IT TAKES A VILLAGE: PERCEPTIONS OF THE SFU EDUCATION RESEARCH ASSISTANT EXPERIENCE

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THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF EDUCATION IN EDUCATIONAL LEADERSHIP

In the
Faculty of Education

SIMON FRASER UNIVERSITY

Spring 2009

APPROVAL

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Degree: Doctor of Education

Title of Research Project: IT TAKES A VILLAGE: PERCEPTIONS OF THE SFU EDUCATION RESEARCH ASSISTANT EXPERIENCE

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ABSTRACT

This qualitative case study explores the perceptions of the Simon Fraser University (SFU) Education research assistant (RA) experience. The purpose of this investigation was to understand what RAs do in their research assistantship. The case study involved seventeen RAs; data consisted of seventeen questionnaires and three interviews. To structure the investigation, activity theory was used to frame the research questions, the data collection instruments and parts of the analysis. The activity theory analysis suggests that RAs are motivated to support themselves financially while interacting with other faculty to learn research skills, possibly for research productivity. These RAs use various intellectual resources, a computer and skills to manage their time and the project. They work on various RA tasks, depending on the length of time they have been a RA. The reported outcomes include intellectual growth, valuable interaction with the community, research productivity, various influences on their PhD and networking outside of the RA activity system's community.

Based on this activity system view of the RA experience, it seems the presumption that the RA-ship is mostly about money, research and a dyadic relationship is questionable. Viewing the RA experience in a new light leads to the understanding that it is the village that contributes to the RAs' growth and socialization instead of one or two individuals. Notwithstanding the many environmental constraints of the Canadian post-secondary system and at SFU that limit financially funding RA-ships, it is suggested to build on the finding that RAs report the broad community as critical to their intellectual development. Various workshops might enhance the PhD experience and other steps taken to enrich the research assistantship by intentionally integrating the other aspects of the RA's lifeworld (work experience, PhD career) into the research assistantship.

Keywords: research assistant; graduate studies; graduate students; doctorate studies

Subject Terms: Graduate research assistants - Canada

DEDICATION

To Michael – may you continue to support and embrace life-long learning.

ACKNOWLEDGEMENTS

I would like to acknowledge some of the villagers although I am thankful to many people who contributed to my doctoral journey. First, and foremost, I owe Dr. Amundsen, Senior Supervisor, special thanks for her guidance, patience and commitment over the doctoral journey. The committee members, Dr. Wexler and Dr. McAlpine, were active participants providing comments that sharpened my analysis and thesis. I am indebted to my dedicated committee who cared deeply about my intellectual experience. I thank the RAs who volunteered to share their experience. In addition to these academics in my village, my gratitude goes to my "sisters" who provided emotional support and friendship. I must acknowledge my son, Michael, who shared his mom for four years. Thank you for your unwavering support Mike! To my mom, thank you for instilling in me the belief that where there is a will, there is a way.

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GLOSSARY

FOE	Faculty of Education
RA	Research assistant
RA-ship	Research assistantship
SFU	Simon Fraser University
TA	Teaching assistant

CHAPTER 1: INTRODUCTION

"if you can't get a fellowship, try to find a job as a research assistant"
(Baird, 1990, p.383).

As I began my doctorate journey in 2005, I reflected on my chartered accountant (C.A.) academic journey twenty years earlier. I chose to pursue my university degree and CA studies through a co-operative university program, which had alternating work and study semesters. This co-operative work/study approach prepared me both academically and professionally for my accounting career. Upon reflection, I felt there were many parallels in the CA and doctorate journeys and wondered what I could learn from my previous experience that would apply to this new journey.

Over the five years, I received training as a CA student to understand conceptually and implement the necessary procedures to gain assurance that the financial statements stated fairly the entity's financial position and performance. This work experience integrated the academic knowledge and work experience while socializing me into the CA profession. After graduating, I successfully passed the final CA exam of four consecutive days for four hours each day. When I wrote my CA exams, the pass rate was about 50%. The exam's purpose was to determine my readiness to practice independently as a CA.

The doctorate journey is a similar long journey with completion rates ranging from 20 to 80%, depending on the discipline (Lovitts, 2001, p.12). Course work provides the conceptual understanding, which acts as a foundation for the design and implementation of a research proposal. It culminates in a public defence wherein it is decided whether the candidate is capable of conducting independent research based on his/her thesis (Golde & Dore, 2001, p.5).

The parallels between the CA and doctorate journey are striking. Due to entrance requirements, both recruit highly capable candidates. Yet many do not obtain their credential. In 1986, I readied myself by obtaining relevant work and academic experience and choosing to study with like-minded people, mainly drawn from my Masters of Accounting classmates and work colleagues. Our professors were our

mentors. I relied on a community or a "village" of people who believed in my pursuit and supported me. Therefore as I embarked on another academic journey, it seemed natural to look for ways to enhance my experience and increase my chances of succeeding if possible. I chose a local doctorate program to work with like-minded professionals. I received advice to combine a research assistantship (RA-ship) with my studies since I wanted to learn about research skills, beyond my own thesis, and enhance my teaching portfolio with research skills.

As a doctoral student and a RA, I envisioned myself as the apprentice learning new knowledge and finding my identity as a novice researcher. At the same time, as a mature student I wanted to proceed deliberately through the doctorate program. My curiousity about how the research assistantship contributes to the doctoral journey was the impetus for this thesis.

My initial reading indicated that there is a perception that a RA-ship is beneficial to doctoral students. In 1990 Baird investigated whether there were program characteristics that contributed to the duration of doctoral study (p. 371). After considering his correlational findings and other literature, Baird dispensed specific sage advice to new or prospective graduate students who would like to keep their time in graduate school to a minimum: "*if you can't get a fellowship, try to find a job as a research assistant*" (Baird, 1990, p.383). Further, he advised graduate departments and faculty, "*Try to obtain funds ... that will allow as many graduate students as possible to have assistantships*" (Baird, 1990, p.383). Similarly, sixteen years later in 2006, in another large correlational study, Nettles and Millett found that a research assistantship is highly predictive of research productivity, which correlates with PhD completion. As such, they suggest that a research assistantship should be integral to an optimal PhD experience (Nettles & Millett, 2006, p.200). Yet the student's voice was mostly silent in the literature. Thus my interest grew in understanding the RA-ship from a student's perspective which appears to be under-researched.

This thesis is a case study of the RA phenomenon at Simon Fraser University (SFU) from the perspective of PhD students in the Faculty of Education (FOE) enrolled in Curriculum Theory and Implementation or Educational Psychology.[1] The modest case study involved seventeen questionnaires and a one-hour interview with three RAs. In

[1] SFU is located in the Greater Vancouver area of British Columbia, Canada. Further information on the university can be found in Chapter Four and Appendix Four.

Chapter One I explain the purpose of the study, why I chose activity theory and how I developed the initial research question. In Chapter Two, I discuss the relevant literature that shaped my preliminary understanding of the RA phenomenon and revisit the research questions in light of the literature. This chapter starts the audit trail that Yin (2003) favours whereby there is a chain of evidence allowing others to follow my process from the research questions through methodology, findings and interpretations (p.105). In Chapter Three I explain my design of the case study and the approach to the analysis, including the tools developed to manage the data. Relying on Stake (2006) I explored the *general* RA phenomenon (the forest) by looking at the *particular* RA experience (the tree). A concluding Chapter Three table shows the link from the research questions to the interview and questionnaire instruments. Following in Chapter Four, I describe the context of the case study. I provide information about SFU, the Faculty of Education and its research environment in particular as there is an assumption that research funding is a prerequisite to fund RA-ships. In Chapter Five I report the findings from the three experienced RAs and the questionnaire administered to another fourteen RAs. Chapter Five provides the initial description of the RA experience. This is the first stage of Miles and Huberman's (1994) data transformation: raw data into a synopsis, aimed at describing the RA phenomenon as reported by the respondents (p.86). To maintain the chain of evidence, a Chapter Five table summarizes the process up to Chapter Five (research questions –activity theory – literature – instruments) and then the table reports the findings. The Chapter Six discussion focuses on the cross-data analysis and interpretation using the literature and activity theory. This chapter handles two more stages in Miles & Huberman's (1994) data transformation – weaving a story about the *general* RA phenomenon (the forest) from what I distilled from the *particular* (the trees) and synthesizing it into a wider body of knowledge (activity theory and the literature) (p.87). The Chapter Five description evolved into a thicker description as the cross-data analysis shaped the findings. A Chapter Six table completes the chain of evidence by illustrating the trail from research question to ultimate interpretation. Lastly in Chapter Seven, I heed Baird's (1993) advice who states "the key to the utility of any study is the extent to which it affects actual behavior" (p.11). As such, I translated my findings and interpretations of the SFU Education RA phenomenon into what I believe are feasible recommendations for academic practice, future research and administrative policy.

1.1 Problem Statement and Research Question

The literature indicates a RA-ship is important to the PhD journey for varying reasons. Despite many PhD students working as a RA, the nature of the RA-ship seems to be under-researched in terms of qualitative studies of the RA phenomenon. My thesis contributes to the PhD dialogue by asking, "How do SFU Education PhD students describe their RA experience?"

While Chapter Two, *Literature Review*, details the extant literature, briefly over many years the RA-ship has been included as a variable in correlational research. Some studies recommend a PhD student obtain a RA-ship (Baird, 1990; Nettles & Millett, 2006). Other studies suggest a RA-ship is an important financial variable (i.e. Baird, 1990, Sheridan, 1990; Bowen & Rudenstine, 1992; Lovitts, 2001). Nettles and Millett (2006) note student interviews bring a different kind of understanding (p.226) and as a result a qualitative study might allow the RA's voice to be heard. Anecdotally, the assumptions are that students engage in research-related activities. Also, some students and faculty speak favourably about the research assistantship while others are critical. This qualitative research study explored the holistic RA experience to increase the understanding of the students' motivations, activities, and interactions in a research assistantship. My intent was to uncover the nuances of the RA experience in order to unpack it and make suggestions for practice. Further, as the RA experience is an integral part of the PhD experience for many Education students, I was curious how the RA-ship might influence the PhD experience. As such, this research informs other research focusing on different aspects of the PhD experience.

The research question is revisited and supplemented with additional questions at the end of Chapter Two. After Chapter Two it will be clear how the theoretical frame and the extant literature shaped the research questions. Chapter One concludes with a discussion of the context of the RA phenomenon and the theoretical framework.

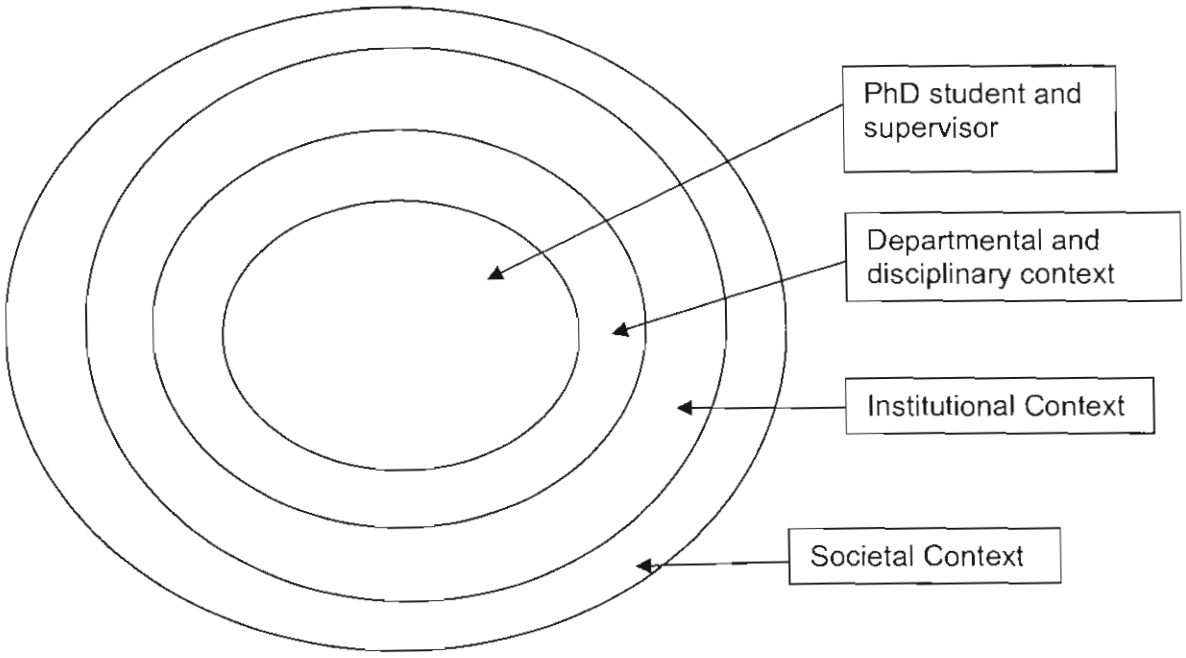
1.2 Context of the RA Phenomenon

PhD students work as RAs during their PhD program. It appears to be a common experience for many graduate students as Statistics Canada reports that an estimated 50% of all earned doctorates report RA earnings as either their primary source of financing or their secondary financing source (2005, p. 11). Clearly a research

assistantship is an important financial variable in the PhD experience (e.g. Baird, 1990; Bowen & Rudenstine, 1992; Sheridan, 1990). While my case study focuses on the RA experience, it is within the context of the PhD program. Thus, I felt it was important to become familiar with and be aware of the factors that influence the PhD experience which might encroach on the RA experience.

There are many contextual factors, which could influence the RA experience. In Chapter Four I describe the specific institution and faculty environment. Here I look more generally at the PhD experience. I found the McAlpine and Norton (2006) model (Figure 1.1) useful to keep me aware of the larger context and to organize the PhD studies during the literature search. In that process, I started with a wide view and then narrowed down the graduate studies that included a RA-ship in some way.

Figure 1.1 Nested Contexts Influencing PhD Retention and Completion. (Adapted from McAlpine and Norton, 2006)



This review of the graduate literature indicated a constellation of factors that seem to influence PhD time-to-degree, completion and the experience. McAlpine and Norton (2006) suggest their framework offers a heuristic to think about doctoral students' concerns (p.12). St. Clair (2005) defines an empirical heuristic "as models of

relationships between factors based on empirical evidence but without a claim to universality. Their value is not infallible prediction, but the ability to aid human inquiry and contributions to reflective practice" (p.436).

Considering these views, the McAlpine and Norton (2006) heuristic facilitated my inquiry and reflection on the PhD experience and the role of the RA-ship. The idea of the nests is that "there is more immediate influence between close contexts and less immediate influence between contexts further apart; however, the nested nature implies that all contexts have some influence" (McAlpine & Norton, 2006, p.6). The societal context constrains and enhances post-secondary policies and practices. The institutional context constrains and enhances the departmental policies and practices. Lastly, the departmental and disciplinary content may influence the PhD experience. I considered how the RA experience might be influenced by these societal, institutional and departmental factors. The model reminded me that the RA experience cannot be isolated from the larger context of the PhD experience. Thus I read some of the key studies relevant to understanding the PhD experience. Since current research indicates that academic discipline influences the PhD experience (e.g. Bair & Haworth, 2005; Golde, 2005), it is important to emphasize I conducted this research in a Faculty of Education. The importance of discipline became very evident during thesis committee discussions. Since a committee member and I work in a Faculty of Business, our business experience biased our initial viewpoints. Thus it was necessary to increase my understanding of the Faculty of Education to avoid misinterpreted data, incomplete analysis or suggestions for practice that might be inappropriate. I interviewed the Faculty of Education research coordinator and gathered information from SFU's website and other publicly available information. Chapter Four describes this specific Education context.

