using support networks for research and teaching (Foote, 2010; Sutherland & Petersen, 2010);

- Balancing duties in research, teaching and service (Greene et al, 2008);

- Balancing work and personal life (Foote, 2010; Sutherland & Petersen, 2010);

- Formal and informal sources of support (Greene et al, 2008);

- Fostering a supportive culture of open communication, collaboration and collegiality (Foote, 2010);

- Environmental support (Coates et al, 2009; Foote, 2010);

- Professional development programs for ECAs and those who support ECAs i.e. senior academics or research/teaching support staff (Foote, 2010);

- Support for ECAs who choose to work outside academia (Foote, 2010);

- ECAs' development of self-efficacy for a range of academic tasks (Hemmings et al, 2009; Major & Dolly, 2003; Sutherland & Petersen, 2010); and

- Use of prior experiences in graduate school and industry (Sutherland & Petersen, 2010).

Identifying these key focus areas for ECAs will be helpful during data analysis, where learning activities while developmental networking can be explored and linked to the literature. While this section provides a broad background into current ECA issues and activities, the following section

will explore developmental networks within the general context of networking for ECAs.

2.2 Academic Networks in Higher Education

Effective networking is commonly defined as the ability to create, use and maintain contacts with a range of people in both professional and personal contexts both locally and globally (de Janasz & Forret, 2008). Networking skills have been identified as critical to career and life success in general, as well as for increasing the resources available to an individual or group as a result of his or her personal relationships, known as 'social capital' (Baker, 2000; de Janasz & Forret, 2008). Networking related to human relationships of a social nature is often broadly referred to as 'social networking' (Borgatti & Cross, 2003; Huttala & Lutta, 2009). A common issue in the literature on networking in a range of contexts is that many people are unaware of the value of networking skills and could improve their chances of success by developing the ability to network with confidence (de Janasz & Forret, 2008). For early career academics, networking is often mentioned as a 'survival' skill necessary for overall success (Kenway et al, 2005; Sutherland & Petersen, 2010) and for developing essential partnerships between universities, industry and other outside professional bodies (Lam, 2007).

The identification of different types of academic networks and their purposes could benefit this study. A key text devoted to assisting early career academics to develop networking skills (Kenway et al, 2005) identifies three broad types of networks in higher education: Academic (research and teaching), stakeholder and dissemination. Other types identified from the higher education literature include, 'support networks' (professional and personal) (Foote, 2010), 'peer' or 'co-learning' networks, 'information networks' and 'knowledge networks' (Lam, 2007), 'social networks' and 'developmental networks' (Baker Sweitzer, 2009). All of

these networks are described in terms of their specific purposes (networks for teaching, research, dissemination or promotion of output, emotional support, collaborative learning, sharing information and knowledge resources). In this way, each of these identified networks is a 'social network', as they consist of social relationships between people, whose purposes could overlap between these specific networks (e.g. the same person may be part of another's teaching, research, support and information sharing networks).

2.2.1 Developmental Networks and Mentoring in Higher Education

The complexity of this networking 'landscape' is suggested in the developmental networks literature (Chandler & Kram, 2005; Higgins & Kram, 2001), which defines a developmental network as a type of social network:

> The key distinction between an individual's social network and his or her developmental network is that the former includes all social ties, whereas the latter includes only those that are identified as of particular importance to career growth and personal learning (Chandler & Kram, 2005, p. 548).

This study will focus on relationships which are significant to a person's 'career growth and personal learning', as opposed to those relationships that are merely social, but not connected to this goal. The theory of developmental networks has originated from the literature and research on mentoring and the changing nature of the mentoring experience from traditional one-on-one 'dyadic' mentoring relationships (Mullen, 1994; Nakamura et al, 2009), to a 'constellation' of formal and informal mentoring and learning relationships potentially beneficial for career and professional growth, satisfaction and success (Higgins & Kram, 2001). Developmental networks theory has emerged as a response to the changing work and technological environment, where careers have become more mobile,

flexible and 'boundaryless' (Molly, 2005). Several purposes and benefits of establishing and nurturing a mentoring and developmental network have been identified in the literature including: access to multiple mentors within one's organisation and beyond and other learning partners for different purposes within a career (Crocitto et al, 2005; Higgins & Kram, 2001; Molly, 2005), development of confidence and self-efficacy in employees (Chandler & Kram, 2005), establishing a professional identity (Baker Sweitzer, 2009; Chandler & Kram, 2005), career development and access to job opportunities and career path advice (Crocitto et al, 2005), development of learning organisations and social capital (Emmerik, 2004).

This theory appears to be growing in recognition and is being used in studies into a range of professional and learning experiences (Baker Sweitzer, 2009; Molly, 2005), particularly in the corporate contexts. However, studies that incorporate developmental networks theory into educational contexts, including higher education and university settings, are scarce even though the opportunity is ripe. The use of multiple mentors in academia has been studied by de Janesz & Sullivan (2004). Recent studies conducted by Baker Sweitzer et al (2009) remain the only studies to use developmental networking theory to explore the doctoral experience in higher education and calls for further interdisciplinary research into the doctoral and early career academic experience from a developmental networking perspective.

Similarly, mentoring as a broader topic has received little attention in the higher education context, in comparison to the literature pertaining to human resource development. Nakamura et al (2009) attempt to explore mentoring experiences in higher education, conceptualising mentoring as "maintaining a pattern of culture" and "the transmission of values, practices, knowledge and other memes (or units of information) across generations". Nakamura et al (2009) contribute to our understanding of

how knowledge is generated, transmitted and then reshaped from one generation to the next, posing questions such as: What are the common memes – or units of information – present in all "lineages", and which ones are unique? What are the practices that make mentors effective? What kind of relationships support good mentoring? How do we train new cohorts so that they will carry on what they are supposed to do, without losing what is good about the past, yet adding fresh knowledge as they go along? However, this work focuses on 'dyadic' (one-on-one) relationships between mentors and protégés and does not attempt to integrate developmental networks theory, even though Kram's early work is referenced. Research into the mentoring experience in higher education could benefit from broader perspectives that view mentoring as a practice of networking, rather than a single relationship between two people. The relationship between doctoral candidates and their research supervisors and pedagogies to support this has been researched by Bruce & Stoodley (2009). This study provides valuable insight into the research supervisory experience and processes from both student and mentor perspectives, however as this study focuses on learning relationships for research purposes only, providing only one piece of a larger picture; a holistic view of support for the early career academic experience is needed.

2.2.2 The Role of Human Relationships in Developmental Networks

Networks are made up of interactive (inter-connective) relationships between people. Thus both relationship or partnership building and social interaction abilities are crucial to creating, utilising and maintaining such networks. In the education literature 'relational agency' theory has been used as a way of framing our understanding of the early career academic and doctoral candidate experiences (Hopwood, 2010; Hopwood & Sutherland, 2009; Sutherland & Petersen, 2010). The concept of 'relational agency' (Edwards, 2006) originates from a socio-cultural, psychological and activity theory perspective study conducted by Edwards & Darcy

(2004) in the teaching context, examining how beginning teachers learn about students' learning. They argue that relational agency is "the ability to seek out and use others as resources for action and equally to be able to respond to the need for support from others." (pp. 149-150) and that the "affective notion of relational agency needs to become more central to understanding pedagogy" (p. 147).

This concept exists in contrast to 'individual agency', which has been shown to be of significance for ECA success with the observation that "the lecturers who appeared to learn most effectively among their established colleagues were those who recognised their own learning needs and who proactively pursued them." (Warhurst, 2008, p. 465). This finding reflects interest in the concept of 'self-efficacy' for ECAs (Hemmings et al, 2009) and on another level, the perceived traditional culture of 'self-help' in the higher education context (Foote, 2010). The use of 'relational agency' theory, transferred from beginning teachers in a secondary school context to ECAs in university context, is a significant contrast to the individual focus, which appears to have dominated higher education theory and practice (Foote, 2010). Hopwood & Sutherland (2009) propose the idea that 'relational agency' in essential for ECA success, in light of findings that key practices that enable ECA success such as mentoring, networking, sharing ideas and resources, help seeking and collegiality, cannot be achieved alone, and all involve building and maintaining positive and supportive relationships. In summary, relational agency is about "knowing how to know whom" (Hopwood, 2010; Hopwood & Sutherland, 2009). This conceptualisation of ECA development draws attention to issues such as relationship quality, and factors associated in successful relationship building (Dutton & Heaphy, 2003; Seligman, 2002). Other types of human relationships relevant to this context include: 'information relationships' for creating actionable knowledge in social networks within organisational settings, similar to the concept of relational agency which emphasises the importance of possessing 'know-who' at critical times (Cross & Sproull,

2004) and mentoring relationships, mainly discussed in the literature as 'dyadic', between two people – mentor and protégé. (Mullen, 1994; Nakamura et al, 2009).

2.2.3 The Role of Social Interaction in Developmental Networks

Key constructs that are relevant to relationship building and networking are those related to the broad areas of human social interaction and communication. These include:

- Emotional intelligence (Arnold, 2005; Goleman, 1995);
- Interpersonal and communication skills (online/face-to-face/blended, informal/formal);
- Empathy and trust building (Arnold, 2005; Baker, 2000; Miller & Wallis, 2011);
- High quality connections (Dutton & Heaphy, 2003); and
- Positive psychology (Seligman, 2002).

The finding that effective networking relationships are built on trust (Baker, 2000) prompts the need to explore the issue of building trust as a 'stepping stone' to effective networking for learning or mentoring. The tenets of 'emotional intelligence' (Goleman, 1995) for establishing and maintaining positive relationships, including the use of empathic communication (Arnold, 2005), are viewed as central to trust building. Empathy, in its many forms and uses, is commonly defined as the ability to identify and understand another person's situation and feelings (Preece & Ghozati, 2001) and is used to establish rapport and build a basis for trustworthy communication (Pfeil & Zaphiris, 2007). A review of the literature on empathy as a key construct in social interaction for information and knowledge management (Miller & Wallis, 2011), points to an opportunity to deepen our understanding of the nature and role of empathy as a factor in developing relationship quality (Vallor, 2009), that requires both cognitive and affective abilities. It is important to recognize that this phenomenon is occurring within a context of three major

paradigm shifts: 1) the merging of traditional communication techniques (face-to-face, telephone) with collaborative Web 2.0 technologies; 2) the transition from the information age to the conceptual age; and 3) the growing need for understanding of the affective paradigm in the information and knowledge professions, including learning, teaching and mentoring. Findings from this initial review indicate that empathy is recognized as a key social and psychological construct useful for examining the quality of social interaction, relationship building between people and networking in a range of human and client services environments. However, the review also notes that studies on the use of empathic interaction as a relationship and trust building technique within the educational sector, particularly higher education, are scarce and this raises some questions as to why this is the case.

These contexts have growing implications for the study of the role and nature of empathy as a relationship building technique in developmental networking. Higgins (2007) considers the role of empathy from the protégés perspective, in building developmental networks, however this has not yet been studied in depth. The study of empathy is also linked in the literature to the positive psychology movement which seeks to explore and understand issues related to work/life balance, healthy and positive relationships at work and in personal life, positive change, health and wellbeing and career and life satisfaction (Seligman, 2002). Another relevant concept is that of 'high quality connections', which refers to 'ties characterized by mutuality, positive regard and vitality' (Dutton, 2003; Dutton and Heaphy, 2003).

> When people are in a high quality connection, it is generative and beneficial for all people involved in the tie. The generative (i.e., capability or capacity-building) qualities of high quality connections makes them potent constructs for generating new ways of understanding relational phenomena in organizations. While social exchange theory is perhaps the predominant relational theory in organizational studies (e.g., Blau, 1964),

a focus on high quality connections encourages inclusion of a broader set of theories, including learning theories, identity theories, and theories of growth and development. Together, the focus on high quality connections and the difference they make bridges research on social networks, mentoring, social capital, community, teams, careers and diversity and partnering by highlighting how the quality of interrelating shapes structures, processes and capabilities (Heaphy and Dutton, 2006, p. 2).

Among other findings, research into building 'high quality connections' has revealed that these types of relationships enable effective information and knowledge exchange or sharing (Heaphy & Dutton, 2006). These areas are relevant to this study, in terms of extending the theoretical and practical implications and providing a more holistic, balanced view of the experiences of ECAs practices.

This section has drawn together literature from social networking and developmental networks and relationships in both academic and professional contexts. Implicit in these relationships is the role and use of information or knowledge. The following section explores the concept of informed learning and its theoretical foundations as a conceptual framework for this study, and as an alternative perspective to existing studies into developmental networking in higher education.

2.3 Informed Learning

As there is a paucity of research into the role or influence of information, knowledge or information literacy in the area of developmental networking for early career academics, this research aims to fill this gap. The overarching conceptual framework to be used for this study is the theory of informed learning, as conceptualised by Bruce (2008). Bruce (2008) defines the concept of informed learning as 'the use of information for learning', which has emerged from:

….a growing body of evidence suggesting that information and

information use   could be regarded as mediators between learning intent and learning outcomes. If we understand information literacy as being about using information to learn, we can draw on information use or information practices to help secure the learning outcomes we seek. Information use becomes one dimension of that complex phenomenon we know as learning. Being aware of the role of information and its uses becomes an avenue for improving learning. Treating information use and learning as closely related enhances the learning experience (Bruce, 2008, p. 17).

From initial reading, informed learning (the use of information for learning) was selected as the conceptual framework for this study as the key information practice to be examined is a learning activity and concept (mentoring and developmental networking of ECAs in the higher education context – and potentially outside of this context). The term 'informed learning' also has the potential to reach the broader, cross-disciplinary audience that this study aims to inform and influence, as one of the key principles of informed learning is that information and learning are closely connected and are simultaneous (Bruce, 2008).

The term 'learning' is, arguably, more acceptable or recognisable for audiences within non-information disciplines, whereas 'literacy' or 'behaviour' have a range of definitions and connotations within non-information disciplines and this may become somewhat problematic. Other information or knowledge related terms that appear frequently in the non-information literature include information or knowledge 'exchange', information or knowledge 'flow' and information or knowledge 'sharing'. Each of these terms could arguably be categorised under the broad concept of 'information behaviour', however each term does not have a strong theoretical base for support. Additionally, none of these terms firmly encapsulates the notion of learning within the context under consideration. Thus, use of the term 'informed learning' appears to be the most suitable term to use and focus on for this study, as supported by key studies

primarily in the areas of information literacy and learning, and secondarily by fields such as information seeking, use or information behaviour, as suggested by Bruce (2008):

> Information literacy research forms the cornerstone of existing research underpinning informed learning. Information literacy research is interdisciplinary, being influenced primarily by learning theory and the broader domain of educational research, and secondarily by other fields, such as information seeking and use, information behaviour, psychology, literacy, health, or management to name a few (p. 132)

2.3.1 Foundations of 'Informed Learning'

The notion of 'informed learning' fundamentally represents the relational approach to information literacy. Informed learning as a concept originated from the 'Seven Faces of Informed Learning' model developed by Bruce (2008). This current model has been adapted from her earlier model 'The Seven Faces of Information Literacy' (Bruce, 1997). Bruce developed informed learning as:

> ...an extension of the relational model for information literacy and information literacy education (Bruce, 1997). The relational model emphasises the importance of uncovering variation and establishes the importance of 1) interpreting the phenomena of *information use* and *information* from an experiential or relational perspective and 2) interpreting information literacy education as bringing peoples' information practices (professional, disciplinary or civic) into the curriculum (Bruce, 2008, p. 131).

As informed learning is based on the relational model of information literacy, it important to understand the meaning of 'relationality' as a key principle of informed learning. Andretta (2012) traces the origins of the relational approach to information literacy using phenomenography, where "subject-object relation is examined through the structure of awareness"

(p. 20). When this phenomenographic principle is used for understanding information literacy, as discussed by Bruce (1997) "the object part of the subject-object relation is information... information literacy may be described as a series of varying relations between people and information." (Bruce, 1997, p. 111). Thus, informed learning is strongly influenced by the notion of 'subject-object' (or 'learner-information') relation.

Informed learning is learner-centred, reflected in one of its key principles of 'second-order perspective', which means taking into account learners' experiences (Bruce, 2008). The concept aims to expand the repertoire of learners' experiences and to help them adopt the full range of possible experiences, thus contributing to improving the quality of learning (Bruce, 2008). While information literacy is the ability to draw upon different ways of experiencing using information to learn, informed learning is an interdisciplinary concept which is supported by previous research into student learning and different ways of experiencing teaching and assessment (Bruce, 2008).

However, while the concept of informed learning has emerged and evolved from the formal learning environment, the theory also seeks to be used to understand and improve quality of learning within information practices in a variety of contexts outside of formal education, such as workplace, community and social life, where informed learning could contribute to our understanding of learning in informal environments. For example, recent research has identified a potential connection between Bruce's informed learning concept and the fields of knowledge management and workplace performance (Howard & Ryan, 2010).

Relevant to this study is the social constructivist approach to conceptualising information literacy in the workplace, which highlights the

collaborative nature and relational dimensions of information literacy as central to learning specific tasks and activities within a professional practice context (Bruce, 1999; Lloyd, 2007). It important to note that within the social constructivist approach, the relational (as developed by Bruce (1999)) and socio-cultural (as developed by Lloyd, 2007) approaches to conceptualising information literacy are contrasting and potentially complementary, in that the relational approach encompasses subject-object relation, while the socio-cultural approach emphasises a human relations perspective (Lloyd, 2007). A study by Hepworth & Smith (2008) of workplace information literacy in the context of university administration shows a preference for collaborative information sharing and social information sources. This study could be useful as general staff in universities such as administrative officers and managers are potential sources of support for ECAs in balancing teaching and research activities.

Other principles of informed learning include the nature of information, reflection and awareness (these will be explored more fully in context of findings and discussion in Chapter 6).

2.3.2 What is an Information Practice?

Bruce (2008) defines information practices as:

> ...those academic, professional and civic activities that require interaction with the information environment; sometimes within a technological context and sometimes not... Information practices rely on creative,
>
> reflective and ethical information use. (Bruce, 2008, p. 9).

Using this definition, the activity of developmental networking by ECAs is conceptualised in this study as an 'information practice'. The informed learning concepts as outlined by Bruce (2008) for professional practice, research community and research students, appear relevant to ECAs. Depending on success of interviews with participants, informed learning in

the context of community interaction could potentially become relevant, as participants could mention that their networking practices span over environments outside of the university.

2.3.3 Information Literacy and Information Behaviour of Early Career Academics

Two main areas within the fields of information literacy and information behaviour appear to be relevant to this study:

1) Workplace information literacy (Hepworth & Smith, 2008; Lloyd, 2007; Bruce, 1999)
2) Affective dimensions of information behaviour (Miller, 2008; Mills, 2002; Nahl & Bilal, 2007)

Some of this work focuses specifically on the university academic contexts (Bruce, 2008; Hepworth & Smith, 2008; Miller, 2008; Mills, 2002), while others provide a conceptual framework for these sub-areas (Lloyd, 2007; Nahl & Bilal, 2007). To date there have been no studies which specifically examine information behaviour or information literacy of early career academics, or within the practice of mentoring and developmental networking. A challenge exists here to successfully use information behaviour and information literacy theory to complement each other, as both theories appear to be relevant to the information practice of mentoring and developmental networking.

2.2.4 Affective Dimensions of Information Behaviour

The body of literature in information behaviour commonly recognises the significance of people preferring to consult other people as information sources in a range of contexts (Case, 2007). The social aspects of information behaviour have mainly been studied from a socio-cognitive framework, however as Nahl & Bilal (2007) point out, such studies often overlook the affective or emotional dimensions (feelings) or how cognitive

(thinking) aspects of information behaviour can be influenced by affective factors. In recognising this, the affective 'movement' seeks to provide a more holistic view of information behaviour in a variety of contexts, towards improving the design of both physical and online environments to support effective information practices.

Three in-depth, face-to-face pilot interviews investigating the research information needs of university academics engaged in interdisciplinary (policy-oriented) research projects (Miller, 2008), carried out as part of a coursework Masters, revealed some emerging issues related to the information experiences of two established academics in comparison to an early career academic. Findings indicate that both established academics and the ECA recognise the increasingly complex information environments they are working in. However, the ECA conceptualises information as mainly textual (print, electronic), emphasising the building of a 'platform' of knowledge from which to draw upon for their doctoral and future research that can feed into their teaching. In contrast, both of the established academics, while acknowledging the importance of textual sources of information, make further reference to their use of established 'networks' or 'connections' with personal contacts, both local and from overseas, built up over many years, that can facilitate their work in a number of ways such as providing access to research data, participants and research funding. Additionally, the ECA reports that improvements need to be made to foster a more active research culture and to provide opportunities for exchanging information and feedback at face-to-face meetings, which he identifies as motivating factors that can help reduce feelings of 'intellectual isolation'. While the use of social technologies can also help ease feelings of isolation, the participant says that for him, it is no substitute for the benefits of face-to-face, personal interaction.

Although the ECA in this study did not explicitly mention the term 'networking', it is clear from his comments that the social, personal and

affective aspects are quite significant to the successful progression of both his research and teaching activities, in particular the importance of face-to-face interaction with a range of people regarded as 'supportive'. Mills (2002), in a study of 32 academics from various disciplines and career stages, concludes that information seeking behaviour of university academics is very individual and that individual or personality differences may also influence one's interaction preferences with various information and knowledge sources and channels. However, as the data used in this study to draw this conclusion were gathered from academics at various career stages from one regional university, it cannot be generalised whether there are differences between the particular information experiences of ECAs and academics at other career stages and from other universities.

2.4 Conclusion

In conclusion, the initial review of relevant literature reveals a shift in focus from the individual experience to a 'relational' experience, reflected in the literature from the fields of human resource development (Dutton & Heaphy, 2003; Higgins & Kram, 2001), education (Arnold, 2005; Baker Sweitzer, 2009; Edwards, 2006; Hopwood & Sutherland, 2009), information behaviour (Miller & Wallis, 2011; Mills, 2002; Nahl & Bilal, 2007) and information literacy (Bruce, 1997; Bruce, 2008; Lloyd, 2007). This finding prompts the need for further research into affective and relational dimensions of information, learning and social networks (Schultz-Jones, 2009) in a range of contexts, to complement and enhance the dominant cognitive perspectives that frame our current understanding.

Themes of human relationship building (Hopwood, 2010; Cross & Sproull, 2004), high quality connections (Dutton & Heaphy, 2003) and developmental networking (Baker Sweitzer, 2009; Higgins & Kram, 2001) in the context of the growing use of social, collaborative technologies

blended with traditional communication methods, suggest an increasingly complex information practice (Miller, 2008, Miller & Wallis, 2011) particularly for the beginning university academic. The notion that information and learning are inextricably linked (Bruce, 2008) via the concept of 'informed learning' deserves further attention in a complex information practice such as developmental networking for ECAs. Further study needs to be conducted to gain a clearer picture of how early career academics are using information within this key information practice: to build, maintain and utilise their developmental networks.

Knowledge Ecosystems of Early Career Academics: A Grounded Theory of Experiencing Information Use for Learning in Developmental Networks

CHAPTER THREE

Methodology

3.0 Introduction

This chapter explores the methodology of constructivist grounded theory, and the techniques employed in collecting and analysing data that assists in interpreting answers to the research questions. This chapter includes a description of the research design of the main study (phases one and two) participant selection and recruitment, data generation through semi-structured interviews and data analysis through open and focused coding of interview transcripts, constant comparison technique and theoretical sampling, and maintaining/evaluating quality throughout the study. Using the qualitative method of grounded theory allowed for investigation of the complex ways ECAs use information to learn while networking for professional growth and development.

3.1 Designing Grounded Theory Research

This study employed constructivist grounded theory methodology. Grounded theory is a methodological framework that is commonly used in a range of social science research projects. The following section is a brief overview of the history and principles of grounded theory. It also outlines the various positions and approaches that have been contested within grounded theory, including the constructivist approach and how this contrasts with other grounded theory approaches. This outline will demonstrate my understanding of how grounded theory has developed as a research methodology and the different forms of grounded theory. This will assist in supporting my choice of methodology, as well as the suitability of employing constructivist grounded theory for this particular study.

Knowledge Ecosystems of Early Career Academics: A Grounded Theory of
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3.1.1 Grounded Theory: Background

Grounded theory as a social research methodology originates from *The Discovery of Grounded Theory* (1967) by Barney Glaser and Anselm Strauss. In this text, Glaser & Strauss described a process of generating theory that was "grounded" in the data collected through social research methods in the field (Glaser & Strauss, 1967). They described strategies to be applied throughout the stages of qualitative research projects. Glaser & Strauss define the method as resulting in a "finished grounded theory that explains the studied process in new theoretical terms, explicates the properties of the theoretical categories, and often demonstrates the causes and conditions under which the process emerges and varies, and delineates its consequences" (Charmaz, 2006, pp. 7-8). Their focus was on developing "middle-range" theories related to specific sociological phenomenon (pp. 32-33) that had the possibility of predicting or explaining behaviour through generalisation (p. 3). This reflects the positivist influences of early conceptions of grounded theory, where Glaser & Strauss attempted to provide a more rigorous, systematic approach to qualitative research that used inductive analytic processes. This early approach to grounded theory was developed during a time when social researchers prioritised the use of deductive analysis within quantitative frameworks, and qualitative studies were judged as lacking in credibility.

3.1.2 Positivist and Interpretivist Positions of Grounded Theory

Since its genesis, grounded theory has been adopted by two main positions: positivist and interpretivist (Charmaz, 2006; Corbin & Strauss, 2008). Early conceptions of the grounded theory method by Glaser & Strauss did not delineate a clear position, as Glaser was from a positivist tradition, which accepts that there is a single objective truth that can be discovered, and Strauss was an interpretivist, influenced by the concept of symbolic

interactionism, which posits that knowledge is created through interaction and that truth is subjective (Charmaz, 2006; Corbin & Strauss, 2008). As Glaser and Strauss came from different traditions, there exists some conflict and tension regarding the original epistemological foundations of grounded theory. Alternative positions such as constructivist grounded theory as developed by Kathy Charmaz have advanced the methodology and its application to qualitative research, particularly from an interpretivist position. Understanding the main critiques of the method have helped the researcher and will help the reader situate constructivist grounded theory as an evolved form of the original method.

A major critique of Glaser & Strauss' form of grounded theory is that it is not clear why the language associated with positivism and deductive reasoning is used to describe an inductive research process. It appears to describe positivist methods to achieve an interpretivist research outcome: to allow categories and properties to emerge (p. 107). Glaser (1978) focuses on more systematic methods of developing codes to build categories, while stressing 'emergence of theory'. However, Glaser does not explore the notion that the researcher constructs codes and categories from the data through his or her own interpretations. Unlike Glaser, Kathy Charmaz' constructivist approach to grounded theory recognises the role of the researcher in constructing interpretations through various interactions. My research aligns with the principles of constructivist grounded theory, as it aims to develop in-depth understanding of the complexity associated with social processes (using information to learn in professional growth and development networks) as experienced by individuals (my participants and myself as the researcher) who are constructing personal meaning through their interactions with others in their developmental network contexts. The following section will outline constructivist grounded theory principles as developed by Kathy Charmaz (2006) and will help reveal how constructivist grounded theory is appropriate for my study.

3.1.3 Grounded Theory: Constructivist Position

In *Constructing Grounded Theory* Charmaz states that:

> "Grounded theory serves as a way to learn about the worlds we study and a method for developing theories to understand them. In classic grounded theory works, Glaser and Strauss talk about discovering theory as emerging from data separate from the scientific observer. Unlike their position, I assume that neither data nor theories are discovered. Rather, we are part of the world we study and the data we collect. We construct our grounded theories through our past and present involvements and interactions with people, perspectives and research practices." (Charmaz, 2006, p. 10).

The constructivist paradigm emphasises personal, subjective making or construction of reality (Williamson, 2002) and a multiple realities/perspectives approach (Charmaz, 2006; Patton, 2002). Closely related to this paradigm is symbolic interactionism, a perspective "which assumes that individuals are active, creative and reflective and that social life consists of processes." (Charmaz, 2006, p. 189). Charmaz' approach to grounded theory involves the use of a set of principles and practices, emphasising flexible guidelines:

> Researchers can use basic grounded theory guidelines such as coding, memo writing and sampling for theory development and comparative methods in many ways are neutral. Grounded theory guidelines describe the steps of the research process and provide a path through it. Researchers can adopt and adapt them to conduct diverse studies (Charmaz, 2006, p. 9).

In addition, grounded theory can complement other approaches to qualitative data analysis (Charmaz, 2006). An important feature of grounded theory is that data generation and data analysis occur concurrently (Charmaz, 2007).

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Mills, Bonner, and Francis (2006a, p. 9) outline three theoretical principles of constructivist grounded theory.

1. The creation of a sense of reciprocity between participants and the researcher in the co-construction of meaning and, ultimately, a theory that is grounded in the participants' and researchers' experience.

2. The establishment of relationships with participants that explicate the power imbalances and attempts to modify these imbalances.

3. Clarification of the position the author takes in the text, the relevance of biography, and how one renders participants' stories into theory through writing.

These broad principles can be suitably used within this study for the following reasons. The notion of co-construction of meaning and theory grounded in both the participants' and researchers' experiences adds great value to the study, to generate new perspectives and concepts that can genuinely represent the 'voices' of a somewhat under-studied group (i.e. early career academics). Being closely linked to the embryonic concepts of informed learning and developmental networking, means the methodology must allow for exploration of any connections and interactions between these broad areas. As the researcher has had significant work experience in higher education alongside other ECAs and could also be defined as an ECA, a theoretical sensitivity from the researcher can effectively facilitate the 'construction' of shared meaning or intersubjectivity. This process began from the conception of the topic, through informal discussions with other academics, and most significantly, during the interviews where participants are guided by a set of broad questions selected by the researcher. Participants were given the opportunity to reflect on the questions

themselves and what they might mean within their own contexts. Although a power imbalance may have existed between participants and researcher (i.e. length of service and types of expertise and professional knowledge of each participant and the researcher will vary), a shared understanding or intersubjectivity was a key goal during the interviews and subsequent interactions through interview transcript checking. Using these principles as guidelines, Charmaz' notion that codes are constructed from the generated data, rather than arising from the data, was of primary importance for this study.

3.1.4 Theoretical Sensitivity

As mentioned in the last section, the concept of 'theoretical sensitivity' refers to the "level of insight into the research area" possessed by the researcher (Mills et al., 2006b, p.4), such as the level of prior knowledge of the discipline and/or experience within the context being studied. In terms of prior theoretical knowledge, the role of the literature review in grounded theory methodology is often debated (Dunne, 2011), with the traditional argument that a literature review should be carried out following the initial data collection phase being challenged by proponents of interpretivist grounded theory approaches (Charmaz, 2006, Mills et al., 2006b). Proponents of constructivist grounded theory regard the literature review as part of the construction of knowledge, and that knowledge is woven into the project (Charmaz, 2006, p. 167). Constructivists posit that researchers are "part of the research endeavour rather than objective observers, and their values must be acknowledged by themselves and by their readers as an inevitable part of the outcome" (Mills et al., 2006b, p. 2). This means it is important for the researcher (and potentially the participants also) to reflect on, and make explicit, their relevant prior background and experiences and how these might be influencing and informing the study.

3.1.5 Use of Constructivist Grounded Theory in Information Research

Constructivist grounded theory has been successfully used as a methodology in previous studies about information literacy (Herring, 2010; Lloyd, 2004). The methodology has been valuable for broadening our understanding of information literacy and information practice and forming alternative conceptualisations of information literacy from the lived experiences of particular groups of learners and users of information. Theories that work towards explicating the research questions arising from such studies are the result of detailed reflections and theme development from analysis of interview data (Charmaz, 2006). This study has resulted in a similar outcome in terms of presenting detailed reflective prose, which explicates the process and experience of the concept of informed learning in the higher education developmental networking context.

3.2 Grounded Theory Data Generation

Regardless of epistemological positioning, researchers agree that the grounded theory is a method designed to study the process people engage in to make meaning of their selves in a particular context. Corbin and Holt suggest that "grounded theorists are not so much interested in individual actors but are more concerned with discovering patterns of action/interaction with changes in conditions, either internal or external to the process itself" (2004, p. 61). Charmaz (2006) emphasises that the focus of data generation and theory building should be on the actions of the participants, rather than static concepts. The focus of this research was on the *process* related to the lived experience and actions of the participants in their use of information to learn while developmental networking.

3.2.1 Research Interviews

To begin to develop an in-depth understanding of the process of use of information, learning and developmental networking, interviews were used to generate data. Interviewing was the primary method of data generation in this study, and is a common practice for data generation in grounded theory (Charmaz, 2006; Corbin & Strauss, 2008; Dey, 1999; Mills et al., 2006a). Interviews are suitable for this research problem because of the focus on personal viewpoints and experiences. A semi-structured interview schedule gave the researcher some control over the interview and organisation of findings, while at the same time remaining open and responsive to unexpected issues brought up by interviewees (Gillham, 2000). Interviewing allowed participants to explain the process and experience of how they use information to learn to build their developmental networks. The interviews allowed the researcher and participants to co-construct the theory through a conversation about their experiences and processes within this information practice.

In following the constructivist grounded theory approach, the interview guide provided a limited number of open-ended questions as a guide, however it also allowed for flexibility in the conversation (Charmaz, 2006). The researcher engaged in qualitative interviewing techniques such as active listening, reflection and paraphrasing during the interviews (Charmaz, 2006). Using these practical interviewing techniques facilitated the conversations in a 'co-constructive' manner, thus the data was generated rather than 'collected'. The initial interview guide is based on questions that arise from theoretical sensitivity constructed during the preliminary literature review and the researcher's own experiences as an early career academic. After the data was generated and categories began to form, the interview guide was revised to reflect emerging categories and new questions. Additionally, during the interviews, some new questions were developed based on participants' responses.

3.2.2 The Participant: Selection and Sampling

The technique of 'purposive sampling' (Pickard, 2007) was used to identify and select suitable participants. This allowed the researcher to define specific criteria for participating in the research and to target and locate participants based on these criteria. As the researcher was interested in examining early career academics' use of information to learn while developmental networking, the following criteria were used. Participants:

1) must be an early career academic - an academic within their first five years of a full time permanent appointment to a university Faculty, who engages in both teaching and research activities;

2) must have significant industry/professional experience before joining academia; and

3) must have experience with networking for professional and personal development towards learning how to be an academic.

The cohorts of potential participants were identified through consideration of their availability, disciplinary diversity and ability to engage with enough data to 'saturate' categories. The researcher expected to generate wider and richer networking experiences from participants with relevant industry backgrounds. Industry experience is defined as having worked in a professional position or role in a non-academic context that consolidates practical understanding of a profession. All participants had between approx 3-10 years of industry experience relevant to their current teaching and research, and this was important as the knowledge from their industry experiences added to the quality of their teaching and research. Academics with no relevant industry experience were excluded, as they would have

provided the researcher with limited data outside of the traditional academic environment.

All participants regarded as 'early career academics' in this study are/were employed as full time permanent academic staff in the first five years of their job. In Australia, at the time of this study, it was possible to be employed as an academic full time without completing a doctoral qualification. Some of the participants in this study were enrolled in PhDs, while others have completed their research training, but they were all 'early career academics' in full time positions.

Constructivist grounded theory's data generation process involved reaching theoretical saturation through diversity of data generated from a minimum of ten participants (Charmaz, 2006). Saturation was reached when no new concepts could be constructed from the data. One example of workplace information literacy research using constructivist grounded theory is Lloyd (2004), which used data collected from fourteen participants to successfully reconceptualise information literacy in the workplace context. Herring (2010) is an example of a grounded theory study, which used a combination (or triangulation) of data collection techniques including interviews, observation and questionnaires, within a constructivist grounded theory framework.

3.3 Generating Research Data

Research data were generated from the two phases of this study: 1) phase one consisting of eight semi-structured interviews and preliminary analysis, and 2) phase two consisting of fourteen semi-structured interviews (including the first eight interviews) and data analysis incorporating early findings from phase one.

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3.3.1 Phase One

Phase one of this study was carried out during the period December 2010 to February 2011. The first phase of data generation consisted of eight semi-structured interviews with ECAs from a range of different disciplines, who met the participant criteria. Interview participants were identified through searching a university communications directory and academic staff web pages online. Participants from all faculties of the university were invited, however participants were available in the Education, Arts and Science faculties. Sample characteristics were: Eight early career academics based at one campus of a regional Australian university across the Faculties of Education (2), Science (3) and Arts (3). Further characteristics of the first eight participants of the entire sample of fourteen participants can be found in Appendix A.

Phase one of this study was designed to identify preliminary concepts and themes in the research as well as to improve and focus the interview questions for the next phase of the project. Findings from the preliminary data analysis and reflection from phase one of the study (located in Appendix B) provided evidence that the interview guide and data generation method had developed effectively, through the formation of themes developed from category saturation. This clearly indicated that the interview schedule and interview techniques were well designed for obtaining the necessary amount of quality data to answer the research question and to develop grounded theory. The following sections describe phase one of the study, its participants and interview method. The grounded theory approach, as discussed in earlier sections, has been implemented through the following stages of phase one.

The data generation process in the first phase of the study involved applying for and obtaining research ethical clearance for low-risk research from the University Human Research Ethics Committee at Queensland

University of Technology (approval number 1000001027), obtaining approvals from relevant Deans, University Faculties and Research Ethics Committee, Charles Sturt University for early career academic staff participation, contacting potential participants by phone or email and scheduling an interview time/place with each participant, emailing an information sheet and consent form to each participant prior to the interview, conducting and recording face-to-face interviews in School based offices of each participant, transcribing audio-taped interviews from a digital voice recorder, performing a member check with each participant via email to verify accuracy of transcripts, and storing data (interview transcripts) in a locked filing cabinet (physical data) and password protected hard drive (electronic data).

Participant confidentiality was ensured by removing all names from transcripts and removing any potential identifiers from all data analysis documents, secure storage of research data, and setting clear boundaries between researcher and participants by avoiding public meetings or situations with participants, which may unintentionally reveal their identities in the study.

Eight interviews lasting approximately forty-five minutes were audio-taped using a digital voice recorder and transcribed by the researcher. Below is the interview guide used in the first phase of the study, with reasoning for each major question.

Can you tell me about your position as an early career academic? How long have you been in your position?

Can you tell me about your professional experience prior to becoming an academic?

These questions were asked at the beginning of the interview to establish

necessary background context for both interviewer and interviewees. For this study it was important to know what interviewees' current roles involve and also how their backgrounds and professional experiences may have influenced their current and future development as academics. Knowing their background context(s) and associated issues assists in the development of grounded theory as each interviewee reflects on their interaction with their networks during their growth and development over a period of time. These questions also provided a 'warm-up' for the participant, to allow them to connect their perceived context and professional experience to their understanding of processes involved in using information to learn.

Major question one:

Can you tell me about your experiences with developmental networking as an early career academic?

This first major question related to the broader concept of developmental networking, remains open-ended in order to encourage the interviewee to reflect on their immediate perceptions of relevant experiences and issues. While the interviewer endeavoured to encourage the interviewee to 'lead' the interview according to the major themes and issues they offer, a set of potential prompt questions were prepared which aimed to guide the interviewee in an exploration of the experience of early career academics' networking and the building of developmental relationships. Additionally, the interviewer responded to participants' own questions and comments and by asking impromptu questions. For example, in this interview excerpt, the researcher adds value to the conversation by steering it according to themes offered by the participant. After discussing informal learning and informal information with this participant after she offered to talk about her understanding of information for learning in this context, the interviewer asked her about formal information in comparison:

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I: What about formal information?

P: *Formal information is your strategy plan from the VC, that kind of stuff. But even that, formal communication tells you something about the organisation and what they're trying to do and if you're astute you'll find you can read between the lines of those things and often something that like, if I'm not sure what something means I'll go and ask another person, or I'll go to my informal network and say what do you think this really means? Or what does this mean for me? And if you build and maintain enough levels of trust you can go to your boss and say 'have I really screwed up here or what?' whereas again as I said earlier you might not want to do that if you don't trust someone. I've worked in places like that where you do not want to talk to people above you because you don't know where they're coming from or sometimes you do know where they're coming from and that's why you don't want to talk to them. I don't get that sense here at all.*

I: How do you think you build that trust between you and your key people?

P: *There's probably a few things. You mean what you say and say what you mean. Are you authentic in your dealings with people? Are you trying to hide something or not? I guess over the years I've done enough of that kind of self reflection to know myself well enough that, if you know yourself and comfortable with yourself you deal with people that way and you take people on face value and you're not paranoid... every organisation I've been in has got one paranoid conspiracy theorist and you know, they're out to get you. No one in here though, well if they tell me something, they'll tell me because it's the formal position or that's what they'll me and I'll be that's fine you take it on face value. And you trust people back unless you've got a proper reason not to.*

This is where intersubjectivity or shared meaning occured as the

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researcher entered the interview as an active co-participant. It was expected that during this part of the conversation, a 'picture' of the interviewee's own developmental networking experiences would emerge, for the benefit of both researcher and participant in discussing the specific processes involved in informed learning in this context. However, it has been noted through discussions on informed learning studies that information practices can be potentially traced within the developmental networking phase of the interview, as well as the information phase.

In relation to participants' reactions to the term 'developmental networks', the researcher began each interview by giving a general overview of the aims of the project. She then explained that the questions did not have right or wrong answers and that she was interested in their interpretations of the questions. Some participants were comfortable with answering the questions using their own interpretations and did not ask for clarification, while others did ask for a definition of 'developmental networking', and whether the researcher was interested in networking for research or teaching and learning, which some saw as separate roles. In these cases, the researcher gave them the definition from the literature and that she was interested in hearing their experiences with both research and teaching activities. After this, we were able to discuss their experiences in detail.

Potential prompt questions:

How important is networking to your career development?

Why do you network? What are the specific benefits?

Can you tell me how you learned how to network?

Can you tell me who the key people are within your networks?

Can you tell me about your relationships with them?

Can you describe how you built relationships with these people in your networks?

What is your understanding of a 'support system' for early career academics?

Do you think you have a support system in place?

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Who are the key people within your 'support system'?

What makes these relationships supportive?

Major question two:

How do you use information to learn while building your developmental networks?

This second major question remained open-ended to allow interviewees to reflect on the meaning of concepts such as information and its use while learning in this specific context. Potential prompt questions below were designed to elicit detailed descriptions of the processes associated with using information to learn, with an equal focus on both information and learning aspects of the process of developmental networking.

Potential prompt questions:

How do you go about learning as you build your networks?

How are you using information in that process?

What information do you use in that process?

What types of information are useful when networking?

What types of information are less useful when networking?

How do you find the types of information you need to network effectively?

What types of information skills do you think are important in order to be able to use information to network?

Why are these skills important?

3.3.2 Phase Two

Phase two of the study involved exploring the connections (actions and processes) between what informed learning (i.e. information/knowledge types), using informal information to learn, reciprocal relationships

between ECAs and their key sources of development (or developers) and their various relationship 'layers' encountered while building their developmental networks. Phase two of the study took place between November and March 2012. Data were planned to be generated from approximately six early career academics located at a different university. Interview data were planned to be analysed using the process outlined earlier in this chapter, and findings were aimed to be compared to results of the first round of eight interviews, towards grounded theory development.

In the second phase of data generation, the researcher chose a second site, an Australian metropolitan university, from which to select and recruit six participants to add to the total sample of fourteen ECAs. Gathering data from two different sites would allow the researcher to identify a greater variation in ECA experiences and any similarities or differences in data patterns. A key difference between the regional and the metropolitan university is the latter provides its ECAs with the opportunity to participate in formal academic development programs. This minor change in methodology was reflected in the research ethics variation approved by Queensland University of Technology. Participants in the second round of data generation were selected in consultation with key gatekeepers of information relevant to this formal developmental program.

Participants were then contacted, scheduled and interviewed personally by myself as the researcher using the revised interview guide (Appendix C). Participants from all faculties of this university were invited to participate however, six ECAs from a range of disciplines (namely, Business (2), Health (1), Science (2) and Engineering (1), at more than one campus of this university were available to participate. Further characteristics of this group of participants can be found in Appendix A (participants 9-14). Participants in the second phase were interviewed virtually for approximately forty-five minutes. Each interview used Skype

videoconferencing where possible, and was recorded using a digital recorder. The researcher also engaged in note taking/memo writing during the interviews, to record impressions of visual experiences of contexts to supplement the voice recordings. The revised question wording of 'what informs you…?' (Appendix B/Appendix C) was helpful in facilitating responses that were not limited to their conceptions of information. Even though interviews were not conducted in person as in the first phase, this round of interviews generated a greater variety of informing entities and experiences, which provided richer perspectives for the data analysis as described in Chapters Four and Five.

3.4 Grounded Theory Data Analysis

The following section explores the nature of data analysis for grounded theory. As mentioned earlier in the data generation section, data generation and data analysis usually occur concurrently in grounded theory methodology (Charmaz, 2006). Results from the initial analysis usually inform a revision of the data generation process and procedures. This section will outline the standard analysis techniques of grounded theory while defining the language used in discussing the methods. This is followed by a description of how the data analysis was carried out in the two phases of the study.

3.4.1 Coding and Categorising

The process of coding in grounded theory is defined as "identifying incidents, events and activities and coding them into their respective categories by constantly comparing them to the properties of the emerging category to develop and saturate the category" (Bronstein, 2007, p. 4). Codes are words or phrases that form initial conceptualisations constructed from the data that categorise both actions and processes. Grounded theorists do not clarify the definitions of action and process in constructing grounded theory, however actions can be understood as

interpretations of the activities carried out by the participant during an experience, while process can be understood as a collection of activities identified through participants and researchers' co-created meaning. The coding process in grounded theory allows the researcher to discover patterns across data (commonalities and differences).

In practice, manual coding may be a two-step process: open coding and focused coding (Lloyd-Zantiotis, 2004). Central concepts and sub-concepts identified in the open coding step, through initial and line-by-line coding, may be further developed, combined or replaced by new ones in the later step of focused coding. Initial coding identifies early concepts from the data, while line-by-line coding is a thorough identification and comparison of concepts through examination of each sentence or phrase of an interview transcript. During line-by-line coding, common themes should begin to be constructed from the data, leading to the focused coding phase. Focused coding allows for a second view of the codes developed from initial coding, as well as anything that may have been missed during the initial coding. As codes are compared and potential relationships between codes are identified, categories should begin to form. Throughout the coding process, it is important for the researcher to 'stay close to the data' by maintaining a focus on the actions and language of the participants (use of in vivo coding) within their contexts.

This study employed the two-step process of open coding and focused coding. During the open coding phase, Charmaz (2006) recommends use of Glaser's technique of coding with 'gerunds' (using action verbs that end with –ing) to ensure a focus on the actions of participants. Charmaz outlines a set of broad questions to guide line-by-line coding that focuses on the process of the phenomenon being studied, in this case the use of information to learn while building developmental networks.

- What process (es) is at issue here?

- How does this process develop?
- How do participants act while involved in this process?
- How do they profess to think and feel while involved in this process?
- When, why, and how does this process change?
- What are the consequences of this process?

Categories have the potential to provide in depth conceptual understanding of the use of information to learn while building developmental networks. Categories are initially developed through the iterative process of constant comparison, defined as "the process of constantly comparing instances of data that you have labelled as a particular category with other instances of data, to see if these categories fit and are workable" (Urquhart, 2001, p. 127). Researchers further construct categories through the process of theoretical memoing.

3.4.2 Memo Writing

A memo is a note about ideas related to concepts, categories and their relationships and properties which emerge during the process of constant comparison (Charmaz, 2006; Lloyd, 2004). Memo writing is the intermediate step between coding and theory development. Charmaz (2006) explains that memos "capture your thoughts, capture the comparisons and connections you make, and crystallize questions and directions for you to pursue" (p. 72). Memos can be written throughout the constructive process to explore emerging codes, categories and their potential relationships, often in an informal, flexible and reflective way. The main purpose of memo writing is to provide a way for the researcher to move through the process of coding, categorisation to saturation and theoretical development.

3.4.3 Saturation and Theory Development

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Theory development in grounded theory methodology involves an inductive and iterative process of constructing categories that can be explored through theoretical sampling in data generation (Charmaz, 2006). Theoretical sampling refers to a collection of concepts developed from focused coding. In grounded theory, the data analysis phase is complete when category saturation is achieved through use of theoretical sampling. Category saturation point is reached when the data set is 'exhausted' and no new patterns or theoretical insights can be developed from the data (Charmaz, 2006).

After preliminary theory was developed, the researcher revisited earlier data to re-analyse against new codes and categories from later data generation. After categories were saturated, the theory was developed. As this was a constructivist interpretive study that aimed to develop in-depth understanding rather than explanation, the grounded theory was an interpretation of the data generated from participants (Charmaz, 2006).

3.4.4 Data Analysis

Once open coding of interview transcripts were carried out, from the initial and line-by-line codes, memos containing early categories were developed (located in Appendix D). These early categories formed the basis of the themes discussed in the findings. Key guiding questions during open coding developed by the researcher are included in Appendix E. Additionally, early memos outlining preliminary conceptions of early career academics' developmental networks, potential sources of development and early discussion of the information used to learn in this context, are outlined in Appendix F and Appendix G. Two main categories reached saturation, however in the next phase of the data analysis, further categories and sub-categories were developed from focused coding and compared to findings from the preliminary phase. In the second phase, these preliminary emerging categories were compared to focused codes and categories from

the second round of data generation and data analysis to develop final themes and grounded theory.

The literature review was revised to reflect findings from the first phase of the study. Literature reviewed in the preliminary phase of the project, and developments in the literature review as the study progressed, were interwoven into later versions of the theory development.

The researcher transcribed recordings and carried out line-by-line coding on all of the transcripts. A thorough immersion in the data helped the researcher identify and consolidate the two initial categories formed from the first round of data analysis, and to develop stronger categories related to contexts where developmental networks were being formed and experienced. Data analysis in the focused-coding phase targeted key processes (verbs from the transcripts, for example in Appendix H) and these became processes and sub-processes within the major categories. The focused-coding phase was guided by a series of questions generated by the researcher to focus coding (Appendix E), as well as the data analysis guiding questions from Charmaz (2006) provided earlier this chapter.

The majority of open and focused coding and category/theory development was carried out manually using tables in a word processor for engaging with the constant comparison technique and theoretical sampling. NVivo qualitative research software used mainly as a research document organisation tool to visualise relationships between memos, drafts, key categories, participant quotes and relevant research literature. Theory from memoing was then developed from these categories, which eventually became the basis for the theoretical model presented in Chapter Four. The focus on spaces and contexts most relevant to their experiences of developmental networking, as presented in Chapter Five, allowed the researcher to identify how the general elements were experienced in

different contexts that were commonly experienced by the sample of ECAs across the two universities.

3.5 Maintaining Quality: Evaluating Constructivist Grounded Theory Research

Maintaining quality is critical for all research studies to ensure that both the researcher and the research outcomes are credible and trustworthy. In constructivist grounded theory studies, the reciprocal relationships between researcher and research participants in co-creating meaning and the resultant theory constructed from the context, means that these relationships need to be thoroughly documented through the use of memos as evidence to preserve the quality and credibility of the researcher, the data gathered from research participants and the grounded theory (Birks & Mills, 2011; Charmaz, 2006).

The issue of quality was continually explored throughout this study through consideration of the following criteria for evaluating constructivist grounded theory research, developed by Kathy Charmaz (2006, p. 216-17). These guiding questions were chosen as most suitable for this study, as they reflect the interpretivist constructivist grounded theory approach. These criteria were used as the basis for reflection and memoing during all key phases of the study, such as data generation, data analysis and theory development.

Credibility

- Has your research achieved intimate familiarity with the setting or topic?

The setting and topic are covered and explored in-depth by using thorough documentation of the research experience throughout the

project, and detailed in Chapters Four and Five of this thesis and Appendices.

- Are the data sufficient to merit your claims? Consider the range, number, and depth of observations contained in the data.

Fourteen participants selected from specific criteria related to the topic have provided extensive data from individual in-depth interviews. Details of range, number of participants and depth of observations are contained in Appendix A. This is sufficient data for a credible grounded theory study, based on Charmaz's principle that constructivist grounded theory's data generation process involves reaching theoretical saturation through diversity of data generated from a minimum of ten participants (Charmaz, 2006).

- Have you made systematic comparisons between observations and between categories?

All interview transcripts were thoroughly coded and checked against the categories formed from constant comparison technique.

- Do the categories cover a wide range of empirical observations?

The categories cover a wide range of observations from interview data with the conceptual model having three main elements of the experience, which contain several different interactions, types of resources which inform learning and types of learning identified from coded interview transcripts.

- Are there strong logical links between the gathered data and your argument and analysis?

There are strong logical links between the interview data and the analysis and discussion, including literature review. These are evident

in the category development tables and memos developed (see Appendices B, D and F)

- Has your research provided enough evidence for your claims to allow the reader to form an independent assessment—and agree with your claims?

Participant quotations are provided for major categories (presented in Chapters Four and Five) and to provide illustrative examples and evidence of informed learning experiences in the relevant contexts.

Originality

- Are your categories fresh? Do they offer new insights?

Yes the categories bring a new and holistic perspective to the concepts and theories of informed learning and academic development, not previously explored by researchers, as identified by the literature review.

- Does your analysis provide a new conceptual rendering of the data?

Yes, the conceptual model of the knowledge ecosystem of early career academics constructed from the data is new and original.

- What is the social and theoretical significance of this work?

From a theoretical perspective, this research can help people gain deeper insight into the informed learning concept for ECAs and their multiple developers. From a practice-based perspective, this research shows how the concept can begin to be applied to enhance ECA development in a number of spaces and contexts where developmental networks and relationships are formed and maintained.

- How does your grounded theory challenge, extend, or refine current ideas, concepts, and practices?

This grounded theory study extends current concepts and practices by viewing academic development from an informed learning perspective. It takes into account a very broad range of "informing entities" and the "interactions" or "processes" they engage in for optimising learning experiences. The study draws together theory from a range of disciplines including information literacy, information behaviour, adult learning, human resource development and communications, alongside data collected from the current sample, to develop a conceptual model that is holistic, interdisciplinary and consisting of key elements and interactions that are adaptable for particular contexts and activities or practices.

Resonance

- Do the categories portray the fullness of the studied experience?

Categories represent the studied experience, in generic and specific contexts where developmental networking is experienced by ECAs.

- Have you revealed both liminal and unstable taken-for-granted meanings?

Liminal and taken-for-granted meanings are revealed to the extent that they are expressed within participants' responses. Liminality is revealed through the recognising layers of relationships experience, particularly 'changing over time' as participants discuss how they have transitioned and developed over the first years of their ECA roles and previously.

- Have you drawn links between larger collectivities or institutions and individual lives, when the data so indicate?

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The relationships between societal, institutional and personal/individual lives are portrayed in the findings. Participants are drawn from across two universities with links discussed in the findings presented in Chapters Four and Five.

- Does your grounded theory make sense to your participants or people who share their circumstances? Does your analysis offer them deeper insights about their lives and worlds?

The study aims to offer the participants, their peers and their supporters deeper insights about their lives and worlds. Some individual participants in this study and other early career academics have commented on early and final presentations or informal discussions with the researcher on the findings and theoretical model, and were able to relate and give informed feedback.

Usefulness

- Does your analysis offer interpretations that people can use in their everyday worlds?

Findings offer interpretations of processes and interactions which people can relate to in their everyday lives, and use to maintain awareness of, and enrich their learning experiences.

- Do your analytic categories suggest any generic processes?

The categories presented in the conceptual model identify generic processes and interactions, which are explored in Chapter Five for specific meanings in different spaces relevant to the study.

- Can the analysis spark further research in other substantive areas?

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This analysis has suggested further research into the relationship between information literacy and information behaviour from human-information interaction (HII) and experience design (XD) perspectives (see Chapter Six)

- How does your work contribute to knowledge? How does it contribute to making a better world?

This research extends our understanding of the informed learning concept in the academic development context and the experience of developmental networking from an informed learning perspective. The study makes a contribution to both theory and practice of higher education and information literacy. Findings help in identifying key elements and contexts of this specific information experience, to empower current and future ECAs and those who assist in their learning and development, through human-centred design of learning and technological interfaces.

3.6 Methodology: Conclusion

This chapter has outlined the methodological approach to this study, providing theoretical background of constructivist grounded theory and the two phase- process involved in designing and implementing the research methods of data generation, (semi-structured interviews) and data analysis (coding, constant comparison and memo writing/theory development). The following two chapters present the findings of the research as developed from the data analysis: a general theoretical model in Chapter 4, while Chapter 5 presents detailed informed learning experiences in six spaces where developmental networking commonly occurs.

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CHAPTER FOUR

Knowledge Ecosystem of
Early Career Academics:
A Theoretical Model

4.0 Introduction

This chapter presents and discusses the main theoretical model that was constructed from the data collected in this study. The model represents the research findings, which help to answer the two main research questions:

- What informs early career academics' learning while they build their developmental networks?

- How do early career academics experience using information to learn while building their developmental networks?

Research findings are discussed in this chapter and expanded in Chapter Five. This chapter aims to define and discuss key elements associated with the 'Knowledge Ecosystem' theoretical model presented. These elements are illustrated by select quotes from participant interviews. It is important to note however, that findings relate the early career academics in this study and cannot be generalised to the entire population of early career academics. Key elements of the model such as 'Resources' help to provide answer to the question of what informs ECAs learning during the practice of developmental networking, while 'Interactions', 'Informal Sphere of

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Learning' and 'Inner Focus' and 'Outer Focus', point to how they experience using resources which inform their learning. The model will be explored further in Chapter Five, in terms of how it is experienced by ECAs within different spaces where developmental relationships are formed. Chapter Six presents a discussion of the research implications for both theory and practice.

4.1 Knowledge Ecosystem of Early Career Academics

The 'Knowledge Ecosystem' is a holistic approach to conceptualising ECAs' developmental experience, encompassing resources that inform learning and the experience of using these resources to learn. The ecological approach (as described by knowledge management researchers such as Chatti (2012)) captures ECAs' descriptions of their experiences with building developmental networks for two main reasons: 1) while information is a critical resource for learning in this context, ECAs' learning is primarily informed by knowledge resources created through dynamic interactions with a variety of information resources and 2) the concept of a knowledge ecosystem in this context features interdependent human and non-human components such as information, knowledge, interactions, informal learning and developmental relationships and networking for ECA career progression. The knowledge ecosystem (Figure 1) consists of three key elements: **Resources** (Knowledge and Information), **Interactions** (Relating to Information to Create Knowledge) and **Learning** (Informal Sphere of Learning). The whole knowledge ecosystem, as depicted below can be viewed through either one of two 'lenses': **Inner Focus** and **Outer Focus**. These lenses represent different ways of experiencing informed learning.
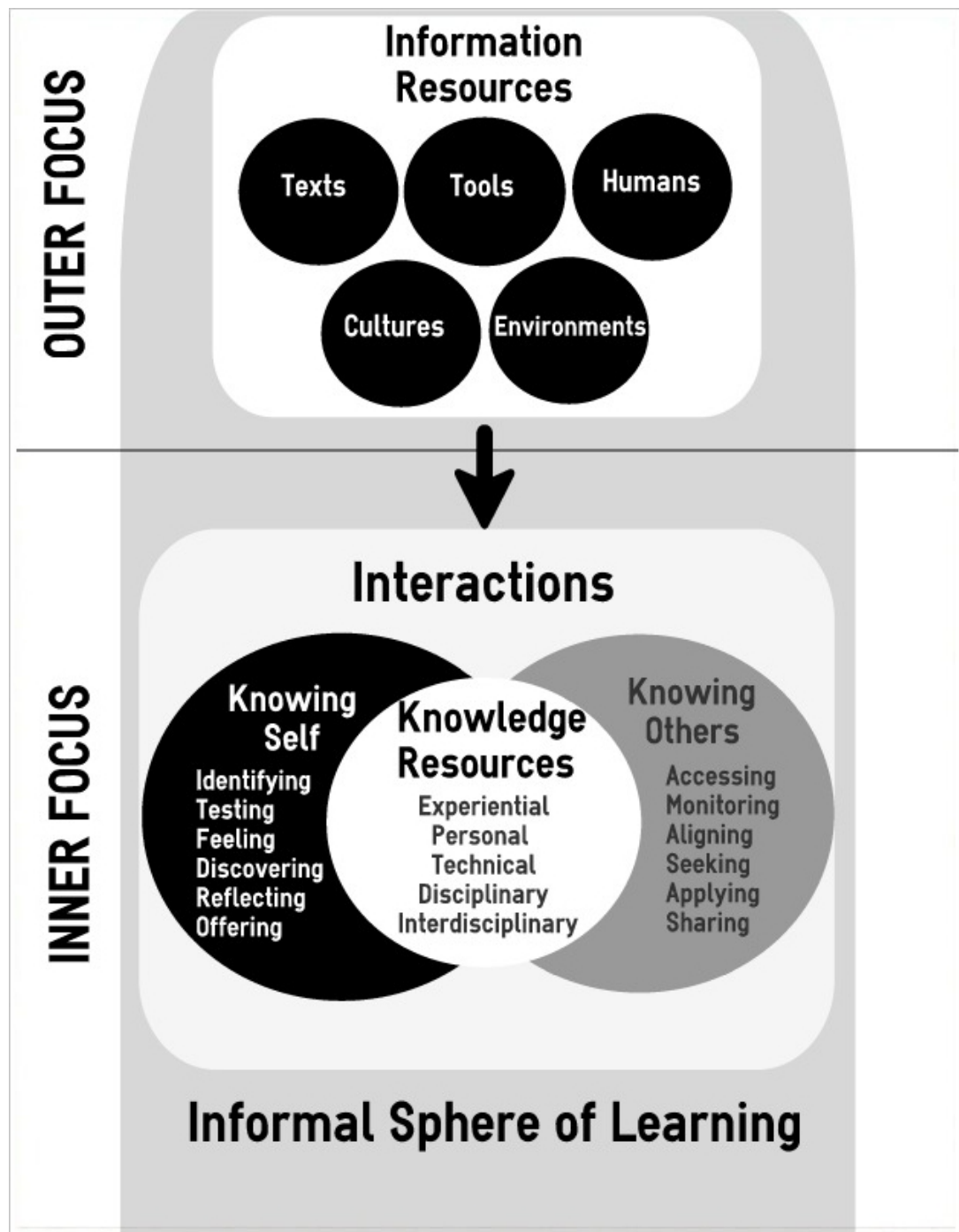
Figure 1: Knowledge Ecosystem of ECAs Building Developmental Networks

The model above shows that while building their developmental networks, early career academics' learning is informed by knowledge and information resources. Knowledge resources are created from three main interactions:

the ECA relating to information resources; knowing self; and knowing others with associated sub-interactions listed below. These interactions occur within the Informal Sphere, which encompasses informal types of learning, information and knowledge. The Inner Focus concentrates on learning by interacting with knowledge resources within human-to-human relationships, while the Outer Focus highlights learning by interacting with information resources outside of human-to-human relationships. The following sections will provide detailed discussion of the three key elements of the knowledge ecosystem: resources, interactions and learning. Following this is a discussion of the Informal Sphere of Learning as experienced from the Inner Focus and Outer Focus lenses.

4.1.1 Resources: Knowledge and Information

In this study, knowledge is defined by ECAs as an intangible resource that is created through interaction between an individual learner and various people within their developmental networks, known as developers. Information is defined by ECAs as a tangible resource that refers to textual sources, tools or devices for receiving information, contextual information gained from experiencing cultures and environments, and information stored within individual people that is not being used. When a learner interacts with these tangible information resources, knowledge is created which can inform their learning. In this study it is knowledge, rather than information that is primarily informing the learning of an ECA. Informed learning in this specific context does not fuse information and knowledge, rather the participants in this study experience information and knowledge as separate things with 'stored' intangible knowledge created from interaction with information (tangibles) being more important for their learning. It was a recurring pattern, in that each participant either implied or directly responded to the question 'what informs you... ?" by saying that the most valuable resource for learning was intangible knowledge (from interaction with people).

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Data analysis revealed two main categories of knowledge in ECAs' experiences: **knowledge of self** and **knowledge of others**. As seen in Model 1, five types of knowledge are created that can be classed as either knowledge of self or knowledge of others, these are: **experiential, personal, technical**, **disciplinary** and **interdisciplinary**. In developmental relationships and networks, these intangible knowledge types are shared, or potentially shared between ECA and their developers. The following section discusses five types of knowledge, constructed from the data that inform ECAs' learning. Each knowledge type refers to knowledge co-created within relationships: knowledge from the ECA (knowledge of self) and knowledge from their developers (knowledge of others).

Experiential Knowledge

Knowledge gained and stored in one's memory from past experience is *experiential knowledge.* Experiential knowledge does not include one's specific expertise in theory, but does include the knowledge associated with one's expertise that informs decisions or judgments related to learning a new task or activity. This includes tacit knowledge or 'know-how' gained from practical experience that may differ or contrast with expert or technical knowledge.

> But then the most important part of I think, knowledge is well your practice knowledge and not every situation is going to be fixed by applying that sort of technical stuff and the rules and policies and procedures and things so the other really important knowledge for me is experience and talking to other people about their experience. When I'm faced with a problem I am really struggling with or may

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not have come across before... now I'm likely to think that's really complex I'm going to have to talk to someone... someone who is likely to have experienced that situation before... so I'll engage my network and say right who do I need to talk to about that? And usually with them it's a mixture of, well these are the rules but how we've managed it in the past is this... and they've given me examples of other students or other situations and this is how we've worked through that. So this is how I see that sort of knowledge, I feel it's more important and more useful than technical knowledge.... experiential knowledge and practice based knowledge, those things are really important for me to access through my networks. (Participant 7)

Experiential knowledge includes intuition developed over a long period of time that also informs decision-making and the rate at which an action or response can occur. In this way, experiential knowledge is an intuitive way of knowing and using technical expertise. In the context of this study, experiential knowledge can include knowledge gained from being a practitioner and a new academic.

Personal Knowledge

Personal knowledge arises from personal or social interaction, which includes 'common sense' (Participant 11), 'survival instinct' (Participant 4), 'interpersonal skills' and 'social savvy' (Participant 13), rational and emotional knowledge, such as trust (Participant 1) and empathy (Participant 2).

Technical Knowledge

Technical knowledge refers to knowledge of processes related to technology, skills, scientific expertise, policies and procedures. This

knowledge can be found in humans or in databases (e.g. how-to guides). As Participant 7 suggests in her quote above, some forms of technical knowledge can only inform her learning to a certain extent, and that experiential knowledge is far more useful for learning her role.

Disciplinary Knowledge

Disciplinary knowledge refers to knowledge that is unique to a particular academic discipline. This means that each discipline has different understandings of particular concepts, or each discipline has contributed specific theories. This knowledge appears more often when interacting within their own discipline and learning more about disciplinary-specific research or teaching.

Interdisciplinary Knowledge

Interdisciplinary knowledge is knowledge gained only from interdisciplinary interaction and collaboration. It is often synthesised from sources of different disciplinary knowledge such as experts working on a joint project or the project work itself.

> ...it is nicer to have people in a network who aren't working in your precise area... look at the same things in different ways. (Participant 9)

The next section describes how ECAs experience interacting with information and knowledge to learn while building networks.

4.1.2 Interactions: Relating to Information to Create Knowledge

As shown in Figure 1, there are three interactions involved in using information to learn in this context. It is important to note that these

interactions constructed from the data are not part of a linear process, but rather iterative and these interactions are linked to different kinds of learning outcomes. The primary interaction is **Relating to Information to Create Knowledge**. Relating to any form of information within the ecosystem as described in the previous section, is a pivotal interaction towards building relationships and networks. The process of relating to information to create knowledge for learning is experienced in a variety of ways, which will be described and illustrated later in this chapter. Once the learner can relate to information, knowledge is created. Once knowledge is created, the learner interacts with the knowledge through the next two processes of **Knowing Self** and **Knowing Others**. The process of Knowing Self involves identifying, testing, feeling, discovering, reflecting on and offering knowledge of self. The process of Knowing Others involves accessing, monitoring, aligning, seeking, applying and sharing knowledge of, and with other people. The three interactions occur concurrently towards building relationships and networks for development.

Participants interpret 'information use' as any interaction between people and information sources and that when humans use information, it becomes knowledge whether the knowledge remains implicit or becomes explicit. Interacting with different types of knowledge for learning activities is central to this study's conceptualization of informed learning. Using information to learn is described by every participant in this study, as manifested through engaging in development, growth and/or learning through relationships between people. In this study, it is knowledge rather than information, which is recognised by ECAs as a primary resource for their learning and development. The following quotes suggest the idea of knowledge (from people) as informing the development of their learning networks:

> Information is just a piece of paper... until you can relate it to someone... knowing who wants it...' (Participant 1)

For the ECA, information is conceptualised as tangible content or text ('a piece of paper'), while knowledge is created ('knowing who wants it') through the interaction of relating to the information ('until you can relate it to someone') for a particular purpose, such as learning. Information remains important, however as the next quotes suggest, ECAs place a stronger emphasis on knowledge that is intangible and fluid, particularly knowing the right people in order to access the most relevant and valuable information.

> The really valuable stuff in networking is not the stuff you can find in a journal or website, Benjamin is who you want to speak to! That sort of thing, you know oh he's doing the best stuff you should check it out. And then you might find some of his stuff on his website but you only find that out in your networks... So you have to know someone or you don't have access to that... (Participant 2)

> First there's intelligence, which is having and knowing plenty of people who will give you information and being able to react to that intelligence very quickly if needed... Intelligence is knowing what's what and being able to take advantage of that (Participant 5)

In the next quotes, a further emphasis is placed on accessing knowledge, including skills, as a usable resource for their self-development and simultaneously, the development of others ('the team around me'). Information for developmental purposes is only accessible through ECAs knowing people, and people knowing them as ECAs.

> I think it's not necessarily about the information or content but more about accessing skills or knowledge... I use the knowledge of others in the network not only to develop myself but to develop the team around me... (Participant 3)

I think that the main form is through the network of people that you know already, because what happens in that is, if they would think or I would think there is something relevant coming up for our development or other research, teaching or servicing I would touch base with my fellows or peers. I think that is ultimately the most important and the most relevant way in which I get access to information and in a way it's also how I can keep track of my development, my learning. (Participant 10)

There's the human network that know the sort of person I am, the sort of things I'm interested in and can piece it together when they come across something and I'll do the same for them... (Participant 1)

The last two quotes suggest that knowledge is created through relating to information. 'Relating' in this sense means having the ability to know what's relevant or valuable for theirs or another person's development. Thus, the main process associated with using information to learn while building developmental networks is 'relating to information to create knowledge':

Early career academics must be able to relate to the information before they can learn. The relationships between people make the learning and knowledge meaningful (Participant 1).

4.1.3 Learning: Informal Sphere of Learning

In this research, learning for ECAs is experienced as formal, informal and non-formal. To define each of these, formal learning types are structured, scheduled and are sometimes compulsory including formally recognized courses of study, formal mentoring and professional development

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programs, university plans and policies and formal meetings such as performance reviews. Non-formal learning types occur as part of structured formal learning, such as face-to-face informal discussions held in relation to a formal class or an online short course message board. Informal learning types are unstructured and more spontaneous in nature, including self-directed learning, incidental learning, informal mentoring, social media, physical informal discussion and distributed informal discussion.

While each participant in this study discusses formal, non-formal and informal interaction, the recurring pattern from the data is clearly on the use of information and creation of knowledge from informal interaction as being most important for learning. The 'Informal Sphere' represents a way of conceptualizing the collective forms of informal learning, knowledge and information located within an ECA's knowledge ecosystem. The Informal Sphere is a key concept in this thesis, as it provides a 'mental space' for understanding how ECAs experience informal learning and interaction between knowledge and information located within an ECA's knowledge ecosystem. The Informal Sphere also includes informal interactions around learning types in the non-formal and formal spheres. The following sections discuss the specific informal learning types identified in this study.

Self-Directed Learning

The concept of self-directed learning is strongly reflected in ECAs' experiences of using information in this context, as they discuss concepts of leadership, entrepreneurship, initiative or proactivity. In this study, self-directed learning is viewed as the opposite of formal teacher or instructor-led pedagogy. When describing their experiences of developmental networking, ECAs conceptualise their learning as individual, contextualised and personalised. This implies that an informal, bottom-up approach is critical to learning and developing in this context. An informed self-directed

learner independently builds relationships through knowing themselves and knowing their others, interacting with information and knowledge within and outside of human relations. Another way of explaining this would be, a self-directed learner who is not informed, is someone who does not interact with the full range of information and knowledge located in their knowledge ecosystem.