In addition to discipline, the concerns in the literature about societal factors (economic pressures, university accountability), which are located in the outer nest of the model, put pressure on the next nest, the institution. The response of the institution to these economic pressure influences the next nest, which is the department. Considering these studies, I investigated the research record at SFU and considered other societal factors. As noted previously, Chapter Four describes the context of the case study.

The empirical studies that relate certain departmental factors to completion are located in the departmental – discipline contextual nest. Finally in the middle nest are the research studies about the student and the senior supervisor who might interact as research assistant and RA supervisor. Understanding the graduate literature categorized into a nest allowed me to appreciate the context of the various issues and how the concerns in a particular nest might put pressure on the RA and the boundaries of this case study. Understanding the contextual nests illustrates that the RA phenomenon is complex. To deal with this complexity, I chose activity theory to investigate the RA experience as I felt the guidance from the theory's structure and principles would benefit the study.

1.3 Theoretical Perspective: Activity Theory

Choosing a theoretical lens[2]

A theoretical perspective guides the research questions, the kind of data collected and the analysis undertaken and provides the lens with which to interpret the findings. I decided a structured investigation would be beneficial based on my understanding of the complex nature of the RA phenomenon. I felt I needed a frame that would allow me to look at the RA phenomenon within the context of the PhD experience. Also, I took into account the theoretical underpinnings of previous studies, traditions of the discipline and the research benefits of applying a particular lens. Further, I was aware that the choice of the theoretical lens might affect how the research community received the study.

Sometimes previous research may provide guidance in selecting an appropriate theoretical framework. However, most of the research focusing on doctoral students has been largely composed of correlational studies based on surveys and most often, atheoretical.[3] Additionally, large correlational studies fail to reveal details about the phenomena under study. Therefore in the case of the research on doctoral studies and in particular, the research assistantship, the next step arguably, was to investigate the nature of the RA experience.

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[2] I gratefully acknowledge the assistance and dialogue with Dr. Robert Bracewell and Dr. Anthony Parè of McGill University, Montreal who provided comments on an earlier draft of this section which was presented at the CSSHE 2007 Conference in Saskatoon, Saskatchewan.

[3] Chapter Two: Literature Review elaborates on the previous research studies.

I chose a naturalistic study to investigate the lived experience of the RA thus allowing me to gain a holistic view of the context under study (Miles & Huberman, 1994, p. 6). In a case study, the researcher's task is to figure out how to uncover the emic (participants') view of the phenomenon (Gall, Gall & Borg, 2003, p.438). At the same time, the investigator maintains his/her "outsider" viewpoint (the etic perspective). This position allows the researcher to make sense of the case conceptually using a theoretical framework (Gall, Gall & Borg, 2003, p.438). Thus, I felt a clearly articulated theoretical framework would support the investigation.

Activity theory framed the initial data collection instruments to investigate what was going on in the research assistantship. It was not my intent to use activity theory to reify the direction of the research as an activity theory study. Rather the intent was to use the theory as a *perspective* along the lines that Wenger (1998) suggests: "A perspective is not a recipe ... it acts as a guide about what to pay attention to, what difficulties to expect and how to approach problems" (p.9). In this section, I review the basic principles of activity theory, its use in academic practice, and its application to an investigation of the research assistantship.

What is activity theory?

I found activity theory described in many ways in the literature although the central premise of *activity* dominates. Engeström (1990) describes activity theory as an interdependent view of human activity involving the individual (subject), tools, a problem space (or object), the community of people who are similarly concerned with the problem, the division of labour between community members, and the conventions (rules) regarding actions (p.79). Kuutti (1996) describes it as a "philosophical framework for studying different forms of human praxis as developmental processes" (p.532). Kaptelinin (2005) argues that activity theory is not only "a powerful analytical tool to understand what people are doing but also why they are doing it" (p.5). Jonassen (2000) views activity theory as "a useful framework for understanding the totality of human work and praxis, that is, activity in context" (p.38). As the nature of the research assistantship involves people working together, activity theory seemed to be a good fit. Within this polyvocal discourse, more recently, Kaptelinin (2005) supports Engeström's (1993) view that activity theory can be tailored to the specific system and argues that "Activity theory is not a monolithic approach. Instead it can be described as a variety of

approaches sharing basic principles but differing in how these principles are implemented" (p.8). Thus in the activity theory literature there is general agreement about the main tenets of activity theory and the model if not the particulars.[4] Nevertheless, activity theory is a complex theory due to its historical roots. I do not attempt to explain in detail its roots and how it evolved to Engeström's model of a triangle depicting the relationships in the activity system. Activity theory continues to evolve with application in different research communities.

Overview of activity theory and the RA research study

Fundamentally, it is assumed the research assistantship involves the RA and the RA-supervisor engaging in research -related activities. If my researcher's task is to reveal the emic perspective while maintaining an etic perspective, activity theory seems appropriate for many reasons. First, activity theory seems to capture the whole experience. As Engeström and Miettinen (1999) explain, "the analyst constructs the activity system as if looking at it from above" (p.10). The unit of analysis is the complete activity system - the RA experience. The investigator is outside of the phenomenon looking at the activity system trying to make sense conceptually of the participants' experience. Second, activity theory requires viewing the activity system from the "subjects" perspectives to understand the activity. In the RA experience, the subject is the RA. Third, a key assumption of activity theory is that human behaviour is "embedded in collectively organized, artefact-mediated activity systems" (Engeström, 1999, p.380). Participants (subjects) interact through mediating tools, rules and with other interested individuals (community) according to some division of labour. Thus the RA experience is a social phenomenon. Fourth, activity theory assumes that contradictions, which arise within and among the activity system elements or between other activity systems, are a force of change. The activity system is a dynamic evolving complex phenomenon. Collectively, I felt activity theory would frame appropriately the investigation. Therefore the following paragraphs unpack activity theory.

[4] Engeström (1993) acknowledges that "the tradition is not a fixed and finished body of strictly defined statements – it is itself an internationally evolving, multivoiced activity system" (p.64). Also, the growing use of activity theory in varied research and disciplines has fostered dialogue concerning the interpretation of the theory's Russian roots and concerns about whether the English translation from Russian adequately conveys the "correct" meaning (e.g. Kaptelinin, 2005).

Activity theory in academic practice

With roots in Soviet psychology, activity theory has evolved and been brought to the Western academic community by various scholars, most notably Yrjö Engeström and his 1987 book, *Learning by expanding – an activity-theoretical approach to developmental research*. Roth (2004) tracked the interest in activity theory and showed a progressing interest in Engeström's work and activity theory since the early 1990s (pp.1 – 2). Further Roth noted that at the 2001 American Educational Research Association (AERA) annual conference, a specific session was devoted to understanding the core issues of activity theory in education (p.1). While activity theory has not been applied to a study about graduate education, it has been used to frame research into various practices such as a health care system (Engeström, 2001), human-computer interaction (Nardi, 1996; Mwanza, 2002), writing in higher education (Dias, 2000; Russell, 1997), online collaborative learning (Barab, Schatz & Scheckler, 2004) and knowledge building and transformation in organizations (Blackler, 1993). This wide application to human activity seems to reflect Engeström's view that

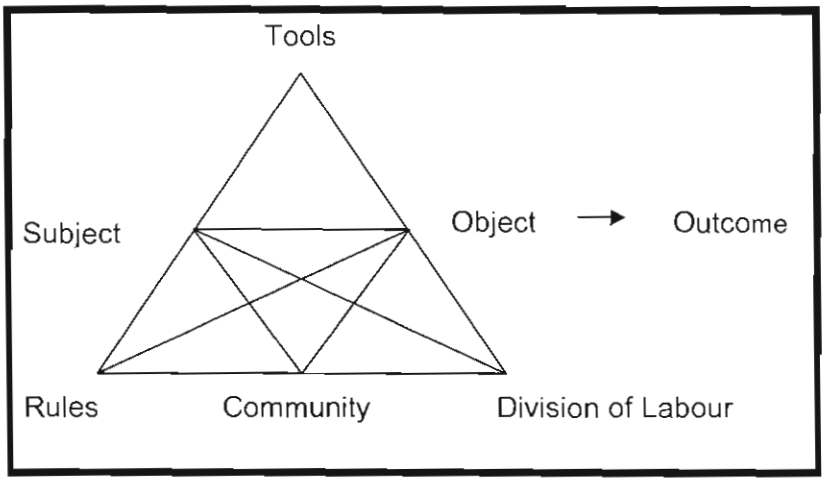
> activity theory is not a specific theory of a particular domain offering ready made techniques and procedures. It is a general cross-disciplinary approach offering conceptual tools and methodological principles which have to be concretized according to the specific nature of the object under scrutiny (1993, p.97).

Therefore, activity theory lends itself to various studies as researchers shape the theory's tools and principles to fit the activity system's object. Keeping this fluidity and diversity in mind, the next paragraphs describe the common elements and assumptions of activity theory as applied to the RA experience.

Elements of the activity system

As a framework, activity theory focuses on an *activity system*. Engeström and Miettinen (1999) state that the "minimum elements of this system include the object, subject, mediating artefacts (signs and tools), rules, community and division of labour" (p.9). Figure 1.2 illustrates the familiar triangle depicting human activity. As Engeström

Figure 1.2 The Components of an Activity System (Adapted from Engeström, 1987)

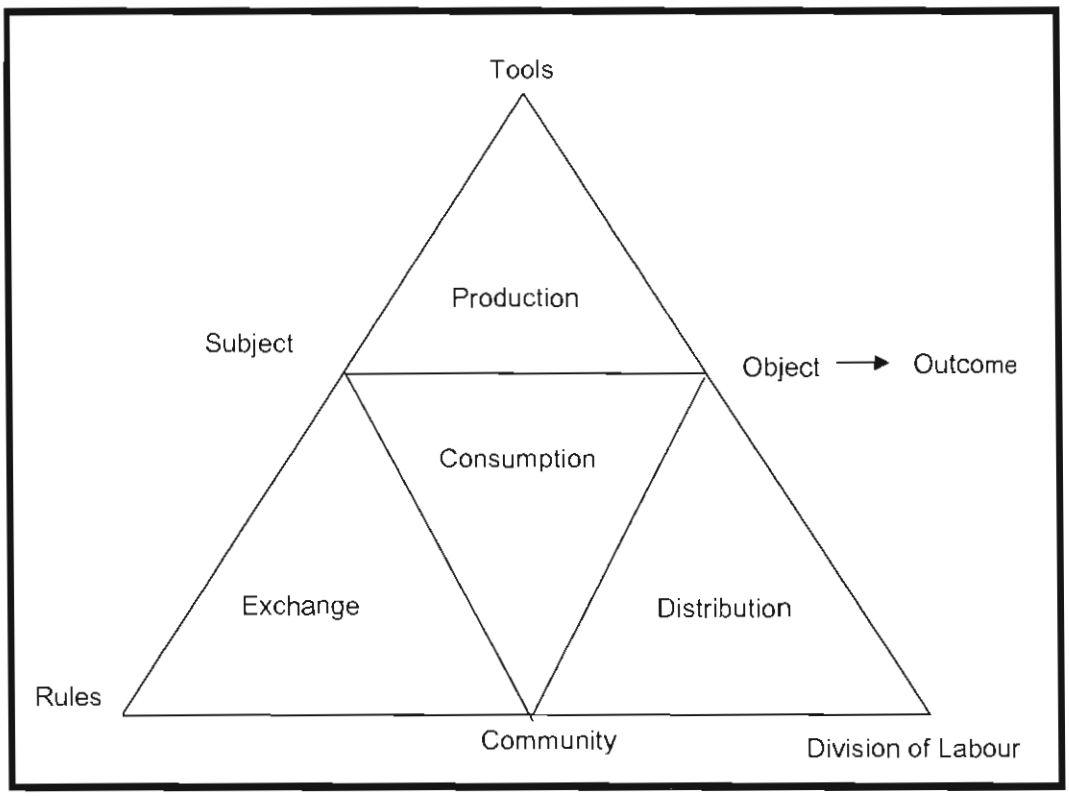


and Miettinen (1999) explain, "The analyst constructs the activity system as if looking at it from above. At the same time, the analyst must select a subject, a member (or better yet, multiple different members) of the local activity through whose eyes and interpretations the activity is constructed" (p.10). The subject interacts with the community using mediating tools according to rules or cultural conventions including division of labour to transform the object into an outcome. Engeström (1990) refers to the object as the problem space or raw materials (p.79). Further, using Webster's Dictionary, Engeström notes that an object is "anything presented to the mind or senses" and "an end or aim" (1990, p.107). With this duality of meaning, objects can be raw materials like the piece of iron to the blacksmith although the subject (blacksmith) acting through tools produces an identifiable artefact (the object) (Engeström, 1990, p.107). Mediating tools and instruments construct certain objects and transform the object into an outcome. Jonassen (2000) describes the outcome as the intention of the activity system (p.99). In the RA study, this broad "look from above" captured more than the dyadic relationship between the RA and the RA supervisor. For example, the investigation revealed the mediating tools and how the RA and RA supervisor interacted. To elaborate on the components of the activity system, subsystems aid in describing the elements and their interactions.

Figure 1.3 shows the activity system as four subsystems: production, exchange, consumption and distribution (Engeström, 1990, p.79; Jonassen, 2000, p.99). The three interacting elements in the production subsystem are the *subject, tools and object.*

Jonassen (2000) believes the production subsystem is the most important as "the object of the system is transformed into the outcome, that is, the intentions of the activity system" (p.99).

Figure 1.3 Activity System Subsystems (Adapted from Engeström, 1990, p.79; Jonassen, 2000, p.99)



The activity system produces an object or artefacts. "Whether physical, mental or symbolic, they are the product that is acted upon by the subject" (Jonassen, 2000, p.100). Tools are culturally specific means through which the subject acts on the object. The tools can be physical, such as computers, or abstract, such as knowledge or theories. For example, the RA might use knowledge gained through course work or specific workshops on using the library databases and software like RefWorks and a computer to produce a literature search. The literature search is an artefact (object) produced by the system which is incorporated into an outcome which might be a research paper (research productivity).

The consumption subsystem involves the interaction of the *community* with the *subject* in the process of acting on the *object*. The community includes multiple individuals who collaborate to act on the same general object (Jonassen, 2000, p.101). Thus the key aspect of the "community" element is that the individuals have a common interest, being the object. In the RA activity system, the individuals sharing the object might include other RAs on the research team and the RA supervisor or faculty members. Jonassen (2000, p.101) notes that individuals are concurrently members of different communities hence there can be conflict between the roles in the overlapping communities. This is important as conflict creates tensions that give rise to transformations in the activity system as explained in more detail shortly.

The distribution subsystem involves the three interacting elements of *community, division of labour* and the *object*. The distribution subsystem reflects how the community deals with tasks and recognizes both horizontal division of tasks and vertical division of power and status. Keeping in mind that the community has a unifying interest in the object, the individuals in the community might change depending on the specific object. In addition, as Jonassen (2000) notes, "how work is distributed throughout the organization determines to some degree the nature of the work culture and the climate for those involved in any activity system" (p.102). In the RA activity system, the RA might be involved in the collection, analysis and interpretation of the data or might only collect the data. The culture might be one of a junior colleague or a lesser status, such as an employee-employer. There could be a hierarchy among the RAs on a research team depending on doctorate experience. The individuals interested in the object (community) are the overlapping element of the distribution and exchange subsystems.