Incidental Learning

Incidental learning is when the learner does not usually notice that learning has occurred. The learning remains in the subconscious mind until the knowledge learned is applied in some way that advances the ECA's performance. Learning in this way is described as accidental, unexpected, random or serendipitous. For example, enjoying an activity and having fun can lead to learning, or having a tough experience and feeling pain can also lead to learning. In its broadest sense, learning incidentally can be informed by almost anything at any time. However the processes of interacting with knowledge and information for incidental learning are those that are less deliberate and more open. This includes unscheduled, spontaneous discussions and/or meetings that occur naturally. Two types of informal discussion were identified: informal discussion that occurs in physical proximity (face-to-face), and informal discussion that occurs in a distributed way (virtual, telephone).

Informal Mentoring

This includes ECAs' experiences being a mentee informally and being an informal mentor. Participants found informal mentoring, where relationships naturally evolved over time and mentors had been selected by the ECAs as more beneficial to their learning and development, in the long term. Formal mentors assigned as part of induction or formal development programs were not seen as useful beyond the initial period of

settling in. When mentors had not been selected by the ECAs, these relationships were perceived as less beneficial and even detrimental in some cases.

Networked Learning Through Social Media

Networked learning through social media is a form of informal learning experienced by ECAs. Examples of social media used by ECAs in this study include LinkedIn, Twitter, Facebook, Academia.edu, Yammer, Skype, blogs and podcasts. In this context, ECAs engage in most processes in the Inner Focus model as described below, to inform their learning through social media.

Informal Interaction Within the Formal/Non-Formal Spheres

Informal interaction related to information and knowledge in the formal and non-formal spheres of learning is vital for learning how to be an academic. Formal learning spheres include formal degree programs, short courses, professional development programs, including mentoring programs and workshops, formal university strategic plans and policies and formal meetings with supervisors such as performance reviews and other scheduled meetings such as committee or staff meetings.

The Informal Sphere of Learning is discussed further in the sections Inner Focus: Learning Informed by Knowledge Within Relationships and Outer Focus: Learning Informed by Information Outside Relationships, later in this chapter.

4.2 Inner Focus and Outer Focus

While the three main elements are fused together in the diagram, there are two lenses from which the entire knowledge ecosystem model can be

viewed and understood. These are labelled the 'Inner Focus' and the 'Outer Focus'. In both the Inner and Outer Focus, the main interaction of relating to information to create knowledge (through knowing self and knowing others) is applicable. Inner Focus highlights ECAs relating to information to create knowledge resources *within* human relationships in a developmental network. In Figure 1, Inner Focus draws attention to intangible knowledge and learning types that can only occur inside human-to-human relationships. Inner Focus is also strongly associated with information, knowledge and learning in the Informal Sphere.

Outer Focus highlights processes of ECAs relating to a broader range of information resources, both tangible and intangible, located *outside* of human relationships in a developmental network. Outer Focus encompasses information sources from text, tools, humans, culture and environment and how these sources can inform learning. Information can be located within any of the formal, non-formal and informal spheres. The interplay between Inner and Outer Focus involves ECAs relating to information sources and creating knowledge within human relationships to use for learning various tasks associated with their academic roles. While Outer Focus is important for understanding the holistic knowledge ecosystem, the view is secondary to Inner Focus as ECAs' interactions are more strongly emphasised in the data for the Inner Focus experience.

This section has defined and discussed the key elements of the knowledge ecosystem conceptual model developed from the data analysis: 1) resources which inform learning, namely knowledge resources such as experiential, personal, technical, disciplinary and interdisciplinary, 2) interactions: relating to information to create knowledge, knowing self, knowing others and recognising layers of relationships, and 3) types of learning experienced in the informal sphere involving collective forms of information, knowledge and informal learning. This section has also introduced the two ways of experiencing informed learning in this context:

the concept of Inner Focus as the primary informed learning experience and the concept of Outer Focus as a secondary informed learning experience.

The following section will discuss the *Inner Focus*, comprised of interactions such as relating to information through knowing self and knowing others and recognising layers of relationships. This will be followed by a discussion of the *Outer Focus*, including interactions of relating to resources of information (texts, tools, humans, cultures and environments) that can inform ECAs' learning through developmental networking. These sections also discuss how knowledge and information resources and interactions inform learning in the Informal Sphere.

4.3 Inner Focus: Learning Informed by Knowledge Resources Within Relationships

This experience places a focus on the knowledge generated from interaction within one or more relationships in a developmental network. This is an Inner Focus, illustrated in Figure 2 below, which concentrates on the relationships themselves as knowledge contexts or entities. The following quote encapsulates the Inner Focus experience:

> What informs me is the relationships that I have, the development of those relationships and how they grow over time (Participant 9).

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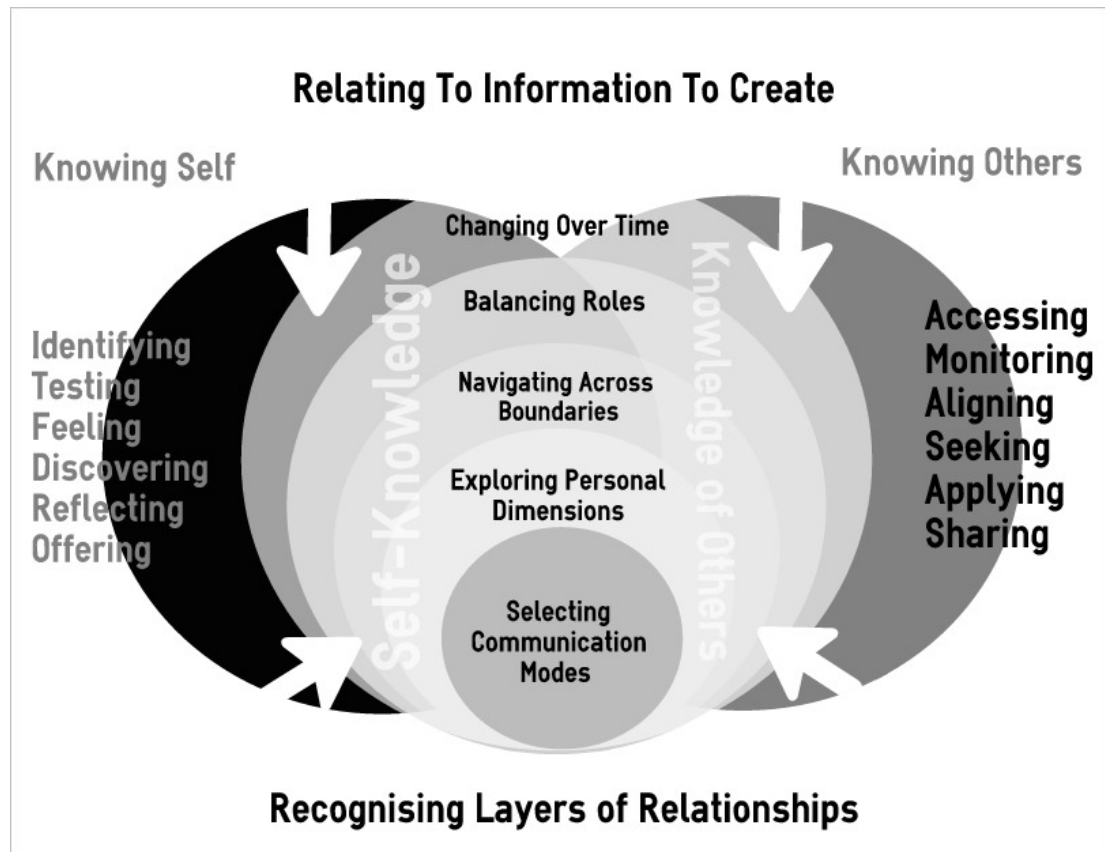
Figure 2: Inner Focus: ECA's Learning Informed by Knowledge Resources Within Relationships

4.3.1   Building Mutually Supportive Relationships

To build on this notion of human relationships, in response to either of the open ended questions posed, each participant suggested and discussed the idea of 'reciprocity' as being critical to successful creation and maintenance of developmental relationships and networks. Such reciprocal relationships are conceptualised as being mutually supportive, in that they provide benefits in the forms of information, learning and support to the ECAs and those people who act as their mentors or 'developers'. A developer in this study refers to someone who does not act as a mentor but still has a significant impact on an ECA's learning, such as a colleague, a friend or relative. Data analysis involved the construction of a variety of ways in

which ECAs use information to learn while building mutually beneficial relationships and networks. While the main process of informed learning, 'relating to information to create knowledge', was discussed in previous sections of this chapter, three sub-processes or ways of relating to information to create knowledge were identified which enable reciprocal interactions between ECAs and their developers, these are *knowing self, knowing others* and *recognising layers of relationships.*

4.3.2   Knowing Self

Knowledge of one's own beliefs, preferences, experience, expertise, skills, capacities and needs, in a holistic sense, is key to establishing and maintaining developmental relationships. Developing an awareness of and learning about oneself as a source of information and knowledge can enhance the quality of the relationships within the network. The focus here is on how the ECA informs the development of a network or relationship, as the following quote conveys:

> …you've really got to get a sense, when accessing a network, of not only what I can get from the network but what can I bring to it… they're always very generous but I think it appropriate to actually have a sense of what you are bringing to it as opposed to what you can get out of it, if you expect them to cooperate with you for very long. And so that sense of reciprocity. (Participant 2).

Self-knowledge can also inform ECAs' decisions about which relationships/networks are most suitable and most effective for their own development. For example, participants discussed service activities both within and outside the university context, such as volunteering to participate in academic committees, reviewing government policy

documents or advising about educational technology use and sharing this knowledge:

> …when someone needs a hand you step in to help as much as you can and by going on committees and meetings… because then you're giving back… so that reciprocity is key (Participant 1).

> So initially I think it starts off as a one way street where you are actually building that network…to access a particular piece of information… but eventually as an academic that has to turn back around… the educational technologist now contacts me about a particular educational technology because I've had more experience with that than they have… it was a case of me setting up the project and working out what I need to do and disseminating it to other people so they're building their networks. (Participant 3).

These activities allow the ECA to offer their self-knowledge for the benefit of others, as a way of building and strengthening networks for developing their teaching and research. The following six activities emerging from the data begin to illustrate the process of how ECAs interact with their self-knowledge to learn while networking.

Identifying Self-knowledge

The first step in the process of learning in the self-knowledge context, involves ECAs' *identifying critical information from personal experience towards forming an academic focus or niche.*

This is mainly comprised of personal interests, beliefs and preferences: 'it isn't consistent with what you believe in...' (Participant 6), 'I'm the sort of

person who prefers to give those things a lot of thought before I jump in…' (Participant 7).

This includes their own learning needs and learning styles: 'know how best you learn and are able to assess what you need personally' (Participant 9). Knowing what they don't know yet, is just as important as having the knowledge needed: 'I wouldn't know how to approach that, I don't have experience with that yet…' (Participant 10).

Personal and experiential forms of self-knowledge are critical for informing this learning activity, as participants describe their ability to identify information that enables them to develop a clear concept of who they are and/or who they want to become as an academic: 'knowing I'm naturally incredibly shy…' (Participant 5), 'knowing where my focus should be' (Participant 11), 'my goal is to be that particular individual…' (Participant 14) 'being genuine in who you are' (Participant 13).

This activity is closely associated with one's will to act in a certain way or to choose a particular path: 'endeavoured to put myself on a path… I made the decision early on…' (Participant 6), 'need to be very proactive…' (Participant 4), 'I'm fairly self sufficient' (Participant 11).

When faced with a multitude of knowledge and information within one's networks and wider environment, ECAs identify knowledge that is truly meaningful or useful for them, to guide personal decision-making and ensure the greatest chance of success.

Testing Self-knowledge

This activity involves ECAs' *testing out and evaluating a variety of information for personal relevance or suitability for developmental purposes.*

Testing is related to the processes of experimenting and keeping an open mind about what informs their learning: 'having an open, inquisitive approach...' (Participant 14), 'willingness to be open' (Participant 5) 'try everybody out' (Participant 2). This activity involves exposure to all forms of knowledge and information within a network or ecosystem, to expand knowledge about oneself and where one belongs in relation to their career progression. Expanding on one's current knowledge base (in terms of all five types identified in this study) can enhance the quality of learning: 'you really push yourself when presenting...' (Participant 10).

Having identified an academic focus, exploring new knowledge beyond one's comfort zone is the next step towards personal and professional development. The 'testing out' phase can give an ECA a sense of who he or she could become, while still being able to return to the base of what he or she already knows.

Integrating new knowledge gathered from testing into the established knowledge base, involves the ECA evaluating new knowledge by asking whether the new knowledge can change or improve him or her in ways that align with an overall focus, goal or academic self-concept: 'test the waters' (Participant 8), 'evaluate how it serves you' (Participant 8) 'test the knowledge they receive...' (Participant 6), 'some of it doesn't work for me, it depends on personality...' (Participant 12).

Feeling Self-knowledge

Interacting with emotional aspects of personal knowledge involves *feeling particular emotional states that inform ECAs development.*

This is comprised of positive feelings such as self-confidence and self-belief: 'I feel I'm willing to go up to people...' (Participant 9), 'feel more comfortable this year' (Participant 12), 'feel like you can get on with it

yourself' (Participant 8), trust and enjoyment: 'there's a favourable environment here, so I really feel I can do things properly...' (Participant 19), 'feel well supported' (Participant 12), 'making us feel like we're part of this place...' (Participant 13) 'read then feel the paper, to actually absorb...' (Participant 14), 'like being far away' (Participant 8), 'really helped me feel like well maybe okay this probably where I want to be...' (Participant 7), 'not feel like you shouldn't be asking...' (Participant 1).

It is also comprised of negative feelings such as frustration, self-doubt and loneliness: 'I felt very much when I came here I was left hanging on my own...' (Participant 11), 'feeling part of the uni has been difficult...' (Participant 9), 'often feel very isolated' (Participant 11), 'still taking the attitude of a post-doc... feel like you're working for someone...' (Participant 9), 'feel like you can't say no...' (Participant 11) 'felt I was in limbo...' (Participant 4), 'it was a bit nerve wracking' (Participant 5).

Based on emotional aspects of their personal knowledge, ECAs choose a particular course of action that can either help or hinder their learning and subsequent development. The feeling process is underlying each phase of self-knowledge development, and is central to learning while developmental networking.

Discovering Self-knowledge

This activity relates to ECAs' *discovering self-knowledge to arrive at certain realisations or understanding of oneself.*

ECAs' discovery of self-knowledge can involve the use of their own experiential and personal knowledge over time to realise or to become consciously aware of what has not been known about themselves before. It is the act of bringing to consciousness a new perspective, idea or concept that existed in one's mind but had remained latent until triggered by

interaction with insight from experiential or personal knowledge: 'I actually realised there was (internal professional development program)' (Participant 6), 'discovered that there was this middle ground…' (Participant 6), 'I didn't really know about that until my first probation…' (Participant 4), 'a lot more solitary than I expected…' (Participant 2).

In this study, discovering self-knowledge is mainly experienced unexpectedly or through hindsight after a significant period of time has passed: 'would have done things differently knowing what I know now…' (Participant 9), 'this is something you discover along the way…' (Participant 10), 'It wasn't until last year I thought hang on…' (Participant 2).

Reflecting Self-knowledge

The activity of *reflecting involves interacting with rational and emotional aspects of personal and experiential knowledge through deliberate introspection.*

This process comprises thinking about and analysing experiences of relationships and networks to increase self-knowledge. The act of reflecting allows ECAs to make informed decisions about their networking, prior to engaging in the next step of the process of *offering self-knowledge*: 'I guess over the years I've done enough of that kind of self reflection to know myself well enough…' (Participant 1). 'I think it becomes sort of tacit… might sit and reflect… 'have you thought about it? How do you feel about it?' (Participant 7).

Before engaging, or becoming an active participant in a relationship or network, reflecting on experiential and personal knowledge can prepare ECAs for handling complex and conflicting interactions while building their networks. However, it is also important to note that reflecting does not

need to occur before engaging in a network, as the processes of testing and discovering involve engaging in relationships through lived experiences and social interaction: 'I think I drew on a lot of my previous sort of experiences...' (Participant 6), 'I can learn from experience as to how to improve quality' (Participant 14).

In this way, learning by doing takes precedence over learning by reflecting. Reflecting serves to solidify self-knowledge gained from testing and discovering: 'lot of stuff I was thinking about and wanting to know about...' (Participant 6), 'reflecting on that and thinking about whether that's something I'm comfortable doing...' (Participant 13), 'opportunity to really reflect, how am I going?' (Participant 9).

Offering Self-knowledge

The activity of offering self-knowledge involves *contributing all types of knowledge to build a relationship with a developer or potential developer*. 'I think that sense of yes you're going to be expected to contribute...' (Participant 2), 'so what they need from me...' (Participant 9).

Offering includes making one's self-knowledge available or accessible for others, in terms of disciplinary, interdisciplinary and experiential knowledge, 'open to give information to people... I'm always writing memos and commenting on things, so a willingness to give out information to other people on what you're doing...' (Participant 5), 'I bring with me a variety of skills and knowledge and attributes that I freely share...' (Participant 14), 'bring my industry credit to a younger generation...' (Participant 4).

Offering also includes technical knowledge 'people come to me for help with usually computers, technology those sorts of things and sometimes

they just come to play with my toys, you know that's fine too' (Participant 1), and personal knowledge 'Is everything okay? Can I give you some support?' (Participant 14).

From a realistic perspective, offering also includes selecting the right opportunity to make their contributions, again the relating aspect comes to the forefront : 'I don't have enough energy to give to something like that if it's not meaningful for me...' (Participant 7).

4.3.3   Knowing Others

At the same time, learning while building networks is informed by their knowledge or their perception of others. In terms of creating broader networks, one participant describes this experience as:

> I know everyone who works in my area, I know who they are and I make an effort to interact with them and help them and give them information... so there's that kind of broader intelligence of knowing what's going on... that means people think of you when they're thinking about who would we put on this committee or we need an advisory panel and who would you ask? (Participant 5).

Similarly, in an effective mentoring relationship, knowing how a mentee benefits a mentor helps to build reciprocity:

> Mentoring is a two-way thing and often it's about someone senior recognising that someone has the ability to make money for you or to help you. And I guess even now I look at people and think this person could actually be quite good so it's worth me spending money to take them to a meeting because I can see some advantage in it (Participant 5).

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In this way, the reciprocal nature of the developmental relationship enhances the perceived quality of learning while building networks. The following six processes emerging from the data illustrate how ECAs interact with the knowledge of others to learn while networking.

Accessing Knowledge of Others

This activity involves *knowing how to access various types of knowledge from developers or potential developers within their network.* 'the network is accessed by invitation only… you have to know someone or you don't have access to that… not only information about people but how best to approach them, not only where networks exist but how best to access them… how to access them in a way people are going to be happy about.' (Participant 2).

Accessing involves using a combination of interpersonal, communication and technical skills: 'access to some pretty experienced people, access to programs, access to some of the tools…learning how to be diplomatic in your communication with people… how to create a partnership beneficial to both…' (Participant 6), 'confidence to access people… being able to physically access… communication and relationship building, technical skills of being able to access where people are… in engaging with that person, questioning is an important skill as well, asking the right questions and also being mindful that the people you engage with are experts and if they don't have a personal relationship with you they don't have a lot of time.' (Participant 7)

Accessing also involves knowing people who can assist in accessing what is needed to learn: 'people showing you where to access information and knowledge…' (Participant 7), 'I suppose there's the people aspect, where people say like 'read…' and someone like (Professor) will say 'you must read so and so' and if I go and see him I need to take a pen and paper and

I'll end up with dozens of authors that I must read, some I would never have found if I'd been looking. That's the key part of the human being that a search engine can't do for you.' (Participant 1).

Monitoring Knowledge of Others

The activity of monitoring involves *ECAs maintaining an awareness of other people's personal, disciplinary and interdisciplinary knowledge to learn their roles.*
'Always the things on the periphery… things you need to be aware of on the periphery… Using information, being aware of it…' (Participant 1).

Maintaining an awareness of others' personal knowledge within disciplinary/interdisciplinary contexts, such as 'knowing what's going on… I know everyone who works in my area…' (Participant 5), 'scanning and thinking I may need to deal with you later… I know who you are and what you do.' (Participant 7), 'number of websites that I normally monitor… I use Twitter quite extensively for that…' (Participant 10) and opportunities to develop (research, teaching or self) 'knowing where those opportunities are is pretty important…' (Participant 5).

Aligning with Knowledge of Others

The activity of aligning involves *ECAs joining and adapting to existing and new developmental networks*: 'I traditionally did not align with anything at this university, I needed to shift and align myself…' (Participant 3).

A combination of others' personal, disciplinary and interdisciplinary knowledge informs aligning for development. In terms of personal knowledge, knowing the right people to align with into certain projects is

important: 'he's a good person to know in terms of helping me align with some other projects' (Participant 3).

As their roles change and they need to learn new things, they need to adapt to the new: 'networks are fluid and as my role changes my network is going to change and I'm going to engage with different people...' (Participant 7). Aligning also refers to new academics establishing their own agendas and attracting people to join and support their networks: 'it's how you attract people, how you inspire people to become involved in your research' (Participant 9).

Seeking Knowledge of Others

This activity involves *ECAs seeking out other people's knowledge to inform their development.* ECAs mainly seek experiential: 'seek out a practitioner who is an expert in that area...' (Participant 7), technical: 'look at certain technological advancements to see how they can be implemented...' (Participant 4), disciplinary: 'if you're outside that area, it's difficult to find people who are interested in areas you're interested in...' (Participant 8) and interdisciplinary knowledge 'I'm actively seeking people outside the school...' (Participant Participant) to inform a range of tasks involved in learning their roles: 'I'd ask different colleagues questions but never felt like there was one person I could go to...' (Participant 4).

Applying Knowledge of Others

This activity involves *ECAs applying and demonstrating what they have learned from other people in their networks.* In this activity, ECAs are using experiential technical, disciplinary and interdisciplinary knowledge gained from interaction with developers. 'I like to demonstrate that I can do that but I could not have gotten where I am without those people...' (Participant 7), 'I guess it was probably from imitating others...' (Participant 13).

Sharing Knowledge of Others

This activity involves ECAs sharing all types of knowledge to build networks. This differs from the offering of self-knowledge. Sharing knowledge with others also involves sharing knowledge gained from others and knowing the overall impact if it is shared: 'sharing how to teach benefits the whole university' (Participant 1).

Dissemination of knowledge and information to people internal and external to the university is viewed as important in promoting their work and the work of others: 'disseminating it to other people...' (Participant 3) and in building strong relationships with external partners: 'I'm always very good with sharing information with government departments...' (Participant 5), 'we've just developed trust in sharing work and developing work' (Participant 8).

Sharing also refers to working collaboratively with colleagues and developers: 'we're sharing information, technical information... we're sharing that almost constantly' (Participant 6), 'discipline is by design collaborative' (Participant 6), 'I automatically shared their labs...' (Participant 12).

In some cases, sharing knowledge is experienced problematically in this context: 'sharing of knowledge could actually be threatening to some people' (Participant 6), 'students don't always understand about oversharing...' (Participant 7), 'a lot of information sharing... it's difficult to identify who gets credit' (Participant 8).

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4.3.4 Recognising Layers of Relationships

Data from the interviews indicate that the developmental relationships are comprised of several layers. This 'layering' phenomenon is potentially significant for increasing understanding of how information is used to learn through these 'developmental relationships'. Several layers have been identified and these can be divided into five categories of 'relationship layers' as outlined in Table 1 below.

Relationship layer	Type
Communication modes	Face-to-face, in person only
	Face-to-face, online (video) only
	Virtual only (non-face to face)
	Blend of face-to-face, in person and virtual, long distance
Cross-boundaries	Cross-disciplinary
	Cross-profession
	Cross-cultural
	Cross-institution
Work roles	Research only
	Teaching and Learning only
	Administrative only
	Overlap of Research/Teaching/ Administration
	Academic-practitioner
	Service
Personal sphere	Intellectual
	Emotional
	Physical
	Spiritual
	Creative

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| **Temporality** | Stages / Timing / History / Journey (of a developmental relationship or network) |

Table 1: Relationship layers that inform ECAs' learning while developmental networking

Selecting Communication Modes

Participants mention their selection and utilisation of both technologically supported and non-technologically supported forms (or a blend of both) of communication to use information to learn. It appears that the type of communication mode(s) used informs learning through a range of experiences as reported below.

> I'm reliant on software because of the whole computer videoconferencing thing, so for me, it's word of mouth or reading blogs to find out what the latest craze is. The best way to network for me, what's important is the ability to videoconference with multiple people in the conference (Participant 4).

> I've used LinkedIn, which is supposedly the professional one, I've used that occasionally but I tend to use email much more and I tend to use the phone, I like to talk to people. I ask questions and then I find out from the horse's mouth, that to me is the number one place where you should be getting your information, from the horse's mouth, from the person. They can direct you to particular sources like texts and journals and online sources. But nothing beats a discussion with someone in terms of being able to source material (Participant 6).

Navigating Across Boundaries

Participants discuss their use of information to learn across a number of boundaries or 'territories', such as institutional, national, cultural, professional and disciplinary. By seeking, disseminating or applying information across perceived boundaries, the ECA is learning how to navigate their developmental relationships within and beyond these territories, as the following quotes convey:

> If you get into a group like that at Oxford, you could go straight to the fine detail because they have all the basic concepts under their belt. Half the guys in the room I'm citing in my PhD... so it was really, really exhilarating, they're all really into what they're talking about, research is what they were about and some of them were teaching as well as doing research... (Participant 2).

> What I tend to do is transdisciplinary research, so the things that I have published have usually relied on me matching up with someone from visual and performing arts or science and technology. That's how I've sustained myself, mainly from outside contacts (Participant 8).

Balancing Academic Roles

Participants in this study were divided in their approaches to balancing their academic work roles, in that some preferred to focus on research and others preferred to focus on teaching. Each participant discussed either research or teaching as being closely linked to administration and/or service activities. Some discussed the role of practitioner-academic, where the ECA continues to network as a practitioner:

> So the way we see it is we're still participants in that industry... it's almost like we've left a little toe in the pool of our previous lives. This tends to come pretty naturally for me because it's

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what I did for twelve years… almost like I take it for granted, it's just an ongoing thing. But if I think about it's extremely important to what we deliver to the students (Participant 6).

Practitioner knowledge gained through industry networking informs other aspects of their role such as teaching and research, so in this respect the multiple facets of academic work are developed through interrelated relationships spanning across two or more work roles.

Exploring Personal Dimensions

ECAs' learning is informed by their individual differences and particular 'states' during different phases of the relationship, such as intellectual 'I can knock on the Professor's door and say 'you got five minutes?' and an hour later we're still talking research…' (Participant 1), emotional 'you can take a problem to someone like that… they're your mum, they're not going to judge you whereas maybe with your colleagues you do hold back… your feelings, your gut stuff' (Participant 7), physical 'I asked if it's okay to leave at four and she looks at me like I'm an idiot, like what are you waiting for the bell to go?' (Participant 1), spiritual 'we share some of the same philosophies…' (Participant 6) and creative 'you are looking for synergies between yourself and them' (Participant 8).

Changing Over Time

Changes experienced over the length, history and timing of a developmental relationship can inform ECAs' learning, for example:

> If I'm teaching in one of the subjects in that particular course, I'd probably be engaging with those people much more at that time, but then the rest of the time I wouldn't as much. It's like you're going in and out of networks or they're becoming more or less

in the forefront of your mind depending on what's going on at the time (Participant 7).

It was almost a coincidental catalyst... with (former Head of School), suggesting that I apply for this job. So some of the key people have been very transient, they don't stick around and see how you're doing... its just serendipity sometimes (Participant 8).

4.3.5 Inner Focus for Self-Directed Learning

This section describes the processes most relevant to knowing self, knowing others and recognising layers of relationships for the informal learning type, self-directed learning.

Knowing Self

Proactive learning, at a very basic level, depends on identifying knowledge of oneself. Developing a clear idea of who they are, what they focus on and what they need informs and strengthens the ECAs' ability to be independent learners in this context. In terms of the entrepreneurial approach to development mentioned by some participants, identification of a niche area is essential.

Proactive learning is enhanced by ECAs' evaluation of their knowledge of oneself. Testing allows the ECAs to develop capacities to be flexible and adapt according to circumstance or situation. Emotional knowledge informs independent learning, as feeling their own emotions impacts upon decision making, such as whether to continue with a particular project.

Discovering knowledge about oneself is important for independent learning as self-discovery often reinforces self-directed learning. Self-

discovery is closely related to authentic learning, in other words, learning from personal experience often has a stronger impact on the learner.

Reflecting regularly on knowledge of oneself helps maintain self-awareness, self- motivation and general momentum for independent learning. The activity of offering one's knowledge reinforces self-directed learning by demonstrating initiative, self-promotion and communicating to others that the ECA is creating his or her own opportunities to learn and build relationships with others.

Knowing Others

Accessing other people's knowledge using a variety of methods (technical or interpersonal access) can enhance self-directed learning. This allows ECAs to independently learn from specific knowledge. Constant monitoring of other people's knowledge maintains ECAs' proactive receptiveness and entrepreneurial responsiveness to opportunities to grow their research and teaching profiles. Aligning with other people's knowledge allows ECAs to increase their chances of success while building relationships. The ability to adapt to join in established networks reinforces independent learning.

Proactive learning is demonstrated by seeking out the knowledge of other people. This is closely related to accessing knowledge of others. The application of knowledge gained from others through a variety of methods (technical or interpersonal) demonstrates and reinforces independent learning. ECAs apply knowledge gained from past professional or industry experience to manage present situations. Being able to share knowledge gained from and with other people informs self-directed learning. Sharing is the central process during collaborative work, thus shared knowledge is essential for developing leadership capacity and independent learning during teamwork based situations and activities.

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Recognising Layers of Relationships

Successful ECAs recognise that their developmental relationships are multi-layered and being able to recognise these layers through the following forms of interaction increases the quality of their self-directed learning.

The ability to select the most suitable communication modes assists in self-directed learning, as the ECA can independently interact with a range of information and knowledge sources within their developmental network or knowledge ecosystem.

By focusing on various facets of the academic role (teaching, research, administration, service, professional practice), and recognising potential overlaps in their relations with others, ECAs independently manage their workloads to increase best outcomes for the work and for their own self-directed learning.

Exploring the personal aspects of relationships for development can inform self-directed learning. Exploring personal aspects in some cases, can strengthen professional ties and the ECAs' ability to independently build and maintain their developmental relationships within a network.

The ability to navigate across various boundaries is essential for self-directed learning as the ECAs independently negotiate access to knowledge, which is not traditionally located within their immediate 'territory' or 'space', thus exposing them to interaction that could expand their horizons or viewpoints.

The trajectory of a developmental relationship over time informs self-directed learning as ECAs track changes in their relationships and independently respond to these changes over a period of time.

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4.3.6 Inner Focus for Incidental Learning

Non-deliberate processes such as testing, feeling and discovering self-knowledge are most important for incidental learning, as they are more likely to promote unexpected learning experiences. Processes such as identifying, reflecting and offering are deliberate and strategic actions that are suitable for other types of learning such as self-directed, but less suitable for incidental learning.

Knowing Self

The processes of testing and feeling knowledge of self involve being open to and trusting informal perspectives of others to learn how to be an academic. For example, while discussing interactions with multiple colleagues and mentors within their university, one ECA mentions the development of openness and trust to encourage learning from mistakes:

> ...basically it's through networking with the people here in an informal sense primarily that I learned what it is to be an academic, what academics do... makes you more open to other people's views, opinions or information... builds the trust where if you make a mistake you can go and say 'I've made a mistake' (Participant 1).

Discovery of self-knowledge often occurs unexpectedly within the informal sphere of learning, thus incidental learning is informed by the discovery of self-knowledge.

Knowing Others

Monitoring is the most important process for incidental learning, as it is more likely to promote unexpected learning experiences. Other processes

in the model are deliberate and strategic actions that are suitable for other types of learning such as self-directed, but less suitable for incidental learning.

The process of monitoring knowledge of others involves listening out for and taking advantage of informal opportunities for learning. For example, while discussing early experiences of locating research funding, informal opportunities are mentioned by one ECA as being 'a better model' than applying for funding using formal channels:

> ...the other model is what happened to me, where someone drops into your office and goes 'oh I was chatting to such and such at a meeting the other day and they mentioned they might have some money to do this, maybe you ought to give them a call'. And that was more my experience and at the time it was so unfair, other people were getting their names on stuff and going crazy writing proposals and doing all this work and getting knocked back. It seemed really unfair, but now I realise that was much better... (Participant 5).

This process also involves observing experienced academics to learn how to teach. For example, Participant 5 describes how regular informal interaction with other academics in her discipline, helped develop her teaching skills and abilities. The lecturer in science says that through informal face-to-face observation and demonstration of her own knowledge, she learned how to emulate and adapt the teaching methods of her more experienced colleagues:

> ...I did a lot of demonstrating... so had been around academics who were running their schools and knew what they were doing, I'd picked up stuff from what they were doing, but it was certainly not a conscious thing... (Participant 5).

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4.3.7 Inner Focus for Informal Mentoring

This section describes the interaction processes most relevant to informal mentoring.

Knowing Self

This involves ECAs knowing themselves as mentees and as mentors in the informal context, including identifying specific needs, preferences and goals. Testing involves evaluating and re-evaluating themselves as mentees and mentors in the informal context. Feeling involves acknowledging their emotional states as a mentee or mentor. Discovering self-knowledge as a result of informal mentoring involves coming to realisations through experience about themselves as mentees or mentors. Reflecting on experiences involves deliberate introspection about themselves as mentees or mentors. Offering involves making a contribution through being mentored informally or being an informal mentor.

Knowing Others

ECAs access knowledge from their informal mentors and access knowledge from their informal mentees, using a range of interpersonal and technical skills. They monitor knowledge as informal mentees and mentors, through active listening and observation. ECAs align with the knowledge from informal mentors and mentees through sharing common goals, activities and projects. They seek knowledge from informal mentors and mentees by asking questions face to face or using technologies. ECAs apply knowledge from informal mentors and mentees by demonstrating what they have learned from informal mentoring in a range of contexts. They share knowledge with informal mentors and mentees to enhance collaboration and joint projects.

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Recognising Layers of Relationships

ECAs select a variety of communication modes for informal mentoring. Face to face mentoring is most common in this study, however virtual or distance informal mentoring is also occurring. ECAs balance academic roles within an informal mentoring relationship, as either mentor or mentee, by focusing on either research or teaching or service with particular informal mentors or mentees. In some cases, informal mentors interact within every facet of academic work, however most participants choose to balance this by focusing on one area per mentor or mentee. ECAs explore personal dimensions for informal mentoring by 'bonding' with mentors or mentees over informal or social activities. ECAs navigate across boundaries as informal mentors or mentees may be located across different universities, organisations, cities or countries. ECAs change over time within an informal mentoring relationship with a mentor or mentee, as either ECAs' and mentors' personal needs or goals develop or change over time and from circumstances.

4.3.8 Inner Focus for Social Media Learning

This section describes the informal interactions most relevant to social media learning.

Knowing Self

ECAs identify which parts of themselves they need to communicate. Through social media, ECAs learn how to represent themselves as professional academics and how to communicate this identity. ECAs experiment with their knowledge while using social media, evaluating their experiences and modifying their representations if necessary. ECAs' feelings about social media related experiences can inform learning in this

context, affecting attitudes (whether positive or negative) towards social media and confidence in its usefulness to academic related tasks. Discovering new aspects of themselves through social media can inform learning by expanding on ways of interacting with others. Reflecting on experiences related to social media and offering what they know using social media or about social media can all inform learning how to be an academic.

Knowing Others

ECAs gain access to knowledge, and seek knowledge of others by using both technical and interpersonal skills to virtually connect with people using a variety of social media. Monitoring knowledge of others using social media such as 'following' particular Twitter and Academia.edu profiles informs ECAs' learning. Aligning through joining internal and external networks or 'liking' Facebook pages informs ECAs' learning. Applying knowledge gained from social media interaction informs learning by not repeating mistakes made in this context. Sharing knowledge using social media encourages collaboration and helps in maintaining support from collaborators and developers.

4.3.9 Inner Focus for Informal Interactions in Formal Sphere

The following sections describe processes related to informal interaction within formal and non-formal spheres.

Formally Recognised Courses

ECAs draw upon knowledge gained from formal degree programs at a variety of levels, both past and present. They interact informally with other students, lecturers, professionals and university staff by accessing, monitoring, seeking, applying, sharing and aligning with knowledge from

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various people in the course. Some ECAs in this study participate in short courses delivered online, such as ATN Research Modules where informal interaction with other academics and students across a range of universities and disciplines is experienced through online forums and wikis.

Formal Professional Development Programs

While ECAs participate in formal mentoring programs and workshops, knowledge gained from these is often evaluated and reflected upon in the informal sphere of learning. In most cases, ECAs share and align with others' knowledge during opportunities to have informal discussions as part of professional development programs. ECAs discuss how informal sharing of issues with other academics is the most valuable learning experience in the formal context.