The exchange subsystem captures the interaction of the *subject, community* and the *rules or norms* that constrain the activity. As might be expected, the exchange of personal, social and cultural norms determines the nature of the work culture and the climate for those involved in any activity system (Jonassen, 2000, p.103). The rules may explicitly or implicitly guide the actions and activities found to be acceptable to the community. The community negotiates rules and norms. For example, from the RA perspective there might seem to be implicit norms about authorship. For the RA-supervisor, there may be a departmental policy that stipulates a standard RA hourly wage rate pursuant to the terms of the research grant.

In summary, Table 1.1 shows possible examples of the activity theory elements as applied to the RA experience, the activity system, from the perspective of two possible subjects - a RA and the RA-supervisor. Note that these are two different viewpoints of the same activity system (RA experience) and that the elements may have different (or similar) meanings for a particular subject. After Table 1.1 I discuss additional aspects of activity theory, including the hierarchical levels in activities and the assumptions underlying the theory.

Table 1.1 The Activity System Elements and the Research Assistantship

Subject: the view of the system	RA supervisor	Research assistant (RA)
Tools: mediating instruments	Physical: computer, software, office space, research grant financial resources. Abstract: Intellectual tools gained through research or other experiences including past experiences as a RA supervisor or a RA.	Physical: computer, software, office space. Abstract: Intellectual tools gained through course work, workshops or other experiences, including prior experiences as a RA.
Division of Labour: horizontal division of tasks and vertical division of power	Horizontal: division of tasks in the research assistantship such as data collection versus data analysis. Vertical: division of power and status such as junior colleague or employer-employee.	Horizontal: division of tasks in the research assistantship such as data collection versus data analysis. Vertical: division of power and status such as junior colleague or employer-employee.
Community: individuals who share the same general object	RA supervisor might interact with a research team, other faculty, other RAs, and the research community.	RA might interact with many individuals such as peers, other RAs, faculty, and people in the research community.
Rules: explicit and implicit regulations or norms that govern interactions	Formalized rules might include the terms of the hourly wage or the "rules' to establish a research assistantship. Informal rules or conventions might include how RAs are recruited and "rules' of how much and when the RA is expected to work.	Formalized rules might include the terms of the hourly wage or the "rules' to submit a RA timesheet. Informal rules or conventions might include how a RA finds an assistantship and implicit norms of when the RA is expected to work.
Object: something towards which the activity is directed	Examples might include data collection and analysis, review of RA work on the research grant, development of project management or data analysis skills	Examples might include data collection and analysis, a literature search related to the research grant, development of interview skills, project or data management skills
Outcome: intentions of the activity system	Successful completion of the grant and publication of the research.	Possible outcomes might include research productivity and skills development for an academic career.

Operations, actions and activities

In order to identify the intentions of the activity system, it is important to distinguish actions from activities. In activity theory, a hierarchy exists with activities consisting of actions and actions consisting of operations (Kuutti, 1996, p.30). Motives align with an activity (i.e. the outcome) while goals drive actions and conditions affect operations. The intention of the activity system or the motive is important in the theory. Leont'ev (1974) states, ""It is precisely its object that gives an activity its specific direction. ... Behind the object there always stands a need or desire, to which it [the object] always answers" (p.22). Leont'ev (1974) explains using an example quoted frequently:

> Let us take the case of a man's activity energized by food. Food is his motive; however, to satisfy his desire for food he must carry out actions not immediately directed at obtaining food. For example, his goal may be to make a hunting weapon. Does he subsequently use the weapon he made or does he pass it on to someone else and receive a portion of the total catch (pp. 23 -24)?

Thus an activity is driven by a motive, an action by goals. Engeström (1999) suggests that goals are "commonly explicated clearly only retrospectively" (p.381). Thus the subject may be able to best articulate his/her goals or object upon reflection. Further, Engeström (1999) argues that "the object determines the horizon of possible actions" (p.381). The subject takes several actions to achieve short-term goals oriented to the outcome. For example, a RA performs a library search and prepares an annotated bibliography. These actions lead to the goal of having a baseline understanding of the relevant research. The annotated bibliography is an object or raw materials for the ultimate outcome, which perhaps might be a research publication.

In addition, Kuutti (1996) notes that "the same action can belong to different activities, in which case the different motives of activities will cause the actions to have different personal sense for the subject in the context of each activity" (p.31). Since the RA experience is part of the PhD experience, the RA may perform actions that have different meaning in the RA activity system than in the interacting PhD activity system. The same action of performing a library search and preparing an annotated bibliography might have a different meaning to the student in terms of his/her PhD thesis research from the meaning in the RA experience. A subsequent discussion elaborates on the

significance of interacting activity systems and contradictions. Furthermore, "actions consist of chains of operations, which are well-defined habitual routines used as answers to conditions faced during the performing of the action" (Kuutti, 1996, p.31). Jonassen (2000) notes that:

> All operations are actions when they are first performed because they require conscious effort. With practice and internalization, activities collapse into actions and eventually into operations, as they become more automatic, requiring less conscious effort. The reverse dynamic is also possible: operations can be disrupted and become actions. (p.104)

Applying these ideas to the RA experience, using the literature search as the example again, initially a RA might not be familiar with searching the library databases for appropriate literature. Over time, the steps to access and search efficiently become routine so that it is now an operation. If a different way to search or if new resources become available, the operation might move back to an action until the student has mastered the needed skill.

Assumptions underlying activity theory

While the object is a critical element of the activity system, certain assumptions guide activity theory. First, fundamentally the theory assumes that activity and consciousness coexist and that "as we act, we gain understanding, which affects our actions, which changes our understanding" (Jonassen, 2000, p.105). Engeström (1999) states that activity theory "approaches human cognition and behaviour as embedded in collectively organized, artefact-mediated activity systems" (p.380). This assumption stems from the roots of activity theory in Soviet psychology. Leont'ev (1974) writes, "Human psychology deals with the activity of specific individuals carried out either collectively – among other people, with reference to them, in interaction with them – or else face-to-face with the surrounding, objective world" (p.10). More recently, Lave (1993) writes:

> Knowledge always undergoes construction and transformation in use. Learning is an integral aspect of activity in and with the world at all times. ... Acquisition of knowledge is not a simple matter of taking in knowledge; rather, things assumed to be natural categories, such as "bodies of knowledge," "learners", and "cultural transmission", require reconceptualization as cultural, social products. (p.8)

Thus one might conceptualize the tasks performed in a research assistantship as actions that lead to greater understanding and knowledge. An exploration of the types of activities in a research assistantship might elucidate the extent of knowledge garnered

through the RA experiences. The activity system captures the transformative nature and suggests this transformation occurs due to contradictions.

Engeström and Miettinen (1999) note that the "internal tensions and contradictions ... are the motive force of change and development" (p.9). The activity system is dynamic and transforms over time. Kuutti (1996) states that "because activities are not isolated units ... they are influenced by other activities and other changes in their environment" (p.34). Thus Kuutti describes contradictions as "a misfit within elements, between them, between different activities or between different developmental phases of a single activity. Contradictions manifest themselves as problems, ruptures, breakdowns, clashes" (p.34). More specifically, Engeström (1987) describes four levels of contradictions. Level 1, *primary inner contradictions*, occur within each constituent component of the central activity system under study. Level 2, *secondary contradictions*, occur between the constituents of the activity system. Level 3, *tertiary contradictions*, occur as a result of interaction between the central activity system and another more culturally advanced activity system. The contradiction occurs when the culturally advanced system introduces an object and motive into the central activity. Lastly, level 4, *quaternary contradictions*, occur between the central activity system and its neighbour activities. Engeström (1987) characterizes neighbour activities as (1) *object-activities*, the objects and the outcomes of the central activity are embedded in the object-activity; (2) *instrument-producing activities*, the activities that produce the key tools and instruments; (3) *subject-producing activities*, activities related to the subjects; and lastly, (4) *rule-producing activities* driven by policies and administration (p.36).

Table 1.2 summarizes possible examples of Engeström's types of contradictions that might occur in the RA experience, being the central activity. Primary inner contradictions occur within each element of the activity system. For example, within the "community" element, tensions may occur when community members interact who have different goals. If members of the research team and the RA (subject) have different objects, tensions might occur in the community element. It is possible that some objects will be different and still be compatible but perhaps some objects are not complementary thus giving rise to change in the activity system. Secondary contradictions occur between the elements so tensions may result from conflict between an individual in the community, such as the RA supervisor, and the rules if the RA supervisor disagrees with administrative policies. Tertiary contradictions might occur when the central activity

system's culture (RA experience) is challenged when another system's object and motive are introduced into the RA activity system. An example might be if the PhD student desires to develop research skills or publish. The student might look for ways to develop the research skills in a RA appointment or may instigate publications. Lastly, the quaternary contradictions recognize that the RA experience is embedded in object-activities, for example the PhD experience. Changes in the PhD activity system may affect the RA experience. Instrument-producing activities might represent the graduate courses that contribute to intellectual tools. Course development may affect how the RA engages with the knowledge. Subject-producing activities could reflect the RA's personal lifeworld (activity system) such as the RA's underlying belief system. The university administration system is an example of rule-producing activities which might include policies on research assistantships.

Table 1.2 Examples of Contradictions in the Primary Activity System: Research Assistantship

Level	Type	Description	Example
Level 1	Primary inner	Occurs within an element of the RA activity system	Element: community. If community members have different goals then tensions may arise during interactions.
Level 2	Secondary	Occurs between RA activity system elements	Elements: community and rules. If the RA supervisor disagrees with RA policies which govern the appointment.
Level 3	Tertiary	Occurs when another activity system's motive or object is introduced into the RA activity system.	Systems: PhD and RA. The RA may want to learn specific research skills or achieve research productivity so will find ways to instigate this into the research appointment.
Level 4	Quaternary	Occurs between the activity system's elements and their neighbour activities.	Element/neighbour activity: tools and faculty course development. The development of a course to include specific research skills might influence how the tool is utilized by the RA.

The last assumption relates to the activity as a "historically developed phenomenon" (Jonassen, 2000, p.108). An activity system develops over time and it is important to understand the history. For example, the RA experience as currently viewed takes into account previous transformations of the system. Further, the subjects have a history which may influence the interactions. RA supervisors may have been a RA during their student career and thus bring to the activity system their views on the nature of the relationship. The student may have had several research assistantships

and this history influences the perceptions about the current research assistantship. The department has a history which permeates the culture which affects the mediating tools, rules and division of labour. Kuutti (1996) states that "parts of older phases of activities often stay embedded in them as they develop and historical analysis of the development is often needed in order to understand the current situation" (p.26). Understanding the current RA experience requires some appreciation for the history of the subject and institution with research assistantships.

Difficulties applying activity theory

Conceptually, the difficulties with empirical research utilizing activity theory as a theoretical lens or analytical tool seem to relate to the analyst's ability to identify a fluid object from various perspectives, the possibility that the subject is not conscious of the object, and the object may manifest itself in different forms for different participants (Foot, 2002; Miettinen, 2005; Kaptelinin, 2005). Recall previously that the explanation of the object was in the context of the production subsystem. The activity system produces an object or artefacts. "Whether physical, mental or symbolic, they are the product that is acted upon by the subject" (Jonassen, 2000, p.100). Further Jonassen (2000) states "the object of the system is transformed into the outcome, that is, the intentions of the activity system" (p.99). Also recall that the subject acts on the object through mediating tools. Miettinen (2005) argues that Engeström distinguishes between a "generalized object of a historically evolving activity system and a specific object as it appears to a particular subject at a given moment" (p.57). The latter is the subject's personal view and the former is the system view.

Engeström suggests that the researcher takes the system view most frequently thereby focusing on the person, task and mediating artefact. Engeström feels it is "vitally important for the actor (subject) to take the system view and for the researcher to take the personal view ... I argue for switching between multiple views" (1990, p.171). Thus Engeström's dual perspective coincides with the desired emic and etic perspectives of case study research (Gall, Gall, & Borg, 2003, p. 438) and this thesis research study. Taking a personal view based on the subject's lifeworld[5] allows the researcher to

[5] Eriksen & Weigard (2003) explain that "when Husserl and Schutz introduced the concept of the lifeworld, their goal was precisely to emphasize the fruitfulness ... in taking the actors' perspectives and concepts as a starting point when we reconstruct social phenomena and relations" (p.90).

conceptualize the tools as "actually used and conceived of by the subjects" (Engeström, 1990, p.174). For example, Engeström illustrates that the medical record has a different character if conceived as an administrative rule rather than a tool to assist with diagnosis (1990, p.179). Engeström (1990) argues that to "disregard the historically evolving, multiple and distributed personal view is to misconstrue the system, to create an oversimplified system view" (p.178). Thus how does the analyst identify an object that is evolving and takes meaning from the subject's context?

Similarly, Kaptelinin (2005) argues, "objects of activities are dynamically constructed on the basis of various types of constraints. These constraints include the needs that the activity system at hand is striving to satisfy, available means, other potentially related activities, and other actors involved, each with their own motives and objects" (p.17). These constraints seem to be consistent with Engeström's contradictions of an activity system as described later. Further, Miettinen (2005) states that:

> as a rule, the members of an activity are not fully conscious of the motive of their joint activity, the social significance and consequences of their activity, or its various economic or political conditions. This is because a single individual cannot have access to them alone, and any attempt to characterize the object is necessarily limited (p.57).

Yet some scholars feel that multiple perspectives enrich the understanding of the activity system through the thick rich description and thus overcome the research issues related to object identification.

In response to the issues of complexity facing an analyst, Foot (2002) demonstrates in her empirical research that recognizing the multifaceted object requires multiple perspectives and ideally different kinds of data (p.148). She notes that she "paid particular attention to the interviewees' articulations of their hopes ..., their accounts of their respective motives for joining it [the resource group], and their perceptions of the [project's] aim" (p.139). Foot (2002) concluded that "variations in conceptions of the object reflect differences in perspectives contingent on the participants' varying constructions of themselves in relation to the subject of the activity" (p.140). Multiple sources of data enriched the analysis. Foot's data included participant-observation field notes, transcripts of recorded discussions among participants, and interviews of participants. Foot (2002) suggests that an analyst might illuminate the

object through asking what energizes the activity and to what is the collective activity oriented (p.148).

Engeström (1999) offers an approach based on differentiating mediating artefacts for object identification. He suggests that the "situation-specific reconstruction and instantiation of the object of the activity system often takes the form of problem finding and problem definition" (Engeström, 1999, p.381). Recall that "the subject constructs the object ... using mediating artefacts" (Engeström, 1999, p.380) That is, in the human activity triangle between the subject and the object are mediating artefacts which "include tools and signs, both external implements and internal representations such as mental models" (Engeström, 1999, p.381). Engeström (1999) suggests that differentiating between different ways of using artefacts is useful to object identification.

> The first type is *what* artefacts, used to identify and describe objects. The second type is *how* artefacts, used to guide and direct processes and procedures on, within, or between objects. The third type is *why* artefacts, used to diagnose and explain the properties and behaviours of objects. Finally, the fourth type is *where to* artefacts, used to envision the future state or potential development of objects, including institutions and social systems (italics by author, pp. 381-382).

It seems that determining the tools and instruments a RA uses might show the connection to the object notwithstanding those different subjects may construct their personal view of the object based on their lifeworld. Nevertheless, similar to other scholars, Engeström (1999) argues that

> The artefact-mediated construction of objects does not happen in a solitary manner or in harmonious unison. It is a collaborative and dialogical process in which different perspectives and voices meet, collide and merge. The different perspectives are rooted in different communities and practices that continue to co-exist within one and the same collective activity system (p.382).

Clearly, object identification is important to understanding the activity system and as such, Engeström (1990) writes that the key determination is how the subject frames and constructs the object (p.112). Based on Foot's and Engeström's views, I believe the research implications are that different means need to be employed to uncover the object and one must not expect the same object from all participants in the research assistantship. In addition, capturing the constraints noted by Kaptelinin (2005) might explicate an object for a particular subject. An analyst must be cognizant that "at any point in time participants may be at different stages in the contingent process of need consciousness and object formation, thus shaping their ability to perceive and articulate the object of the activity in which they are engaged" (Foot, 2002, p.135).

Summary of activity theory

In activity theory the unit of the analysis is the activity system. It is a holistic view of human practice – the RA experience. Engeström (1993) states, "a collective activity system can be taken as the unit of analysis, giving context and meaning to seemingly random individual events" (p.65). As noted previously, the top-down look at the system allows a broad picture of the experience encompassing not only the relationship between the RA and the RA supervisor but also the broad community, the differing objects, the rules and division of labour that guide the community's interactions and the tools used in the activity. Activity theory assists with answering the question, "*What is an individual or group doing in a particular setting*?" More specifically, I explored how students articulated their intentions and their interactions with the mediating tools and community and whether they encountered contradictions.

CHAPTER 2: LITERATURE REVIEW

"having a mentor and a research assistantship ... should become a departmental benchmark for creating the optimal doctoral students' experience"
(Nettles & Millett, 2006, p.200).

The literature review illustrates how previous empirical research informed the investigation of how Education PhD students describe their RA experience. Therefore, this section discusses the systematic approach to the literature review, the inclusion (or exclusion) of certain studies, and a structured summary of extant literature that informs our current understanding of the RA experience. The chapter concludes with the research question, supplemented by questions supported by the literature and activity theory.

2.1 Approach to Literature Review

A systematic approach to the literature review involved searching databases, reviewing bibliographies, discussing the broad study with knowledgeable people and then organizing a structured review of the literature. The following paragraphs explain this systematic approach.

The literature search started with a search of the major databases – EBSCOHOST (e.g. ERIC, Academic Search Elite, Business Source Premier), Proquest, SpringerLink, JSTOR, Wilson, Science Direct, Digital Dissertations, Theses Canada, and Web of Science, a citation index. The same scholarly articles appeared in several databases due to inclusion in multiple databases. The library catalogue at two universities indicated both recent and seminal books on the topic. Key words included research assistant, assistantship, graduate studies, graduate students, higher education, doctorate studies, advisors, and supervisors. Databases' thesaurus gave likely key words and groupings. Several of the databases have defined fields which allowed searches within searches or "find more like this" functions to connect to other articles with similar subject terms as defined in the database. During this process, a consultation with the education librarian assisted with key word selection and efficient use of the databases to mine for selected studies.

All disciplines and fields and graduate studies (which include masters and doctorate) were included in the broad search to take into account the need to understand the broad PhD literature as well as the RA literature as explained in Chapter One. Later I screened it to reduce the literature to empirical studies with data from education and only PhD studies. As explained subsequently, I privileged research assistantship studies over studies that researched teaching assistantships singularly.

This literature search highlighted several current resources to confirm coverage of significant studies and an older US article (1988) that also captured an earlier time period. Malaney (1988) provides a comprehensive evaluative review of the US graduate literature in the *Higher Education: Handbook of Theory and Research* thus confirming the results in the more current reviews. However it also highlighted certain areas not addressed explicitly in other resources such as the lack of a theoretical lens (p. 443), the largely survey methodology (p. 440) and specific research (or lack thereof) about research assistantships (p.418, 420). Bair and Haworth's (2005) meta-analysis about graduate attrition and persistence reviewed 118 US research studies thus providing an extensive bibliography. In addition, Nettles and Millett's book, *Three Magic Letters: Getting to PhD* (2006) and Lovitts' book, *Leaving the Ivory Tower* (2001) proved valuable to uncover further studies that were not revealed through the database search either because of the date of the article or because the journal or book was not in the initial selected databases or library catalogue. A Google Scholar search confirmed the selection of studies while indicating citation statistics and suggesting other articles and internet sites. Further, a discussion with colleagues familiar with PhD study directed me to internet sites and additional reading. An internet search for associations that have an interest in graduate studies provided both Canadian and US graduate studies' associations or organizations that represent higher education institutions (CAGS, TUPC), and Statistics Canada information. To remain current during the dissertation process, I established database alerts for key journals and key words.

The forgoing process revealed in excess of 150 PhD sources hence a structured review occurred using RefWorks and Microsoft Excel. I accumulated the citations for numerous journal articles and the publications in RefWorks, a web-based bibliography and citation database manager. In RefWorks, I ensured there was either the author's abstract as provided by the publisher or I entered an abstract manually based on my assessment of the article, including additional notes. To structure the review and

categorize the literature, I exported the RefWorks database into Excel, a spreadsheet program, and identified and completed missing information. I sorted the RefWorks fields in many ways. The RefWorks fields included author, date, journal or book, abstract and other information. Initially, I read and categorized the articles' abstracts according to a nest in the McAlpine and Norton (2006) model.[6] This allowed me to understand the larger contextual picture of the RA embedded in the PhD experience. I also sorted by other categories and thus performed an in depth review of the literature using various data fields, including year, discipline or academic field, author, publication source and key words. From the sorting process, major themes emerged from reading and re-reading the abstracts. Within the contextual nests, I identified RA studies and their main themes, such as benefits of or issues in the RA experience. This intensive process elucidated the lack of Canadian empirical studies, highlighted the studies involving education and identified the major themes as discussed subsequently. The next section addresses the decisions related to inclusion or exclusion of certain literature.

2.2 Inclusion/exclusion of Literature

Before the literature discussion, it is important to address concerns regarding the selection of literature. The first concern relates to whether non-Canadian studies are useful to frame the research problem and purpose in a Canadian context. The second concern is whether research located in specific fields and institutions are suitable if the study did not include the field of education. A third concern is the definition of research assistantship as some studies simply identify graduate assistantships rather than specifying a research assistantship. I address these concerns in the following paragraphs.

As there is a dearth of Canadian studies, other countries' studies are a source of understanding. There are several important US studies that have investigated a significant number of graduate students at many institutions and in an extensive number of fields. These studies shed light on the RA experience even though there is a caution that the particular environment will affect the PhD experience, which inherently

[6] I have not included in the Literature Review the studies identified in the outer nests of the McAlpine & Norton model. However, reading these studies served to increase my understanding of the contextual issues surrounding graduate education although they are outside of the boundary of the case study. The boundaries are discussed in Chapter Three, *Methodology*.

influences the embedded research assistant experience. Because Canadian and US research studies have confirmed that field of study is a significant factor when researching the PhD experience, where possible education studies were considered of more relevance to this thesis than other fields although these other fields' studies enhance the understanding of the PhD experience as well.

In considering the efficacy of US education studies, a comparison of descriptive statistics seems to indicate that at least demographically the US field of education is similar to the Canadian field. Recent statistics in both countries show a similar gender mix of approximately 34% male and 66% female Education students (Statistics Canada, 2005, p. 24; Nettles & Millett, 2006, p.14). While the US graduates a larger percentage of education doctorates than in Canada, it is not clear that this would have a significant effect on using US education research studies. Also SFU's Graduate Studies Fact Book (2001) showed over the period of Fall 1985 through to the Fall of 2000 a withdrawal rate of approximately 36% which is similar to reported US statistics of 33% (Dolph, 1983) to 41% (Murrell, 1987 in Bair & Haworth, 2005)). In addition, the median time to degree for education doctorates, reported at 5.3 years in Canada (Statistics Canada, 2005, p.25) compares favourably to 5.75 years in the US (Nettles & Millett, 2006, p.133). These descriptive statistics suggest there are some similarities in the structure although the PhD experience likely varies widely among institutions in both counties since it is a result of many factors.

The third concern relates to the definition of the research assistant. In this thesis research study, the broad definition of a research assistant is: *a graduate student employed on a contract basis by a faculty member to assist in activities related to the faculty member's research.* It is a paid contract (non-union) position in contrast to the teaching assistantship which is a union position at SFU and at many other Canadian universities. As a contract position, there are no formal policies about the rate of pay and the employment conditions for a research assistantship although SSHRC guidelines for payment of research assistants might prevail. This definition is similar to Roaden and Worthen's (1976) definition: "research assistantship is defined as any experience concurrent with the student's academic studies in which the student holds an assistantship, internship or associateship in which *assisting in the conduct of research is the primary activity*" (p.143, italics by author). I considered whether this definition would be suitable for this thesis but since graduate students were not unionized in 1976, I

decided to indicate it is a contract position. Currently, contract versus employee-status is a contentious issue in Canada and the US and it could be an important contextual factor. Therefore, I feel it is important to note the contract status of RAs. Further, the type of activities a RA engages in might be relevant. While Roaden and Worthen emphasized that the conduct of research was the primary activity, Nettles and Millett (2006) simply defined the research assistantship as "monies (tuition/fees and/or a stipend) given to students with the expectation of research services to be rendered" (p.238). Nettles and Millett did not define "research services". Since I wanted to investigate the activities, I included all literature addressing research assistantships and graduate assistantships while teaching assistant (TA) studies were not selected for review unless part of a RA study.

In summary, the studies referred to in the literature discussion framed the issues I wanted to investigate although their findings are not generalizable to the Canadian context. Their usefulness is limited to providing understanding and dialogue about the research assistantship and its relevance to the larger graduate studies' context. The following sections highlight the extant literature related to the RA experience.

2.3 Nettles and Millett (2006): The RA and Research Productivity

This section explores the Nettles and Millett (2006) study in significant detail, with comparisons to other studies, as it is one of the few extensive current studies that include the field of Education. The Nettles and Millett (2006) findings influence the present research study as they are bold and emphatic. The authors state that "students with research productivity were more likely to complete their degrees, and research productivity did not impede the progress of those who earned their doctoral degrees" (Nettles & Millett, 2006, p.199). In addition, they argue that "having a mentor and a research assistantship are so highly predictive of research productivity across disciplines and demographic groups [it] suggests that this should become a departmental benchmark for creating the optimal doctoral students' experience" (Nettles & Millett, 2006, p.200). Before elaborating on the significance of the findings, the next paragraphs explain briefly the research design, methodology and limitations of this important study.

Nettles and Millett (2006) which is a US study, surveyed over 9,000 students in eleven fields, including Education, from twenty-one of the major US doctorate-granting institutions (p.3). There was a 70% return rate on the survey. Taking into account the

magnitude of the respondents, survey return rate, the cross-disciplinary focus and the cross-institutional study Nettles and Millett is a solid credible study that adds considerably to understanding current doctoral studies. Yet survey research is limited with respect to the depth to probe understandings of specific phenomena. A particular limitation of the Nettles and Millett study is that it draws on students after their first year of studies and this could bias the findings to the extent that students with research assistantships may have withdrawn prior to completion of their course work and early in the process. For example, a Canadian study showed that approximately 32% of those who leave a doctoral program leave in the first year (CAGS, 2004, p.5). Looking at the Nettles and Millett (2006) statistics, overall 44% of doctoral students (26% Education) in the study were offered research assistantship upon admission (p.77), and these students were still enrolled after their first year. There is the possibility that some students who had a research assistantship withdrew and the Nettles and Millett research findings would not capture their experiences.

To determine if this is a significant limitation, a source of comparison to Nettles and Millett's study is Lovitt's (2001) study, which did not include Education but other fields similar to Nettles and Millett (Sciences, Social sciences, Humanities). Lovitts (2001) indicates that students completing their degree were three times as likely as non-completers to have received a research assistantship and six times as likely to have some form of financial support over non-completers (p.95). Even though it does not include Education graduates, since the Lovitt study includes similar fields as Nettles and Millett, it seems plausible that omitting the first year student withdrawals would not significantly alter the conclusion that a research assistantship is related to PhD completion.

Fundamentally it is believed that research activities are the heart of the research assistantship. In the Nettles and Millett study research productivity was a dichotomous variable coded if the respondent reported having "participated in any of four research activities (presenting a paper, publishing a chapter, publishing an article, publishing a book)" (p.267). Again the specific survey questions indicate some breadth in responses as there were tick boxes for amount (i.e. zero to five or more) and the categories were further delineated by refereed or non-refereed journal, submitted an article for publication or attended a scholarly meeting (pp. 246 – 247). In total there were 22 measures (p.165). The authors discussed only three – whether a student had overall

productivity (a composite of various forms of productivity), whether a student published an article and whether a student presented a paper at a national conference (p.165). In all three categories students who achieved productivity were more likely to have a research assistantship (except Humanities, where teaching assistants are more prevalent). Notwithstanding the possibility of a weak threshold for productivity, other researchers have found a positive relationship between holding a research assistantship and research productivity.

Ethington and Pisani (1993) found that RAs perceived greater growth in research capabilities than TAs (p.350) and scholarly productivity was significantly greater if a student was both a RA and TA (p.351). I will explore this study in more detail later, but similarly to Nettles and Millett (2006), Ethington and Pisani defined "scholarly productivity" using fairly broad measures as the sample population included all graduate students at a single institution whereas Nettles and Millett (2006) differentiated by field.

An interesting contrast to Nettles and Millett's (2006) finding that research productivity is correlated to completion is Golde and Dore's (2001) finding, based on student reported data, that "the training doctoral students receive is not what they want, nor does it prepare them for the jobs they take" (p.3). It seems incongruous that research productivity on one hand is leading to PhD completion while the research training is inadequate in another study. Golde and Dore found that the research training was not sufficiently comprehensive as only 65.1% of respondents stated that their program prepared them to conduct research, 42.9% were prepared to publish research findings and 27.1% were prepared to collaborate in interdisciplinary research (p.13). One might argue that as student self-report data it is limited as students may lack confidence and faculty may have other impressions of students' skills. Nonetheless, if research productivity is associated with completion, as argued by Nettles and Millett, I wondered whether an exploration of the research assistantship might reveal the development of research knowledge and skills that would improve research productivity.

In summary, other smaller studies that perhaps are limited by size of the study or discipline seem to validate Nettles and Millett's correlational study.

2.4 PhD Completion and the Research Assistantship

I reviewed the literature that identified a relationship between a research assistantship and a successful outcome to distil the scholars' reasons or explanations of

why a relationship exists. Table 2.1, which is not exhaustive of all literature but representative of those studies most often cited, lists in chronological order the findings related to research assistantships and the discipline and method of the study. Not all studies included Education, hence only those studies that explicitly included Education will be discussed in detail as discipline has been shown consistently to influence the PhD experience (Golde, 2005; Bowen & Rudenstine, 1992; Baird, 1990; Lovitt, 2001). Canadian studies include the two dissertations by Sheridan (1990) and Allen (1996) and a study by Sheridan and Pyke (1994) while all others are US studies. The three studies that include the field of Education are Cook and Swanson (1978), Allen (1996) and Nettles and Millett (2006). The next paragraphs address the Table 2.1 studies' findings over the years with particular emphasis on the empirical literature that have Education data.

Table 2.1 indicates many Canadian and US studies that associate the research assistantship and financial support to time-to-degree and completion. The table highlights several points: the long history of exploration (Berelson, 1960 to Nettles & Millet, 2006); the varied research approaches although primarily correlational studies; the focus on different disciplines; and the consistent findings that financial support matters to degree progression and completion. Over the years, various propositions have been put forth to explain this relationship between an assistantship and completion. Explanations encompass three broad propositions about the research assistantship: (1) it is a simple financial variable, (2) the research assistantship is simply a function of the discipline (i.e. Sciences include more RAs than Humanities) and (3) inherently the RA engages in research activities that are conducive to PhD completion. Further elaboration of the research studies supporting these propositions follows.