Formal University Plans and Policies

While learning about the overall university strategy, one ECA interacts with her informal network to develop a better understanding of its meaning and how the formal plan impacts on her role:

> Formal information is your strategy plan from the VC… But even that, formal communication tells you something about the organisation and what they're trying to do and… if I'm not sure what something means… I'll go to my informal network and say what do you think this really means? Or what does this mean for me? (Participant 1).

Formal Meetings

Formal meetings with supervisors such as performance reviews provide a context for informal reflection and identification of strengths and

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weaknesses, challenges and opportunities towards development. Other formal meetings include staff and committee meetings which allow ECAs to share, monitor and align with others' knowledge.

This section has discussed the experience of Inner Focus where learning is informed by interacting with human knowledge resources within established relationships as contexts for informal learning. Inner Focus works towards helping us gain in-depth understanding of the various experiences and interactions of ECAs while building and strengthening their human relationships and networks for development.

4.4 Outer Focus: Learning Informed by Information Resources Outside of Relationships

While the Inner Focus highlights the entities of human-to-human relationships as informing learning, the Outer Focus experience acknowledges the wider range of resources within a knowledge ecosystem used by ECAs while developmental networking as illustrated in Figure 1. The Outer Focus broadly encompasses contexts and factors influencing and shaping the relationships and their development. In the Outer Focus, ECAs' learning is informed by:

> ...anything that you receive through your senses that enables you to improve, enables you to do something at a better capacity than you had previously done... So it can be anything, it can be someone demonstrating something to you, it can be text on a page or a screen, it can be an anecdote, it can be a story someone tells you, it can be a full on lecture, it can be you being told off, like this is wrong, you know. It encompasses all of those things…. to me, that's what a network is, it's not just people, it's texts you read, it's articles you read, it's blogs, podcasts, it's everything.' (Participant 6).

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4.4.1 Relating to Information to Create Knowledge

The Outer Focus highlights information resources (texts, tools and human individuals) and contextual information (environments and cultures). The ECA relates to these resources outside of human-to-human relationships through a multisensory experience to create knowledge to inform their learning, and are recognized as part of their developmental networks.

4.4.2 Relating to Texts to Create Knowledge

This mainly involves seeking people to contact using a wide range of textual sources such as print and online (i.e. articles, books, databases and expert directories).

It also involves seeking theory from academic, peer-reviewed publications to support the development of teaching and research portfolios to identify theories that can relate to their specific experiences. This information can enhance their learning about self-concept as related to various facets of their academic roles. Accessing these texts from databases or networks requires knowledge of searching techniques, both technical and interpersonal.

Monitoring print and online media for 'who's who' and 'who's doing what' is also commonly practised. Some participants share these findings with others using online social media or during informal meetings and discussions with colleagues and team members.

4.4.3 Relating to Tools to Create Knowledge

This mainly involves testing a variety of technologies (i.e. hardware and software, landline telephones, PCs, wireless tablets or mobile devices) for

developmental networking purposes. How these technologies are used informs ECAs' learning by influencing their experiences (either positive or negative). Technologies are evaluated through ongoing testing for task-specific and personal suitability, monitoring for updates, aligning and sharing through working collaboratively on common platforms, accessing through funding and communicating with relevant technical experts.

4.4.4 Relating to Humans to Create Knowledge

This involves initial seeking, monitoring and accessing information from a range of individual people who are located outside of their established developmental networks. ECAs relate to information from previously unknown humans usually at the very beginning of relationship formation, to be potentially followed by knowledge creation as the ECAs engage in the interactions of knowing others.

4.4.5 Relating to Cultures to Create Knowledge

Participants in this study discuss several forms of 'culture' that they perceive as they learn their roles. Again, these are perceived as either positive or negative. These include a culture of research or enthusiasm about intellectual activities, a culture of sharing information and knowledge both internally and externally.

4.4.6 Relating to Environments to Create Knowledge

This involves monitoring the physical environment such as building infrastructure, geographic location, design of workspace and ambience or atmosphere. It also involves broader political and governmental climates.

4.4.7 Outer Focus for Self-Directed Learning

Reading materials such as books, articles, websites, newsletters and blogs on various academic leadership issues are used by ECAs for strengthening self-directed learning. These textual sources of information are often monitored or applied while building their research or teaching portfolios and for performance reviews.

Mobile devices such as smartphones, tablets or netbooks enable ECAs to manage their networking and self-directed learning as it occurs both on campus and off campus in remote locations. Information from these devices, including the types or models of devices and previous performance of such devices, is used to select the most suitable device for an ECAs' purpose.

Cultures inform self-directed learning as cultures within and outside of an ECA's university influence the extent to which being a self-directed learner is valued or encouraged. In some cases, being a self-directed learner is inevitable in order to maintain employment as the ECA is left to 'fend for themselves'. However, in more positive cases ECAs are encouraged by their employers to be proactive and seek out opportunities for professional development. In some cases, ECAs monitor positive cultures from their own experiences at other universities or from hearing the experiences of others at other universities. ECAs in this situation use that experience to proactively help address issues at their own universities during professional development activities.

ECAs' physical, geographical and political environments inform and influence the level of self-directed learning experienced. ECAs thrive in non-restrictive environments that enable high levels of self-directed learning.

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The above processes related to knowing self, knowing others, recognising layers of relationships and interacting with information and knowledge outside of relationships, enhance the quality of self-directed learning towards developing quality research and teaching and towards becoming a successful academic.

4.4.8 Outer Focus for Incidental Learning

ECAs interact with a wide range of information from text and tools, which can inform incidental learning in a variety of situations. ECAs create their own personal systems to monitor and store print and online textual sources such as emails, articles, books, news bulletins and contact information. Print textual sources are monitored physically by browsing library shelves or while attending conferences in person. Online sources are monitored and stored using a range of technologies such as mobile devices, desktop computers, landline telephones and media broadcasting (television and radio). ECAs interact with a range of cultures and environments, which can inform incidental learning in a variety of situations. Information from both cultures and environments are monitored and absorbed as personal experience over time.

4.4.9 Outer Focus for Informal Mentoring

ECAs monitor, seek and access information related to informal mentoring such as articles (scholarly and business literature), books and websites and other multimedia on the topic to enhance their experiences of mentoring and how to be an effective mentor. ECAs monitor various cultures and environments to inform informal mentoring. Being exposed to and in tune with cultures and environments that reinforce and value informal mentoring can enhance their experience. Where ECAs experience environments and cultures that do not value informal mentoring,

information gained from this particular experience informs improvements and increased awareness of benefits.

4.5 Conclusion

This chapter has provided an outline and discussion of the key elements of the overarching theoretical model, the knowledge ecosystem of ECAs. The key elements are resources (knowledge and information) that inform learning, interactions (relating to information to create knowledge, knowing self, knowing others and recognising layers of relationships) and learning in the informal sphere (self-directed, incidental, informal mentoring, informal interactions in the formal/non-formal spheres and social media). The chapter describes how these elements can be experienced in two interrelated ways: Inner Focus and Outer Focus. The Inner Focus section provided an explanation of how ECAs primarily interact with knowledge resources to know self, know others and recognise layers of relationships to inform learning within human-to-human relationships. The Outer Focus section introduces how ECAs experience relating to information resources such as text, tools, individual humans, cultures and environments, to create knowledge to inform their learning, as experienced within the Inner Focus concept. The following chapters will use the general knowledge ecosystem model to describe the context-specific experiences of ECAs building their professional and personal developmental networks with key developers.

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CHAPTER FIVE

Building Developmental Networks:
Informed Learning Experiences

5.0 Introduction

The main elements of the knowledge ecosystem model were introduced and outlined in Chapter Four. This chapter examines more closely in context, the learning activities from experiences that participants have discussed as being essential to learning during the information practice of building academic developmental networks. The purpose of this chapter is to highlight the key informed learning experiences involved in building developmental networks of ECAs. Key learning activities from experiences can arise from various 'spaces' encompassing the Informal Sphere of Learning as experienced by ECAs. While the previous chapter discussed the main types of informal learning experienced by ECAs, this chapter will focus on the main 'spaces' where developmental networks are being formed and maintained. Within these spaces, any combination of the informal learning types can be experienced. These spaces include: *Programs, Courses, Events, Community, Home* and *Social Media*. Detailed descriptions of these experiences will be presented with respect to the question:

How are the key learning experiences enriched by focusing on interactions with knowledge and information resources?

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Key learning experiences identified in this study include:

1) Programs: Developing a Research Profile;
2) Courses: Seeking/Attracting Developers;
3) Events: Presenting Research at Conferences;
4) Community: Volunteering for Internal/External Service;
5) Home: Establishing Personal Foundation; and
6) Social Media: Seeking/Attracting Expansion Opportunities.

It is suggested that the emphasis on research activities in the findings is due to research accomplishment being experienced by participants as essential to career progression. Each of the key experiences are discussed in the following way:

Outer Focus concentrates on the process of establishing and maintaining developmental relationships through relating to information to create knowledge resources to be used and re-used to learn. *Inner Focus* concentrates on interacting with created knowledge resources from self and others, to inform learning experiences.

The overall focus is on creating knowledge from information that ECAs can relate to. These are not necessarily the 'correct' choices of information (as emphasised in traditional definitions and conceptions of information literacy) but the information that holds the most meaning and relevance to their experience. In this way ECAs are 'screening' information for personal relevance, being selective about what is stored and created as knowledge in one's mind, and what is ignored, avoided or not stored in the mind. This experience reflects a self-directed way of learning as ECAs control their knowledge creation to inform what is learned in terms of process and content. Because of this, learning experiences differ considerably depending on individual differences and preferences or choices.

The initial experience of interacting with various forms of information resources, or selecting what is relevant and meaningful for ECAs, involves relating to any combination of texts, humans, tools, cultures and environments to create knowledge resources (of self and others) such as experiential, personal, technical, disciplinary and interdisciplinary. These knowledge resources are then used and re-used for a particular learning experience. Once relationships are established, the relationship becomes a knowledge context and is continuously informed by any resource within the knowledge ecosystem. Examples of developmental relationships in the context of a specific learning experience are then discussed.

Types of information and knowledge resources are summarised in Table 4 (Appendix I) and Table 5 (Appendix J). The aim of presenting these tables is to highlight the similarities and differences between the types of information and knowledge resources used for learning in each of the key spaces. While some information and knowledge may appear similar across different spaces, the tables point to subtle differences between information and knowledge resources in the six learning spaces. The key difference between information and knowledge resources is that information resources are tangible and knowledge resources are intangible. These resources and how they are used for learning, are described and discussed further, supported by research participant quotes, in the following sections about Inner and Outer Focus experiences within each learning space.

5.1 Experiencing Informed Learning Within Informal Spaces

According to participants in this study, experiencing simultaneous information use and learning for developmental networking is occurring in a variety of different contexts or spaces where relationships are formed. Through data analysis, six key 'spaces' have been identified. These spaces are introduced in the following sections, along with a learning experience

within each space that is frequently experienced by participants in this sample. It is important to note that each learning experience is meant as an illustrative example in context, and that data indicate many other experiences can exist within each space.

5.2 Informed Learning Within Programs: Developing A Research Profile

Programs initiated and implemented by university management (Vice-Chancellors and Deputy Vice Chancellors, Deans and Heads of School) include professional research and teaching development programs for ECAs. These programs involve a range of orientations, training workshops, seminars, meetings, formal mentoring, Fellowships, overseas and local study leave or visiting scholar programs and performance management. These programs are most often internal and associated with current full time position at a university, but can also include external workshops or mentoring and professional development programs experienced at institutions (both academic and industry-focused) prior to becoming an academic. One example of a learning activity within programs is developing a research profile, which involves a significant amount of network building. The experience of developing a research profile involves building and maintaining relationships for developing a research focus or niche (discipline/field and methodologies), publications, conference papers and discussion, research grants and funding, research supervision, performance management and promotion, and research use or impact in areas of scholarship of teaching, course development, media and general public, research commercialisation and innovation, ethics and reputation as a researcher.

ECAs begin this learning experience with their existing knowledge. For example, ECAs holding PhDs and having significant work and life

experience are able to draw upon this collective experiential knowledge while learning, whereas ECAs with significant work and life experience and who are still completing their research training, are developing and refining their experiential knowledge for research. Regardless of level, all ECAs experience the growth and development process by relating to information to create new knowledge of self and knowledge of others. Based on existing knowledge, ECAs select information most relevant to them to create knowledge which is then used or re-used to learn a new activity. Relating to information can be experienced at any time throughout the developmental process, to create new knowledge (sometimes conflicting with existing knowledge) to inform learning. Informal learning types such as self-directed and non-formal learning are critical here as ECAs take responsibility for their own learning, in both structured (non-formal) and unstructured (self-directed) ways, independently self-selecting information resources to create knowledge.

5.2.1 Outer Focus: Relating to Information To Create Knowledge

Textual information in this context refers to a range of research and industry related print, digital and multimedia resources. Such information can be classed as either personal or impersonal. Personal textual information is experienced by ECAs in the context of the original authors' primary 'official' communication, such as emails and notes or memos, personal interviews from general and specialised media sources such as magazines, podcasts or radio and television, PowerPoint slides from talks, blogs, newsletters, tweets and status updates. ECAs relate to this information to create experiential and technical (know-how, know-when and know-why) and personal (know-who) knowledge. Research related knowledge created from this information includes lessons learned from mistakes or unsuccessful research activities, cases or stories, research strategies and plans, consultancy advice, perspectives, research skills, methodologies, tools and user reviews of research technologies.

Impersonal textual information is not contextualised by the original author and often located through secondary sources such as library databases or search engines. This type of information can come from academe and industry in the forms of published and unpublished works both print and offline: books, journal articles, bibliographies, conference papers, working papers and grant applications. ECAs relate to this information to create disciplinary and interdisciplinary knowledge (know-what). This knowledge consists of key and emerging authors ('names') and prominent communities and networks active in the disciplines, history of the disciplines and their relationships to other disciplines and fields through literature reviews.

Information from tools in this context refers to a range of research and industry related technologies (hardware and software) and scientific equipment. Tools in this context can include scientific equipment for lab and fieldwork experiences and information technologies such as desktop and laptop computers, mobile communication devices (smartphones and tablets), research related software such as Word processors, data analysis programs, search engines and databases, research apps, landline telephones and secure electronic file storage for research datasets such as servers and data preservation tools. All of these tools are experienced as short and long-term enablers of research profile development. Initial interaction with these tools includes relating to tools to create technical and experiential know-how, when dealing with operational aspects. Technical and experiential know-how includes research skills such as literature and database searching, technological and scientific equipment supported research methodologies and user reviews from feedback and corporate training facilitated discussion. However, in the longer term, relating to tools leads to creating all types of knowledge identified in this study, as technology and equipment are central to communication for knowledge transfer and creation.

Information from humans refers to a range of research and industry related resources closely linked to research profile development that provides initial 'encounters' of ECAs with potential developers (and potential developers with ECAs). This information includes research and industry experience, emerging track record documented on portfolios and CVs, biographies or memoirs, one-time interviews, business cards, personal introductions and 'elevator speeches'. ECAs relate to this information to create personal (know-who and know-where) and experiential (know-why) knowledge. Personal knowledge in this context includes research goals and orientations, work style preferences and personalities, research learning needs, emotions related to research, research networks and collaborations, synergies, research journey, location and context of research and researchers or practitioners and personal reasons for research related choices. Experiential knowledge includes feedback and guidance from formal performance reviews related to research performance.

Cultural information in this context refers to a range of research and industry related cultures or behaviours present within an ECAs ecosystem. This information is observed through group or collective behaviours associated with research, such as freely sharing research information throughout the organisation or network (as opposed to hoarding information), research related humour, personalities and styles, information from organisational cultures experienced as positive or negative emotions around issues of respect, belonging, trust, collegiality and recognition of achievements and information from intercultural interaction such as languages, cultural beliefs and integration. ECAs relate to this information to create disciplinary and interdisciplinary knowledge (know-what, in terms of advancing fields of research knowledge through information sharing) and personal and experiential knowledge (know-who,

know-how and know-why) such as emotions related to research, orientations, work styles and preferences and learning needs.

Environmental information refers to a range of research and industry related environments or contexts in the form of physical spaces, atmospheres and climates. This includes information from physical places where research is conducted such as office spaces, infrastructure, places of fieldwork and geographic locations specially suited for certain types of research. This also includes information from political climates such as government interests and circumstances (i.e. funding priorities) and natural climates such as access to certain physical areas or species of animals for scientific study. ECAs relate to these forms of environmental information to create disciplinary and interdisciplinary knowledge (know-what, in terms of advancing fields of research through place-specific study and work environments conducive to quality research). They also create personal knowledge (know-where) by relating to environmental information associated with the geographic locations (and associated meaning of the locations) of particular people who can assist with development.

5.2.2 Inner Focus: Knowing Self and Knowing Others

ECAs relate to information to create knowledge of themselves as researchers and knowledge of others to build relationships for research profile development. Inner Focus involves key relationships as learning experience contexts for developing a research profile. These key relationships are between ECAs and the following groups of developers: Mentors, Research Colleagues, Senior Research Leaders, Research Services, Research Funders and University Management, such as Heads of School and Deans.

5.2.3 Relationships with Mentors

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Knowing Self

In a formal context, ECAs identify specific feedback from performance reviews related to research, outlining strengths and weaknesses or areas of improvement, learning needs or expansion. This information is usually gathered in the formal sphere of learning and later identified more clearly in the informal sphere during informal discussions with colleagues, as described by the following participant.

> I also find the [performance review program] quite a useful tool to find out how you're actually progressing as an academic, areas of strengths and weaknesses so I can use that to guide my own development over the course of the next year. So information [in this context] for me is verbal and written feedback, information from [performance review], information from meetings that I have with colleagues, staff forums, university wide forums, research forums. (Participant 14)

The following ECA identifies what ideally constitutes an initial formal mentorship program that is in line with his personal learning needs and preferences:

> So for me, the support network is someone who has been teaching here for quite a few more years and knows the system and the way the university operates and someone who you can actually go to on a day-by-day basis and ask day-by-day questions. Somebody who is actually patient and understanding, especially when you probably haven't been an academic before. And then do I feel like that was supported? Not initially but when I tried to seek support it was given sort of a need by need basis but if someone asked my opinion on it I'd say I think something more formal needs to be set up as far

as that's concerned. And then after a year or two maybe can opt out of it or something like that. (Participant 4)

In contrast, this ECA identifies his personal preference for an informal mentorship as feeling more supported to learn in a self-directed way:

So for me it's about that, the intent that comes from another of wanting to help you. That's what the key element is. If that wasn't there I don't think it would be anywhere near as valuable or as useful a resource to have… That's why I'm not sure that organised mentoring is as effective, because I think that relationship has to happen sort of naturally as opposed to being sort of 'well ring this person because they've been allocated to you', that rings alarm bells with me almost immediately, because then I don't necessarily believe that the support will automatically be there… If you're choosing to do it, it is immediately going to be supportive, even if you don't actually solve many issues or problems. (Participant 6)

One participant identifies her goals as a mentee (and future mentor) and describes her ideal mentoring support system consisting of multiple individuals for various forms of research knowledge and expertise. She suggests the following arrangement as an ideal use of information and knowledge for ECA learning and progression:

Unfortunately I don't think you can find an ideal support system in one individual, so you need multiple individuals… So the support systems to me incorporate sound knowledge of research methodologies, how to access funding, how to publish, when to publish, developing a publishing plan at the beginning of your research… My goal with where I would see a networking relationship would be to have one individual to go to for that but unfortunately, we've become very focused in our areas and I don't

think that's a very realistic goal, but that would be my goal to be that particular individual in time. (Participant 14)

Interacting with personal knowledge through feeling comfortable with talking about certain issues and maintaining privacy and confidentiality of problems and issues within a mentoring relationship are important for building strong developmental networks. In the following quote, one ECA describes how she experiences group mentoring sessions within a formal program. While she experiences the arrangement as useful for gathering general information, it is not as effective in terms of interacting with personal and emotional knowledge through one-on-one informal conversation:

we were assigned a group mentor as well… so they were group mentors for us with the two of them looking out for us. I found that to be not really useful because I think the whole mentoring concept needed to revolve around intimate conversations about what's happening on a day-to-day basis with us. I found that in the small group situation… people were sometimes uncomfortable talking about what was going on. It was great to have them there to go to but it really wasn't as effective as appointing someone you work with one on one, more closely. (Participant 13)

The following quote is from one ECA reflecting on her experience with a formal mentor that she perceives as more beneficial for the formal mentor than her own development, in that the mentor gained from her expertise in an area outside of the mentor's. While she attributes most of her progression to her informal research mentor, a senior academic who was self-selected with a common interest, this reflection has led to her offering to mentor other new researchers in order to build and strengthen her developmental network:

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When I started I was appointed a mentor and it was just like, well that's not necessarily the person I'd go to... It was kind of like 'here we're appointing this person to you' and they don't get anything for it... So I don't think just appointing a mentor is that useful if you don't have a common interest. So it took a couple of years and we've only just started working and doing some stuff together and that was more because I became useful and not to help me develop. So there's a conundrum there and now that I'm almost not an early career researcher anymore, I've kind of found myself looking at other early career researchers and thinking how can I help. You do achieve these things, but yeah it's not formal. (Participant 5)

Knowing Others

Most participants describe experiencing a combination of both formal and informal mentoring. Formal mentoring is linked to a development program and induction into a new university, and informal mentoring is a self-selected mentor with whom the ECA shares research interests. Both forms of mentoring enable access to experiential, personal and technical knowledge for research development, as the following two quotes describe:

As part of the [current university] program I have an official mentor who is the Assistant Dean, Teaching and Learning and she is specifically my mentor for the program. So the other ones are informal and are people I clicked with. These people I'm fortunate to see all the time in the office. But I also see them outside of work and I also talk to them on the phone quite a lot. Particularly my mentor at [previous university] I can speak to him on a daily basis or every second day and often get together for lunch. There's a social side to these relationships as well and the conversation is very much informal as opposed to set meetings for example. [University program] though is a different story... with my mentor there is

scheduled meetings to talk about whatever as per agenda. (Participant 11)

So when moving to [current university] I've got two different kinds of experiences, one as a mentee and I can clearly see there is one associate professor with whom I am working with quite extensively and he's very knowledgeable about the use of technology in terms of research design... so basically we cooperate on papers together and at the more general level on the whole project. But I can clearly see that I am learning through weekly interactions, we go for lunch at least once a week, we're building a relationship also outside the university which I find very useful, really it's like glue, we're getting closer and closer and this is very helpful also research wise. Then I have another kind of relationship as mentee with a more senior professor which is very different in nature... It is much more structured, we meet on every fortnight for two hours and he is basically very supportive when I'm supervising honours students, because for me it's been the major difficulty when you move from overseas is that you need to get familiarity with the system here... that was more kind of induction while the other one is more focused on research. (Participant 10)

One ECA whose research is trans-disciplinary discusses the challenges involved in aligning and seeking experiential mentoring knowledge for research development:

So I haven't had any success in finding a research mentor who's interested in the particular area I'm working in. But it's probably because I'm in a school that's focused on education and my research is really divergent. So I don't blame the school for it... I tried to find a niche there but I just have not been able to find a mentor or a couple of people who are sort of senior and respected and good at it, used

to doing it, that would take you on. I think it would be different because you're doing a degree through a different university, I think if you enrolled here you'd pretty much be doing research that the faculty wants but you'd also have access to more mentors because they're on the ground here. (Participant 8)

5.2.4 Relationships with Research Colleagues

Knowing Self

Interaction with researchers from other disciplines in formal development programs allows ECAs to test out or experiment with new ideas or approaches to a problem or task. Sometimes this experimentation leads to solid interdisciplinary collaborations and research grant applications. ECAs also interact with perceived research cultures within other faculties of their home university, or as visiting scholars at other universities with well-developed research cultures. From these experiences, ECAs gain insight into research culture from 'role models' to test their own ideas about work styles and preferences, as the following quotes describe:

> I think it is also quite useful to see how active some faculties are in helping early career researchers and some faculties have a different perception in how an ECAs responsibilities should be. So it's good to get that scope across what's happening in [the university] for me. (Participant 13)

> During my time at [current university] we did one really nice grant writing workshop in the program where we actually peer reviewed each other's grants. That was really handy. Because we had other people from different disciplines reading each other's grants to see if they understood it which maybe prepared you for the panel, very handy that was good. (Particiapnt 12)

Reflecting on experiential and personal knowledge that arises from participation in formal programs helps the ECA to formally recognise what they have learned, identifying initiatives to change or improve the learning experience and transitioning for future ECAs they can now assist and build into their networks:

> …I was thrown into it and I had to get my own way through. I found throughout my career, until the formal program, throughout my career I've just managed on my own. It was just a matter of me, showing initiative to go to people and ask the questions that I needed answered. Just on that note, I think in some ways, that is a problem. I think an academic career is very isolating because when you're researching it's something you do on your own. Writing is a solo activity. I think not having the support in some sort of formal capacity, sort of late PhD students/early careers post PhD, I think is very dangerous. I've got a post-doc colleague here in my discipline, who I see as also a peer mentor… developing a program to learn some of these core skills you kind of need to develop while you're still a student to then transition to be an effective early career. I think that's a tremendous initiative because I didn't have that. (Participant 11)

Knowing Others

Accessing personal, experiential and interdisciplinary knowledge from research colleagues facilitated through grant writing and collaborative workshops and visiting scholar programs is important for both structured and unstructured learning about a range of research tasks, as the following quotes describe:

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So I had the opportunity to network in amongst early career researchers from all different Schools and disciplines and faculties, which was absolutely the best part of the early career researcher program, because now I've developed a set of a people as support and networking across those schools which is something you wouldn't normally do as an early career researcher, because you might never have the opportunity to meet people from creative industries [outside your field]. (Participant 9)

I usually work with a lot of people that are not located in [university], in Australia, some are in India, others are in Europe and I think that in order to foster my development, having technology and being able to travel or being able to host them here, this is really fundamental when developing research… (Participant 10)

5.2.5 Relationships with Senior Research Leaders

Knowing Self

One participant identifies senior research leaders as role models that reflect the ECAs' preferences, focus and needs while developing their careers. Developing strong relationships with these people viewed as role models, as sources of experiential and personal knowledge is important for learning about research.

I saw an academic who, in my discipline, is one of the best of the best, a world-renowned scholar who is also a beautiful person and she was here as a visiting academic here in our school. I looked at her CV before she came and I could see very clearly under the American system, whereby she finished her PhD and you could see the first few years she did nothing but research, she had no teaching load, no supervision, no editorial board, no review or service

whatsoever. But over those first years she was able to rack up the publications from her PhD, get them out under review and then slowly start to teach and slowly bring in a bit of service… she was given a chance to perform at the very best level she could and as an ECA here in Australia, I feel ECAs aren't given that best chance to succeed because from day 1 you are bombarded with so much stuff that you are struggling to keep your head afloat. You don't have that time to upskill and develop skills you need to be an academic, and you don't have time to create that research profile initially and so as a result from Day 1 you are behind and you are competing within a system… you're expected to perform at senior level. (Participant 11)

Knowing Others

Accessing knowledge about research users and funding bodies involves creating opportunities to be introduced to research funding bodies by senior academics. Accessing and seeking experiential and personal knowledge involves proactively asking for research opportunities, research strategies, feedback on grant applications and advice for particular schemes and funding rules. ECAs apply this knowledge when developing their research grant applications or apply strategies for acquiring research income through industry links.

Successful ECAs know how to access specialist knowledge (disciplinary or interdisciplinary) from Professors who are leaders in their fields. This knowledge can be gained through informal means, provided that ECAs have personal knowledge of the Research Leader in terms of approachability, the Research Leader can be asked questions to share their knowledge, for example recommending and linking ECAs to key researchers in a particular field of interest. Specialist knowledge can also be gained from ECAs' participation in formal development programs, which often feature keynote speakers who are Research Leaders. ECAs are introduced to these

Research Leaders who make themselves accessible for further informal discussion and possible mentorship after the formal program.

> The [Academic development] program is a really great program that puts you in… using insight into what's happening at those higher levels in the university, what their visions are for the future. I think with so much change going on within the faculty it was really good last year to hear directly from the people at those higher levels what their vision is for the future… We got access to… people that are role models for research, which I don't think I would have had the opportunity to meet those people and hear from them and how they developed their careers and how they think an early career researcher should strategically position themselves step by step to develop a strong background. (Participant 9)

> One of the things that the program has given is… a larger network of other academics, and particularly very senior people within the university. So there's been scheduled sessions that were held throughout [the year] and at those sessions we had very high profile people so we had the Dean of Research, we had Heads of School, we had Directors of various Institutes and Centres that came and spoke with us and that we had an opportunity to I guess network with over lunch breaks and things like that. So one of the good things is that many of these senior staff you would never have the opportunity to know until you got to Aspro/Prof levels. But we level Bs [Lecturers] can meet these people and talk to them. I've gained a lot from their opinions and advice. (Participant 11)

ECAs align with the knowledge of Senior Research Leaders by listening to their advice on where their priorities should be in terms of research productivity and potential areas of research they can align with in order to increase their chances of gaining research funding. This knowledge can be

gained from informal discussions "breakfast with the Dean" (Participant 1) or from scheduled meetings that are part of a formal development program.

> Dean of Research, for example, he's someone who immediately stood out for me. He's been very helpful with things on the research side and I had a separate meeting with him to talk about my progress as a researcher and where my focus should be and where I could make my CV look a lot better and so he's given me strategies that I can use and has given me advice as an outsider, how he sees my CV and where he sees I need to focus, that's really helpful. (Participant 11)

Knowledge gained from formal interaction within these programs is applied through conversations within the informal sphere of learning and subsequent 'tangible outcomes' in the form of grant applications, as the following quote describes:

> The other thing that's come out of it, is in some of these presentations I've met directors of various institutes. Some of that happened in the program, and then there's one person in particular who delivered a seminar within our school, he works for a different faculty. And from that and subsequent conversations I've had with him, I've been invited onto an ARC grant project, with him and his colleagues from that faculty. So in terms of development, there has been some more intangible stuff in terms of my skills and knowledge, but also more tangible things in terms of this ARC grant that's currently under review. (Participant 11)

5.2.6 Relationships with Research Services

Knowing Self

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ECAs identify their own knowledge gaps and learning needs related to research commercialisation, grants development and strategies for winning competitive internal and external grants and acquiring contract research income.

> I see a lot of promotion, a lot of rounds, a lot of support from the school and the research office, but that's a general assessment. In fact I wouldn't know how to approach that, I don't have experience in that yet. (Participant 10)

ECAs discover that the research office staff have the experiential and personal knowledge that can help them complete the often arduous and complex tasks of developing research grant applications and contracts. Changing their attitudes towards having to rely on research support is important for learning how to be successful in gaining research income.

> It took me a year to realize that I didn't have to know everything, or pretend to know everything. I could access those people to help me grow in those areas, I didn't have to read it all myself and try to figure it out. I could call people, I could ask to have a meeting to talk about where do I go from here, I didn't get that funding, what should I do now? They have loads of strategies and loads more experience and it took me a year to realize that and get my head out of the clouds. (Participant 9).

Knowing Others

Accessing experiential knowledge about research strategies through the research services of a university is important for self-directed learning, in knowing how to manage their workload and gain assistance from experienced staff:

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I think there could be more information for early career researchers on how to strategically go about how to build a strong research portfolio, a strong research track record for gaining funding. Because I think that looking back on my first year I probably would have done things differently knowing what I know now and invested time in different things. So this year my entire strategy for gaining funding is different than it was last year, but it was only through that first year of not successfully securing funding through the ARC that I have a better strategy for that now. But it would be nice to have more opportunities to discuss those strategies with people who have been through that. So I think there is access to people in the Research Office who are experts in that field and can give you advice... I can call on them to get advice specifically about research grants and took me a while to realize that they're not just checking grants but they're there also to act as a sounding board for strategy. (Participant 9)

5.2.7 Relationships with Research Funders

Knowing Self

In the research funding context, ECAs identify their own learning needs and preferences about gaining research income, research contracts and collaborating with research users. They identify their goals in relation to types of research income needed and what constitutes their research profile including their track record of grants and research contracts, and the purpose of developing this. ECAs who are successful at attracting research income from a range of competitive and non-competitive sources, offer their services (sometimes in a voluntary capacity) to potential funding bodies and research users as a way of demonstrating to the research user how their research or methodological expertise can add value to the

funding body's or research users' objectives. Offering their self-knowledge to funding bodies in either a paid or voluntary capacity, can help establish and maintain ongoing relationships or partnerships for research income.

Knowing Others

Accessing also involves informal networking for contract research income, through informal face to face discussion or through professional focused social networking sites such as LinkedIn. ECAs access knowledge gained from their past association with industry to develop their research grants and profile. ECAs maintain strong relationships with industry to access opportunities for research funding. ECAs monitor the research funding environment by remaining alert to identify opportunities for collaboration with research users. These opportunities are monitored online through professional social media sites, internal social networking, face to face informal interaction at a range of venues such as research conferences, staff meetings, professional research development workshops and short courses or spontaneous meetings during and outside of work hours. Being able to pitch and communicate their research to match the needs of industry users or government funding bodies involves aligning with partners to learn how to develop their research income and creating maximum impact and influence of their research on users.

5.2.8 Relationships with University Management

Knowing Self

In terms of viewing the formal program as a 'work in progress', ECAs identify their learning needs and preferences to try and relate to the program to improve its design and effectiveness. For example, one ECA would welcome a shift away from the generic approach and a focus on pedagogy that is specific to her discipline of research and teaching:

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Pedagogical underpinnings of teaching and learning, how they've evolved, where they've evolved from, how that applies in the specific context of my area of academia, versus a generic approach. So it's not being targeted well, let alone taught very well. I've been given a textbook, fifteen months after the program started, that's just unacceptable. In terms of that academic development, it's sort of not been the strongest point there. I see as the program evolves and they get feedback from the first cohort then, then this will become a stronger point as the program unfolds but I felt I need theory before I can actually start implementing. (Participant 14)

Feeling confident enough to 'speak up to the powers that be' informs learning how to transform a potentially negative experience into a productive one. Knowing how to be assertive with those who have authority over their research activities is important in a range of situations where ECAs must defend themselves to improve their learning and overall job experience.

And it wasn't until my probation meeting that I really did say something and then support and changes started to come into place. I think you've got to kick and scream which maybe is what is required in every workplace, before that support will kick in. (Participant 3)

ECAs feel a range of emotions in relation to PhD progression and academic career motivation and retention. One participant describes how an overseas study program at Oxford, sponsored by university management inspired and changed his outlook on an academic career and gave him the determination he needed to complete his doctorate.

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I had the first semester this year off to go overseas. I went and studied at Oxford with my supervisor and presented at conferences, which was fantastic… the [overseas study program] worked great, it was a really terrific experience. I left having decided to throw the PhD in. I came back determined to finish it. So that's a big turn around. I mean people said I came back a different guy. And I am determined to finish it, I can do this. And just getting feedback from other academics, after working on my own for two years, and these academics actually looked at my work and said 'this is some good work' and this was at Oxford, remember? They said this will stack up anywhere. This is good, it's rigorous and careful, it's got a few problems but there's nothing wrong with it. So I think the university support system needs to provide that material support… which allowed me to get the intellectual and emotional support that I really, really needed. (Participant 2)

Another participant emphasises the importance of experiencing positive feelings from program, enabling her to feel a sense of belonging to the academic community.

I think that's the reason why they have us because we're the next generation of academics and I think unless whatever organization you're in, they need to do a better job at making us feel like we're part of this place rather than just someone who is at the lowest level, we're very, very low in the pecking order. But if there are programs in place to help a young academic feel more settled into their jobs, that would be good so I can definitely see the value in what you are proposing here. There's a lot of uncertainly when going into a post-PhD as to what is possible… (Participant 13)

Formal programs enable opportunities for ECAs to reflect on their experiential knowledge towards continual improvement:

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So that's been the real highlight and just knowing that the [university management] wants to invest in developing the skills of people and crafting them and helping them become specialized in those areas, it's really special I think, an opportunity to really reflect I think as well, you know how am I going, how did I do this wrong, what's my next step? (Participant 9)

Knowing Others

Being able to access a range of knowledge towards developing a research profile is crucial and one way of interacting with university managers is described by one participant as the "collective" approach:

If I was in a room with three or four PhD students... we're getting a collective together, we're going to talk to the Head of School and say 'listen, we're all PhDs and we need this'. Then you've got the PhD student body and they have talked about it and decided they want X. And it really does create a whole different dynamic. (Participant 2)

Other types of programs run by management include fellowship programs, which can be experienced as 'gateways' for accessing knowledge through facilitation of knowing who has the right skills to assist with certain relevant tasks:

I got that [Institute] fellowship and for me that just opened up the door to all the other key people that I didn't know existed, so the Director and Deputy Directors of [Institute] who have given me some exceptional opportunities to go to Leadership conferences and all sorts of different things... I've actually deliberately gone and sought out a lot of people and what is really nice now, for example when I came back to work last week and realised one of the new

tools I'd piloted wasn't available for all staff like I said it would be, and so just knowing the person who to send that email to and to get it actioned immediately, just made a huge difference. (Participant 3)

While describing an ideal support program for new academics, one academic discusses accessing both information from databases and human knowledge or experience. This is applicable to research profile development, and problem solving or developing research strategies that require a combination of human (experiential and personal knowledge exchange) and database or technology interaction (relating to information types).