Many studies seem to suggest the research assistantship is a purely financial variable that serves to reduce stress and the need for outside employment, which detracts from doctorate studies (Abedi & Benkin, 1987; Sheridan, 1990; Bowen & Rudenstine, 1992; Nerad and Cerny, 1993, Sheridan & Pyke, 1994, Ehrenberg & Mavros, 1995 and Allen, 1996). Of these, Allen is the only study that identified Education in its data. Allen's (1996) mixed methods study of Ontario doctoral Education graduates was seeking to identify factors that related to time-to-degree. Allen found that several factors related to time-to-degree including holding an assistantship. This Canadian study is similar to Nettles and Millett (2006) in that both showed many factors

contribute to completion. The limitations of Allen's study include the single institution data at one point in time and that only faculty were interviewed (14 supervisors) although a significant number of graduates were surveyed (353 graduates). Yet surveys mask the nuances of the experience that might be revealed through an in depth exploration of the research assistantship.

Other studies suggest the nature of the discipline is important as research assistantships occur naturally in some disciplines, such as the Sciences. The structural program features in these disciplines are conducive to shorter time to degree because students work in a supervised research team with predetermined dissertation topics (Baird, 1990; Bowen & Rudenstine, 1992; Sheridan & Pyke, 1994). Quite possibly the nature of the RA experience in the Sciences is different due to the program structure and while not part of this study, it would be interesting to compare the dynamics of the RA activities in Education to another field, such as the life sciences.

Another Education study, Cook and Swanson (1978), used a path analysis study to predict doctoral graduation factors. Their study was a precursor to the now accepted view that many factors affect completion as described previously. While assistantships were found to be a strong predictor of completion, it is not clear how assistantships were defined in the Cook and Swanson study and the authors did not speculate why it would be a predictor. Like other early studies, perhaps the authors assumed it was financial as generally assistantships in Education could include teaching and research assistantships and tutor markers for example. Cook and Swanson's (1978) finding that assistantships are a strong predictor of graduation seem to be validated by later studies that found involvement in the department, such as a research assistant, are related to completion (e.g. Girves & Wemmerus, 1988; Golde, 2005.)

More recently, the relationship between a research assistantship and PhD completion seems attributed to research productivity, the nature of the work and academic integration (Lovitts, 2001; Nettles & Millett, 2006). As previously explained, Nettles and Millett (2006) found a close relationship between research assistantships and research productivity. In all fields, including Education, "students with research productivity were more likely to complete their degrees" (p.199). Hence as the studies evolved, it seems that researchers have attempted to refine the research through increasing the number of variables that might be correlated. The main limitation of this is that with many variables, it becomes difficult to distinguish variable relationships and it

may not add to an explanation of the relationships found. For this reason, the literature includes many studies calling for a qualitative method or case study to investigate the RA experience (e.g. Nettles & Millett, 2006). This thesis answered that urgent call.

In summary, while significant correlations have been identified between research assistantships, research productivity and PhD completion the explanation for the relationships required further exploration. For example, from the current studies we do not know whether a research assistantship is just about money, easing the financial strain, or that certain activities in the research assistantship contribute to completion. I investigated student perceptions about the dynamics of the community, the resources used in the process and the motivations to engage in a research assistantship. I was curious whether faculty and peer RA interaction contributed to PhD progress or their career because of additional support not available to other students. Like many aspects of the PhD experience, it is likely that a combination of factors contribute to completion when a graduate student is a research assistant and not just the research assistantship alone. The next section, after Table 2.1, looks at the literature that has suggested certain benefits from the research assistantship and how these studies informed the investigation.

Table 2.1 Summary of Research Studies with Time-to-degree and Completion Findings related to Financial Sources, including RA-ships

Author	Findings	Discipline and Method
Cook and Swanson (1978)	Findings include that a discontinuance of graduate study can't be attributed to a specific factor but rather to a multiplicity of reasons (p.90) and that an assistantship was a strong predictor of graduation (p.88)	Graduate students in Education at the State University of New York at Buffalo. Significant relationships determined by path analysis. Purpose of study was investigate whether some factor or set of factors predict the probability of doctoral graduation.
Abedi and Benkin (1987)	The results of this study indicated that source of support was the most important variable in predicting time to doctorate. "On-campus earnings" (RA and TA) had the shortest time-to-degree at 7.68 years versus average of 8.68 years (p.9).	Using stepwise multiple regression techniques, this study predicted time to doctorate. The data for this study came from the National Research Council's Doctorate Records File extract prepared for UCLA.

Author	Findings	Discipline and Method
Baird (1990)	Findings include duration of study (time-to-degree) is related to either personal financial resources or departmental/faculty research funds that help students complete their dissertation research. Baird quotes Berelson's (1960) study: "the more support a field has, in the form of fellowships or research assistantships that contribute to the dissertation, the faster its students complete their degrees" (p.370)	*Assessment of Research-Doctorate Programs in the US* data set which covers doctorate students in 32 disciplines at 228 US universities (although Education not identified in tabular results). Quantitative study with a focus on whether program characteristic contribute to duration of study and whether those characteristics are different for different disciplines.
Sheridan (1990)	Funding from all sources, including RA, increases the chance of graduating.	Multiple regression analysis of demographic, academic and financial factors to determine time-to-degree and retention patterns. Survey of 539 master's and 150 doctoral candidates at York University, Canada.
Bowen and Rudenstine (1992)	Findings include: "money plainly matters"; students who rely on own resources have higher attrition and longer time-to-degree (p.178). Institutional assistance (RA, fellowships, TA) is of critical value in PhD completion. In physics, students supported primarily through RA completed the PhD in higher proportions than students in any other support category (p.189).	Arts and sciences (English, history, political science, economics, mathematics, and physics) study based on Doctorate Records File and institutional data sets from 10 US universities. Quantitative analysis using descriptive statistics, interviews and other artefacts.
Nerad and Cerny (1993)	Time to degree is related to the amount and type of support received although PhD program structure is a significant influence in humanities and social sciences in particular (p.35)	Multidisciplinary study at University of California at Berkeley. Interviews of 40 students and various institutional data such as exit surveys (95% return rate). Purpose of study was to identify issues related to time-to-degree and retention.

Author	Findings	Discipline and Method
Sheridan and Pyke (1994)	Time to degree is related to discipline area and funding among other variables. (p.84).	Canadian study at York University of 79 doctoral students in natural sciences, social sciences and humanities (not include Education). Small sample size and single institution limit findings. Regression analysis on various factors to determine differential contribution to time-to-degree.
Ehrenberg and Mavros (1995)	Findings include that students who receive fellowships or RA have higher completion rates and shorter-time-to-degree than students who receive TA or tuition waivers or who are totally self-supporting. Concludes that study shows financial support important but not how it influences it.	Study's data consisted of four fields (economics, English, physics and mathematics) at Cornell University between 1962 to 1986. Utilized an econometric risk model. One hypothesis was that dollar levels and types of financial support affect degree times and completion probabilities.
Allen (1996)	Survey findings include that holding an assistantship was associated with completion. Reason cited most often for discrepancy between expected and realized completion times was the need to work.	Purpose was to explore factors related to time-to-degree and perspectives of faculty and graduates. Mixed method approach with regression analysis on institution data, survey of 353 graduates and personal interviews with 14 supervisors.
Lovitts (2001)	Findings include that "teaching and research assistantships are the most integrative forms of support, so it should not be surprising to discover large differences in attrition rates between students who receive these forms of support and students who do not" (p.95).	Multidisciplinary study of 816 students at two universities in nine departments (not including Education). Sources of data include survey, interviews with students, faculty and directors of graduate study, observations from site visits and institutional data. Focus was exploration of the causes of graduate student attrition.

Author	Findings	Discipline and Method
Ferrer de Valero (2001)	Findings included that financial support positively affects time-to-degree and completion except in departments where students experienced low completion rates and long time-to-degree.	Mixed methods approach using institutional data to determine time-to-degree and completion and interviews with students and faculty in various departments (not Education) to explore the departmental factors. Only faculty with longer than 5 years teaching and researching experience and students working on their dissertation were selected. Interviews with 16 faculty and 24 students.
Nettles and Millett (2006)	Findings include that in all fields, including Education, "students with research productivity were more likely to complete their degrees, and research productivity did not impede the progress of those who earned their doctoral degrees" (p.199). Also, having a mentor and being a research assistant are stable predictors of several positive doctoral program outcomes" (p.176). A research assistantship was correlated to research productivity in most fields (p.165).	Comprehensive 28-page survey of 9,036 students (70% response rate) in eleven fields of study including Education at 21 US institutions. Descriptive statistics and multivariate analysis focusing on how individual, institution, field, faculty and financial characteristics affected progression and completion.

2.5 Perceived Benefits of a Research Assistantship

The previous section considered PhD completion as a possible benefit flowing from the research assistantship as evidenced from studies aimed at investigating time-to-degree and PhD completion. This section considers the empirical research that suggests other benefits. These benefits include holding a research assistantship might lead to future research productivity, growth in research skills, beneficial faculty-student interaction, and a supportive peer group. Table 2.2 contains the details of the studies which are all US studies. I discuss only four studies as they include the field of Education: Perna and Hudgins, 1996; Weidman and Stein, 2003; Roaden and Worthen, 1976 and Worthen and Gardner, 1988.

Table 2.2, similar to Table 2.1, summarizes the extant literature and indicates a long research history. Malaney (1988) identified Roaden and Worthen's 1976 study as the first published research about RAs specifically (p. 420). As shown in Table 2.2 the research has been sporadic over the years touching on the knowledge and skills and the extent of faculty interaction. Socialization into the discipline or department involves professional and academic integration (Golde, 2005) and a research assistantship may facilitate this as shown by Perna and Hudgins (1996) and Girves and Wemmerus (1988). The following paragraphs discuss the findings from several studies although Perna and Hudgins (1996) as a qualitative study with Education data, liberally sprinkled with student comments, holds the possibility to elucidate the RA experience more than the quantitative studies. Beyond this, the studies indicate a caveat about comparing findings as the definition of research productivity varies in the studies.

Table 2.2 Summary of Research Studies with Findings Related to Benefits of the Research Assistantship

Author	Findings	Discipline and method
Roaden and Worthen (1976)	Findings indicate genuine research assistantship experience is positively related to subsequent research involvement and productivity" (p.141). Further, "whether or not their assistantship supervisor was also their academic supervisor" did not result in discriminating between productive and non-productive members of the sample (p.146).	Survey of AERA members with 3963 responding (78%) but only 1710 respondents were found to have held a "genuine" research assistantship as defined by the authors. The purpose of the study was to examine critically whether research assistantships had an impact on subsequent research in faculty's careers.
Girves and Wemmerus (1988)	Findings indicate that 'those students employed as teaching or research assistantships and/or as fellows were more likely to become involved in their graduate programs and to earn doctorates" (p.185).	The purpose of this multidisciplinary study was the development of models predicting progress toward the master's and doctoral degrees. Survey administered to 486 students (59.1% response rate).

Author	Findings	Discipline and method
Worthen and Gardner (1988)	Findings suggest RA-ships are of 4 to 12 months in length, support research activity and RAs stated financial support and a desire for a research experience as reasons for a RA-ship. Authors feel that the RA-ships may be falling below their training potential.	Study to depict current RA-ships, ascertain student' perceptions, depict specific activities and determine if genuine research apprenticeship exist. Results compared to Roaden and Worthen (1976) study, Survey of RAs in education and social science at five U.S. universities.
Ethington and Pisani (1993)	Findings indicate RAs report greater growth in research skills than TA and over those not a graduate assistant (p.352).	Survey to study growth and professional development of graduate students and those who held assistantships. Multidisciplinary study of 524 (74% response rate) teaching, research and graduate assistants.
Perna and Hudgins (1996)	The study identified certain benefits of the research assistantship such as the provision of structurally based opportunities for doctoral students to interact with and learn from faculty, a ready-made peer group for support and associated informal socialization experiences. Research assistantships were also found to reduce students' financial concerns.	This qualitative study explored the professional socialization experiences of doctoral students enrolled in the school of Education at a public research university. Also the effect of financial concerns on graduate students' socialization was addressed. The study analyzed a variety of data including students' written personal reflections, interviews with three students, a focus group discussion with six students, participant observation, and a review of written documents.
Anderson and Swazey (1998)	Findings suggest greater attention should be given to supervision and training of teaching/research assistants. Statistics indicate that 63% strongly agree or agree that the faculty have exposed them to a wide variety of useful research experiences (p.5).	A 1989 survey of over 1,400 doctoral students in chemistry, engineering, microbiology, and sociology at major research universities elicited perceptions of the graduate experience.
Weidman and Stein (2003)	Findings show social interaction among students and faculty to create a supportive climate to stimulate students' research and scholarly productivity (p.653).	This multivariate study addresses socialization of sociology and Education doctoral students to the academic norms of research and scholarship at a major research university. Survey of 50 active PhD students (60% response rate).

Perna and Hudgins (1996) found in a qualitative study in a School of Education that the student respondents felt that the research assistantship involved "grunt work" (p.28). Nonetheless, Education students felt that they received many benefits such as: "exposure to external funding organizations, opportunities to network with faculty at other institutions, recommendations from the faculty supervisor, joint student-faculty publications, presentations at professional conferences and development of research and other professional skills" (p.30). In short, one might characterize these benefits as important for their careers and valuable opportunities. Even so, it is interesting to read how these students describe their interaction in wide-ranging terms.

Curiously, in partial contrast, the same sample indicated that they did not find their research assistantship intellectually stimulating and challenging (p.34) which seems incongruent with the career benefits. The authors did not address this incongruence although they felt that the pre-assignment of students to research supervisors at time of program entry was the cause of early feelings of mismatch because students who were further along in their degree were able to connect their RA duties to their dissertation (p.35). I was curious about this so I investigated how the RAs described the outcomes, whether the research project was related to the RA's own research and whether they reported any tensions.

Perna and Hudgins (1996) felt their study showed at least three benefits accruing to Education students who held research assistantships: a structure to interact with faculty, a ready-made peer group through shared office space, and less financial concerns (p.48 – 49). Even though students felt the research assistantship offered important preparation for their future careers, Perna and Hudgins (1996) wondered about the quality of the research skills developed and whether RAs received sufficient guidance for selection of dissertation topic and training on research funding (p.49). Similarly, Golde and Dore (2001) concluded, based on student reported findings, that "the training doctoral students receive is not what they want, nor does it prepare them for the jobs they take" (p.3). To address these issues, I investigated the activities that RAs engaged in and the way students perceived these activities in terms of their PhD or professional career.

Roaden and Worthen (1976) surveyed members of the American Educational Research Association (AERA) about their prior experience as a research assistant while

in graduate school. They found that research assistantship experience was positively related to subsequent research involvement and research productivity in faculty's careers (p.143). Although based on self reports, the authors culled their sample to ensure all had been involved in specific research activities which strengthens the findings. Further, research activity was defined stringently as "the average number of research articles, monographs, books and reports that a person publishes and research contracts or grants a person received" (p.156).

Yet Roaden and Worthen cautioned that these findings "do nothing to identify the *specific* types of experiences that might collectively account for the relationship observed" (p.143, italics by author). Therefore, Roaden and Worthen reviewed 19 experiential variables and in all cases, except one (typing, filing), the research assistants with experiences specific to authentic research, such as designing a research study and constructing research instruments, were more highly productive in terms of research publications and grants than research assistants without these experiences (p.147). As noted previously, Roaden and Worthen had culled their sample to exclude those who did not meet their stipulative definition of a research assistant. Yet Roaden and Worthen also conceded that when they tested for academic ability as measured by holding a fellowship or scholarship, they found a positive relationship between those research assistants who held these forms of awards and high research productivity, highlighting one of the interpretive limitations of correlational research.