Access to those tangible things like methodologies, information about how to do things, strategies, how to deal with things, both on a strategic level and a global level but also on a tactical level, like 'specifically stuff' like I have a really specific problem that these certain strategies don't quite target, how do I really get to the guts of what this particular problem is? And I suppose that's where the human element comes in. So a database of all this information is only half of it, the other half of it is experience of people who have been there before. And I suppose if you bring those two things together, people who know, who have the capacity to draw on their own experiences, and the experiences of others that they've dealt with, and use these broader documents and broader strategies and broader methodologies and bring them together to attack a very specific problem or a very specific situation. If you bring those two things together for an academic, there's going to be very little issues that they're not going to be able to grapple with, I think. (Participant 6)

Monitoring and seeking professional development opportunities is a key activity. In this context, having opportunities available from university

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management such as dedicated time allocation for monitoring and seeking opportunities supported by mentoring, funding for research development and improving communication of those opportunities to facilitate 'personalised' experiences for the ECA, are suggested by participants as very helpful university wide support strategies:

> Sometimes I find the whole way that the newsletters and staff updates on things at the university, the way it happens is just too broad sometimes. It's impersonal, not personalized. Sometimes I just feel that you also need to be very proactive as to finding out what developmental programs are out there and things like that. Whereas because it's so impersonal the emphasis is on you to be proactive but sometimes you don't know where to look. So you don't know whether some of these things exist. So I find the communication in terms of developmental programs that exist is sometimes just a bit too broad. (Participant 4)

> I think ideally, it should be something that meets an early academic's needs contextually... it's a group of people, it's a collection of information, a collection of strategies, a collection of methodologies, that a new academic should have access to, free access to but it should be flexible enough to be able to be contextual. I think sometimes I've found stuff that was too broad. Like if I wanted to learn about writing up an academic report or a grant proposal and I wanted to learn about that I could go to a workshop on it. But it would be, at times some of this stuff was too broad, I could maybe stick my hand up in the room and go 'well what about if I'm doing a creative works proposal for a creative work for research?' and I might get a very tiny brief response to that. I mean it's doing what it's supposed to do which I suppose is trying to cater to everyone in the room but to me a good support network is something that's tailored... (Participant 6)

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One ECA discusses how formal developmental plans available from management including dedicated funding and time would assist in 'carving his niche':

> I think the other thing is you should almost be given a budget as well, as far as time and money is concerned to look at what programs may assist you as an early academic… if things are coming up you may wish to be involved in that, not well you're here to teach so you can't fit that in your time… but if you actually had a formal developmental plan they could say here's x amount of dollars, here's x amount of hours, here's a mentor, you've got three years to be up to speed. Would at least carve your niche. (Participant 4)

Participant 9 uses the metaphor of the programs being like a 'life jacket' given to ECAs by university management in order to 'grow' their research by facilitating experiential and personal knowledge seeking though teams and collaborations:

> I think anyone starting a new job as an academic, the initial few years are going to be really difficult. It's like starting your own business, it's your own business and you're starting from the ground up and having that guidance and people to talk to in that network is really special… I think that is really a life jacket, you get a chance to meet other people who are going through similar things and then you realize that it's just normal… that book says the first two years are 'make or break' of any business and I think it's true with early career researchers as well because in the beginning you're just your own and you have to produce the work on your own but as you slowly develop more connections and more collaborations, you develop a team of people and get more research funding, then you

can really start building on that and start developing something special that works well, that is functional. (Participant 9)

Increased informal opportunities to consult with their Heads of School regarding performance and learning needs are suggested as a strategy for better access to experiential and personal knowledge in order to learn their jobs and develop further in alignment with university expectations:

I think one of the things would be giving them better access to, well whether you put them under the label of 'their bosses' which is very broad. But certainly in terms of their Head of School, I think it's their HoS because on a day to day basis they're kind of working with you. I think ECAs often don't have access because you're your junior and there's a hierarchy. I think having access to HoS and Head of Faculty is helpful because as an ECA you can't just waltz into the HoS office like more senior staff can, perhaps have been around longer. And that poses a lot of challenges with your day to day job, because everything then becomes a formal process where you have to email for approvals and signatures and that sort of thing which again is wasting more time. I think if doors were open for ECAs and even if, you might have ECAs who don't feel comfortable even with the door open but even more regularly meetings, monthly or bi-monthly just to check in and make sure they're doing okay and see if there's any problems, I think that would be very helpful and would help ECAs start to feel like they're part of the academic community. (Participant 11)

Participant 11 suggests that she would feel more supported by the university by being able to better access all forms of knowledge through limiting 'irrelevant' information and setting more realistic expectations for beginning academics:

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I think that the university as a whole, should provide more support to ECAs. I'm not sure in what sense because I'm not sure if the answer is more seminars and more workshops, because quite frankly I think there's too many already. But I think what often happens, as you transition from PhD to being full time academic, the expectation is there that you are already a fully functioning academic and as a ECA obviously you're not. So there's no way you can achieve what may be expected of someone at Aspro/Professor level. (Participant 11)

5.2.9 Recognising Layers of Developmental Relationships

In selecting communication modes with research users and funding bodies, ECAs prefer face to face meetings when negotiating contracts and working on projects as virtual communication is not seen as effective in discussing fine details associated with certain research activities. Being able to translate academic findings to non-academic audiences is important for navigating across boundaries.

Some ECAs feel that heavy teaching loads in their first years of the job prevent them from spending more time creating and nurturing their developmental networks for research. More advanced ECAs with established research funding track records are able to devote more time to research and to balance their responsibilities through schemes such as teaching buy-out and employing sessional academics. This allows ECAs to spend more time nurturing and expanding their networks and producing more quality research.

Things like workload is one of my big bugbears... as an ECA you feel like you can't say no and there is this ongoing pressure that you need to make sure that you're seen and you're a member of staff and

that you are productive and effective, there's a subconscious pressure that you have to be seen and involved because you're trying to prove yourself and that again takes a lot of time away from what's really important, first and foremost it should be research and secondly it should be teaching. So I think that universities as a whole need to better understand those challenges that ECAs face and need to give them support, whether in terms of reduction in workloads… Even in terms of basic things like how to manage a performance review because as an ECA you know nothing about being strategic and I think the biggest challenge an ECA faces is how to find balance between all of those various demands and how to get up to speed quickly. (Participant 11)

This section has described the informed learning experiences of ECAs developing a research profile within the professional development programs context. The next section deals with informed learning experiences of ECAs seeking and attracting developers within courses.

5.3 Informed Learning Experiences Within Courses: Seeking and Attracting Developers

Perhaps the most central activity to building a developmental network, according to participants in this study, is to proactively seek and contact potential developers. Participants recount early experiences of network building during both research and general networking within Bachelors, Honours, Masters or PhD projects, Graduate Certificates in Teaching and Learning/Academic Practice or short online courses, and for these ECAs, building relationships with key developers such as informal research and teaching mentors often involved being proactive in selecting and approaching certain people for support. In some special cases, where there is close alignment between ECAs' and mentors' areas of interest, informal mentors approached the ECAs. These early relationships were often

established before entering their present full time positions (particularly on the research side) and new developmental relationships were sought in an ongoing way. Learning to be proactive about establishing a support network is regarded as very important to their overall success in the role. Being proactive about networking is often mentioned as a basic survival skill that can be traced back to learning in their formative years (as young people) and during their professional or industry experience. However, all ECAs in this study acknowledge that while proactive networking is an essential generic ability, they need to know how to adapt networking skills for the different environments they are expected to operate within such as academic, research, industry and community. Informal learning types such as self-directed and non-formal learning are critical here as ECAs take responsibility for their own learning, in both structured (non-formal) and unstructured (self-directed, incidental, informal mentoring) ways, independently self-selecting information resources to create knowledge.

5.3.1 Outer Focus: Relating to Information To Create Knowledge

Textual information in this context refers to a range of research, educational or industry related print, digital and multimedia resources. Texts in this context can be classed as either personal or impersonal. Personal textual information is experienced by ECAs in the context of the original author's primary 'official' communication, such as emails and notes or memos, personal interviews from general and specialised media sources such as magazines, podcasts or radio and television, PowerPoint slides from talks, blogs, newsletters, tweets and status updates. ECAs relate to this information to create experiential and technical (know-how, know-when and know-why) and personal (know-who) knowledge. Knowledge created from this information includes lessons learned from mistakes or unsuccessful research, educational or industry activities, cases or stories, strategies and plans, consultancy advice, perspectives, skills, methodologies, tools and user reviews of technologies.

Information from tools in this context refers to a range of research, educational or industry related technologies (hardware and software) for establishing virtual relationships and maintaining relationships with developers located at a distance. These include information and communication technologies such as telephones (mobile and landline), internet (email), video and teleconferencing hardware and software such as Skype and web cams. ECAs relate to information from tools to create all types of knowledge as these tools enable various types of communication to build relationships.

Information from humans refers to a range of research, educational and industry related resources that provide initial 'encounters' of ECAs with potential developers (and potential developers with ECAs). This information includes research and teaching experience, emerging track record documented on portfolios and CVs, biographies or memoirs, one-time interviews, business cards, personal introductions and 'elevator speeches'. ECAs relate to this information to create personal (know-who and know-where) and experiential (know-why) knowledge. Personal knowledge in this context includes research/teaching goals and orientations, work style preferences and personalities, learning needs, emotions related to research and teaching, research/teaching networks and collaborations, synergies, research and teaching journeys, location and context of research and researchers or practitioners and personal reasons for choices. Experiential knowledge includes brief lessons learned from mistakes or unsuccessful experiences.

Cultural information in this context refers to a range of research, educational or industry related cultures or behaviours present within an ECAs ecosystem. This information is observed through group or collective behaviours associated with research, courses or industry experiences, such as sharing or not sharing information throughout the organisation or

network, humour, personalities and styles, information from organisational cultures experienced as positive or negative emotions around issues of respect, belonging, trust, collegiality and recognition of achievements and information from intercultural interaction such as languages, cultural beliefs and integration. ECAs relate to this information to create disciplinary and interdisciplinary knowledge (know-what) and personal and experiential knowledge (know-who, know-how and know-why) such as emotions, orientations, work styles, preferences and learning needs.

Environmental information refers to a range of research, educational and industry related environments or contexts in the form of physical spaces, atmospheres and climates. This includes information from physical places where research, learning or industry projects are conducted such as office spaces, infrastructure, places of fieldwork and geographic locations specially suited for certain types of work. This also includes information from political climates such as government interests and circumstances (i.e. funding priorities) and natural climates such as access to certain physical areas or species of animals for scientific study. ECAs relate to these forms of environmental information to create disciplinary and interdisciplinary knowledge (know-what). They also create personal knowledge (know-where) by relating to environmental information associated with the geographic locations (and associated meaning of the locations) of particular people who can assist with development.

5.3.2 Inner Focus: Knowing Self and Knowing Others

ECAs relate to information to create knowledge of themselves as ECAs and knowledge of others to build relationships for development. Inner Focus involves key relationships as learning experience contexts for proactively seeking and attracting research developers. These key relationships are between ECAs and the following groups of developers: Academic Colleagues, Research Supervisors and Research Students.

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5.3.3 Relationships with Academic Colleagues

Knowing Self

To create self-knowledge, ECAs first identify critical information to form a research or teaching focus or niche area. Identifying self-knowledge enables self-directed learning as having this knowledge acts as a compass to guide the ECAs' interaction while networking for research. It helps give ECAs the confidence to proactively build relationships. Feeling a range of emotional states, whether positive or negative, informs ECAs' learning while building relationships with other academics. The most commonly mentioned is confidence or self-belief which is important for being able to network effectively and when introducing oneself to another academic.

Feeling passionate about their area of research or teaching interests and enjoying the research or teaching processes is important for sustaining informal learning, particular self-directed learning where learning must come from an internal interest inspired by feelings of passion for their work. Optimism and willpower are important emotions used by ECAs to remain positive and overcome negativity or obstacles, such as a perceived disinterest or opposition to their work or ideas. Trusting self and gaining trust from others is also linked to gaining confidence during networking. Feelings of belonging and feeling valued by others also help the ECA network confidently and proactively.

> being allowed to be on the periphery but trusted enough to be in that as well, that meant a lot to me. I thought he thinks I can do it, you know? That was important and that gave me a lot of confidence to do my PhD which I've been enrolled in for a year now… (Participant 1)

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Negative feelings can also inform self-directed learning as negative emotions emerging from perceived negative experiences, such as frustration, confusion, self-doubt or rejection, are often used by ECAs to strengthen themselves, to learn to be assertive and to recognise the need to speak up and defend themselves when necessary. Often negative feelings associated with research tasks such as loneliness or isolation, anxiety, pressure, failure, pain and harassment provide an impetus for improvement to ECAs' own experiences and the experiences of other academics.

> So really that interpersonal networking is what gives you confidence and also what helps you get a grip and get some perspective, okay you feel like you're drowning, you're so stressed you're going to puke, you know? So the mentoring stuff that's gone on around me, is about what you're feeling is normal but later on it's going to be better. And that's very valuable because if I hadn't had that stuff around there's no way I would be still enrolled in my PhD, not in a million years. But even Sub-Dean for PhD program, he said 'I got my PhD in spite of my supervisor, the prick'. And I'd never heard him use the word 'prick' before so he's obviously still very angry about it. Ok so this guy who's a great researcher and has been around forever would obviously suffer periods of intense frustration and anger trying to get this really big job done. And that was really helpful to me. I thought if he actually used the word 'prick', then we all get angry, it's normal. (Participant 2)

While ECAs desire to avoid negative emotions, experiences suggest that while negative emotions are challenging they are often necessary or normal for learning and personal growth, and are often dealt with in the informal sphere through self-reflection, empathising with other researchers during informal discussions and through social media or solving problems through

incidental learning while working on a project. Often this leads to discovery of self-knowledge, when personal and experiential knowledge is discovered during the most challenging experiences, informed by their resulting emotions. Reflecting on experiential knowledge allows the ECAs to offer their self-knowledge to other researchers through story telling or mentoring.

Knowing Others

Accessing the personal and experiential knowledge of established researchers involves knowing how to approach researchers to gain the right knowledge needed. Knowing the personal preferences and particular expertise of a researcher assists in gaining both knowledge and cooperation. Most ECAs describe the process of researching people before meeting informally with them in person, reading their work or looking at their backgrounds, as this assists in productive conversation. Most ECAs also know the value of clearly stating what the developer will receive in return as intangible incentives for their time and cooperation, for example a paper on their CV.

Monitoring experiential and personal knowledge is experienced by ECAs through incidental learning and social media. Maintaining awareness of other researchers and their work during various research related activities such as conference participation, informal meetings and events, staff meetings and also through participation in email lists and following researchers using online social networking sites that are internal (university-wide social media) including Yammer, or external social networking for researchers such as Academia.edu, Facebook, Twitter and LinkedIn.

> I might start with doing my PhD candidature… we have a very active email network of which I'm a part of, so through that email network

we hear about the latest conferences that are coming up, funding opportunities that are coming up, research positions and teaching positions that are coming up also. So I subscribe to that. (Participant 10)

...there are a couple of interesting websites that the university [of PhD enrolment] put us onto at the start of the year, it's Academia.edu and you register your profile and then it tells you who in your university is a member and the wider circle. (Participant 8)

ECAs align with the personal and experiential knowledge of researchers in the same field by working in research teams, using team work and team building skills by adapting knowledge towards the goals of the research project or team. Being flexible and diplomatic enough to adapt to the needs of the team as a whole is essential for good research collaborations. Informal meetings both in person and virtual are experienced as important for aligning to build networks. Seeking knowledge from particular researchers is important for building networks and self-directed learning. For example, ECAs recall how they learned to network for research purposes during their PhD candidature, by being proactive enough to seek out and contact researchers whose work they admired. As a result, they established contacts with them early on. Being able to ask good questions and generally being inquisitive while developing their early research is recognised as a key skill to building developmental networks as it stimulates thinking and ideas for both ECAs and their developers.

I couldn't believe it, when I was doing my PhD and had friends who would only ever talk to their own supervisor about their work, even when there weren't any commercial issues around it, whereas I would email people from around the world if I liked their paper and I'd just get in touch with them, and if they didn't get back to me, they didn't get back, but a lot did and we'd set up work around the world

early on. So that I had learned coming in from my degree, it was a natural thing for me… So that's been a massive benefit in that way, and then through my peers I actively established those relationships, even if someone's not working in the same area, it's almost nicer to have people in a network who aren't working in your precise area because you can talk about other things and look at same things in different ways. (Participant 9)

I think it actually comes from my PhD to be honest. During my PhD, just for example, my first paper, no the second paper I published out of my PhD has I think 18 authors on it, just to give you an idea of the number of people involved… I actually had to engage with lots of different types of people so there's the medical staff… all the ethics people, my own supervisors, my peers so my colleagues who I interact with everyday. So I really I think it was during that time that I probably learned the importance of networking but not just networking, it's networking with the right person and I think that comes down to effective research collaboration to be honest. I learned, possibly the hard way! During my PhD, if you're not working with the right person then it's very counterproductive. It will take you far more time than if you just did it by yourself… (laughter) an issue I'm currently having with a collaborator. So, that's probably where those skills were developed. (Participant 3)

Just having an open, inquisitive, positive approach to the area of your interest. Not only my own area of interest but the areas of interest of the people that I meet… once my PhD is finished I'm going to make contact with one of the world's leading researchers in my area who has now cited my work in his papers. So I'm very excited by that! So just having a very positive inquisitive mind, being approachable, sticking your hand up and saying you know I found your research on XYZ quite interesting, this is my area of interest

can we sit down and have a cup of coffee sometime? Or can we maintain this, can I contact you by email? As you know many researchers are international so quite often things have to be done by teleconference or by email. So I usually approach it like it's not just about me, it's what's in it for the other researcher as well. So how do my skills and attributes meet their needs and how might we be able to undertake one project and meet two needs at the same time. (Participant 14)

Sharing all types of knowledge for research commonly occurs through social media or informal meetings, involving virtual or in person sharing of knowledge for research such as funding and collaborative opportunities, reading material and research news. ECAs viewed sharing as an essential part of their learning about their roles as an academic.

We communicate constantly, in any and every way you can think. We're speaking to each other almost constantly, we're sharing information, we're sharing technical information, we're sharing information about the students, we're sharing information about our industry, information about our own teaching models and techniques. We're sharing that almost constantly. It's almost like we have this database of resources that we all dip into and we all contribute to, and it all blends in together. (Participant 6)

I'm from Europe where there is a different tradition in terms of university, it's more structured, it's more hierarchical, and especially during the PhD, there would be some shared platforms where we would on a daily basis share what's going on and who is doing what, what kind of problems they are facing. While here it's not necessarily the case, so it's really there are some small coalitions, groups they work together, but it's very hard that you get to know what they're doing and what kind of problems they are facing

because sometimes it might be your same problem and you might not know. So there's a lack of that, and it's more individualistic here in a way, for instance the Head of the Research Committee and the Director of HDR students are really trying to foster this kind of culture of sharing because there's nothing personal, it's just better off for the whole structure. (Participant 10)

While some ECAs freely share their knowledge both internally and externally, internal sharing occurs more frequently in a university wide context around a teaching and learning course, through Yammer or face to face or virtual informal meetings.

I've also developed contacts and got to know people who are in my sort of situation where they are also very new and been able to have discussions with them, how is it that you're learning, what resources are you looking at to learn about methodology, and learn about writing styles and things like that. I think I've benefited a lot from knowing other people in my situation. But that's only happened because I've been enrolled in these programs, I think if I hadn't decided to do things like the [Internal Teaching and Learning Certificate]... I think if I'd done that, and said that's all I'm going to do, that's all I need to do, I wouldn't have met these people or wouldn't have had the opportunity to get to know some of these people, speak with them... So I think I would have struggled. If I hadn't met those people I don't know where I would go to find other people who are just beginning that research journey. (Participant 6)

Some ECAs are members of more than one university due to external higher research degree enrolment, increasing their access to sharing networks. External sharing mainly occurs within established relationships with trusted collaborators from other institutions.

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I'm lucky to work with a handful of people in this major collaboration, this international network. We... because, just with my love of this field I'm in I feel, I'm willing to go up to people and start talking at a conference and talk about my work and talk about their work and what I love about their work and invite them to lunch, invite them to dinner at the conference. I always try to make appointments beforehand, so I'm always trying to set up those networks... (Participant 9)

5.3.4 Relationships with Research Supervisors

Knowing Self

ECAs identify who they are as research candidates at Masters, Professional Doctorate or Doctoral Candidates. They identify all types of knowledge to articulate their learning needs, personal and professional goals and how the research training will advance their career goals and their personal preferences with supervisory styles. ECAs' learning is informed by both positive and negative emotions felt from all stages of the research candidature. Learning from positive supervisory experiences is informed by feeling supported, encouraged, trusted, valued and motivated or inspired by research supervisors. Where supervision is experienced as 'inadequate', learning is informed by feeling unsupported or neglected by the supervisors. However, in most negative cases ECAs in this study show determination and resilience to overcome negative experiences by displaying optimism and self-belief. They demonstrate self-directed learning towards completing the research qualification and subsequently anticipating building relationships with more supportive and/or knowledgable individuals in their own discipline during their future post-doctoral stage. Reflecting on their own experiences with research supervisors and offering feedback or their own expertise and research

findings to support their supervisors' research, helps in building stronger research supervisory relationships and mutually supportive learning.

It's hard, in terms of PhD and those sort of things, I've maintained because it was a fairly targeted, a type of project that was quite pertinent to what happened in the future because I was working on [species of animal], that I did make a lot of contacts during that time and it also was an area where there was nobody else working. So I was fortunate that when I came out of my PhD even by that stage I was known as the 'go to' person for these particular species and for these issues which meant it was much easier for me to get projects going and get things than a lot of other PhD students who may have done things that their supervisor does as well. Whereas my supervisors had never seen a [species of animal], they never went to my sites, they had no idea what was I was doing, but they gave me editorial and methodological support but not... so that was a key advantage for me I think. (Participant 5)

I think in the old fashioned model, I never went the traditional way into academia which is to do an undergraduate degree, an honours degree, your supervisor becomes your masters supervisor and then you do a PhD. I never took that track but I think in that old fashioned model, the student was at the mercy of the supervisor's networks so they slot into an existing community of practice. Sometimes they don't like it, sometimes that might not be a helpful marriage but nowadays people come in to study from different pathways and I'm thankful that even though sometimes it's a bit lonely. (Participant 8)

So it really turned out well because I was always talking with different people and establishing my own relationships not just counting on the relationships of my supervisor to help me in my

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post-doc position, I was making my own also in my PhD. (Participant 9)

Knowing Others

ECAs access the knowledge of research supervisors in building and expanding their own networks, by asking supervisors to introduce them to key people in the supervisors' own professional networks. In this way, supervisors act as 'gateways' to knowledge, able to direct the ECAs to particular people who may assist them in their career development.

But the supervisor I've got now is very much into the research I'm doing, even though he's in England, he's the key part of my network. He's got me plugged into people in Boston, he's always sending me papers, he's getting in touch with people and he knows everybody. He's really charming so everybody wants to talk to him... he's my charisma, without him I'm dead. (laughter) (Participant 2)

Where the ECAs respect that their supervisors are highly knowledgeable and recognised scholars in their discipline, they will proactively research the supervisors' work and then ask relevant questions based on this research to access specialist knowledge. ECAs monitor supervisors' knowledge by staying up to date with their latest work, personal updates on availability and opportunities for development (for example, opportunities to give talks about doctoral work or collaborate with other students) linked to their supervisors and any networks they may be involved with.

Aligning with supervisors' knowledge results in ECAs learning how to collaborate with their supervisors, by adapting their writing for a certain style recommended through feedback from their supervisors based on experience of pervious successful candidates and what will be accepted by

examiners. Working alongside their supervisors to co-author papers is a form of incidental learning informed by aligning with their supervisors' disciplinary focus. Seeking supervisors' knowledge is mainly experienced at the beginning of a relationship when the ECAs are seeking suitable supervisors who match their learning needs and career goals. Applying their supervisors' knowledge, usually received in the form of feedback on research and candidate behaviour, informs incidental learning as the ECAs integrate this feedback to improve and revise their work in a tangible form.

5.3.5 Relationships with Research Students

Knowing Self

ECAs identify their own supervisory styles and preferences and test out different ways of relating or interacting with different students. They identify how research supervision relates to the overall career and personal goals. As a way of attracting and retaining graduate students, ECAs offer their time, advice, funding and equipment.

> So that was good and I got a few lucky breaks too and I've used some people externally so I had a good network with government agencies and other universities already so I kind of already through my PhD had really good networks, and that was a real help. So I was able to start getting reasonable sized grants on my own and get my own students and my own staff much more quickly than some early career researchers. (Participant 5)

> I actively pursue those networks, I feel good research is done through networks, I feel great teaching, great supervising is not done through just an isolated relationship between you and a student, you have to create networks for them as well and if you have networks and you show them how to network, then hopefully

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that breeds better research and better opportunities for them down the line. So I feel like it is my role to build those opportunities for myself but also for the students that I'm starting to have as well. (Participant 9)

Knowing Others

Monitoring 'who's doing what' through informal face to face meetings and social networking using all social media types, allows the ECA to learn what other students and supervisory teams are doing and the research methods they are using. This informs their own learning of supervisory practices by sharing ideas. Participating in online modules for research students allows ECAs to connect to other research students in a range of disciplines through informal discussion on message boards and emails. ECAs align with current and potential research students by attracting them to join and advance their area of research focus. Speaking to them informally (both in person and virtually) to explain the benefits of being a research student influences the students' decisions to become involved in the ECAs research. Experiential knowledge gained from aligning and applying this knowledge allows the ECA to better understand their role as a research supervisor.

5.3.6 Recognising Layers of Developmental Relationships

ECAs in this study select face-to-face communication to establish relationships with other researchers and where possible to maintain face to face contact. Otherwise, due to distance or time factors, they are maintaining these relationships using a range of virtual communication methods such as email, telephone, videoconferencing or social media. Some ECAs report that face to face contact is increasingly becoming rare in the current 'digital environment', however opportunities need to be proactively created for face to face interaction with other researchers as face to face meetings can create stronger ties of trust. Face to face meetings

are viewed as opportunities for more authentic communication or to avoid mixed messages or confusion, as can sometimes be experienced using online communication methods. ECAs often mention that exploring personal dimensions of relationships with other researchers strengthens the overall quality of the relationship. Knowing other researchers on a personal as well professional level deepens trust and finding things in common on a personal level serves as a motivator for sharing progress and achievement on a professional level.

ECAs interact with a wide range of researchers from other universities, research institutions, professional organisations and public and private sectors. Successful ECAs know how to adapt their communication with different types of researchers from different disciplines and industry backgrounds, to encourage collaboration and support. Other researchers can be based both locally and internationally, which means ECAs need the ability to communicate cross-culturally and have an understanding of national and international policies and the climates in which they operate.

ECAs in this study had a mixture of face to face and virtual research supervisory experiences. Selecting communication modes with supervisors depends on the ECAs personal needs and circumstances. Where suitable supervisors with knowledge needed exist at institutions distant from their usual place of residence, ECAs are able to establish and maintain virtual relationships with supervisors by selecting a range of communication modes such as teleconference or videoconference and email.

Virtual communication is often seen as more convenient when ECAs balance full time teaching with part time research training, often working across more than one university. Virtual supervisory relationships are strengthened by occasional face to face meetings in informal settings, such as spending time socially with supervisors. This increases the level of

personal knowledge of both supervisors and ECAs which enhances the working relationship.

ECAs describe how relationships for research development change and grow over time. Most ECAs in this study can name an informal research mentor who is pivotal to their development as a researcher, however other researchers are also important during different phases of their development as certain researchers have the expertise or knowledge needed by the ECA at a particular time. Ongoing informal mentors for research are sometimes experienced as 'limiting' by the ECA as their choice of developer changes as they grow and develop as researchers. Other times their relationships with research mentors are viewed as problematic and challenging. Successful ECAs know how to deal with this by maintaining a positive attitude about mistakes and to turn the relationship into a productive one for the longer term.

This section has described the informed learning experiences of ECAs seeking and attracting developers within courses. The next section highlights the informed learning experiences of ECAs presenting research at events such as conferences.

5.4 Informed Learning Experiences Within Events: Presenting Research at Conferences

Events include research or teaching related conferences, seminars, meetings, social events or creative works exhibitions that are held internally and external to the ECAs' home institution. Events can be experienced in-person, completely online or a blend of both online and in real time. A key learning experience within the events context is learning to interact with colleagues and potential research users through early presentations of research work. Regardless of whether the event is primarily formal or informal, a focus on informal learning types in

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unstructured (self-directed, incidental, social media) and structured (non-formal) elements of events is an important part of the learning experience.

5.4.1 Outer Focus: Relating to Information To Create Knowledge

Textual information in this context refers to a range of research event related print, digital and multimedia resources. These include personal texts such as original emails and invitations from people involved with conferences, and impersonal texts such as presentations (live and recorded as podcasts), conference papers, research posters, conference programs, websites, email advertisements or flyers from events convenors, event related tweets and popular media resources. Relating to personal texts creates experiential and personal knowledge, such as key people related to conferences, while relating to impersonal texts creates disciplinary or interdisciplinary knowledge, such as major conferences in field and their impact levels.

Information from tools in this context refers to a range of research event related technologies (hardware and software), communications media (television and radio) and scientific equipment. This includes event related technologies such as mobile devices for social media use, equipment for multimedia presentations and scientific equipment for demonstrations. Relating to tools creates all types of knowledge, as technologies are used as communication enablers. Information from humans refers to a range of research event related resources that provide initial 'encounters' with potential developers, such as online/print biographical information of speakers, business cards or brief informal discussions at social events. Relating to humans creates personal and experiential knowledge.

Cultural information in this context refers to a range of research event related cultures or behaviours present within the ECAs' ecosystem. This can relate to cultures or behaviours specific to the global/geographical

locations of the events, such as traditions and customs. Relating to cultures creates personal, experiential and disciplinary/interdisciplinary knowledge. Environmental information refers to a range of research event related environments or contexts in the form of physical spaces, atmospheres and climates. Again, physical or virtual contexts in which the events take place can inform ECAs' learning as they relate to environmental information to create disciplinary and interdisciplinary knowledge (the state of a physical or virtual environment can help an ECA mentally focus on absorbing content) and also experiential knowledge (know-where) such as maps of the physical or virtual locations of events and navigational knowledge.

5.4.2 Inner Focus: Knowing Self and Knowing Others

ECAs relate to information to create knowledge of themselves as researchers and knowledge of others to build relationships for research development. Inner Focus involves key relationships as learning experience contexts for presenting research at conferences. These key relationships are between ECAs and the following groups of developers: Established Academics.

5.4.3 Relationships with Established Academics

Knowing Self

In an informal context such as a post-conference dinner or through incidental learning presenting a poster at a conference, ECAs identify their self-knowledge to promote their work and communicate their researcher identities to other researchers who may be potential collaborators or informal mentors. ECAs engage in testing and evaluating a variety of information and knowledge for research. Successful ECAs keep an open mind to gain knowledge from a variety of sources and then evaluate the

new knowledge according to how relevant it is to their identification of purpose or focus. For example, at research conferences ECAs explore different perspectives from fields other than their own, or from researchers with different approaches. Other times, experimentation can lead to new directions not aimed for, especially during incidental learning when new experiences provide unexpected opportunities or mistakes from which an ECA can learn and grow.

> I think it's very important and the way I've been doing it is I've been to a number of conferences and I've done presentations and prepared papers, but really at this stage in my doctorate which is only two years into that, really I've only attended conferences to see if the ideas and the atmosphere is one that I could work in creatively if I could make a kind of synergy among the people. So I've been trying out a number of difference conferences. I don't know if that's common because my supervisor asked me why I was putting forward a number of papers so early in the literature review of my PhD, and I explained that it's not to, the university likes publications so that's one thing, but it's really to see, to test the waters, to test a variety of communities to see which one you really belong in. So I've had some very interesting experiences going to conferences and assessing them. (Participant 8)

> So I do keep announcements of conferences that I may not yet be able to go to but may be able to in two years time. So I just flick emails into boxes that are called research opportunities, or I keep track of particular papers that are interesting from interesting people, that might not help me now but may later on. Information… multi-sources, like something I've heard on the radio, something that I've picked up from the popular press, not being snobby about where you get your information from. I avoid cliques, so I think it's a good idea to critically assess a mass of information and critically

evaluate it for how it serves you and what to keep and what not to keep. I've been to a conference at ANU where the speakers all came from the sandstone universities in Australia and they had supervisors who had taken on through this traditional model and what I found, I found that to be extremely territorial and the information that they were able to access was blinkered because it had to be in line with a particular guru in a particular area. So how I first twigged onto that was that prior to the presentations, we were having conversations about the papers and a number of them, this happened a few times in different settings, and number of them would say 'oh you're presenting in environmentalism, so am I, you're going to say everything I said' and I thought what is it about Australian academia that people are so brought up in the politically correct body of information or the acceptable sources of information that in the end they go to a conference and all preach to each other, they reflect back to each other just a limited set of references or information. So they're not thinking diversion there outside the square, because they're in a very little pond. So I think breadth is important... but it still needs a critical analysis, so you need to weigh it but there are some preferences that are only really snobbery about certain sources of information and it doesn't necessarily reflect the quality of the information, it's a prejudice that goes with a particular way of looking at something or a clique. We're hampered by that. I think it helped that I lived overseas for fourteen years, because coming back to Australia, the Australian system is quite British and quite closed in terms of intellectual risk taking. So I think in North America there's much more openness. In Australia they don't say what's your idea, they say who are you before they'll listen to your idea. I think that holds us back, intellectually holds us back as a country. (Participant 8)

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Presenting and discussing work with seminal authors at highly regarded research centres can be very motivating and inspiring for an ECA, as this participant describes:

> I think that's really what I found when I went to Oxford, so having the colloquium and instead of me say presenting my research having to say let's start with the start, economists know this thing called [theory]. By the time I've done that my talk is finished. If you get into a group like that at Oxford, you could go straight to the fine detail because they have all the basic concepts under their belt. Half the guys in the room I'm citing in my PhD, so it was like Geoffrey Rush at the Oscars. (laughter) So it was really really exhilarating, they're all really into what they're talking about, research is what they were about and some of them were teaching as well as doing research. (Participant 2)

Knowing Others

ECAs are accessing and monitoring personal, experiential and technical knowledge of established academics. This is experienced at online and face-to-face conferences, to learn about presenting research. A range of perspectives on learning from others through conference participation are presented in the selected quotes below:

> The best way to network, for me, what's important is the ability to videoconference with multiple people in the conference. So I could spend time on the web researching what videoconferencing software allows multiple person videoconference. Or you'll be working on a job with someone and they'll say on the last job we did this and that, have you seen that? And the other thing is I'm pretty connected with some of the technology releases that happen so I subscribe to some forums and get automated email updates on

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software advancements and then I'll normally download whatever that is and maybe test it one on one to see if it works. (Participant 4)

I conduct [presentations of research] either face to face, teleconferencing or video conferencing. Video conferencing, probably less so with the government agencies, I'm actually more inclined if it's something very important, to go up to Sydney and do it there in person, sometimes it's difficult on the phone to get a feel for how people are responding. Even with teleconference you can say something that would be fine face to face but if you say it teleconference it seems mean and you're not chatting with them afterwards and say I just felt this and this and this… and you get off the phone and it's over and you don't know how they're feeling. Particularly because it's a critical thing, if you're dealing with some tough things, so that's also part of networking. (Participant 5)

Colleagues, but also their academic colleagues who help you work out which conferences to go to… You meet people at conferences and you exchange emails and maybe send them copies of your presentations, I've got a few people I've kept in my inbox to remind me that when I publish they're interested in my work… It makes it easier with email, something that I am a part of is, I went to a conference… there was a young investigators network that I joined as I part of this European Association of Communication in Healthcare and it was for early career researchers… I'm on a listserv but it doesn't seem to have gone anywhere because most of the members are in US and Europe but it doesn't seem to have, people haven't really engaged in it… I haven't ever been involved in one of those types of networks that has been really active and really meaningful and I wonder if that's because people are busy and you do have local networks and national ones, your stronger networks that you go in and out of physically. (Participant 7).