Notwithstanding the possible influence of academic ability as measured by Roaden and Worthen in 1976, Nettles and Millett (2006) found a significant relationship between a research assistantship, research productivity and fellowships for graduate Education students (p.165). However they found no significance between GRE quantitative scores and research productivity, albeit loosely defined (p.165). However, it is possible that in thirty years much has changed in the PhD experience that confounds comparing these studies, including the definition of research productivity.

Worthen and Gardner (1988) surveyed RAs in education, social science or behavioural science at five U.S. universities. The purpose of the study was to depict the types of RA-ships, ascertain students' perceptions of their RA-ships, depict the specific activities and experiences, determine whether RA-ships provide genuine research apprenticeship experiences and compare their study with Roaden and Worthen's (1976)

results (p.6 – 7). Worthen and Gardner's findings include the following: majority of the RAs reported it was a positive learning experience; less than half found their RA-ship to be conducive to research; more than half had not given a research paper or written a research article (p.23); and many RA-ships are too short to allow much training(p.24). This study piqued my interest in what I would find in terms of types of research activities and the FOE experience.

As the Roaden and Worthen (1976) study was a retrospective look from the memories of professors back to their research assistantship years, the study might not capture the true essence of the research experience. Further, both the Roaden and Worthen (1976) and the Worthen and Gardner (1988) study are potentially not current sufficiently to reflect practice in 2007. Hence I interviewed RAs with current or very recent research assistantships. Further, since I was interested in the kind of activities RAs engage in, Roaden and Worthen's nineteen experiential variables were used to design the survey and semi-structured interview protocol. Worthen and Gardner's (1988) results were an interesting comparison to my findings.

Similar to Roaden and Worthen's findings, other studies found a relationship between the RA experience and research productivity. These studies relate professional development and socialization of graduate students to research assistantships. Girves and Wemmerus (1988) found a relationship among a research assistantship, involvement in the department and socialization. Similarly, Weidman and Stein (2003), although not a specific RA study, found that Education and sociology students reported that social interaction fostered research and scholarly productivity (p.653). I investigated the community relationships to understand who the RA interacts with and the nature of the relationship.

The multi-disciplinary comparative study by Ethington and Pisani (1993), which surveyed all graduate students at the University of Illinois, considered growth and professional development. The authors point out that their findings concerning assistantships could be caused by personal factors or biased by field of study (p.351). They acknowledged that they do not know enough about the nature of the research assistantship experience (p.353). Nevertheless, Ethington and Pisani found that students who were graduate assistants were significantly more active within the external academic community (1993, p.353). While all graduate assistants perceived their

professional growth as positive, Ethington and Pisani (1993) found that TAs did not find their experience contributed as much to their development as research assistants (p.352). Startling though is the finding that with respect to development of research skills, TAs had the lowest perception of growth while those who held neither type of assistantship (RA or TA) perceived the same growth as research assistants. Thus, Ethington and Pisani (1993) conclude that possibly the teaching assistantship was impeding the development of these research competencies (p.352). This finding seems contrary to other studies that espoused the benefits of an assistantship. Ethington and Pisani (1993) suggest that faculty need to examine carefully the assistantship duties and consider whether the requirements are conducive to proper development of competencies and socialization (p.353). Hence I explored the student's perception of the outcome of the RA experience. I was curious what outcomes the RA would report and whether they were intentional or serendipitous.

In summary, prior research indicates that a research assistantship might contribute positively to research productivity, RAs could develop research skills and a RA-ship possibly provide a structure for faculty-student and peer interaction. As a caveat though, the studies show that the definition of research productivity may be problematic for comparison purposes. The next section considers the nature of the knowledge and skills developed in the RA experience.

2.6 Perceived Issues of a Research Assistantship

To this point, I have reviewed several important studies, including Nettles and Millett's (2006) which found that research productivity and research assistantships were valuable aspects of the PhD experience. Other studies have confirmed a positive relationship between the research assistantship and research productivity. However, this section looks at perceived issues surrounding the RA experience. The literature indicates two issues: RA and RA-supervisor goal incongruence and lack of transparency of authorship. With only two significant studies, the literature search seems to suggest that this area is under-researched perhaps.

Brown-Wright, Dubrick and Newman's (1997) investigated graduate assistant and faculty role expectations and authorship. "Graduate assistant" was defined broadly as a teaching assistant, research assistant and administrative graduate assistant and the study was at a single institution so the findings may be limited. Nevertheless the

findings indicate different role expectations which Brown-Wright et al (1997) attributed to faculty reporting lower skills expectations than what graduate assistants feel they possess (p.415). While the study did not investigate reasons for this differing skill expectations, it might be attributed to faculty being uninformed about current course work in the program or perhaps students' experiences prior to graduate school. This latter point is particularly important as most Education doctoral students return to graduate school with life skills acquired in their professional careers. Another possibility is that faculty perceive their role as teaching the inexperienced researcher the "ropes" so simply assume lower competencies than students feel they possess. Thus I asked RAs whether their previous work experience was useful in their RA appointment and whether any tensions arose in the assignment or completion of the tasks.

Authorship was another area investigated by Brown-Wright et al (1997). The authors asked faculty and students whether a graduate assistant who assists with analysis of research data should be listed as an author. While there was agreement that authorship was appropriate it wasn't unanimous. The results indicated 96% of graduate assistants agreed but only 88% of faculty agreed. In another example, approximately 50% of both graduate assistants and faculty agreed that authorship results if a graduate assistant assists in typing, proofreading, searching the literature and/or coding of the data (p.413). Clearly the implicit norms of the profession need more transparency if we embrace the importance of research productivity. Are there field specific unwritten codes about authorship? Is it dependent on implicit or explicit norms of the specific institution? For example, I have noticed during the process of the literature review that in some studies the authors acknowledge those who assisted with the study yet these people are not given authorship. In speaking with colleagues, it seems that some faculty believe that part of their role as a RA supervisor is to promote the graduate student and they are willing to give up authorship to achieve this. The next study clearly shows lack of clarity of authorship as a wide spread issue in many fields.

While not a study that specifically identified research assistantships, Golde and Dore (2001) highlight a concern about a seemingly deficient research ethic, which is significant if research productivity is important to completion as Nettles and Millett (2006) contend. Alarmingly only 26.2% of the respondents were very clear about determining and ordering authorship of papers (Golde & Dore, 2001, p.16). Further, Golde and Dore (2001) feel that their overall "data indicate that the ethical dimension of faculty and

professional life ... is not, as often assumed, part of graduate training" (p.14). Only 29.1% of the respondents reported that a workshop or seminar on research ethics was available to them (Golde & Dore, 2001, p.27). Since 56.2% of the respondents report that the source of their information is their supervisor (Golde & Dore, 2001, p16), it is important that faculty are informed about ethical issues as well as role expectations.

In conclusion, these studies indicate a gap in the perceptions of the knowledge developed in the PhD experience and possibly during the research assistantship. If research productivity is important to completion as Nettles and Millett (2006) argue and assuming research is central to the RA experience, it seemed critical to explore the perceptions and beliefs about authorship if it arose during the interview. I was curious how students broached the subject of authorship and whether they felt any tensions in this discussion.

2.7 Conclusion

In Chapter One I introduced the single research question, ***How do SFU Education PhD students describe their RA experience?*** To unpack the experience, several supplementary questions guided the research as informed by the perspectives of activity theory and the extant literature. Since the literature indicates a paucity of structured theoretical investigations of the RA phenomenon, activity theory provides the framework. Activity theory aims to understand what people are doing in practice, how they engage and why. Engeström's triangle model directs the researcher to consider the activities in the system in terms of specific elements: subject (RA), tools (resources), object (reasons to engage), outcome, rules, community and division of labour. Further the assumption that contradictions or tensions may occur in an activity system suggests addressing this possibility. In addition, the findings in the literature about the research assistantship inform the research questions. The literature includes findings that the RA assistantship contributes favourably to the future research productivity as a faculty member (Roaden & Worthen, 1976); current research skills (Ethington & Pisani, 1993) and research productivity as a student (Nettles & Millett, 2006). Also the research assistantship seems to create opportunities for beneficial interaction with others (Lovitts, 2001; Girves & Wemmerus, 1988; Perna & Hudgins, 1996). Unclear role expectations may result in different perceptions about the roles and tasks of the participants (Brown-Wright, Dubrick & Newman, 1997). Thus my research questions focused on the RA's

intentions, activities, resources, outcomes, roles and the potential for conflict or tensions in these areas:

1. What **reasons** do students report for participating in a research assistantship?
2. What **outcomes** do students report as a result of the research assistantship?
3. How do students describe their reported **activities** in the research assistantship?
4. What **resources** do students report they use or need in the research assistantship?
5. **Who** do students report as significant to their participation in the research assistantship?
6. How do students describe the **rules and division of labour** in the research assistantship?
7. What **tensions or problems** do students report in the research assistantship?

The rationale for the research questions as informed by activity theory and the extant literature are as follows. Question one concerning reasons for participation intended to increase our understanding about motivations and intentions. Activity theory assumes the subject (RA) in an activity system is motivated to achieve an outcome. Through this motivation they will take actions driven by a goal(s). To understand the activity system fully, one needs to understand the RAs' motives and goals. Engeström (1990) suggests that how the subject frames and constructs the object is a key determination of understanding the activity system (p.112). Thus not only is the reason of interest, how the RA frames the reason is of importance. Further, the literature indicates that a research assistantship is an important financial variable for PhD completion (e.g. Baird, 1990; Bowen & Rudenstine, 1992; Sheridan, 1990). Yet Nettles and Millett's (2006) descriptive study suggests that the research assistantship is an important aspect of the PhD experience beyond financing the degree (p.200). As such students may desire a research appointment for reasons beyond financial support. As such, the question asked what reasons the RA report for engaging in a research assistantship. I was seeking to understand whether students look for specific assistantships intentionally, and/or whether students might articulate intrinsic reasons for engaging in a research assistantship. Are there other extrinsic reasons besides financial

for participating in a research assistantship? Do students seek out a research appointment with the intention to achieve specific research skills or productivity?

Question two focused on the outcomes of the research assistantship as reported by students. In activity theory, there is a presumption that the participants engage for the motivation to achieve a particular outcome. Notwithstanding the possibility that the participants might not be able to articulate the benefit or outcomes as suggested in the activity theory literature, the question asked the students to consider what resulted from the participation. The literature suggests certain benefits beyond the integration into the department and support from fellow RAs (e.g. Perna & Hudgins, 1996). Some might report a belief that they will have a shorter time-to-degree as suggested in the literature (e.g. Abedi & Benkin, 1987; Baird, 1990; Bowen & Rudenstine, 1992). Others might feel the opposite as the work in the research assistantship might not relate to their own thesis and thus be a distraction to progress (Nerad & Cerny, 1993) albeit providing other benefits. Based on the literature and anecdotally, I was aware that the outcomes had the potential to be either favourable or less than ideal.

Question three about activities concerned itself with identifying the nature of the research-related activities. Activity theory is "a useful framework for understanding ... activity in context" (Jonassen, 2000, p.38). What do RAs do? The literature suggests the kind of work RAs engage in is very important. Roaden and Worthen (1976) argue that authentic research activities relate to research productivity as a faculty member while Nettles and Millett (2006) suggest that the research assistantship relates to current research productivity. Further, Ethington and Pisani's (1993) findings suggest that RAs experience growth in research skills. Brown-Wright, Dubrick and Newman (1997) report that students and faculty may have incongruent role expectations in an assistantship while others suggest there needs to be more attention to the quality of the research preparation (Perna and Hudgins, 1996; Ethington and Pisani, 1993). My intent was to appreciate the extent of activities or tasks performed by RAs and to explore whether they described them as valuable to their PhD program or future career. Do the RAs perceive the activities as meaningful, valuable tasks or learning opportunities? Are there other non-research related activities in the research assistantship?

Question four about reported resources addressed activity theory's premise that implicit and explicit tools or instruments mediate the students' actions. Implicit tools include intellectual knowledge while explicit tools include computers and software for

example. The literature does not address resources used or needed by RAs which is curious given the research focus of the appointment.[7] One could speculate that the tools are implicit knowledge from course work and as passed on by the faculty member. Yet advances in research-related software suggest students need software capabilities. The intent was to identify the resources or artefacts used or produced by students. What physical resources, such as office space and a computer, might be required? What course work or workshops (knowledge) contributed and where are the gaps in needed resources?

Question five and six sought to understand the social relations and the community. Community as an element of activity theory relates to the people who are interested in the same object as the subject. Jonassen (2000) notes that participants are members of multiple communities and this can give rise to conflicts as the participants negotiate their roles and participation in each community. In the literature, the idea of community arises in different contexts. Lovitt's (2001) study relating to PhD attrition suggests that RAs are more highly integrated and thus more likely to complete their degrees. Similarly, Girves and Wemmerus (1988) suggested that this involvement in the department related to PhD completion. Perna and Hudgins (1996) reported that students feel a research assistantship provided support from fellow RAs and faculty. I was seeking answers to these questions: Who do students report as being a significant part of the RA appointment? Who do they perceive in their RA-ship as important or influential to their PhD experience? Are there explicit or implicit rules and norms governing those relationships? What roles or division of labour result during the activities? Are there tensions in the relationships?

Lastly, question seven focused on the potential for conflict and tensions as reported by RAs in their interactions with others or in their ability to perform the activities. In activity theory, contradictions, which arise within and among the activity system elements or between other activity systems, are a force of change. These contradictions result in innovation. Further, the division of labour and the rules or norms of the activity system might be a source of tension which may affect the participation in the research assistantship. The literature suggests these contradictions might arise due to different role expectations and authorship beliefs (Brown-Wright et al, 1997).

[7] The literature search did not indicate empirical research although several authors offered suggestions for improving the research appointment. For example see Nyquist & Wulff (1996) and Pearson & Brew (2002).

In summary, I supplemented the primary research question, *How do SFU Education PhD students describe their RA experience?* with seven questions driven by the theoretical framework of activity theory and the findings in the literature. Table 2.3 summarizes the theoretical and literature links to the research questions. These questions guided the data collection as described subsequently. Table 2.3 is the beginning of the evidence trail recommended by Yin (2003). The chain of evidence increases reliability as the chain shows the derivation of any evidence from initial research questions through to the ultimate case conclusions (Yin, 2003, p.105).

Table 2.3 Research Questions linked to Activity Theory and the Extant Literature

Activity theory	Literature	Research Question
Intentions/reasons Participants are motivated to achieve objects and outcomes. To understand the activity system, one needs to understand the participants' motives and goals.	Findings suggest research assistantship is a financial variable but participants may be motivated for other reasons such as research productivity.	1. What **reasons** do students report for participating in a research assistantship?
Outcomes Intentions of the activity system	Findings suggest shorter time-to-degree if a RA although also RA distraction if work not related to thesis; higher completion rate; research productivity	2. What outcomes do students report as a result of the research assistantship?
Activities What are people doing?	Findings suggest growth in research skills while others recommend attention to quality research preparation	3. How do students describe their reported **activities** in the research assistantship?
Resources Actions and interactions are mediated by explicit or implicit tools and resources.	No empirical research related to resources.	4. What **resources** do students report they use or need in the research assistantship?
Community People interested in the same object as the subject.	Findings suggest RAs tend to be more involved in the department and may look to other RAs for support.	5. **Who** do students report as significant to their participation in the research assistantship?
Rules and Division of Labour: Explicit or implicit norms; horizontal division of tasks and vertical division of power	No empirical research related to rules and division of labour	6. How do students describe the **rules and division of labour** in the research assistantship?
Tensions/contradictions Contradictions result within and among the elements of the activity system and other activity systems and give rise to innovation or change.	Findings suggest there may be incongruent role expectations and a conflict in authorship beliefs.	7. What **tensions or problems** do students report in the research assistantship?

CHAPTER 3: METHODOLOGY

"A case study illuminates the reader's understanding of the phenomenon"
(Merriam,1998, p.13)

The thesis is a case study of the RA phenomenon at Simon Fraser University (SFU) from the perspective of PhD students in the Faculty of Education (FOE) enrolled in Curriculum Theory and Implementation (CTI) or Educational Psychology. In this section I explain how I investigated the RA phenomenon through an intrinsic exploratory case study, framed by activity theory. The broad research question is, "*How do SFU Education PhD students describe their RA experience?*" Marshall and Rossman (2006) note the importance of choosing a research method that is congruent with the research question (p.12). They state that the research design must flow logically from the research questions with support from the methodological literature (p.13). Thus a brief discussion of alternative research methods precedes the discussion about the methodological literature and the design of this RA case study. However, prior to this discussion, it is important to locate the thesis research in a broader research project.

In September 2006, a large longitudinal study of the doctoral experience began with the investigation of many aspects of the doctoral experience that might ultimately lead to understanding and addressing the problem of time-to-degree and low completion rates of the PhD. This thesis research, focused on the RA experience, contributes to the larger research study since the literature indicates a research assistantship, among other factors, contributes to research productivity which in turn seems related to PhD completion.

3.1 Alternative Research Methods

The phenomenon of the RA experience might be addressed through many research designs, most notably a survey, as has been demonstrated in the literature which established correlational relationships between a number of variables of interest to the RA experience. While a survey can add to methodological triangulation, on its own another survey will not contribute to the *understanding* of the nature of the research assistantship. Therefore, a reasonable next step was an in depth exploration of the RA

experience. I considered two possible research designs: a phenomenological study, which would describe the lived experiences of research assistants; or a case study, which would be an in depth situational exploration of the phenomenon. A phenomenological study would increase our understanding of the meaning of the lived experience of research assistants. It might uncover some of the issues mentioned in the correlational research literature relating to skill development, or interaction of the RA with others. However, a phenomenological study does not account for the situational variables of the PhD experience, such as program of study and departmental culture that might influence the reported experience of the phenomenon. As a result I chose a case study approach.

3.2 Case Study Methodological Literature and the RA Study

This section explains how a case study design assists with understanding the RA phenomenon. Robert K. Yin (2003) and Robert B. Stake (2005, 2006) influenced my research design.

Yin (2003) states that "a case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (p.13). As discussed earlier, a constellation of factors may influence the PhD experience. The research assistantship is one of these factors and when viewed from the contextual nested model of McAlpine and Norton (2006), one can see how the boundaries between the phenomenon and the context are not clear as noted by Yin (2003).[8] If we apply the concept of a nested model to locate the RA experience, then the RA and faculty member as the RA supervisor have a relationship and are at the centre, but they have different roles and responsibilities in the next level, the departmental context. A RA is also a graduate student with various responsibilities as the PhD progresses. Initially course work may influence the student's perceptions of the RA tasks. Besides conducting research, faculty teach and supervise graduate students. These different roles and responsibilities may influence the interactions and activities in the research assistantship. For example, a student hired to perform a literature search at the beginning of a research project may find this work very relevant and worthwhile if the literature review relates to the RA's thesis or other area of interest. Therefore in this study I considered the possibility of a blurring RA-PhD

[8] Find a detailed explanation of the McAlpine & Norton (2006) model in section 1.2.

boundary and other contextual issues that might influence the perceptions of the RA's experience.

Stake (2005) classifies a case study investigation as intrinsic or instrumental. This distinction reflects the intent of the research questions. An intrinsic case study "is undertaken because, first and last, one wants better understanding of this particular case" (Stake, 2005, p.445). In contrast, an instrumental case study is a particular case "examined mainly to provide insight into an issue or to redraw a generalization" (Stake, 2005, p.445). As the phenomenon is the research assistantship at SFU in the FOE, it is an intrinsic case study.

Yin (2003) further delineates the type of case study used in research as explanatory, descriptive, and exploratory. Yin's distinction reflects the intent of the research questions similar to Stake's classification of intrinsic or instrumental. However Yin's (2003) focus is on the purpose of the investigation. Explanatory case studies tend to explain causal links that are too complex for survey strategies (p.15). Descriptive studies describe an intervention and the real-life context while an exploratory case study explores those situations in which the intervention has no clear, single set of outcomes (p.15). These distinctions guide the study's propositions and unit of analysis although Yin notes certain features of each may occur in a case. In this case study, I was not seeking to confirm the possibility of a positive relationship between a research assistantship and completion but rather I was exploring and describing the RA phenomenon as reported by Education PhD students. For example, a case study's propositions direct attention to the examination of the phenomenon within the scope of the study. Fundamentally it is assumed the research assistantship is about research activities. In a descriptive study, the intent is to gather evidence about the nature of these activities while uncovering the full experience. The descriptive aspect is secondary to the overall goal. Therefore, adding Yin's (2003) delineation to Stake's (2005), this thesis research is an intrinsic exploratory case study.

The complex nature of the RA experience is another reason why a case study is appropriate to answer the research question. Yin (2003) writes that case study inquiry,

> copes with the technically distinctive situation in which there will be many more variables of interest than data points and as one result relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as another result benefits from the prior development of theoretical propositions to guide data collection and analysis (p.14).

Similarly Stake (2006) writes that epistemologically, a case study "requires experiencing the activity of the case as it occurs in its contexts and in its particular situation. The situation is expected to shape the activity as well as the experiencing and the interpretation of the activity" (p.2). It seems to me that Yin and Stake clearly identified the most compelling reason why a case study was appropriate. To study the RA phenomenon, I looked at the situational factors as well as the particulars using a theoretical frame to guide the data collection and analysis. As Merriam (1998) observes, a feature of a case study is that it "illuminates the reader's understanding of the phenomenon under study" bringing about "discovery of new meaning, extend[ing] the reader's experience, or confirm[ing] what is known" (p.13). This thesis research offers greater understanding of the nature of the RA experience for Education PhD students.

3.3 Defining the Boundary of the Case Study

Miles and Huberman (1994) describe the boundary of the case in terms of setting, concepts and sampling (p.25). Similarly, Stake (2006) writes that the "case has an inside and an outside. Certain components lie within the system, within the boundaries of the case, certain features lie outside. A few of the outside features help define the contexts or environment of the case" (p.3). The following paragraphs and accompanying graphic (Figure 3.1) reflect the boundary of the case study which is the SFU Education RA phenomenon.

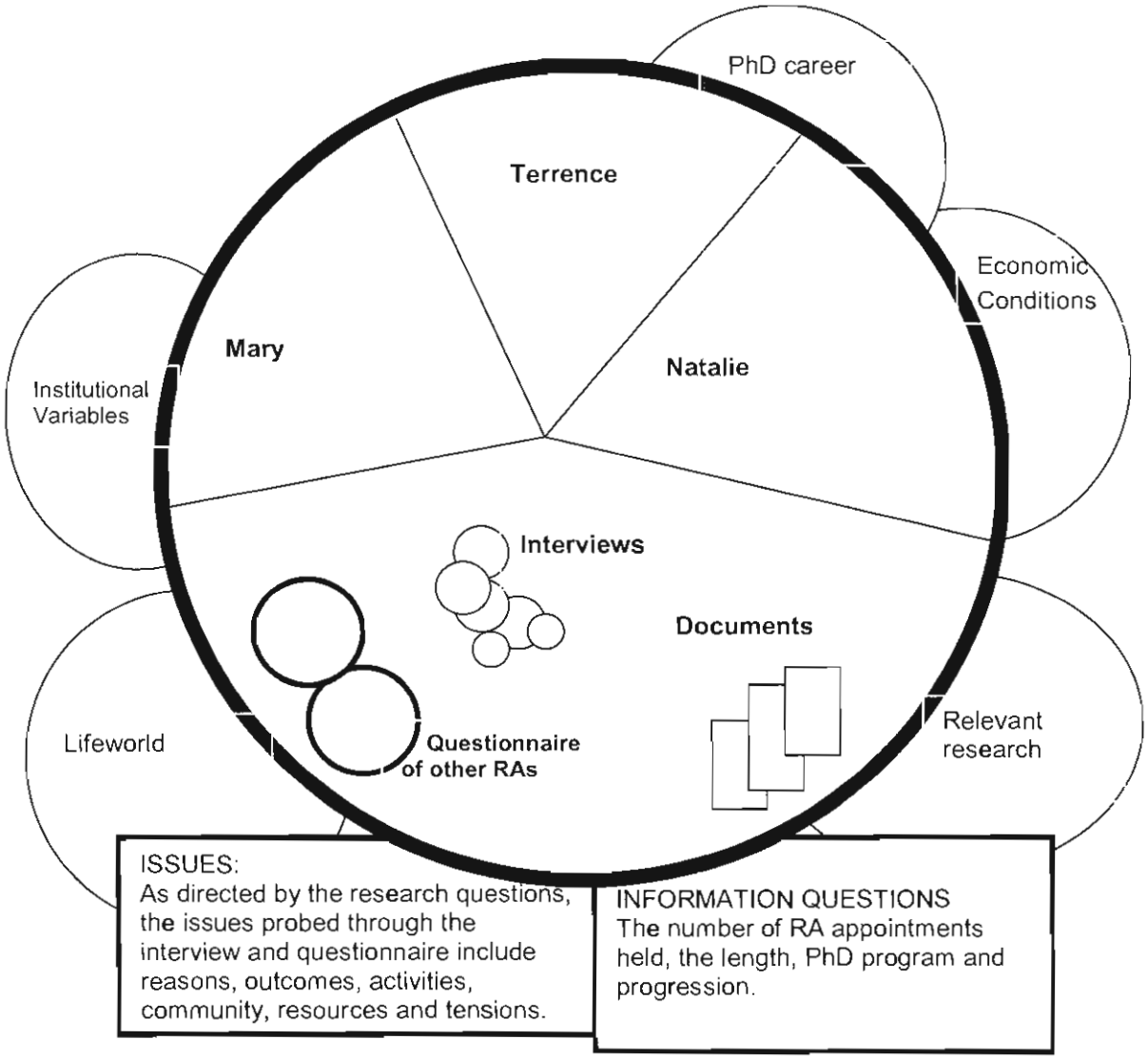
Figure 3.1 illustrates Stake's (2006) graphic view of the case and its boundaries as tailored to this RA thesis study.[9] The large circle represents the complete thesis study, the RA phenomenon for short or using Stake's (2006) term, the *quintain.*[10] Addressing *where, who, what, why, when and how* assists with drawing the boundary of the case study. The case study rests within SFU's Faculty of Education and the selected interview informants were PhD students who have held a recent research assistantship. As explained previously, this case study is part of a larger PhD research

[9] Stake grants permission to use the diagram to purchasers of the book, Multiple Case Studies (2006) published by The Guilford Press. The various worksheets used in this thesis are available from http://www.ed.uiuc.edu/circe/EDPSY490E/worksheets/worksheet.html

[10] Stake (2006) defines the quintain as the "arena or holding company or umbrella for the cases we will study" (p.6). Stake feels that the term *phenomenon* is not large enough to encompass the meaning of the focal point of the research. Nevertheless, I use *RA phenomenon* to refer to Stake's *quintain*.

project in progress at SFU and McGill University. However, for the RA thesis study I collected data from students affiliated with SFU Faculty of Education only.

Figure 3.1 Graphic of plan for the SFU Education RA case study adapted from Stake's (2006) "Worksheets for multiple case studies".



Further, while Masters' students are RAs, they were not informants in this study as the context is the PhD experience, as driven by the larger PhD research project. In addition, time is a boundary as data collection occurred during a specific semester (Fall 2007) and not over the period of the RA's appointment. The research questions set a boundary around what was being investigated and why, as supported by the theoretical framework and the literature review. Chapter Two explains this aspect. Lastly the methods and theoretical frame bound the case in terms of how the data was collected (interviews, documents and questionnaires), analyzed (structured as a case study) and organized (activity theory themes).

Looking at Figure 3.1, inside the boundaries of the case are the data collected from the three RAs who completed a questionnaire and were interviewed: Mary, Natalie and Terence. Their in-depth interviews elucidated some aspects of the experience that were not evident from the questionnaire data. In addition to the three interviews and their questionnaires, fourteen RA questionnaires were collected. Together these seventeen questionnaires and three interviews represent the RAs' perspectives in the case study.

Outside the circle are other external contextual variables (as shown in small circles) that influence the RA phenomenon. For instance the design of the case study reflects the findings from the literature review about the RA experience. In addition, the research assistantship occurs as part of the PhD experience. For example, it seems that progress in the PhD program and knowledge gained in the PhD program may affect the RA experience. Economic conditions affect the availability of research grants and thus the ability of faculty to hire and retain RAs. Personal variables, such as financial or a desire to work as a RA, affect the student's motivations for the RA appointment. Lastly there are other influential institutional variables, such as the overall environment at SFU and more specifically in the Faculty of Education and finally at the level of the individual faculty member. For example, the faculty may feel pressure to garner more research grants and hire more RAs. These pressures may affect the number of RAs hired and the level of interaction between the faculty and the PhD student. These SFU and FOE institutional variables are discussed further subsequently and in detail in Chapter Four. Exhaustive study of all of these variables are outside of the case study's boundary yet the very nature of case study research required me to think about the *particular* of the case study within the *general* (Stake, 2006, p.10). Therefore as these variables arose in

the findings, I explored these "outside" variables as required to understand both the *particular* and the *general*.

To set the context of the case study at SFU in the Faculty of Education, I relied on numerous documents and web site information found either by searching SFU's web site for a key word (i.e. research assistant) or by directly reviewing websites of SFU generally, and in particular the Faculty of Education, Graduate Studies, Institutional Research and Planning (formerly Office of Analytic Studies), Office of Research Services, V-P Research and SFU Policies and Procedures. External web sites included the Federal research granting agencies (Social Sciences Humanities Research Council (SSHRC) and Natural Sciences and Engineering Research Council (NSERC)), Statistics Canada, as it publishes statistics about graduates students, The University Presidents Council of BC (TUPC) and other relevant resources. From the Faculty of Education I reviewed the Graduate Orientation booklet, the "Three Year Plan, 2007-2010", the Report from the External Review team, March 2008; and the "Response to the 2008 Report of the External Review Team". I attended a FOE Graduate Student Orientation to more fully understand the initial PhD viewpoint. In addition I met informally with the Research Coordinator for the Faculty of Education as Dr. Winne is aware of the research agenda in the Faculty of Education. Further I informally talked with the Director of Graduate Programs, Dr. Bai, to discuss graduate studies generally in the FOE. These informal conversations were semi-structured around broad questions of research and the RA experience in the Faculty of Education at SFU. I spoke with Dr. Winne after the RA data collection to have him reflect on some of the initial findings. This institutional information, as summarized in Chapter Four, reflects the external constraints of the case study as shown in Figure 3.1.

To complete the discussion of the graphic plan for the RA case study, the RA interviews and questionnaires probed the supplementary research questions which Stake (2006) calls the "*issues*". I discuss how I approached collecting data about the supplementary questions in the following section on data collection. The "*Information questions" as* shown in Figure 3.1 are separate from the "issues" as they do not tap into the essence of the case study's issues (Stake, 2006, p.9). Examples are the questions about the RAs' program of study, the number and length of RA appointments and career history. Discussion of these details follows after an explanation of the study participants which also bound the case study.