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One of the best ones I went to… it's a conference held in teaching time because it wanted to discourage most of the mainstream academics that go to conferences, they designed a conference that wasn't for a thousand people presenting a thousand of the same papers, there were only twenty academics at that conference, but they were only senior and retired academics. So they were all speakers at the pinnacle I think of their academic careers, because they'd been for a long time researching but now they had the freedom that they weren't necessarily attached to a particular university or they weren't trying to make a name, they'd already made their name. So it was really interesting to go to that conference with so few people that you got to have conversations with them at dinner and while you walk to things where you find out what they were like as people, and that was really good. (Participant 8)

ECAs align with personal and experiential knowledge of other academics during conferences.

I was in a band years ago, this does have a point (laughter). And you know, you really couldn't make your best music by just getting together to practise. You had to sit up, play Scrabble, ask each other how the kids were… And even Neil Finn said that, they were living in different cities, that's why they broke up. And I think that's also true of a really vibrant research culture, and here again small numbers with my colleagues, I've tried to organize dinners out and it always turns into a fizzer. And it's just because there aren't enough people and it only takes two people not to be able to make it and it's dead in the water. So there's a critical mass. We have once a year [event] where everyone gets together, I reckon that would be great twice a year. There's a big agenda during the day but then (Educational

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Designer) would say get your bike and in the morning you go for a ride. (Participant 2)

The conferences allow me to see a great range of presentations in one place at one time and then sort of find speakers who are aligned to what I'm interested in. (Participant 8)

This section has described the informed learning experiences of ECAs presenting research at events such as conferences. The next section presents the informed learning experiences of ECAs volunteering for service activities within their communities.

5.5 Informed Learning Experiences Within the Community: Volunteering for Service

Community engagement involves interactions with a range of people and organisations within both local and global contexts. A key learning experience in the community context is volunteering for research, teaching or industry related service. In the community context, unstructured informal learning types (self-directed, informal mentoring and incidental) are most important for the learning experience.

5.5.1 Outer Focus: Relating to Information To Create Knowledge

Textual information in this context refers to a range of research, teaching and industry related print, digital and multimedia resources. Texts in this context can be classed as either personal or impersonal. Personal textual information is experienced by ECAs in the context of the original authors' primary 'official' communication, such as emails and notes or memos, personal interviews from general and specialised media sources such as magazines, podcasts or radio and television, PowerPoint slides from talks, blogs, newsletters, tweets and status updates. ECAs relate to this

information to create experiential and technical (know-how, know-when and know-why) and personal (know-who) knowledge. Knowledge created from relating to this information includes lessons learned from mistakes or unsuccessful projects, cases or stories, strategies and plans, consultancy advice, perspectives, skills and user reviews of technologies.

Impersonal textual information is not contextualised by the original author and often located through secondary sources such as library databases or search engines. This type of information can come from academic and industry in the forms of published and unpublished works both print and offline: books, journal articles, bibliographies, conference papers, working papers and grant applications. ECAs relate to this information to create disciplinary and interdisciplinary knowledge (know-what). This knowledge consists of key and emerging authors ('names') and prominent communities and networks active in the industry and disciplines, history of the industry and disciplines and their relationships to other industries and disciplines/fields.

Information from tools in this context refers to a range of research, teaching and industry related technologies (hardware and software) and scientific equipment. Tools in this context can include scientific equipment for lab and fieldwork experiences and information technologies such as desktop and laptop computers, mobile communication devices (smartphones and tablets), research related software such as Word processors, data analysis programs, search engines and databases, research apps, landline telephones and secure electronic file storage for research datasets such as servers and data preservation tools. All of these tools are experienced as short and long-term enablers of academic service development. Initial interaction with these tools includes relating to tools to create technical and experiential know-how, when dealing with operational aspects. Technical and experiential know-how includes research skills such as literature and database searching, technological and

scientific equipment supported research methodologies and user reviews from feedback and corporate training facilitated discussion. However, in the longer term, relating to tools leads to creating all types of knowledge identified in this study, as technology and equipment are central to communication for knowledge transfer and creation.

Information from humans refers to a range of research, teaching and industry related resources that provide initial 'encounters' of ECAs with potential developers (and potential developers with ECAs). This information includes research and industry experience, emerging track record documented on portfolios and CVs, biographies or memoirs, one-time interviews, business cards, personal introductions and 'elevator speeches'. ECAs relate to this information to create personal (know-who and know-where) and experiential (know-why) knowledge. Personal and experiential knowledge in this context includes research, teaching and service goals and orientations, work style preferences and personalities, learning needs, emotions related to research, teaching and industry, networks and collaborations, synergies, research and practitioner journeys, location and context of research and researchers or practitioners and personal reasons for career or service choices.

Cultural information in this context refers to a range of research, teaching and industry related cultures or behaviours present within the ECAs ecosystem. This information is observed through group or collective behaviours associated with research, such as freely sharing information throughout the organisation or network (as opposed to hoarding information), humour, personalities and styles, information from organisational cultures experienced as positive or negative emotions around issues of respect, belonging, trust, collegiality and recognition of achievements and information from intercultural interaction such as languages, cultural beliefs and integration. ECAs relate to this information to create disciplinary and interdisciplinary knowledge and personal and

experiential knowledge such as emotions related to research and practice, orientations, work styles and preferences and learning needs.

Environmental information refers to a range of research, teaching and industry related environments or contexts in the form of physical spaces, atmospheres and climates. This includes information from physical places where voluntary projects are conducted such as office spaces, infrastructure, places of fieldwork and geographic locations specially suited for certain project types. This also includes information from political climates such as government interests and circumstances (i.e. funding priorities) and natural climates such as access to certain physical areas or species of animals for scientific study. ECAs relate to these forms of environmental information to create disciplinary and interdisciplinary knowledge (know-what, in terms of advancing fields of research through place-specific study and work environments conducive to quality research). They also create personal knowledge (know-where) by relating to environmental information associated with the geographic locations (and associated meaning of the locations) of particular people who can assist with development.

5.5.2 Inner Focus: Knowing Self and Knowing Others

ECAs relate to information to create knowledge of themselves as researchers and knowledge of other researchers to build relationships for research development.

Inner Focus involves key relationships as learning experience contexts for developing a research profile. These key relationships are between ECAs and the following groups of developers: Internal Committees, Government Bodies, Industry Professionals and Professional Associations.

5.5.3 Relationships with Internal Committees

ECAs identify their reasons for participating in service activities and how it relates to their overall professional and personal goals. They offer all types of knowledge to assist in the development of research and teaching activities both internal and external, such as research and teaching committees, organizing research seminars and visiting scholars. By offering their knowledge for service activities, ECAs develop a good reputation for being active in their research communities and networks and this assists in getting known and establishing their identity and reliability. Being invited to join internal committees within their university's community allows ECAs to identify and offer their experiential knowledge. This helps ECAs begin to discover their area of expertise and feel valued for their expertise within their home university.

> Because you get into those and produce, unknowingly at the time kind of technological stuff, they go 'ooh you know technology, come on this committee and come on this' and so with Teaching and Learning Services, I've ended up helping them with a lot of things and then you become a part of that higher education network within the university. So I've ended up speaking on communities of practice and those kinds of things where they're talking about teaching online. (Participant 1)

Knowing Others

ECAs experience accessing and seeking experiential and disciplinary knowledge in a variety of ways such as organising visiting scholars programs, often viewed as a service/committee activity towards building their international networks and learning their academic roles.

Then the second leg is service, which is actually quite engaging because service means running a few activities for the school or the faculty, and what I'm doing now is coordinating a visiting academic program so I'm trying to get scholars from Europe and the US to come here and spend some time doing research together with our academic staff... In terms of service, given my role, I have to be more proactive and liaise with possible academics who potentially might be interested in coming over here and spend some time and do some research, given that this is the major component of my service kind of role, I would say that this is the way I try to develop networks (Participant 10)

Another way to build relationships with internal committees is through service mentoring, providing access to advice to specific roles as discussed by this participant:

And then on the service side, I don't really have a mentor, perhaps like (associate prof) on the supervision side of things, other service related things, I serve on the school's research and development committee which he chairs. I have a portfolio that I'm responsible for as part of that committee and report to him and he provides advice in terms of that research and development role that I have. (Participant 11)

5.5.4 Relationships with Government Bodies

Knowing Self

ECAs who engage with external organisations such as government departments or private sector often experience offering their expertise to support external projects, in order to develop or demonstrate their capacity for consultancy aspects of academic work. This in turn increases

opportunities for research development and future funding. While most ECAs in this study report that research related service is not a high priority at this early stage of their careers, it is regarded as helpful to at least offer their knowledge to others as a way of establishing themselves in their networks.

> The key reason why I established relationships with government people has been helping make decisions with them. I do a lot of work for them, I've been described at meetings as kind of an honorary staff member I review documents for them… I do lots of unpaid stuff, so it is appreciated in the end and you do have to accept it as an early career researcher, you're going to do really big jobs for nowhere near as much money as you want and sometimes it's worth taking a hit in your personal time to a really good job to a time and budget and sort of demonstrate your capacity to do good work, which I sort of did. (Participant 5)

Knowing Others

For those involved in creative arts projects as part of their academic role, establishing themselves as part of creative communities linked to government organisations is viewed as important for accessing and seeking feedback on projects and financial and emotional support from potential developers within the local community.

> Well I have a creative network, which is more community based and in terms of my creative work, because I still write I do poetry and creative works. So I have a cultural network within the city and I'm on the Local Council Cultural Advisory Board, a reading group in town, so I've got a group of people who feed my creative output (Participant 8)

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5.5.5 Relationships with Industry

Knowing Self

ECAs identify the role of industry service as part of being an academic, as the following participant describes.

> I think there is an expectation that academics are to be involved in some capacity within the industry bodies and anything that adds value to my work. I haven't yet got around to doing much service, hopefully I'll get time and the opportunities to do it maybe later this year to do it. (Participant 13)

Knowing Others

Monitoring and keeping up to date with the latest industry news and trends is regarded as important for academics in this study. One of the best ways to do this is to maintain industry links from previous employment through continued involvement with industry projects and activities. Experiential and disciplinary knowledge gained from monitoring industry professionals can feed into academic research and teaching activities.

> I think it's very important to our course for us to build our networks with industry. We have a number of really strong connections with industry particularly our local connection here with [practitioners] because they have a lot of our students but they also teach into our course. I try and remain connected to our profession just because it's my profession and it's what I love and I'm teaching it and I want to keep inspired and motivated by that. In addition a lot of our graduates work in our local area so it's a nice way of keeping in contact with them and keeping up with what they're doing. (Participant 7)

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5.5.6 Relationships with Professional Associations

Knowing Self

Much like their experiences with committees and external organisations, ECAs identify their reasons for being involved with professional associations and offering their expertise to advance professional associations. They seek to understand how this relates to their overall professional identity as academics and practitioners.

Knowing Others

Being a member of a professional association's committees is experienced as advantageous in developing close and positive relations between the university and the profession. Through professional association involvement, ECAs can align with and share experiential and disciplinary knowledge with the profession and vice versa, as described in the following quotes:

> Other areas of service I also maintain my professional links with professional bodies outside the university, such as being a committee member on a couple of committees so I maintain those relationships and link with those committees as to how they can work in with the university or the school and how the school work in with them. An example is one of the committees I work on provides a fellowship for PhD candidates. One of the main things I've brought to them this year is linking some communication from them to the school and getting them to do a five minute presentation about what they actually offer in terms of the fellowship for the biannual forums for research students. So getting them to come along to that particular forum to promote their fellowship and how

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they can actually support PhD candidates. Consequently there are a couple of other academics from other universities and they too have taken that idea forward. Promotion is a two way thing. (Participant 14)

And there's another network I was involved with not so much anymore at the national level in [professional] association I was a member of a committee that was organizing continuing professional development and I felt that was something I could do to give back to my general overall profession and we would organise conferences and events and things like that. I've kept in contact with the Chair of that committee because she's a great girl and we got on really well. But I only see her at conferences and things like that. So every now and again if I was putting together a resource for new graduates on short courses to continue upskilling, and I contacted (Chair), she's a private practitioner and thought she would have a lot of good insight into the courses she would recommend for practitioners. (Participant 7)

Through professional association involvement, ECAs learn how to conduct themselves in professional committee work through informal mentoring from other experienced members.

The Head of School nominated me to be on the State branch committee of the professional society. That I haven't received any mentoring or guidance in, except one of the girls on the committee has done similar committee work for another committee, so she always helps me out with stuff like organizing events. We organized a career event last week that went really well for the undergrads. (Participant 12)

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5.5.7 Recognising Layers of Developmental Relationships

Balancing Academic Roles

In most cases, research is viewed as a separate activity to teaching, although research is mainly linked with service. For example, some ECAs discuss how they actively participate voluntarily in policy development activities for government departments as a way of promoting their research and increasing its impact on policy.

This section has described the informed learning experiences of ECAs volunteering for service activities within their community. The next section presents the informed learning experiences of ECAs establishing and maintaining a personal foundation with family and friends in and around their homes.

5.6 Informed Learning Experiences Within the Home: Establishing and Maintaining A Personal Foundation

Home life experiences include interactions with family and friends that occur within and around the area of the home. Participants in this study acknowledged the essential role of establishing and maintaining a strong personal foundation in their overall career development and success. Unstructured informal learning types such as self-directed, informal mentoring and incidental are most important for this learning experience.

5.6.1 Outer Focus: Relating to Information To Create Knowledge

Textual information in the home context refers to a range of personal information such as print, digital and multimedia resources. This includes personal text communication through email, instant messages or videoconferencing or personal recommendations. Relating to personal text

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creates personal and experiential knowledge. Impersonal text about personal issues includes print or digital information such as blogs exploring personal issues faced by academics. In this context, relating to impersonal text can also create personal and experiential knowledge as catalysts for reflection and action.

Information from tools in the home context refers to a range of technologies (hardware and software) used for communication, particularly when personal relationships are experienced at a distance. Relating to tools creates all types of knowledge as tools are used as enablers for establishing and maintaining relationships at a distance. Information from humans in the home context refers to a range of resources, experienced face-to-face or virtually, that provide initial 'encounters' with potential developers. Relating to humans creates personal and experiential knowledge.

Cultural information in this context refers to a range of cultures or behaviours present within the ECAs' ecosystem. This can include national or intercultural communication and social behaviours. Relating to cultural information creates personal and experiential knowledge. Environmental information refers to a range of environments or contexts in the form of physical spaces, atmospheres and climates. This includes the physical spaces where family life mainly occurs (home and community), personal spaces where work at home occurs and national and local climates. Relating to environmental information creates personal and experience knowledge, as well as disciplinary and interdisciplinary knowledge where the ECA chooses to work within the home space and share their work with family or friends outside of academia.

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5.6.2 Inner Focus: Knowing Self and Knowing Others

ECAs relate to information to create knowledge of themselves as ECAs and knowledge of others to build relationships for academic and personal development. Inner Focus involves key relationships as learning experience contexts for establishing a personal foundation. These key relationships are between ECAs and the following groups of developers: Family (Within Academia and Outside of Academia) and Friends (Within Academia and Outside of Academia).

5.6.3 Relationships with Family

Knowing Self

In this context, ECAs experience identifying the role of family in relation to their career support. This is closely associated with feeling emotionally stable or ready to fully engage with the necessary tasks in order to successfully carry out their duties or progress as an ECA.

> My wife and my family are a massive part of it obviously because your personal relationships play a massive part in who you are, your state of mind, your stability, your emotional stability, because you can't work unless you're emotionally stable, at least somewhat emotionally stable. (laughter) That's proven, I mean if you're in trouble in your personal life it going to be have an impact on your working life. (Participant 6)

> …comes from having a really good solid family foundation (Participant 11)

…my family even to a lesser extent don't have to involve themselves if they choose not to. There's no imperative for them to do so, so for me what makes their participation supportive and makes me feel supported is the fact I know they want to do it. Because I don't measure, I'm not constantly measuring their contributions to my development. So that's not how I decide whether or not I am being supported by them or whether they're being supportive to me. Just the fact that they intend to do so is a support to me, it provides me with support (Participant 6)

My last child just left home so now I'm more free to travel, that sort of cramped my travelling style in that sense, but I fully intend to make some more networks around the world. As an academic I'm expected to do that, if I want to go the next level up, that's the criteria. (Participant 1)

Knowing Others

ECAs align with personal knowledge through social communities, which can involve family, where close, supportive relationships are formed.

I had terrific peer support from undergraduate college, we had some great nights and a lot of these people are still my very good friends and colleagues. And that's how I met my wife. And occasionally we still talk about research! (laughter) (Participant 2)

You know I went to the [university internal] conference at the end of last year and I've got to say it was nice and I said to my partner that it was really nice to turn up to a conference and pretty much know everyone who was there. (Participant 3)

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ECAs apply personal and experiential knowledge in forming clear boundaries between personal and work lives.

> …coming from industry to academia I wanted to make a distinct division between what I do in industry and what I do as a lecturer, and even with my personal life (Participant 4)

ECAs learn from monitoring personal knowledge through observation and reflection on early family experiences. The following quotes are examples of past meets present family experience.

> And so when we learn to communicate as a child, I think we're networking right there. I mean when a kid goes out, and I've thought about this, and I've got a child now, 6 months old, she's only just starting to communicate with the world, she doesn't speak yet but she's communicating, she's saying what she wants, she's listening and she's receiving and sending messages… she's creating a network. She's created a network with her parents, her secondary relations, her grandparents and cousins, and then when people who aren't related to her come in… there was communication going on and there was a sense of I'm getting to know who you are and getting to know what you do, I'm learning from you. That's a network. So I think learning how to network starts very early on and therefore probably it can be suppressed early on too, like if you don't learn how to communicate properly it can probably affect you later on when you become an adult. (Participant 6)

> But I think too, it probably came a lot from my upbringing, in the context of my family. I think we're a social family… there was never any discomfort I suppose with well we have an issue in the family we need to seek outside advice or we need to get other people involved in this. So that's from that problem solving point of view,

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but we always had other people around us so I suppose it's something you're brought up with, that it's normal to have other people around and it's normal to seek out connections with other people. So I think it is a combination of my upbringing but also perhaps my education as well. You think everybody's just a person, I'm just going to ring them and ask them whereas maybe when I first started I was like I can't ring them and I can't ask a doctor for their ideas, they're so busy and important. So maybe it's a combination of those things. (Participant 7)

ECAs access experiential knowledge from family members that can assist in a range of professional and personal situations. The following two participants have family members either within academia or within the education sector, which is experienced as very helpful for accessing experiential knowledge to learn their roles.

it would be my husband as well, because he's a very experienced academic. So I'm lucky in that way. (Participant 8)

The other person that was key and remains key through that whole time was actually my mother. My mum has been a teacher at TAFE for the last four or five years. So she's someone that I bounce ideas off a lot and again we're not in the same sort of institution but it's about adult learning. And I can be honest with her about 'oh god this happened...' or 'I just don't know what to do about this situation...' You know, I always maintain confidentiality of my students but you can take a problem to someone like that and you know, they're your mum, they're not going to judge you whereas maybe with your colleagues here you do hold back some stuff, maybe your feelings, your gut stuff, because you want to maintain your sense of professional credibility. Say with the situation, if I'm talking to mum about it, she doesn't have that university perspective, it's different,

you know like it's a different mindset between different institutions and organizations. So the TAFE mindset is going to be different in some ways to the university mindset... So that's where between the two of them, I sort of put bits together to try and work. (Participant 7)

5.6.4 Relationships with Friends

Knowing Self

In this context, ECAs identify the role of friends both within and outside of academia, in relation to their career support.

Knowing Others

ECAs experience accessing personal and experiential knowledge through academic friends networks in very informal ways as discussed by the following two participants.

> And of course once you start getting into the academic swing of things, someone knows so and so, who knows so and so, my supervisor is a friend of (Professor) then off it goes and suddenly you're in another network! And so you're in another network, not only just professionals but because they're friends of friends they'll look after you in a different way as well. And that's being really nice and so helpful, and like 'come down and have coffee next time you're down here' just on the basis of you being a friend of someone else. So that's been really lovely and helpful. (Participant 1)

> There is a whole lot of stuff and if I hadn't gone over to (colleagues) place to borrow his Esky because I was moving my fridge out and he'd just come back from a conference he probably would've

forgotten to tell me. But he just happened to be there when it was fresh in his mind and he was really excited about it. So for me that's information that you get from networks, that's what's valuable. (Participant 2)

ECAs align with personal knowledge through shared personal activities or being able to relate on a personal level. This often enhances the working relationships when colleagues become personal friends, either within or outside their home universities.

> I think within your own university you develop fairly personal relationships, one of the people in my networks we have children of the same age and they were playing together yesterday and we were talking about papers we're working on. So I think that the best working relationships are relationships that work on more than one level… Even (colleague) I was talking to about working from home and she said great and I said 'I'll just put that load of washing on' and she confided in me, this really successful academic that she procrastinates. (Participant 2)

> I don't think PhD students necessarily do that enough in terms of kind of making friends. Because there's people you have acquaintances with, they can very helpful later on and I certainly had some people who were very helpful to me. And that's because we just had a common interest in such and such and there's a bit of luck involved. I'm not as a good at networking as some other people. But I do have friends external (Participant 5)

> I often have coffee with some of the practitioners here. I'm personally friends with some of them. I think there's that personal connection as well that makes it feel stronger. (Participant 7)

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This section has described the informed learning experiences of ECAs establishing and maintaining a personal foundation with family and friends in and around their homes. The next section presents the informed learning experiences of ECAs seeking and attracting expansion opportunities within social media platforms.

5.7 Informed Learning Experiences Within Social Media: Seeking and Attracting Expansion Opportunities

Half of the participants in this study were active users of social media for a number of reasons such as maintaining developmental relationships that are virtual or at a distance and monitoring through personalised subscriptions for new information. The other half chose to avoid social media websites for a number of reasons including maintaining professional boundaries with students, avoiding irrelevant information such as advertising and as a time management strategy, instead preferring to conduct more 'strategic' networking activities for development through traditional communication modes of face-to-face, telephone, videoconferencing and email. Those who were active users of social media acknowledged their use of a range of social media platforms, both external and internal, in creating and maintaining their developmental networks. Social media is used to enhance the learning experience of seeking and attracting expansion opportunities for research and teaching. Informal learning types such as social media learning, self-directed and incidental are most important for this learning experience.

5.7.1 Outer Focus: Relating to Information To Create Knowledge

Textual information in the social media refers to a range of research, teaching and industry related digital and multimedia resources. This includes personal text such as original messages/status updates or tweets that come directly from an author intended for someone in particular.

Relating to personal text creates experiential and personal knowledge. Textual information also includes impersonal text such as shared articles, website links or announcements. Relating to impersonal texts creates disciplinary and interdisciplinary knowledge.

Information from tools in the social media context refers to a range of research, teaching and industry related technologies (hardware and software). Relating to tools for social media use creates technical and experiential knowledge in the short-term and all types of knowledge in the longer-term as technological tools are essential enablers of social media.

Information from humans refers to a range of research, teaching and industry related resources that provide initial 'encounters' with potential developers. These can include profiles, virtual business cards, opportunities and digital portfolios. Relating to humans creates personal and experiential knowledge.

Cultural information in this context refers to a range of research, teaching and industry related cultures or behaviours present within the ECAs' ecosystem. In the social media context, virtual and real time cultures and behaviours can overlap as real time behaviour during networking can involve social media (i.e. adding people to their LinkedIn network during an in-person meeting or vice versa). Relating to cultural information creates personal and experiential knowledge through endorsing or recommending a colleague on LinkedIn through an in-person work involvement, as well as disciplinary and interdisciplinary knowledge through cultural behaviours such as online information sharing and peer evaluation.

Environmental information in the social media context refers to a range of research, teaching and industry related environments. In this context, this includes geographical locations and time zones for asynchronous,

geographically dispersed conversations (as opposed to conversations held with all people at one location). Climate can also refer to social media policy and ethical considerations in the use or non-use of social media. Relating to environmental information creates personal and experiential knowledge (especially know-where and know-when) and also disciplinary and interdisciplinary knowledge, the quality of which is influenced by the contexts in which social media is used or not used.

5.7.2 Inner Focus: Knowing Self and Knowing Others

ECAs relate to information to create knowledge of themselves as ECAs and knowledge of others to build relationships for development. Inner Focus involves key relationships as learning experience contexts for seeking and attracting expansion opportunities. These key relationships are between ECAs and the following groups of developers: Establised Academics, Students and Industry.

5.7.3 Relationships with Established Academics

Knowing Self

In the social media learning context, ECAs identify themselves as researchers, teachers and practitioners or ex-practitioners as a first step to developing virtual representations of themselves as academics. These virtual identities are modified as their self-concepts change as their career progresses. This allows other researchers to get to know who the ECAs are. ECAs identify personal preferences for social media use or non-use. Social media users report feeling supported emotionally by other academics that use social media.

> So part of my support network is very much online and that goes from Facebook, which I find enormously supportive and useful in a

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professional sense (everyone says *groan* Facebook!) but I mean I've got a lot of academic friends now and colleagues and there's a lot of professional things I subscribe to and find there's enormous support. Sometimes you don't want to know about your grade sheet, you want to know that I've got to write this thing for 14 hours because it's due tomorrow and you want someone there to talk about their cat was sick or whatever cause it's a bit of relief! So they can support you as well, there's the online kind of aspect of that too. (Participant 1)

Knowing Others

Sharing personal, experiential, disciplinary and interdisciplinary knowledge is mainly experienced through internal social media such as Yammer. The following participant expresses the personalisation of knowledge sharing within a close-knit community within the university setting, and also the difference between general and specific internal sharing.

> So there's the human network, that know the sort of person I am, the sort of things I'm interested in and can piece it together when they come across something and I'll do the same for them particularly a network like Yammer online... people will share within the university. Yammer is like a combination of Twitter and Facebook, it's an organisational social communication tool... it's like a work based one, so everyone on our university email can join that. So that's a good example of sharing stuff, sometimes you don't know who's going to be interested, it's general enough to share, but if it's specific enough you can just email it to a person. (Participant 1)

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Monitoring social media such as Twitter and Facebook and the serendipity of 'finding what you're not looking for' is experienced by ECAs who actively use social media. Receiving shared resources from people in their networks has been experienced as more useful for time poor ECAs than spending a lot of time searching through databases. On the other hand, monitoring several different social media sites is experienced as information overload, which suggests that ECAs are also relating to or selecting the social media site most relevant to their needs to create their knowledge.

I do have a number of websites that I normally monitor to see what's happening, and then I use Twitter quite extensively for that, so I would normally follow a number of people that are in related areas of research and see whether there's something new coming up. (Participant 10)

So you go looking for what you think you need, where I found the most interesting things and interesting for my PhD and my work as well are the things that you're not looking for. Always the things on the periphery. But it's really being sharp about it maybe... I don't know... that's really interesting, that creativity, the creativity of thinking that you need to see the information that's around you when you're not looking for it maybe, because there's so much, there is so much when you go into a database or a journal or something. But that's also where informal networks and social media is useful because a lot of the things I have found will be someone posting something on Facebook or on Yammer. You know I've had to stop using Twitter because there's so much good stuff, which seems silly but I could spend a lot of time finding, looking for really good stuff... the sorts of people I follow tend to be academics. I've got to put aside some spare time to do it, I don't have it. (Participant 1)

Seeking personal knowledge, disciplinary and interdisciplinary knowledge through online sources is described as a current challenge with the digital information overload experienced. The following participant suggests that the current technologies associated with academic information such as journal databases could benefit from being more like social media where information is transferred in the more personal context of user relationships and networks. She suggests that this would improve online information and knowledge seeking experiences.

> There's a lot of accidental-ness happening. It's being able to get it out there. I guess that's why social networks that are, like Yammer and Facebook, are based on friendships or relationships, rather than a faceless sort of journal database... so the technology is still, as it evolves becomes more sophisticated, it's relying on humans more, trying to get more human interaction because... like Google, goes on what humans like. So we still keep going back to the human and trying to relate back to the way humans think and share and want to use information as well. I wish I had a journal database that did that for me... So hard to find stuff in there, and they're all different, and why can't you all just talk to each other so I can find what I want. Drives me nuts! (Participant 1)

Some ECAs are building their virtual developmental networks by accessing disciplinary and interdisciplinary knowledge through a variety of online social networks, supported by online communication, in the following way:

> ...the ones I took with me were on email lists, distribution lists and there's a big one in the UK on [my area] and you know the names pop up. And you go to Academia.edu and you see the same sort of names and they've got a blog and Twitter and you build up a key group that way of people working in your field and then it's so easy to just email and say I'm working in this area and then off you go. It's

made that sort of thing so much easier because you can flick documents back and forth, you don't have to meet people. (Participant 1)

5.7.4 Relationships with Students

Knowing Self

Some ECAs in this study chose not to use social media for personal interaction, however some discussed this in the context of their relationships with students. They identify personal and disciplinary knowledge for teaching and learning how to be a professional educator. Some found social media relevant to their teaching and found ways to integrate it into their lessons.

in terms of social media, I'm not a Facebook user, the only reason I would use it in the teaching space is because that's where my students are and in a course [with an online focus], because they're all there it's a fairly easy transition to get them onto my unit Facebook page to get them talking about… examples and things we see on the web and so on. (Participant 11)

I am using a couple of things in my teaching, one is real time review together with students, so I would put up questions and they would have to answer them. I would give them feedback straight away so that's really useful. There are a number of social networking tools, Twitter groups, the school gives me an online tool to do presentations that are much interactive. (Participant 10)

Some ECAs chose not to use social media to maintain professional boundaries between themselves and students, or preferring to use traditional communication channels.

I don't use any social networking sites at all. In my personal life I don't use it because the students hassle you and I'm acutely aware that I'm actually quite young and just in terms of keeping that boundary between being an academic and knowing someone in a social setting. A lot of my students are older than me. I guess the email would be the way I maintain my contacts, but picking up the phone there's still a lot to be said for that. (Participant 3)

I've never used Facebook, in terms of that kind of social networking, I don't use any of it. I don't see the value of it, because I'm so busy I don't sit around seeing if I've done something, you need to be a bit strategic. I've never been on Facebook, occasionally I get emails from students saying I've been added as a friend but I just delete it, I don't know what it is. (Participant 5)

5.7.5 Relationships with Industry

Knowing Self

This ECA identifies his occasional use of LinkedIn is due to a preference to build networks using traditional communication channels.

I've used LinkedIn, which is supposedly the professional one, and I've used that occasionally but I tend to use email much more and I tend to use the phone, I like to talk to people. (Participant 6)

Knowing Others

ECAs align with industry professionals' personal knowledge, experiential and disciplinary knowledge through use of social media to strengthen their relationships formed in person.

So there's that, what's interesting about that is that social element to the network I have with the [practitioners] here… I'm friends with some of them on Facebook and I've met their children and you have that different level of relationship. (Participant 7)

Monitoring and seeking industry personal, experiential, disciplinary and interdisciplinary knowledge using LinkedIn is experienced by ECAs.

But I do have a basic profile on LinkedIn and do use it to find other people and I find that to be a useful tool in terms of knowing who's who and who's where and what people are doing. (Participant 11)

Aside from that, just based on research projects I've been on I've joined a number of networking groups in niche areas and I've only recently joined LinkedIn which I found to be quite useful to connect to different professional groups around the world actually. I only joined it about six months ago and I've tried to be quite active in it and subscribing to the networks, and the conversations that I find going on they ground me in terms of what's going on in industry at the moment, without actually going out there and networking these groups are quite good to find out what are the current concerns of [industry] (Participant 13)

5.8 Conclusion

By closely examining each of these key learning experiences involved in building developmental networks and how they are informed, it is possible to begin to understand how best to utilise and interact with relevant knowledge and information resources towards designing and facilitating optimal learning and development experiences for ECAs. The next chapter will discuss how the conception of informed learning presented in Chapters

Four and Five, extends our current understanding of the informed learning concept within the academic development context. It also offers implications for academic and information theory and practice, and suggests future research directions based on the findings.

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CHAPTER SIX

Research Implications and Discussion

6.0 Introduction

Findings from this study outlined in the previous two chapters work towards increasing our understanding of how ECAs experience 'informed learning' or how that group experiences using information to learn in the context of building developmental networks. Chapter Four presented a conceptual model of informed learning in the form of the 'knowledge ecosystem' consisting of the elements of information and knowledge resources, interactions and the informal sphere of learning. Chapter Five presented examples of how the knowledge ecosystem model operates within six 'spaces' where informal learning is experienced and where ECAs' developmental networks are commonly built and maintained. Additionally, Chapter Five explored the question: How are the key learning experiences enriched by focusing on interactions with knowledge and information resources? Findings presented in Chapter Five extended our understanding and awareness of the complex nature of ECAs' knowledge ecosystems by simultaneously focusing on specific informal learning experiences, types of information and knowledge that informed the learning and some of the interactions involved as they were being informed. This chapter will discuss 'informed learning' as it was conceptualised from the data analysis in this study and how it manifested within this specific context as compared to original findings and other informed learning studies. The

chapter discusses the ways in which this conception of informed learning extends our current understanding. It also suggests future research directions based on the findings of this study.

6.1 Informed Learning for Early Career Academic Development

In the initial literature review for this study, the research problem described the need for further research into informed learning experiences, as a newly emerging interdisciplinary concept. This was acknowledged alongside the need for further research into the early career academic developmental experience. In this study, informed learning is the most suitable conceptual framework to adopt as the study concentrates on how ECAs use information to learn within their developmental networks. In contrast, other studies into information experiences may examine the experiences of using information to make better decisions, to deal with a crisis, to solve a problem or for serious leisure. Arguably, some degree of learning is involved in all tasks and activities carried out by humans, however not all information experience studies have a primary focus on learning, or are as focussed on professional development.

While the concept of informed learning attributes its origins and influences from the relational view of information literacy research and phenomenographic research into the variation of human experience, findings from this study and context present an alternative interpretation of informed learning that is heavily focused on processes manifesting as human interactions with informing entities revolving around the contexts of reciprocal human relationships, in this case between ECAs and their various developers. Findings from this study build upon current understanding of informed learning, as this study was conducted in a new context and found different perspectives from ECA learners. Informing entities include information resources outside of human relationships, and knowledge resources within human relationships. The processes or

interactions were constructed from grounded theory data analysis and are a key element of the experience of building developmental networks. These interactions included:

1) Relating to Information to Create Knowledge of Self and Others; and

2) Building Mutually Supportive Relationships through Knowing Self, Knowing Others and Recognising Layers of Relationships.

This study adds to our understanding of what it means to experience informed learning in the informal sphere consisting of a combination of informal learning in both structured and unstructured environments and relationships, and informal interactions with information and knowledge resources. In this study, an informed learner is understood to be someone who interacts with a wide range of resources that reach beyond formal sources of information (such as a traditional teacher-led classroom setting) into the informal sphere of learning to experience self-directed learning (deliberate and autonomous), incidental learning (non-deliberate or spontaneous) or non-formal learning (informal learning within formal spaces). From the findings, we can see how these non-traditional forms of learning influence how people use and experience information to learn. Compared to research on formal learning experiences, there is little research focussing on informal learning experiences from information literacy, behaviour and practice perspectives. While the concept of informed learning has emerged and evolved from the formal learning environment, the theory also seeks to be used to understand and improve quality of learning within information practices in a variety of contexts outside of formal education, such as workplace, community and social life, where informed learning could contribute to our understanding of learning in informal environments. This study has provided some emerging insight into what informed learning looks like in a professional practice (academic)

context, which spans across university and non-university contexts and spaces.

In examining the foundations of informed learning as an information experience, the area of workplace information literacy is most relevant to the findings of this study as it explores experiences of people using information while learning a professional practice. The study of workplace information literacy, as discussed in the literature review chapter, is influenced by two main approaches – socio-cultural and relational. Both experiences of workplace information literacy can be seen operating within the knowledge ecosystem model constructed from the data. This suggests that informed learning is experienced by ECAs in both university and non-university contexts, primarily through human-to-human relationships and secondarily, through human-to-object. Both approaches are interrelated, although in this study, the emphasis is on human relations as being more valuable to optimising ECAs' developmental networking experience. This study has also shown that interactions related to both the socio-cognitive and affective dimensions of information behaviour are also relevant to increasing our understanding of information experiences of ECAs. Interactions towards knowing self and knowing others often involve a combination of cognitive and affective behaviours.

In this study, using Bruce's definition of information practice in the context of informed learning, the 'practice' under examination is ECAs' developmental networking. This study advances our understanding of the nature of developmental networking viewed as an information practice. Information practice is relevant to the concept of informed learning, as it provides a schema for studying and examining particular professional activities and tasks carried out by a group of people. Focusing on a learning activity such as developmental networking helps our understanding of the full complexity of the experience; an experience that is often overlooked in terms of its complexity and challenge for the ECAs. By identifying specific

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interactions, resources and learning commonly experienced by this group in building networks, we begin to be able to simplify the complex experience through human-centred design of information environments. It is through the concept of information practice that recognition of the pragmatic value of the knowledge ecosystem conceptual model occurs, as it guides design principles to effectively support information practices.

The knowledge construction, knowledge extension (intuition) and wisdom experiences of informed learning (Bruce, 2008) support the main finding of ECAs' informed learning experiences as a knowledge ecosystem or ecology, where use of information leads to knowledge creation, use and re-use for learning. While this study explores the concept of knowledge ecology (Chatti, 2012) from the perspective of a group of people (ECAs), knowledge ecology is a holistic concept that encompasses the perspectives of people who impact upon the user group's experience (Pata, 2009). Therefore, in future research these perspectives of ECAs' developers need to be integrated into this study to gain a more holistic picture of the knowledge ecology for academic development. This study illustrates the interdependence of each of the elements in the knowledge ecology: the people, relationships, informal learning interactions and other forms of information and knowledge that are informing learning. By conceptualising the system in this way, it makes clear the need for strong collaboration between each of these key elements.

Findings from this study make a contribution to our understanding of the early career academic experience, from the perspective of informed learning. The key ECA developmental activities identified from the literature review in Chapter Two, are all highly relevant to building developmental networks, according to the participants' responses. The value of this contribution is a holistic and unified model, which identifies the main elements of the ECAs' knowledge ecosystem containing informing entities which ECAs interact with to learn. The model can be used to inform

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design of university or workplace-based experiences such as professional development programs, events, courses and experiences external to the university such as social media, community and the home.

One of the main issues raised in the ECA development literature is the need to support the development of agency, or the capacity to act in a certain way, for new professionals, particularly a balance of individual and relational agencies and the need for ECAs to recognise when different forms of agency should be exercised (Sutherland & Petersen, 2010). In this study, the knowledge ecosystem contains the key interactions of knowing self, knowing others and recognising layers of relationships. The identification of these processes and interactions works towards our understanding of how ECAs use information to learn, and also learning by the balancing of individual agency, through knowing self and developing self-concept, professional identity and self-efficacy by interacting with self-knowledge, and relational agency, through knowing others and how they collaborate by interacting with the knowledge of other people. Interactions grouped under recognising layers of relationships add value to our understanding of relational agency, highlighting various dimensions of relationships, which can inform learning. While relational agency has come to the forefront of the current discussion in this research area, this study suggests that both forms of agency are critical to ECAs' empowerment for learning and development, and ultimately for experiencing success in their roles. From these findings, it can therefore be suggested that successful development of individual and relational agencies can be achieved by facilitating informed learning experiences for ECAs.

Three main findings from the current literature on developmental networks have particular salience for this study. These are that developmental networks (in general):

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- consist of multiple mentors for helping people grow and develop in a variety of areas relevant to their jobs (Crocitto et al, 2005; Higgins & Kram, 2001; Molly, 2005);
- are successfully built and experienced through mutually supportive relationships (Dobrow et al, 2012); and
- involve quality interactions for learning (Baker Sweitzer, 2009).

Findings from this study clearly reflect these current trends, with this study making a specific contribution to an understanding of the experience of developmental networking in academia. Mentors, especially informal, self-selected mentors, are identified in this study as key developers and key knowledge resources within an ECAs' developmental network. Research supervisors and senior academic leaders such as Heads of School, Deans and highly experienced members of the Professoriate, are also identified as key knowledge resources, and accessing their experiential knowledge is regarded as very important for ECA development. Developmental networking experiences in the academic context, suggests that the design of higher education support systems needs to better facilitate multiple relationships with key developers to improve access to specific types of knowledge needed to learn and therefore allow ECAs to perform their jobs successfully.

Recent reviews of developmental networking as a general human resource development strategy highlight the importance of the 'mutuality perspective' (Dobrow et al, 2012). Findings from this current study of ECAs reflect the reciprocal nature of successful contemporary developmental relationships. Mutually supportive relationships comprised of ECAs' self-knowledge, knowledge of others and various relationship layers as identified in Table 1, can be linked to research into early career practitioners, particularly the concepts of 'relational' and 'individual' agencies (Edwards & D'arcy, 2004; Hopwood & Sutherland, 2009; Warhurst, 2008). As participants each discuss both working collaboratively

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and independently, according to their learning needs and situations, this study suggests that a combination and/or balance of relational (knowledge of others) and individual (self-knowledge) informs learning and growth.

Quality interaction for learning, in the context of this study, refers to ECAs' interactions with personal knowledge (including affective knowledge such as trust, empathy and social savvy) and the experiences of recognising layers of relationships, particularly selecting communication modes. This finding is supported by the concept of 'high quality connections' (Heaphy & Dutton, 2006). Among other findings, research into building 'high quality connections' has revealed that these types of relationships enable effective information and knowledge exchange or sharing (Heaphy & Dutton, 2006). These areas are relevant to this study, in terms of extending the theoretical and practical implications and providing a more holistic, balanced view of the experiences of ECAs' practices.

This study indicates the use of, or interaction with informal information and knowledge resources, needs much closer attention. Literature on learning informally in higher education is focused on information sharing while social networking (Totterman & Widen-Wulff, 2007), however information use for learning and professional development is a different context and the use of information to enhance quality of learning needs further research. In general, strategies to facilitate informal interactions through relationships of mutual benefit are needed. Academic developers (for teaching, research, career), mentors (formal and informal), ECAs and information and knowledge managers within higher education, need to collaborate to enhance learning within the informal sphere. This could involve providing opportunities and support for informal interaction and informal information use, both online and offline, to develop personalised developmental networks towards quality learning experiences for ECAs and their successful development of 'relational' and 'individual' agencies.

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On a theoretical level, the model of informed learning in the context of ECAs' developmental networks extends the existing theories in these areas.

6.2 Evidence-Based Strategy: Implications for Academic Practice

The next section presents the implications for a range of stakeholders for practice. The implications are outlined for the higher education sector in Australia and internationally for the studied group (ECAs) and key groups involved in their development as professional academics such as research supervisors, mentors, experienced academic colleagues, professional development programs for academics, information, research and teaching support services, industry, external research users and funding bodies from a range of sectors, university senior management, graduates and students and personal contacts such as friends and families of ECAs.

6.2.1 Early Career Academics

This study provides an empirical model for assisting early career academics to prepare for the challenges associated with learning how to be an academic and how to develop in their roles. While the ECAs in this study are within first five years of a full time role, not all have completed formal research training or have significant teaching experience. This model incorporates the experiences of those ECAs who are attempting to balance a variety of roles such as PhD candidate, beginning teacher and ex-practitioner. This study finds that even though their experiences are varied, the processes associated with building mutually supportive relationships and networks for learning and development are no different between full time academics who have completed their research and teaching training and full time academics who are working towards completing their research or tertiary teaching qualifications.

Early career academics interviewed for this research represent a variety of stages in their development and are also working within different disciplines. The main implication here is that despite these apparent differences, ECAs engage with similar interactions of using information while building developmental networks. This research outlines and examines specific interactions of 'informed learning' associated with knowing self, knowing others and recognising layers of relationships to inform their learning how to be an academic. Fostering informed learning in the informal sphere is a useful perspective to increase early career academics' awareness of the multitude of ways they can experience information use. Being conscious of these interactions as they participate in a range of tasks and activities assists in making explicit the types of information and knowledge that informs their learning. This in turn enriches the learning experience and fosters higher quality output in terms of academic research, teaching and service and overall career and life satisfaction through rewarding relationships.

ECAs acknowledge the complexity of their information environments and systems. By selecting what is relevant and meaningful to them, they are collecting and creating knowledge for learning solutions. One design principle is to simplify a complex experience by empowering the user/learner (ECA) to self-select (or relate to) information from a variety of sources and create their own knowledge resources to draw upon and interact with during learning activities. Empowering can mean through 1) agency (individual and relational) and 2) facilitation (design of physical and virtual systems and environments). These systems can facilitate personalised informal learning in unstructured (self-directed, incidental, informal mentoring, social media) and structured (non-formal) spaces. Informal interactions with various stakeholders or groups who form part of the ECAs' developmental network or support system, and the implications for these stakeholders are discussed below. Dual focus on learning and

what informs learning benefits the following ECA developer groups accordingly.

6.2.2 Professional Development Programs

Internal professional development programs including workshops and various forms of mentoring are generally experienced by ECAs as sources of knowledge particularly experiential, personal and interdisciplinary knowledge for learning. The presence of well-developed programs at universities for ECAs allows them to feel valued and supported by their employers, thus increasing retention and success. The programs can be experienced as gateways to experiential knowledge from peers within and from other disciplines and from senior academic role models. Formal mentoring where a mentor is assigned is often viewed as useful for induction into the workplace, however participants report that long-term relationships with mentors are often more beneficial when the mentor is self-selected by the ECAs and the relationships are formed naturally and continue in an informal manner. Being able to personalise their experience of the program based on their individual learning needs, styles and preferences is important for optimising development. Generic experiences such as group mentoring or workshops that may not be relevant to the ECAs' needs are viewed as not as effective. This suggests a need to facilitate ways for ECAs to self-select sources of knowledge that are directly relevant to their situations and needs.

6.2.3 Academic Mentors

Mentors are regarded as key resources of experiential knowledge that is valuable for ECAs as they learn how to be an academic and how to handle various situations related to their multiple roles. Academic mentors need to be strong role models and also possess the wisdom to offer sound advice. Mentors need to recognise that their mentees may have multiple mentors

from other areas of their role and that ECAs may select or piece together knowledge or advice from a wide range of sources, so a traditional dyadic mentoring relationship where the mentee accepts information and knowledge from one mentor, cannot be assumed to be experienced by ECAs. In this case, mentors need to act as gateways to knowledge resources, through introduction to relevant people or information based on their knowledge of the ECAs. Mentors are in a strong position to facilitate individual and relational agencies through helping the ECAs increase their self-knowledge and knowledge of others.

6.2.4 Research Supervisors

For academics supervising early career academics undertaking a research degree, this study has implications for the design of supervisory pedagogy. Successful ECAs reported feeling more confident with networking activities when their research degree experience allowed them to take ownership of their project and to network independently to expand or steer their research, in a way that prepares them for future employment. Self-directed learning is important for establishing networks that can serve ECAs during and after the transition from PhD candidate to academic staff member. Encouraging research candidates to seek and establish relationships in the key spaces identified needs to be emphasised in research supervisory pedagogy, as this relationship building side of the research degree experience is regarded as important, if not more important than the writing of the thesis itself. It is important for research supervisors to establish trust in the ECAs' ability to be self-sufficient in regards to management of the project as well as their ability to collaborate with and ask for advice from supervisors and other key developers.

6.2.5 Senior and Mid-Career Academic Colleagues

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Academic colleagues who are not acting as mentors need to support ECAs by encouraging open information and knowledge sharing and collaboration on research and teaching projects. This provides opportunities for ECAs to feel part of the academic community, to learn, observe and acculturate within their immediate environments and to make contributions to high profile projects.

6.2.6 Information, Research and Teaching Support Services

This study suggests potential for technologically supported networking for ECAs that can also act as a facilitator for offline interaction. Social media platforms for career development such as LinkedIn, Academia.edu or Yammer are being utilised somewhat, however users or potential users in this study are finding them challenging to integrate into their daily workflow or to customise their experience based on their particular tasks or learning needs. This often results in feeling overwhelmed or potential information or knowledge is not being accessed. The ecosystem model within the spaces of developmental network formation could potentially act as a guide for designing interfaces and applications towards personalised knowledge management which aggregates identified information and knowledge resources. These include directing to explicit knowledge recorded digitally and facilitating easier access to implicit knowledge located in certain developers, integrating personal contacts, day-to-day tasks, goals and opportunity (project, funding or collaboration) management. Such resources could reach across Library, the Research and Graduate Studies Office and Educational Developer services and could be accessed using mobile devices for user convenience.

6.2.7 Industry, Research Users and Funders

Industries linked to the ECAs' field of research and/or teaching need to provide opportunities for ECAs to get more involved through professional

associations, publications, events and projects, so they can make a stronger impact on advancing industry through their teaching, research and potential consultancy work. Collaborating with ECAs on projects in voluntary capacities can help attract external research funding and projects. These collaborations can directly benefit organisations from a variety of sectors.

6.2.8 Research Students

Current and potential research students being supervised by ECAs need to recognise that the ECAs are learning their own preferences and needs as a new supervisor, and that a collaborative relationship where information and knowledge can be freely shared is preferable.

6.2.9 Personal Contacts

Family and friends of ECAs can help in the development of informed learning by having regular informal conversations to help build understanding and empathy for the experiences of ECAs. They can provide emotional support by providing 'outsider' or 'everyday' perspectives that are not coloured by academic or institutional experiences. These experiences usually take place in and around the home, community or at relevant events. There is an implication that friends and family can better support ECAs by creating stress-free spaces that allow the ECA to take different perspectives. Some ECAs have friends and family who are also associated with academia, and these relationships have added empathic knowledge to strengthen support. ECAs with friends and family outside of academia are able to utilise these people as resources of experiential and personal knowledge that goes beyond academic life, providing relief or a perspective that can be adapted to the academic environment.

6.2.10 University Senior Management

ECAs note the importance of feeling valued and included by their direct supervisors (Heads of School, Deans and above). Having easier access to knowledge resources located in senior management is important for ECAs development. This implies that traditional hierarchical structures that typify universities are hindering information and knowledge flow and sharing within these organisations and that a flatter structure may be conducive to better access to knowledge for learning. There is a need for improved culture to empower ECAs rather than relegate them to the lower levels. This culture of empowerment needs to be pervasive through institutions and beyond. Additionally, informed learning as experienced by ECAs in the knowledge ecosystem model, needs to be integrated into university strategic plans for research and teaching development.

6.3 Future Directions

Experience Design is proposed as an approach to responding to the findings of this study. 'Experience' in this study refers to the knowledge ecosystem model (including both models one and two) as empirical evidence of ECAs' information use and developmental experiences. 'Design' refers to the guiding principles to facilitate learning experiences, including the design of spaces, systems and interfaces located both online and offline, for developmental purposes. As this research has implications for solutions towards optimising the overall quality of learning and development for ECAs, creating an 'Experience Design Strategy' is the next step towards applying the knowledge ecosystem model and communicating implications for academic and professional practice. This section will begin with a discussion of the broader theoretical fields within which the conceptual model can be contextualised and understood. Broader theories include Human-Information Interaction (HII) and Experience Design (XD). An integrative review of research will be presented in relation to the findings of this study, followed by theoretical implications for both 'Experience' and

'Design'. General implications for practice aimed at relevant groups or stakeholders will then be presented.

6.3.1 Exploring Links Between Informed Learning, Human-Information Interaction and Experience Design

The field of Human-Information Interaction (HII) has its origins in, and is closely influenced by theories of Human Information Behaviour (HIB). HII was originally developed as an alternative to the well-established field of Human-Computer Interaction (HCI), as a way for research into information behaviour to gain impact and applicability for systems design work and to help designers recognise the benefits of research that encompasses a wider view of people's interaction with 'information' regardless of medium or way of interacting with that information. As the following excerpt from Marchionini's article on HII from an LIS perspective suggests, HII goes beyond the 'computer' in HCI, towards a broader ecological view of information (technological and non-technological) and how people interact with information (Marchionini, 2008).

> Interaction is a special kind of action that involves two or more entities and a set of reciprocities that effect changes to each entity. To characterize an interaction, it is necessary to specify the entities, the nature of the actions, the genesis of the actions (initiation), the amplitude (intensity) and frequency of the reciprocity cycles, and the resultant changes in the participating entities. In the case of human–information interaction, humans and information are the entities.

> Theoretically, a human uses an object when there is little or no reciprocity or the feedback cycles are extremely limited and predictable. The term interaction is reserved for the situation in which the entities participate in several cycles of action that in turn cause changes in those entities. More practically, when human–information interaction is discussed in the information and computer science literatures, a human typically does

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something repetitive (e.g., click, read response, click again). The person experiences different information each time without regard to changes in the object used (i.e., the changes in the interacting entities are mainly one-sided). One claim of this paper is that humans are moving toward a potentially more symmetrical meaning of human–information interaction, where both humans and information objects evolve as a result of and throughout interaction.

This intermediate interaction with technology is tangible and necessary (but not sufficient) to accomplish information goals. Because early electronic technologies were so foreign to common human experience, human–computer interaction has classically addressed interaction with the technology. This study considers what it means to interact with information rather than another human or a computer. (Marchionini, 2008, p. 170)

Findings from this study have implications for the emergent field of HII, as it identifies important information resources (texts, tools, humans, cultures and environments), which a group of information users (i.e. ECAs) interact with and from these information resources, creates the most important informing entity in this context - knowledge. By focusing on informing entities regardless of communication medium, HII can pave the way toward designing information systems and environments without the boundaries created by technologically focused concepts. The term 'interaction' is sufficiently broad enough to encompass a range of information activities, practices and experiences, which will be discussed in the next section.

'Relating to information' is an information interaction mentioned in the original definition of HII by Gershon (1995), where he defines HII as the study of:

how human beings interact with, relate to, and process information regardless of the medium connecting the two.

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Although the idea is mentioned in the original definition, 'relating to information' as a human interaction towards creating knowledge, has not been specifically studied. As relationships are a major component in the findings of this research, the interaction of relating to information to create knowledge of oneself and knowledge of others is central to the relationship-focused and ecological view of informed learning. This presents an overlap between the concepts of HII and the conception of informed learning constructed in this research. In the context of HII, informed learning experiences as presented in the previous two chapters, could be viewed from multiple perspectives: an information behaviour perspective, an information literacy and an information practice perspective through reconciling these fields under the 'umbrella' of HII. Each of these fields shares the same goal of designing human or user-centered systems or pedagogies. In this case, learning systems (such as networked learning through social media and informal mentoring online) and informal learning pedagogies are equally relevant to developmental networking as an information practice.

There are also common links between HII and the field of Experience Design (XD). Research which examines the intersection between HII and User Experience (UX) is highly relevant to this study, as it focuses on studying information interactions as 'rich and varied narratives' to 'explore information seeking and use as processes within, and outcomes and predictors of human experiences' and to 'holistically conceptualize, evaluate and design for human information experiences' (O'Brien, 2011). UX Design is a sub-field of XD, which is concerned with designing technologically supported products (such as websites or apps), systems or services that fit "a person's perceptions and responses that result from the use or anticipated use of a product, system or service" (International Organization for Standardization, 2008). Traditional UX is more closely associated with Human Computer Interaction and the term 'User' from a

HCI perspective relates to a human who is experiencing a technologically supported product, system or service. However, in both HII and informed learning, a 'user' refers to a user of information and how that information is used or interacted with. From a HII perspective, UX is about how people experience using information regardless of medium. For example, O'Brien makes reference to the process-based model of 'Threads of Experience' by McCarthy & Wright (2004), including compositional, emotional, sensual and spatio-temporal experiences:

> The compositional thread pertains to the narrative structure of the experience or how it unfolds. The emotional thread is a "resource for understanding and communicating about what we experience". During an experience, the user's senses (e.g. sight, sound, touch) are engaged, and this is the sensual thread. Lastly, the spatio-temporal thread is the time and space in which an experience occurs (McCarthy & Wright, 2004).

Each of these 'threads of experience' are exemplified by participants' responses in this study, particularly in interactions associated with 'recognising layers of relationships' and multi-sensory informing entities. The term Experience Design is preferred in relation to this study, as participants expressed many informing entities for their learning outside of the technological realm, as well as within. This calls for a term that is flexible enough to substitute 'user' with other people-centric terms such as learner experience, collaborator experience and human or multi-sensory experience. These will be discussed further under the 'Design' implications sections.

In summary, this study also makes a significant contribution towards understanding the fields of HII and XD, how informed learning is related to HII and XD and how the fields potentially intersect to optimise learning and development of ECAs. As noted earlier in this chapter, an ecological view of

human information interaction implies a holistic understanding of the experiences from the perspectives of all key people interacting within the ecosystem. This study focuses on the specific experiences of a sample of ECAs across two universities. Furthermore, constructivist grounded theory has provided an initial theory constructed from data collected through interviews. Other methodological perspectives, such as ethnography could enrich these initial findings, for example studying experience from a user behaviour perspective, integrating data from observation techniques to compare to data analysed from semi-structured interviews (opinion/attitude) for comparison.

The implications section for information and research support services proposes a solution towards increasing access to information and knowledge for development. Further questions can be asked around this proposed solution, such as can technology or systems facilitate high quality relationships or connections for learning a new profession? How do we increase interaction opportunities with knowledge resources for learning?

6.3.2 Designing an Experience Strategy

The previous section outlined the theoretical implications of the findings of this study for understanding 'experience' in this context from information, early career academic and developmental networking perspectives. The next section works towards applying these theoretical findings, through the design of an experience strategy for ECAs based on the evidence presented in this thesis. The diagram below represents an Experience Design Strategy for ECAs, that includes understanding the information and learning experiences of ECAs and the design principles towards optimising ECAs' learning and development, within the context of building developmental networks in the six key spaces where relationships are formed.
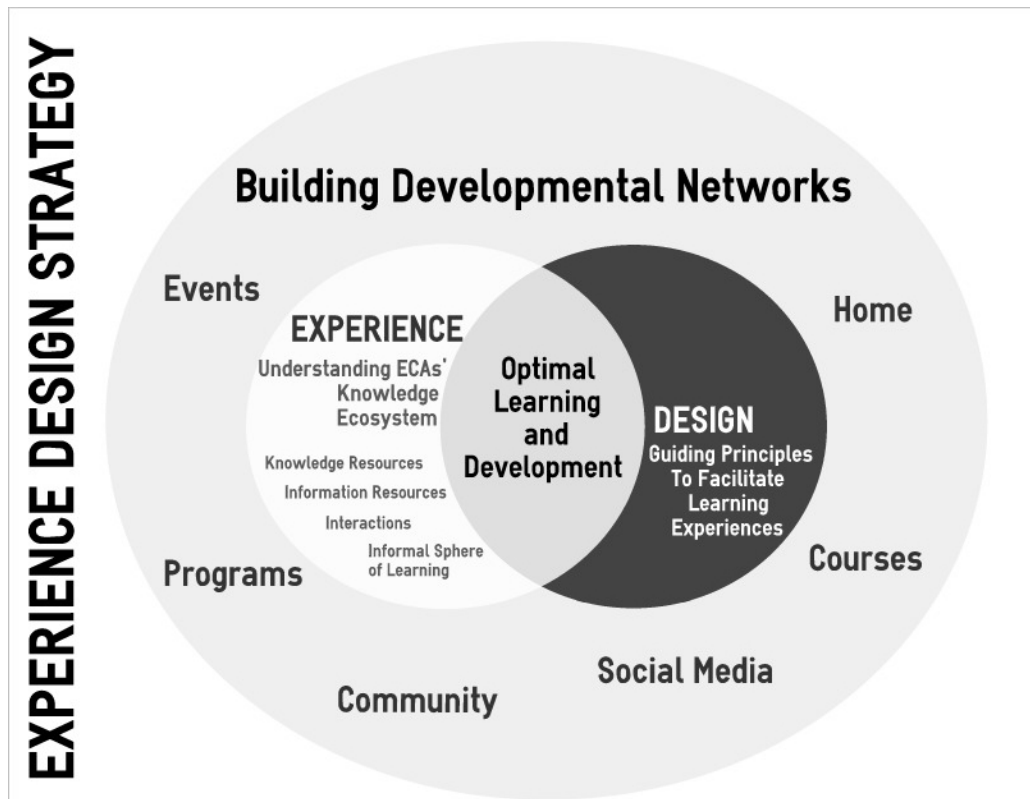
Figure 3: Experience Design Strategy for ECA Development

6.3.3 Developing Design Principles for Optimal Experiences

Experience Design is the field and practice of designing optimal experiences for people (Berridge, 2007). The experiences of people are researched using a variety of methods to inform human-centered design of technologies, products, services, systems or environments. The following section outlines six types of experience design relevant to the findings of this study. These have been developed by myself as the researcher.

1. *User Experience Design* is the design of optimal and engaging experiences for people who use (or potentially use) a product, service or system. This refers specifically to the design of technologically supported experiences of information including texts (multimedia), tools (hardware and software), humans (service and virtual representations), digital cultures and environments (interfaces and visuals), including the social media learning

space. In this study, social media was used primarily for seeking and attracting research and teaching expansion opportunities. While half of the participants in this study were active users of social media for these purposes, the other half had either no experience with, or interest in social media or had used social media but had not found it conducive to their work preferences and goals. This implies that networking for productive career development encompasses online social media, but goes beyond it and needs to be facilitated in ways that suit individual preferences.

2. *Human Experience Design* is the facilitation of optimal experiences for humans, which is broader than 'users' who are only engaging with what is being designed. Human Experience encompasses experiences of the everyday lives of people, not necessarily including experiences with a product or technology. It also focuses on developing a more personalised experience that is a 'natural fit' for the person using the resource or system. This study argues that designing for human experiences is a stronger design principle than UX. By understanding holistic human experiences in each of the spaces identified in this study, we can begin to view the interconnectivity between offline and online experiences.

3. *Learner Experience Design* is the design of optimal experiences for people who have learning and/or development as their main goal, or who have a need to learn a particular area or skill. In this study, with its informed learning focus, learner experience design refers to designing and integrating pedagogical concepts into each of the key learning spaces to facilitate developmental networking. The knowledge ecosystem model represents how informed learning is conceptualised by ECAs and can be viewed within each of the learning spaces as a model for designing informed learning experiences. While Learner Experience and Human Experience design are the strongest areas of design principles for ECA developmental networking, user experience appears of secondary importance to ECAs as the technologically focused experience. Three other

types of experience design which complement these main areas emerged from the findings of this study, including memorable, collaborator and multisensory.

4. *Memorable Experience Design* is the design of optimal experiences of memories through knowledge creation and use. Findings indicate that memorable or 'sticky' experiences that have a strong impact on the ECAs translate into knowledge resources of all types. Designing spaces for memorable experiences greatly enhances the likelihood of retaining knowledge for future use for learning.

5. *Collaborator Experience Design* is the design of optimal experiences through collaboration between two or more people. Shared experiences feature largely in the relationship view of informed learning and the idea of collaborator experience needs to be highlighted as a unique type of experience. In this study, the Inner Focus interactions and resources are working to facilitate mutually supportive relationships and in this view, it is the relationships themselves that inform learning as separate learning contexts to the individual working independently. Thus, the collaboration as an informing entity, as opposed to a single 'user' or 'human' as an informing entity, needs to be considered during design.

6. *Multisensory Experience Design* is the design of optimal experiences by receiving information through multiple human senses. Design which allows the ECAs to participate in an experience through use of the five senses: sight, sound, touch, smell and taste, has a potential impact on learning and development. This is particularly relevant for spaces such as events (conferences or informal meetings) but can potentially apply to all spaces where networking occurs.

6.4 Conclusion: Designing Knowledge Ecologies for Early Career Academics

This study provides in-depth insights into the information experiences of a specific group of information users: people who are learning a new profession or career. Through recognising that information, knowledge and learning are naturally fused together, the study highlights specific processes involved in building developmental networks within inner (within human relationships) and outer (outside human relationships) informal spaces. This theoretical model can inform practice in the following ways:

- developing experience design strategies for higher education and potentially within other contexts, where new professionals work;

- broadening the concept of user experience design, going beyond design of online interfaces to include design of online and offline information and knowledge environments, ecosystems and human services; and

- optimising learning and development experiences for ECAs and others by understanding experiences and design principles.

CHAPTER SEVEN

Conclusion

7.0 Introduction

This thesis has examined how early career academics (ECAs) experience using information to learn as they build their developmental networks. Using a constructivist grounded theory approach, the key processes, actions and contexts involved in extending our understanding of informed learning for early career academic development are identified, defined and illustrated within specific relevant contexts. This chapter presents a summary of key findings towards answering the research questions stated in Chapter One, with reference to the implications for advancing theory and practice.

7.2 Key Findings

How do early career academics experience using information to learn while building their developmental networks?

Findings from this study and context present an alternative interpretation of informed learning that is focused on processes manifesting as human interactions with informing entities revolving around the contexts of reciprocal human relationships, in this case between ECAs and their various developers. Informing entities include information resources outside of human relationships, and knowledge resources within human relationships. The processes or interactions were constructed from

grounded theory data analysis and are a key element of the experience of building developmental networks. These interactions included:

1) Relating to Information to Create Knowledge of Self and Others; and

2) Building Mutually Supportive Relationships through Knowing Self, Knowing Others and Recognising Layers of Relationships.

This study adds to our understanding of what it means to experience informed learning in the informal sphere consisting of a combination of informal learning in both structured and unstructured environments and relationships, and informal interactions with information and knowledge resources. In this study, an informed learner is understood to be someone who interacts with a wide range of resources that reach beyond formal sources of information (such as a traditional teacher-led classroom setting) into the informal sphere of learning to experience self-directed learning (deliberate and autonomous), incidental learning (non-deliberate or spontaneous) or non-formal learning (informal learning within formal spaces).

From the findings, we can see how these non-traditional forms of learning influence how people use and experience information to learn. Compared to research on formal learning experiences, there is little research focussing on informal learning experiences from information literacy, behaviour and practice perspectives. While the concept of informed learning has emerged and evolved from the formal learning environment, the theory also seeks to be used to understand and improve quality of learning within information practices in a variety of contexts outside of formal education, such as workplace, community and social life, where informed learning could contribute to our understanding of learning in informal environments. This study has provided some emerging insight into what informed learning looks like in a professional practice (academic)

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context, which spans across university and non-university contexts and spaces.

Findings from this study make a contribution to our understanding of the ECA experience, from the perspective of informed learning. The key ECA developmental activities identified from the literature review in Chapter Two, are all highly relevant to building developmental networks, and resonate with the participants' responses.

One of the main issues raised in the ECA development literature is the need to support the development of agency, or the capacity to act in a certain way, for new professionals, particularly a balance of individual and relational agencies and the need for ECAs to recognise when different forms of agency should be exercised (Sutherland & Petersen, 2010). In this study, the knowledge ecosystem contains the key interactions of knowing self, knowing others and recognising layers of relationships. The identification of these processes and interactions works towards our understanding of how ECAs use information to learn, and also learning by the balancing of individual agency, through knowing self and developing self-concept, professional identity and self-efficacy by interacting with self-knowledge, and relational agency, through knowing others and how they collaborate by interacting with the knowledge of other people. Interactions grouped under recognising layers of relationships add value to our understanding of relational agency, highlighting various dimensions of relationships, which can inform learning. While relational agency has come to the forefront of the current discussion in this research area, this study suggests that both forms of agency are critical to ECAs' empowerment for learning and development, and ultimately for experiencing success in their roles. From these findings, it can therefore be suggested that successful development of individual and relational agencies can be achieved by facilitating informed learning experiences for ECAs.

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Three main findings from the current literature on developmental networks have particular salience for this study. These are that developmental networks (in general):

- consist of multiple mentors for helping people grow and develop in a variety of areas relevant to their jobs (Crocitto et al, 2005; Higgins & Kram, 2001; Molly, 2005);
- are successfully built and experienced through mutually supportive relationships (Dobrow et al, 2012); and
- involve quality interactions for learning (Baker Sweitzer, 2009).

Findings from this study clearly reflect these current trends, with this study making a specific contribution to our understanding the experience of developmental networking in academia. Mentors, especially informal, self-selected mentors, are identified in this study as key developers and key knowledge resources within an ECAs' developmental network. Research supervisors and senior academic leaders such as Heads of School, Deans and highly experienced members of the Professoriate, are also identified as key knowledge resources, and accessing their experiential knowledge is regarded as very important for ECA development. Developmental networking experiences in the academic context, suggests that the design of higher education support systems needs to better facilitate multiple relationships with key developers to improve access to specific types of knowledge needed to learn and perform their jobs successfully.

Recent reviews of developmental networking as a general human resource development strategy highlight the importance of the 'mutuality perspective' (Dobrow et al, 2012). Findings from this current study of ECAs reflect the reciprocal nature of successful contemporary developmental relationships. Mutually supportive relationships comprised of ECAs' self-knowledge, knowledge of others and various relationship layers as identified in Table 1, can be linked to research into early career practitioners, particularly the concepts of 'relational' and 'individual'

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agencies (Edwards & D'arcy, 2004; Hopwood & Sutherland, 2009; Warhurst, 2008). As participants each discuss both working collaboratively and independently, according to their learning needs and situations, this study suggests that a combination and/or balance of relational (knowledge of others) and individual (self-knowledge) informs learning and growth.

Quality interaction for learning, in the context of this study, refers to ECAs' interactions with personal knowledge (including affective knowledge such as trust, empathy and social savvy) and the experiences of recognising layers of relationships, particularly selecting communication modes. This finding is supported by the concept of 'high quality connections' (Heaphy & Dutton, 2006). Among other findings, research into building 'high quality connections' has revealed that these types of relationships enable effective information and knowledge exchange or sharing (Heaphy & Dutton, 2006). These areas are relevant to this study, in terms of extending the theoretical and practical implications and providing a more holistic, balanced view of the experiences of ECAs practices.

What informs early career academics' learning while they build their developmental networks?

This research question can start to be answered by identifying the resources they use during learning experiences. Data analysis revealed that their learning is mainly informed by knowledge - knowledge of oneself and knowledge from a range of people in their professional and personal networks such as informal and formal mentors, industry and academic colleagues, family, friends. Five types of knowledge emerged from the data:

Knowledge Types	Examples
Experiential	lessons from past experience, tacit knowledge, know-how
Personal	social savvy, common sense, trust, empathy
Technical	how-to guides, user reviews
Disciplinary	conversations or reviews within similar discipline or field
Interdisciplinary	conversations or reviews between different disciplines

Table 2: What Informs ECAs' Learning?: Knowledge Types

Each knowledge type refers to knowledge co-created within relationships: knowledge from the new lecturer (knowledge of self) and knowledge from their developers (knowledge of others). Contrastingly, information is discussed as useful for learning but is experienced as secondary to knowledge. Participants in this study view the knowledge types as listed above as more important to their learning than information types listed

here. From the data, the following categories of information resources used for learning experiences have been identified:

Information Types	Examples
Texts	articles, books, websites, multimedia, emails
Tools	software, hardware, mobile devices, equipment
Humans	elevator speeches, business cards, online profiles
Culture	organizational or community
Environments	work/home space design, geographical location or political climate

Table 3: What Informs ECAs' Learning?: Information Types

How are the key learning experiences enriched by focusing on interactions with knowledge and information resources?

The value of this contribution is a holistic and unified model, which identifies the main elements of ECAs' knowledge ecosystem containing informing entities which ECAs interact with to learn. The model can be used to inform design of university or workplace-based experiences such as professional development programs, events, courses and experiences external to the university such as social media, community and the home.

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Some of the ways in which the key learning experiences from this study are enriched by identifying interactions with knowledge and information resources, include:

- hearing from experienced leaders as 'role models' at professional development programs,

- seeking and attracting developers (informal mentors or peers) while taking formal courses,

- presenting papers at events such as conferences, thus gaining peer feedback and making friends,

- getting known through volunteering within professional communities and internal committees,

- maintaining personal foundations around the home, family, and social life, and

- seeking or attracting new opportunities for expansion using a range of social media.

This study indicates the use of, or interaction with informal information and knowledge resources, needs much closer attention. Literature on learning informally in higher education is focused on information sharing while social networking (Totterman & Widen-Wulff, 2007), however information use for learning and professional development is a different context and the use of information to enhance quality of learning needs further research.

In general, Experience Design strategies and principles to facilitate informal interactions through relationships of mutual benefit are needed. Academic developers (for teaching, research, career), mentors (formal and

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informal), ECAs and information and knowledge managers within higher education, need to collaborate to provide enriching learning experiences within the informal sphere. This could involve providing opportunities and support for informal interaction and informal information use, both online and offline, to develop personalised developmental networks towards quality learning experiences for ECAs and their successful development of 'relational' and 'individual' agencies..

7.3 Recommendations for Future Research

This study illustrates the interdependence of each of the elements in the knowledge ecology: the people, relationships, informal learning interactions and other forms of information and knowledge that are informing learning. By conceptualising the system in this way, it makes clear the need for strong interactions between each of these key elements. This study has focused on the perspectives of ECAs only, while an ecological view would encompass the perspectives of all involved in the ECAs ecosystem such as their developers. In future studies, the perspectives of ECA developers could provide further insight to consolidate the knowledge ecosystem model developed in this study. It is also suggested that future studies explore ways in which experiential (including informed learning) and behavioural (including human-information interaction) theorists and practitioners in information and academic development can work together to develop deeper understanding of the ECA learning experience, and design principles for empowering new academics through agency and facilitation.

7.4 Conclusion

This chapter has outlined the key findings of this research towards answering the research questions about what informs ECAs' learning in building developmental networks and how they experience using

information to learn their roles as new researchers and lecturers. This chapter has also suggested some recommendations for future research based on the findings of this study.

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Appendices

Appendix A: Participants Sample Characteristics: Early Career Researchers

Five participants are currently completing their PhDs while employed full time as academics. Seven participants had completed their doctoral research, while two are planning to enrol in a research higher degree. Participants' experience as researchers ranged from having completed Masters research through to PhD candidature to Post-Doctoral levels.

Participant	Age Group	Research Discipline	Research Level
Participant 1	40s	Education	PhD Candidate
Participant 2	40s	Psychology	PhD Candidate
Participant 3	30s	Science	Post-Doctoral
Participant 4	30s	Creative Arts	Masters, considering PhD
Participant 5	30s	Science	Post-Doctoral
Participant 6	30s	Creative Arts	Masters, considering PhD
Participant 7	30s	Science	PhD Candidate
Participant 8	50s	Education	PhD Candidate
Participant 9	30s	Science	Post-Doctoral
Participant 10	30s	Business	Post-Doctoral
Participant 11	30s	Business	Post-Doctoral
Participant 12	30s	Science	Post-Doctoral
Participant 13	30s	Engineering	Post-Doctoral
Participant 14	40s	Science	PhD Candidate

Participants Sample Characteristics: Early Career Educators

All participants in this study have at least one year of tertiary teaching experience. Most participants began their teaching roles coming straight from industry with no prior teaching experience. A few had worked as qualified teachers at various levels (primary to vocational education) before entering academia. Experienced teachers were more likely to mentor or to share teaching methods, while those less experienced with teaching were being mentored or were participating in professional development programs focused on teaching and learning.

Participant	Age Group	Teaching Discipline	Teaching Level
Participant 1	40s	Education	< 4 years University teaching Qualified teacher in secondary/adult education
Participant 2	40s	Psychology/Social Work	< 4 years University teaching No prior teaching experience
Participant 3	30s	Sciences	< 4 years University teaching No prior teaching experience
Participant 4	30s	Creative Arts	< 4 years University teaching Experience in adult education
Participant 5	30s	Sciences	< 5 years University teaching No prior teaching experience

Participant 6	30s	Creative Arts	< 4 years University teaching No prior teaching experience
Participant 7	30s	Sciences	< 4 years University teaching No prior teaching experience
Participant 8	50s	Education	< 4 years University teaching Qualified teacher in primary education
Participant 9	30s	Sciences	< 4 years University teaching Qualified teacher in secondary education
Participant 10	30s	Business	< 4 years University teaching No prior teaching experience
Participant 11	30s	Business	< 4 years University teaching No prior teaching experience
Participant 12	30s	Sciences	< 2 years University teaching No prior teaching experience
Participant 13	30s	Engineering	< 4 years University teaching No prior teaching experience
Participant 14	40s	Sciences	< 2 years University teaching No prior teaching experience

Appendix B: Phase One Research Interviews Reflection and Preliminary Data Analysis

The design of the interview guide was informed by the research problem and literature review findings. In the first phase of data generation, the ECAs were interviewed face to face. The interviews lasted approximately forty-five minutes and were recorded with a digital recorder before being fully transcribed by the researcher. ECAs were asked by the researcher to discuss their current roles as ECAs, their previous work experience and how it related to the current ECA role, their experiences with developmental networking in general and their experiences with using information to learn while building their developmental networks.

The first phase interviews were recorded and transcribed, all of which generated very detailed descriptions of their experiences with developmental networking of early career academics and their conceptions of using information to learn in this context. Data collected from these interviews were very valuable and suitable for working towards theoretical conceptions of this experience. General issues identified from the initial review of literature have been in line with most of the participants' responses, however this first phase was interesting in discovering new issues and ideas related to the topic which were then used for further exploration and integration of literature into the existing literature review.

As discussed at supervisory meetings during the data generation phase, the use of the second question "How do you use information to learn while building your developmental networks?" was perceived as perhaps limiting participants' responses. It was an interesting idea to use a modified interview question of "What informs you as you learn to build your developmental networks?" to compare participants' responses in a later

stage of the data generation. The use of the verb 'inform' was thought to be more suitable for the grounded theory approach, which seeks to uncover a broader range of experiences.

For myself as an interviewer, the proposed interview guide proved flexible enough for me to respond by tailoring some new sub-questions or prompt questions, based on individual responses. This added to the overall value of the interviews, in building rapport with participants and for developing inter-subjectivity (shared understanding). Because of this more spontaneous approach, the interview questions (and thus, responses) appear somewhat varied in the interview transcripts. The interviewing techniques of active listening, reflection and paraphrasing were practised during the conversations. I have noted the importance of ensuring that the participant understands the topic and that any key terms used in the main questions are explained or paraphrased before the interview commences, to avoid any confusion during the interview.

Active listening is important in remaining responsive to verbal cues offered by the participant, to help steer the interview. As participants feel that the researcher is actively listening and responding to their comments (either by paraphrasing what the participant has just said and relating the point to another question or an earlier point, or by asking a new question based on a comment), the amount of trust grows and the participant feels that they can 'open up' and discuss their points in further detail or offer comments which they may not have felt comfortable sharing without establishing the feeling that they are genuinely being 'listened to' by the researcher. I feel that the techniques of active listening and paraphrasing before and during the interview are subtle but effective ways of eliciting the most relevant and interesting information, and most participants responded well, despite the disciplinary differences between some participants and myself.

Reflection usually occurred after the interview, and this involved informal conversations evaluating the interview. The most common evaluative comment was that the participants felt that, after the forty-five minutes, they could have said more in relation to the topic. This raises some questions about whether a 'follow-up' interview is needed, however in this case a second interview with the same participant may not be practical, as some first phase participants are no longer working as academics or unavailable for other reasons. For this reason, further interviews will need to be conducted with a separate cohort of ECAs, perhaps from another university. Findings from a second cohort of ECAs could then be compared to the first cohort from this first phase study, thus engaging in triangulation of data.

The semi-structured approach and the nature of the research interviews as discussed above have implications for the processes during the data analysis stage. This means that the 'standard' approach of analysing the data sorted by interview question is not applicable to this data set; rather initial coding processes need to focus on searching for common or emerging themes across each interview. Because of this, I have decided that manual coding will be employed initially, followed by the development of thematic categories (nodes) into the NVivo program, for further analysis and for identifying relationships between key themes. Thus I will carry out a mix of manual and computer-assisted data analysis.

Manual coding will be carried out by constructing a Word document containing interview transcripts with coded quotes/paragraphs highlighted and linked to initial codes presented on a side column. Any annotations will be included (to explain why certain quotes/paragraphs have been coded as they have) and can be used in the development of nodes in NVivo.

The NVivo stage of analysis will involve:

- developing themes (nodes) from initial manual coding, memos and the research literature;

- identifying any links (relationships) between nodes;

- potentially discovering new concepts as they 'emerge from the data'; and

- writing up draft documents based on concepts/findings from the analysis.

In evaluating the suitability of NVivo, the software allows a range of data 'sources' to be grouped together. In my case the use of memos, themes, literature (journal articles, websites, reports etc.), word frequencies and concept/relationship mapping are relevant and should support the development of my constructivist grounded theory work.

Emerging Themes From Phase One of the Study

The following is an integrative review of literature pertaining to the major themes emerging from the first phase of the study. Based on early findings from the first phase, using information to learn in this context is closely related to the following emerging themes:

1. The primary conceptualisation of the multilayered nature of mutually supportive relationships between people in a developmental network (between ECAs and their mentors or developers); and

2. The primary importance of using informal information to learn in this context.

From these early findings, it could be suggested that early career academics primarily make use of informal information to learn as they build their developmental networks, by engaging in mutually supportive relationships of a multilayered nature. The connections between using informal

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information to learn, reciprocal relationships and their various 'layers' encountered by early career academics while building their developmental networks will be the primary focus of the next stages of the research project.

There is a paucity of literature related to these specific areas within the higher education context. It is clear that the affective concept of relational agency (Edwards, 2006) and higher education research, which has used relational agency as a conceptual framework (Hopwood, 2010), as outlined earlier in this literature review, can be used to support these emerging themes. However, the focus on using information to learn, as a concept that is separate from information literacy and pedagogy, is a new area for exploration. Research from other disciplines/sectors, which explores these emerging themes, could be used to support the early findings. This review is divided into two major sections: 1) Using informal information to learn and 2) Building mutually supportive relationships. In the first section, some specific types of informal information (i.e. verbal/non-verbal) are linked to key literature relevant to informal information use. Literature in the second section forms a platform for beginning to understand how these types of informal information are used during the learning process of developmental networking.

Using Informal Information to Learn

Perhaps the broadest conceptualisation of using information to learn offered in this first phase came from Participant 6, who defined information use for developmental networking as 'anything that you receive through your senses that enables you to improve, enables you to do something at a better capacity than you had previously done.' The concept of 'information as enabler of development' is potentially significant for this study and can be linked to the recent literature and discussion on information literacy as an enabler of knowledge management (Ferguson, 2009; O'Farrill, 2010).

For this study, the concept and strategy of knowledge management in higher education may act as an overarching theme (Debowski, 2006), which means that this study could also potentially contribute to the knowledge management field.

Using information to learn is described by every participant in this first phase as manifested through engaging in development, growth and/or learning through relationships between people. The following quote from an interview with participant 1 encapsulates this notion: 'Early career academics must be able to relate to the information before they can learn. The relationships between people make the learning and knowledge meaningful.' While every participant in the study mentions both formal and informal information and communication, the emphasis is clearly on the informal sphere as being most important for learning. The use of informal information to learn has not yet been the specific focus of a research study, however three areas of literature relevant to the theme could assist in developing our understanding of the phenomenon: 1) Informal information sharing and adult learning 2) Workplace information literacy and informal learning and 3) Informal information behaviour.

Informal Information Sharing and Adult Learning

Studies into informal information sharing during learning/training of workers in the hospitality industry focus on the nature of word-of-mouth information exchange (Lundberg, 2008; Lundberg & Mossberg, 2008). These studies are potentially useful for this research as participants mention verbal and social forms of information such as word-of-mouth and oral communication as being particularly useful during the learning process. Oral-based information is being studied by Turner (2010) and this area is also useful for understanding this type of information, its use in informal environments and for learning in general. To enhance the social dimension, Hara & Schwen (2006) discuss informal information sharing

within the collaborative context of 'communities of practice' and learning in the workplace, also relevant to the higher education context. On a more practical level, Sommervile & Howard (2010) explore the concept and strategy of co-designing workplace structures for informal information sharing and learning processes.

Workplace Information Literacy and Informal Learning

Lloyd & Sommerville (2006) conceptualise information literacy in the workplace as a way of knowing how to access social and physical (as well as textual and digital) sources of information for professional development. Within key studies into workplace information literacy (Hepworth, 2008; Kirk, 2005; Lloyd, 2006) informal, collaborative learning in the workplace is highlighted as a primary context for understanding and developing workplace information literacy.

Informal Information Behaviour

Informal information behaviour for this study can be closely linked to informal networking behaviour (Schwartz & Hornych, 2010) and the management of knowledge/tacit knowledge through informal networks (Nie et al, 2010).

Information Modalities and Types

The study identified specific types and modalities of information that are potentially being used during the process of learning to build a developmental network. These information types have been categorised as verbal and non-verbal.

Verbal information: It is important to note that either textual or social modalities of verbal information mentioned below can be accessed or used

in real life or through various information and communication technologies.

Social (two-way communication) – Rumour, gossip, small talk, discussions, word of mouth, ideas, inspiration, stories/anecdotes, criticism, feedback, comments, opinions, views, perceptions, questions, interviews, speeches, lectures, presentations, social network profiles, blogs, Twitter feeds.

Textual (one-way communication) – Notes**,** emails, files, news reports, videos, contact details, business cards.

Non-verbal information: Instinct, intuition, dreams, intelligence, inspiration, feelings, visuals, atmosphere / setting**,** culture (mainstream/non-mainstream).

How is Information Used to Learn While Building Developmental Networks?

To build on this notion of human relationships, in response to either of the open ended questions posed, each participant suggested and discussed the idea of 'reciprocity' as being critical to successful building of developmental relationships and networks. Such reciprocal relationships are conceptualised as being mutually supportive, in that they provide benefits in the forms of information, learning and support to the early career academic and those people who act as their mentors or 'developers'.

Dickson (1996) links informal information exchange with trust and reciprocity, however the usefulness of this study is limited as it focuses on relationship building between organisations, rather than individual learning. The use of the concept of 'social capital' as a way of building affective trust throughout and beyond organisations, has been discussed as a useful framework for understanding information sharing in higher education contexts (Totterman & Widen-Wulff, 2008). Researchers in this area have established social capital as a conceptual framework, however

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further research is needed to elucidate what this concept means and how it can be applied, particularly for higher education.

Layers of Relationships

It appears from the interviews that the nature of these developmental relationships is comprised of several layers. This 'layering' phenomenon is potentially significant for increasing understanding of how information is used to learn through these 'developmental relationships'. Several layers have been identified and these can be divided into five categories of 'relationship layers':

Relationship layer	Type
Communication modes	Face-to-face, in person only
	Face-to-face, online (video) only
	Virtual only (non-face to face)
	Blend of face-to-face, in person and virtual, long distance
	Cross-disciplinary
Cross-boundaries	Cross-profession
	Cross-cultural
	Cross-institution
Work roles	Research only
	Teaching and Learning only
	Administrative only
	Overlap of Research/Teaching/ Administration
	Academic-practitioner
Personal sphere	Intellectual
	Emotional

Physical

Spiritual

Creative

| **Temporality** | Stages / History / Journey (of a developmental relationship) |

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Appendix C: Revised Information Sheet and Interview Guide

QUT Queensland University of Brisbane Australia	PARTICIPANT INFORMATION FOR QUT RESEARCH PROJECT
Building developmental networks of early career academics: An informed learning perspective	

Research Team Contacts			
Faye Miller PhD Candidate Faculty of Science and Technology Queensland University of Technology Mob. 045 038 3775 Faye.miller@student.qut.edu.au	Professor Helen Partridge (Principal Supervisor) Faculty of Science and Technology Queensland University of Technology +61 7 3138 9047 h.partridge@qut.edu.au	Professor Christine Bruce (Associate Supervisor) Faculty of Science and Technology Queensland University of Technology c.bruce@qut.edu.au	Dr Brian Hemmings (External Associate Supervisor) School of Education Charles Sturt University bhemmings@csu.edu.au

DESCRIPTION

This project is being undertaken as part of a PhD research project for Faye Miller. The purpose of this project is to develop an in-depth understanding of how early career academics (ECAs) use information to learn as they build, utilise and maintain their developmental networks. Findings will be used to:

- Develop a theoretical model of early career academics' use of information to learn how to create and utilise their developmental networks, for the purposes of enhancing their research and teaching, and
- Inform academic development strategies and information development strategies to enhance mentoring and networking training programs at universities for early career academics.

PARTICIPATION

The research team requests your assistance because you have been identified as an early career academic with the following characteristics:

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- Are within the first 5-6 years of a full time permanent appointment to a university faculty, who engages in both teaching and research activities;
- Have significant industry/professional experience before joining academia; and
- Have experience with networking for professional and personal development towards learning how to be an academic.

Your participation in this project is voluntary. If you do agree to participate, you can withdraw from participation at any time during the project without comment or penalty. Your decision to participate will in no way impact upon your current or future relationship with QUT.

Your participation will involve an online interview using videoconferencing software (QUT Elluminate or other agreed software), and will take approximately 45 minutes. The interview will be recorded using a digital voice recorder. Questions (open ended) will include (for example):

- Can you tell me about your experiences with developmental networking as an early career academic?
- What informs you as you learn to build your developmental networks?

EXPECTED BENEFITS

It is expected that this project will directly benefit you through the findings being incorporated into information and academic development strategies with emphasis on improving support for early career academics.

RISKS

There are no risks beyond normal day-to-day living associated with your participation in this project.

CONFIDENTIALITY

All comments and responses will be made anonymous and will be treated confidentially. The names of individual persons are not required in any of the responses. Participants will be given transcripts of their interview and may be asked to verify comments prior to final inclusion. Audio recordings of the interviews will be destroyed after the contents have been transcribed. For this study all interviews will need to be recorded. Members of the research team will be the only persons authorised to have access to the audio recordings. All data (hard copy and electronic) will be kept in a secure location to ensure confidentiality.

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CONSENT TO PARTICIPATE

We would like to ask you to sign a written consent form (enclosed) to confirm your agreement to participate.

QUESTIONS / FURTHER INFORMATION ABOUT THE PROJECT

Please contact the research team members named above to have any questions answered or if you require further information about the project.

CONCERNS / COMPLAINTS REGARDING THE CONDUCT OF THE PROJECT

QUT is committed to researcher integrity and the ethical conduct of research projects. However, if you do have any concerns or complaints about the ethical conduct of the project you may contact the QUT Research Ethics Unit on +61 7 3138 5123 or email ethicscontact@qut.edu.au. The Research Ethics Unit is not connected with the research project and can facilitate a resolution to your concern in an impartial manner.

Thank you for helping with this research project. Please keep this sheet for your information.

Dear

My name is Faye Miller and I am a PhD candidate studying through Queensland University of Technology.

I am emailing you to ask whether you may be interested and available to participate in a 45 minute online research interview. The interviews will be confidential and anonymous.

This is part of a research project, on the topic of *'Building developmental networks of early career academics: An informed learning perspective'*. A project information sheet is attached. The research work has been reviewed by the University Human Research Ethics Committee at QUT and confirmed as low risk.

The aim of this study is to improve our understanding of the networking experiences of early career academics in both professional and personal contexts, and to contribute to improving support for early career academics.

I am currently looking for participants who meet the following criteria:

1) Must be an early career academic - an academic within their first 5 years of a full time permanent appointment to a uni Faculty, who engages in both teaching and research activities

2) Must have significant industry/professional experience before joining academia

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3) Must have experience with networking for professional and personal development towards learning how to be an academic

The interviews are scheduled for January/February 2012.

If you are interested and available to participate in this study, and you think that you do meet these criteria, please let me know and I will contact you to set up a day and time to conduct the interview. Once this has been established you will receive an email confirmation with the full details for participating in the interview including a consent form.

If you have any questions or comments about the interviews please do not hesitate to contact me.

Many thanks for your consideration of this project.

Faye Miller

PhD Candidate
School of Information Systems
Faculty of Science and Engineering
Queensland University of Technology

Building developmental networks of early career academics: An informed learning perspective

Interviews

Discussion Guide – Duration: 45 mins

1.   Introduction (*5 minutes)*

   - Greeting
   - Introduction to the project overall
   - Purpose of the interviews
   - Recording
   - Confidentiality
   - Consent process
   - Individual opinion (no right or wrong answer)

2.   Brief get acquainted period *(5 minutes)*
        Participant will be asked about work experience, current employment (ie role, responsibilities).

3.   Major questions: (30 mins)

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Can you tell me about your experiences with developmental networking as an early career academic?

Potential prompt questions:
- How important is networking to your career development?
- Why do you network? What are the specific benefits?
- Can you tell me how you learned how to network?
- Can you tell me who the key people are within your networks?
- Can you tell me about your relationships with them?
- Can you describe how you built relationships with these people in your networks?
- What is your understanding of a 'support system' for early career academics?
- Do you think you have a support system in place?
- Who are the key people within your 'support system'?
- What makes these relationships supportive?

What informs you (or helps you) while learning to build your developmental networks?

Potential prompt questions:
- How do you go about learning as you build your networks?
- How are you using information in that process?
- What information do you use in that process?
- What types of information are useful when networking?
- What types of information are less useful when networking?
- How do you find the types of information you need to network effectively?
- What types of information skills do you think are important in order to be able to use information to network?
- Why are these skills important?

4. Summary *(5 minutes)*

- Recap what has been done and why
- State what will happen next in the research process and the availability of results
- Question & Answer Time
- Thank participant
- Ask for recommendation for another ECA

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Appendix D: Early Categories Developed from Open Coding

Two major themes have emerged from open coding of four interviews:

1) Early career academics use informal information sources while learning to build their developmental networks

2) Early career academics experience informed learning while developmental networking as building mutually supportive relationships between themselves and other people

Constant comparison will now focus on two categories (and sub-themes):

Informal aspects
>Informal information
>Informal networking
>Informal meetings
>Informal learning
>Informal communication
>Human knowledge
>Human experience
>Human expertise
>Tacit knowledge
>Personal knowledge
>Past experience

Mutually supportive relationships
>Shared information
>Shared understanding
>Reciprocity
>Trust building
>Social capital
>Emotional support networks
>Friendships
>Knowing people
>Collaborative learning
>Knowledge sharing culture
>Sense of belonging
>Confidence building

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Appendix E: Key Questions Used During Data Analysis

The key questions that guide coding of interview transcripts and theme development are:

- o What is a developmental network for an early career academic?

- o What information is used to learn while building developmental networks?

- o How is information used to learn while building developmental networks?

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Appendix F: What is a Developmental Network for an Early Career Academic?

All of the early career academics interviewed for this study stated that building networks for developmental purposes related to their work roles is essential for learning how to be an academic. This finding strengthens the rationale presented in the proposal, providing evidence that the focus of this research topic is significant and that developmental networking theory has high potential as one major area of the overall conceptual framework for this study.

The interviews revealed multiple sources of development (or 'developers') within their networks. These specific sources include:

PhD experience
- Supervisors (or potential supervisors)
- Examiners
- PhD students

Six out of the eight early career academics interviewed were either completing or had completed their doctoral studies. The remaining two participants were planning creative works by professional doctorates. Given the importance of the PhD for early career academics for both learning and job requirement reasons, it is not surprising that the PhD experience is discussed as a primary source of development.

Formal mentoring
- Assigned mentor
- Head of School
- Dean

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Each participant mentions that upon commencement of their employment as an academic they were assigned a mentor from within their own School. Participants mention that they did not choose their 'formal' mentors and the majority of them comment that a randomly assigned mentor is not a genuine member of their developmental network, compared to a mentor they have selected for themselves. Each participant mentions work supervisors such as Heads of School (including former Heads of School) and Deans as primary sources of information and support for developmental opportunities, however some mention that ongoing developmental support is provided or could potentially be provided by other academics other than current Heads of School who, due to heavy workloads, may not have the time capacity that early career academics require. In a few cases, where participants have had more than three years experience as an academic, they have acted as a formal mentor or research supervisor for another academic and/or research student. In these cases, participants describe their experiences as a formal mentor as a major source of building and expanding their developmental networks in terms of collaborating with other academics and postgraduate students.

Informal mentoring
- Senior academics
- Peer mentors
- Other professionals

Informal mentoring is often mentioned as participants describe their experiences with certain colleagues both within and outside of academia providing developmental advice and assistance. Participants mention that often informal mentoring 'happens naturally' and is proactively offered by the mentor. In some cases, where an early career academic is in the process of seeking an informal mentor, they mention that it is a challenge to find a suitable informal mentor who can meet their specific learning and

developmental needs. There also appears to be a key role for professional colleagues outside of academia (for example, practitioner colleagues known through the early career academic's previous industry experience, or friends or relatives who are related professionals) in providing informal mentoring in a more personal way that may not be possible within their immediate work environment, but is just as important to their professional and personal development as any mentoring taking place within academia.

Information and Research Support
- Library
- Research Development
- IT

Information and research support from within own institution and from outside of it, is often included in participants' descriptions of their developmental network. General and specialist support services related to the various roles within their jobs, appear to be seen as vital to sustaining their overall job performance. While some participants include 'one-way relationships' with non-human text-based resources accessed through online databases or websites as part of their developmental networks, the majority conceptualise their relationships with support services as human to human regardless of the mode of communication or whether they are 'faceless' due to virtual interaction only. In this way, the relationship is perceived as 'two way' regardless of communication mode.

Academic development
- Educational Designers
- Professional development programs

Learning and Teaching services (Educational Designers) and professional development programs offered by the university are mentioned as key areas of their developmental networks. However, the focus appears to be

on early career academics knowing how to select the most suitable person with the right expertise for the task they need to complete, and this knowledge is not as straightforward as looking up the assigned person (such as an Educational Designer) from these areas. In the same way, it is suggested by several ECAs that participation at professional development workshops and seminars, which are often perceived as providing general information for development, does not mean that the developmental assistance meets their specific needs and context. Formal developmental programs are seen as good informal learning opportunities in terms of networking with other early career academics and support people.

Colleagues/peers
- Within the same School
- Outside of School/Discipline
- Practitioners

Each participant describes several examples of working collaboratively on team- based projects, that occur both within their Schools, or across different Faculties, institutions, industries and disciplines. In general, colleagues are vital sources of both information and support. Some ECAs describe interdependent relationships between themselves and close colleagues whom they work beside daily. While every ECA interviewed for this study described collaborative learning activities, the degrees or levels of 'closeness' between colleagues appear to vary depending on the disciplinary context.

Family
- Within academia
- Outside of academia

Family members are mentioned as key people for developmental support. Each participant acknowledges the role of family mainly for providing

emotional support, and in some cases, where relatives possess relevant professional expertise, for providing information, advice and technical support.

Friends
- Within academia
- Outside of academia

Participants mention the role of friends in both a personal sense and professional sense. 'Academic friends' are described as providing mutual companionship and motivation that reaches across both professional (e.g. academic activities) and personal (e.g. outside interests, events and leisure activities) spheres. Friends from outside academia are mentioned by some participants as providing information and support that is independent of bias or perspectives of friends within academia

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Appendix G: What Information is Used to Learn While Building Developmental Networks?

The participants have identified many different forms of information as being used in the process of building networks and learning. It is clear that their responses to conceptualizations of information and information use have been influenced by indoctrination into a range of disciplines and backgrounds and this goes towards explaining the emerging emphasis on experiences as being highly contextual. Participants have described using both formal and informal information to learn while networking. Informal information appears to be of primary importance for early career academics in building their developmental networks. Where formal information has been mentioned, it is only to illustrate that informal information is gathered or used to make sense of formal information.

Appendix H: Example of Focused Coding on Interview Transcript

197   I: Thanks very much, I think we've covered the first question quite well. We'll
198   move on to the next main question which is, can you tell me what informs you as
199   you learn to build your developmental networks?

200

Receiving feedback from people face to face
Receiving information from overseas collaborators
Interacting on Skype
Learning through listening
Learning by collaborating strongly in the network
Learning by relating
Developing relationships
Growing over time

201   P9: I guess it's the feedback that I get from people, face to face in person, and a
202   lot of my collaborators are overseas so I do get a lot of information from them
203   through interactions on Skype and I guess how I learn from those is to mainly

Being informed by her relationships
204   listen and to be as strong a collaborator in that network as I can. So what informs

Giving what they need
205   me is the relationships that I have, the development of those relationships and

from her
206   how they grow over time. So what they need from me and also I try to ask for the

Asking what she needs from them
207   things that I need as well in a give and take relationship.

Giving and taking in a relationship
208

209   I: So what kinds of information do you use within that process of learning?
210   You've talked a bit about your feedback and your collaborative networks,
211   obviously the human element is important for you, are these any other sources
212   that you can think of that you might use while you're going through your
213   professional development activities, any sources of information that you might
214   consult?

215

216   P9: Yeah, so I read journals about professional development. I have newsletters, I

Reading professional
217   have a Tomorrow's Professor newsletter that I read, to get information on

development journals
218   teaching, it's a publication sent out by Stanford university, it's really great. I try

Reading newsletters
219   to read books about teaching, for my development as a teacher, particularly

about international teaching
220   about brain based learning and how to deliver information more clearly. I try to

Reading books about
221   get feedback through internet journals, newsletters those sorts of things as well,

Delivering information more clearly while teaching
Getting feedback through international journals and newsletters
Helping herself develop

teaching
222   to help myself develop.

Developing teaching 223
and learning
224   I: What sorts of skills are important in being able to access that information?

knowledge
225

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Appendix I

Table 4: Differences in Information Types Used in Learning Spaces for Outer Focus Experience

	Texts	**Tools**	**Humans**	**Cultures**	**Environments**
Programs	Research/ industry related print, digital, multimedia Personalised (personal): emails, notes, memos, personal interviews from media (magazines, podcasts, radio, television, presentation slides, blogs, newsletters, tweets, status updates Generic (impersonal): published/un published books, journal articles, bibliographies, conference papers, working papers, grant applications.	Research/ industry related technologies Scientific equipment for lab/fieldwork Hardware and ICT: desktop/laptop computers, mobile communication devices (smart phones/tablets), landline phones, secure electronic file storage for research datasets, data preservation tools Software: Word processors, data analysis programs, search engines, databases, research apps.	Research/ industry related resources – initial encounters Portfolios CVs Bios memoirs One-off interview Business cards Personal introduction Elevator speeches.	Research/ industry related cultures or behaviours Sharing vs hoarding research information Research related humour Personalities and styles Positive/ negative emotions around issues of respect, belonging, trust, collegiality, recognition Intercultural interaction, languages, cultural beliefs and integration.	Research/ industry related environments Physical spaces/ atmospheres: office spaces, infrastructure, places of fieldwork/ geographic locations for research Climates: political, natural

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Courses	Educational, research or industry related print, digital, multimedia.	Educational, research or industry related technologies	Educational, research or industry related resources – initial encounters	Educational, research or industry related cultures or behaviours	Educational, research or industry related environments
	Personalised (personal): emails, notes, memos, personal interviews from media (magazines, podcasts, radio, television, presentation slides, blogs, newsletters, tweets, status updates	Information and Communication technologies: telephones (mobile and landline), internet (email), video, teleconferencing hardware and software	Portfolios CVs Biographies memoirs One-off interviews Business cards Personal introduction Elevator speeches.	Sharing vs hoarding research information Research related humour Personalities and styles Positive/ negative emotions around issues of respect, belonging, trust, collegiality, recognition Intercultural interaction, languages, cultural beliefs and integration.	Physical spaces/ atmospheres: office spaces, infrastructure, places of fieldwork/ geographic locations for research Climates: political, natural
	Generic (impersonal): published/ unpublished books, journal articles, bibliographies conference papers, working papers.				

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| Events | Research event related print, digital, multimedia.

Personalised (personal): emails/ invitations from conference people

Generic (impersonal): presentations (live and recorded as podcasts) Conference papers Research posters Conference programs, websites, email advertisements/flyers from event convenors Event related tweets Popular media resources | Research event related technologies hardware/ software

Communications media (television, radio, webcast)

Scientific equipment for demonstrations

Mobile devices for social media use

Equipment for multimedia presentations | Research event related resources – initial encounters

Online/print biographical speaker information Business cards Brief informal discussion at social events | Research event related cultures

Cultures/ behaviours specific to global/ geographical locations of events, traditions, customs | Research event related environments

Physical spaces/ atmospheres: venues, locations

Climates: political, natural |
|---|---|---|---|---|---|

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Community	Research, teaching or industry related print, digital, multimedia Personalised (personal): emails, notes, memos, personal interviews from media (magazines, podcasts, radio, television, presentation slides, blogs, newsletters, tweets, status updates Generic (impersonal): published/un published books, journal articles, bibliographies conference papers, working papers, grant applications.	Research, teaching, or industry related technologies Scientific equipment for lab/fieldwork Hardware and ICT: desktop/laptop computers, mobile communication devices (smart phones/tablets), landline phones, secure electronic file storage for research datasets, data preservation tools Software: Word processors, data analysis programs, search engines, databases, research apps.	Research, teaching or industry related resources – initial encounters Portfolios CVs Biographies / memoirs One-off interviews Business cards Personal introduction Elevator speeches.	Research, teaching, or industry related cultures or behaviours Sharing vs hoarding research information Research related humour Personalities and styles Positive/ negative emotions around issues of respect, belonging, trust, collegiality, recognition Intercultural interaction, languages, cultural beliefs and integration.	Research, teaching or industry related environments Physical spaces/ atmospheres: office spaces, infrastructure, places of fieldwork/ geographic locations for research Climates: political, natural
Home	Personal life related print, digital, multimedia Personalised (personal): Email Instant messages Videoconfere ncing sessions Personal recommendat ions Generic (impersonal): Blog articles	Personal life related communication technologies hardware/ software	Personal life related resources – initial encounters	Personal life related cultural behaviours, national, intercultural communicati on and social behaviours	Personal life related environments Physical spaces/ atmospheres: (home and community) Personal spaces where work at home occurs National/local climates: political, natural

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Social Media	Research, teaching, industry related print, digital, multimedia Personalised (personal): messages/ status updates, tweets Generic (impersonal): shared articles, website links, announcements	Research, teaching, industry related technologies hardware/ software	Research, teaching, industry related resources – initial encounters Online profiles Virtual business cards Opportunities Digital portfolios	Research, teaching, industry related cultures or behaviours Overlap of virtual/real time cultures	Research, teaching, industry related environments Physical spaces/ atmospheres: Geographical locations, time zones Climates: social media policy, ethical considerations in use/non-use of social media

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Appendix J

Table 5: Differences in Knowledge Types Used in Learning Spaces for Inner Focus Experience

	Experiential	Personal	Technical	Disciplinary	Interdisciplinary
Programs	Lessons learned Unsuccessful research activities Cases/stories Research strategies/ plans Consultancy advice Perspectives Feedback Guidance from research performance reviews	Research goals/ Orientations Work style preferences Personalities Research learning needs Emotions related to research Research networks/ Collaborations Research journey Locations Personal reasons for research choices	Tools/user reviews of research technology Research skills Methods	Key authors Emerging authors Research community networks History of discipline	Relationships to other disciplines Interdisciplinary literature reviews
Courses	Lessons learned Unsuccessful research, educational industry activities Cases/stories strategies/ plans Consultancy advice Perspectives	Research and teaching goals/ Orientations Work style preferences Personalities Research/ teaching learning needs Emotions related to research and teaching networks/ Collaborations Research /teaching journey Locations Personal reasons for choices	Tools/user reviews of research technology Research skills Methods	Cultural knowledge impacting on discipline Location meaning impacting on discipline	Cultural knowledge impacting across disciplines Location meaning impacting across disciplines

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Events	Maps of physical/ virtual locations of events Navigational knowledge Cultural knowledge	Key people related to conferences Cultural knowledge	Technological communication enablers	Major conferences in own field/ discipline and impact levels Cultural/environmental knowledge impacting on discipline	Major conferences across disciplines/ Interdisciplinary Impact levels Cultural and environmental knowledge impacting across disciplines
Community	Lessons learned Unsuccessful project activities Cases/stories strategies/ plans Consultancy advice Perspectives	Key people related to community/ Industry Research teaching, industry goals/ orientations Work style preferences Personalities learning needs Emotions related to research, practice and teaching networks/ Collaborations Research practitioner journey Locations Personal reasons for career/service choices	Tools/user reviews of research technology Research skills Methods	Key authors Emerging authors Industry/ community networks History of discipline/ Industry Cultural knowledge impacting on discipline Location meaning impacting on discipline	Relationships to other disciplines/ industries Cultural knowledge impacting across disciplines Location meaning impacting across disciplines
Home	Catalysts for reflection and action	Catalysts for reflection and action Personal choices	Tech enablers for long distance relationships	Environmental knowledge (home/ work space) impacting on discipline	Environmental knowledge (home/ work space) impacting across disciplines
Social Media	Social media experience	Key people Endorsements Recommendations	Tech enablers for social media	Shared texts within discipline Cultural behaviours (online information sharing/ Peer evaluation) impacting on discipline	Shared texts across disciplines Cultural behaviours (online information sharing/ Peer evaluation) impacting across disciplines

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