3.4 Ethics Review

As required, I completed the SFU Ethics Approval application and received approval from SFU's Director of the Office of Research Ethics (DORE). I prepared two consent forms – one for the interview of research assistants and a separate consent form for the online questionnaire although in substance they were the same consent form. Interviewees read the consent form and signed it at the time of the interview. (See Appendix One for the consent form.) Questionnaire participants read a consent form online and then gave their consent by indicating they had read it and were agreeing to participate. This action to click on that agreement then took the participants to the secure log in page for the questionnaire.

3.5 The Participants

Purposeful sampling lead to information rich cases (Gall et al, 2003, p.178). In order to access information about the RA experience, I purposefully recruited students who have current or recent past experience as a research assistant. While I initially thought I would recruit all volunteers (interview and questionnaire) through an email, this wasn't necessary as I found the snowball technique effective for selecting the interviewees. Through conversations with other PhD students, I found two participants and the third student was recruited through another student who advertised my study to her colleagues. Since I was able to recruit all participants, I preserved their anonymity even from my supervisor.

I advised the interview participants of their complete anonymity and noted they could be candid. SFU has three campuses so I made myself available for interviews at all campuses. Two interviewees chose Burnaby Mountain campus and one chose Surrey campus. I emailed current Education PhD students to invite them to complete the online questionnaire. A subsequent Chapter Three section discusses the interview and questionnaire process in more detail.

Stake (2006) believes that one of the main criteria for selecting cases is whether the case provides an opportunity to learn about the quintain or phenomenon (p.23). To select interview participants, I considered the level of RA experience, as various levels of experience and when they last worked as a RA might affect how the students recalled and described their RA experience. Hence, using criterion sampling I identified interview

volunteers that had completed one appointment of at least 4 months at any time in the last twelve months. I chose an assistantship in the last twelve months with a view that recall might be difficult or incomplete if the experience was not in the last twelve months. I interviewed three experienced research assistants, who had worked from four months to thirty-six months. I did not include the pilot interview data in the thesis as the PhD student was a RA for my thesis supervisor. I felt there could be a perception of a conflict of interest so decided it was prudent to exclude this data.

The following chart provides the demographic information of the interview study participants. Note that the snowball technique resulted in a volunteer from three different age groups and from two different programs. Natalie might be categorized as a novice RA with four months of experience while Terrence has a moderate amount of experience at sixteen months and Mary is quite experienced with three years. I reserve further discussion for the findings and discussion section. Two of the interview volunteers are enrolled in the Curriculum Theory and Implementation program while the other is enrolled in Educational Psychology.

Table 3.1 Characteristics of Interview Volunteers

Alias	Terrence	Natalie	Mary
Age	30 to 39	40 to 49	20 to 29
Year started PhD program	2006	2006	2004
Total time as RA	16 months	4 months	36 months

For the questionnaire, I invited all current PhD students who have held a RA appointment at any time during their PhD career to complete the online questionnaire. Thus I did not limit it to participants who have held a RA in the last year. This was done to try to encourage as many RAs as possible to share their experiences. There were fourteen (14) responses. Table 3.2 summarizes the demographics of all seventeen participants. The questionnaire comments provided rich data due to the number of comment boxes and the length of the respondents' answers. I reserve further discussion for the findings and discussion chapters.

Table 3.2 All Respondents' Demographics

Category	Number	Percentage of total
Gender		
Male	3	18%
Female	14	82%
Age		
40 to 49	9	53%
30 to 39	5	29%
20 to 29	3	18%
Year Admitted to PhD program		
2007	2	12%
2006	3	18%
2005	5	29%
2004	3	18%
2003	2	12%
2002	2	12%
Program of Study		
Educational Psychology	6	45%
Curriculum Theory and Implementation	11	55%
Total time as RA		
4 months to 8 months	7	41%
Over 16 months	10	59%

While there are several doctorate programs in the FOE as described in Chapter Four, the respondents represent six RAs in Educational Psychology (35%) and eleven RAs enrolled in Curriculum, Theory and Implementation (CTI) (65%). These are the two largest program areas accounting for 82 students (58%) of all active FOE PhD students.[11] At the time of the study, the number of RAs with an appointment was not known as it is not available through any means at SFU or the Faculty of Education. However, these seventeen RAs represent 21% of the total possible population in CTI and Educational Psychology. Yet many PhD students do not hold a RA-ship thus these seventeen RAs likely represent a higher percentage than 21% of the RA population.

[11] There were 140 Education PhD students registered in the Fall 2007 semester.

3.6 Data Collection Instruments

Case studies, which afford the opportunity to investigate a phenomenon in detail, rely on the depth and breadth of data collected. I collected data from two primary sources: face-to-face interviews with three research assistants and questionnaires from other PhD students who have held a RA appointment. Prior to the interview, interviewees also completed the questionnaire, except I formatted it as a Word form document for convenience. I utilized the demographic and experiential information to tailor the interview questions to the particular RA's experience. I felt this pre-interview step was successful in quickly focusing our discussion on the salient aspects of the research assistant's experience.

In the next section I discuss how I developed the interview questions and the questionnaire by explicitly showing the link with the chosen theoretical structure (activity theory), the research questions and the instruments. I am discussing this as the next section because it is common to both data sources and it sets the context for the procedures followed for collection and analysis of the data. I follow this with two sections which elaborate on each data source separately. First I discuss the questionnaire as all participants completed it and then the interview process follows. These two "data" sections explain the steps I followed to develop and pilot test the instruments and the procedures I implemented while collecting the data. After this, in a separate section I explain the data analysis procedures and analytical tools which were used for interview and questionnaire data.

3.7 Developing the Instruments: Linking Research Questions, Activity Theory and the Instruments

Yin (2003) recommends maintaining a chain of evidence to increase the reliability of the information in a case study (p.105). The principle is to show the derivation of any evidence from initial research questions through to the ultimate case conclusions (p.105). Table 3.3 builds on Table 2.3, "Research questions linked to activity theory and the extant literature". Table 3.3 continues this chain by adding the questions from the data collection instruments. Please see Appendix Two for the interview protocol/worksheet and Appendix Three for the Word form questionnaire. The basis for the instrument questions flows from the literature review and activity theory. Similar to Patton's (2002) view that the quality of the interview is enhanced through asking focused

questions based on what you want to find out, in Stake's (2006) terms, this is anticipating foreshadowed problems (p.30).[12] Foreshadowed problems become speculative issues for attention during the research. For example, the findings in the literature suggest students may seek a RA appointment in order to finance their degree. However, in the process they may realize they have gained valuable opportunities to publish their research or network with other faculty. This isn't a problem per se for this student but it is a problem for recruiting RAs if these kinds of opportunities are not associated with a RA appointment, particularly in the current academic environment which rewards research productivity. As a result, I asked about the outcomes and whether they were intentional or serendipitous. Similarly, the activity theory principle that contradictions might create tensions suggest foreshadowed problems. Thus I asked about the nature of the relationship between the RA and the faculty member. I wanted to understand how research assistants perceived their working relationship and whether any tensions influenced their experience.

Next the discussion turns to the details of the instrument questions as linked to activity theory and the literature review. The RA completed the questionnaire prior to the interview in order to allow me to tailor the questions to the particular RA experience. Also, the interview protocol guided my interview process to probe *foreshadowed problems* in a *particular* experience (Stake, 2006, p. 30). Other RAs who were not interviewed completed the same questionnaire except in an online format to preserve their anonymity and to ensure only one questionnaire per student.

The first research question asked, "What **reasons** do students report for participating in a research assistantship?" The literature suggests the research assistantship is an important financial variable in the PhD career (e.g. Baird, 1990; Bowen & Rudenstine, 1992; Sheridan, 1990). Hence this is one of the options allowed in the questionnaire question 21. Since the literature suggests other benefits, the other choices included looking for opportunities to learn a specific research skill or methodology, work with a specific faculty member or enhance research productivity. It is possible the RA didn't intentionally seek out the appointment and simply responded to the thesis supervisor's invitation to work on the supervisor's research project. Lastly the "other" category was included to capture reasons not evident from the literature that

[12] Stake (2006) attributes the concept of foreshadowed problems to Malinowski (1922/1984) who claimed that we could distinguish between arriving with closed minds and arriving with an idea of what to look for (p.30).

might be as yet uncovered or peculiar to SFU. Question 22 asked for an explanation about attaining the goal. While it might have uncovered tensions or problems (i.e. Research Question Seven), it illuminated the outcomes. The interview probed the particulars of each RA's experience by confirming the RA's number of appointments and length of work history. Lastly the question about means to obtain a RA appointment gave insight into how the elements of the RA activity system interacted with other activity systems, such as the department.

The second research question asked, "What **outcomes** do students report as a result of the research assistantship?" The activity theory literature suggests that a RA would be motivated to achieve the outcome through achieving the objects of their activities. Hence there is a close relationship between the reasons and the outcomes. Further, the RA literature suggests that reflection in hindsight may elucidate the outcome for the subject (RA) because the RA may not see the outcome until after the RA has utilized the knowledge or skills or experienced some aspect in another part of his/her PhD or professional career. For example, the RA literature suggests that PhD progression, completion, research skills, and research productivity are all possible outcomes. The RA may see in hindsight that the research work, either directly or indirectly, led to some other benefit. Yet the RA investigation seeks to understand the research assistantship in its context of the PhD experience. Therefore, Question 23 was open-ended although contextualized by asking about the possibility of development of research skills, opportunities accessible as a RA and whether the research assistantship influenced the PhD progression or professional career. Question 24 asked about difficulties related to the outcome (i.e. Research Question Seven). I was wondering if interacting activity systems created problems or if issues arose with others involved in achieving the outcome. The interview probed the details of the outcomes to understand the RA's perspective. If the RA felt the research assistantship was influential, in what way? Was it a beneficial experience or a distraction? Although RAs may have specific intentions as considered in Research Question One, the interview question asked about intentional and serendipitous outcomes.

Research Question Three asked, "How do students describe their reported **activities** in the research assistantship?" I derived the list of activities from the literature by combining activities from Roaden and Worthen (1976), Ethington and Pisani (1993), Weidman and Stein (2003) and Nettles and Millett (2006). Hence questionnaire question 25 asked about what tasks the RA engaged in and how they evaluated the tasks in

terms of value to their PhD academic or professional career. This evaluation was of interest as the literature shows that authentic research assistantship activities may lead to future research productivity as a faculty member (Roaden & Worthen, 1976) yet other research suggests the activities may not be stimulating (Perna & Hudgins, 1996). Question 26 asked if the RA experienced any tensions or problems in carrying out the task (i.e. Research Question Seven). In the interview, these "activity" questions probed the activity theory elements as the theory assumes the tools and community inter-relationships mediate the activity. Further, the interview explored why the RA scored the task in the range of 1(not valuable) to 5 (very valuable) to their PhD or professional career. During the interview the RA had an opportunity to explain the experience and the value of the task and whether s/he thought other PhD students would benefit from the same activity.

Research Question Four asked, "What **resources** do students report they use or need in the research assistantship?" According to activity theory, the explicit or implicit and "hard" or "soft" resources mediate the activities. The RA literature doesn't address resources hence I listed logical resources or tools that might have been involved in the RA tasks. Question 28 and 29 allowed the students to suggest other resources that might be beneficial and whether there might be problems gaining access to the suggested resources (i.e. Research Question Seven). In the interview, the questions probed the tool, why it was beneficial, how it was used, why it was necessary to accomplish the task, when and how often it was used and where. As in the questionnaire, during the interview the RA had an opportunity to expand upon suggested resources that might be beneficial and whether s/he thought there might be problems gaining access to the suggested resources.

Research Question Five asked, "**Who** do students report as significant to their participation in the research assistantship?" According to activity theory, RAs interact with a community who have an interest in the underlying object of the activities. The RA literature suggests that interaction with other RAs and faculty generally may result from the research assistantship. Questions 30 and 31 asked the RA to indicate who they interacted with and to score the people in terms of value to their PhD or professional career. This was similar to the scoring of the activities. The interview questions allowed the RA to discuss not only the people s/he indicated on the questionnaire but I also explored other people that may have surfaced during the interview. During the interview the RA expanded on why s/he interacted with this person(s), the value score and if there

were tensions in the interactions, what the problem was and how it was resolved. These questions addressed Research Question Seven.

Research Question Six asked, "How do students describe the **rules and division of labour** in the research assistantship?" Activity theory suggests that implicit or explicit norms guide the activity system and that the RA may experience a horizontal division of tasks and/or a vertical division of power. The RA literature seems to suggest that assignment of low level activities results in little benefit to the RA. Hence, looking at tasks assigned coupled with how the RA described the initial discussion about the contract and how the RA described the relationship partially elucidated the nature of the RA role. Questions 32 asked about how the details of the contract were explained giving five options ranging from no discussion of the contract to full discussion. While it is departmental policy for the signing of a standard contract, the "other" category allowed a RA to explain another way to initiate the contract and its terms. Question 33 gave the RA four choices to describe the relationship with the faculty member. Employee-employer might occur where the hiring of a RA relates to a single task. The apprentice-expert relationship might occur in the situation where the *student selected* a specific faculty member for his/her expertise or knowledge. The protégé-mentor relationship might develop where the *faculty member selected* a student. The RA might feel s/he has been taken under the wing of a senior faculty member. The junior colleague relationship might occur when the RA is nearing the end of his/her PhD studies (Nyquist & Wulff, 1996). These choices reflected possible working relationships plus an "other description". The interview probed the initial contract discussion starting with an explanation about sufficient initial contract discussion given what had transpired in the RA appointment. Were the hours and tasks similar to the expectation? If there was a need to change the hours/tasks, how did the faculty member handle it? Was the change more of a directive rather than a discussion? This type of incidence might have indicated something about the rules of the relationship. Finally the RA explained why s/he described the faculty relationship as indicated.

The remaining questions on the questionnaire targeted the situational variables of the RA. In the case of the RA interviewees, this information allowed me to tailor the interview questions to each RA's specific circumstances and it enhanced my reporting of the specific RA's experience. Questionnaire questions 1 to 11 gathered demographic information about gender, age, program, PhD career and employment now and expected employment upon graduation. Questions 12 to 15 gathered specific details

about the RA in terms of number and length of appointments, the total number of semesters hired as a RA and hours worked per week on average. Questions 16 to 20 asked how students found the RA appointment, any difficulties in accessing it, the nature of the relationship with the faculty member and whether the thesis topic related to the research project in terms of method or content. Lastly, the questionnaire asked about whether a RA was ever a TA or tutor marker (TM) in order to probe the idea that those interested in an academic career might attempt to gain work experience in two different facets of their future career. The last interview section and the questionnaire questions 34 and 35 allowed the RA to express a view generally about the research assistantship and whether s/he would recommend other PhD students seek a RA appointment.

In summary, Table 3.3 gathers the essence of the instrument questions as linked to the research questions, literature review and activity theory. After Table 3.3 the discussion turns to the particulars of the questionnaire process followed by the interview process. After this, I discuss data analysis as I approached the two data sources similarly in some ways.

Table 3.3 Research Questions linked to Activity Theory and the Extant Literature and Instruments

Research Question	Activity Theory and Literature	Interview Section (Appendix Two)	Questionnaire Number (Appendix Three)
1. What **reasons** do students report for participating in a research assistantship?	**Intentions/reasons** Participants are motivated to achieve objects and outcomes. Findings suggest research assistantship is a financial variable but participants may be motivated for other reasons.	**Section 3 Reasons.** The interview questions probed the reasons/motives, and ask about achieving his/her goal, and whether there were tensions. For example if the goal was not met, this might indicate a conflict in the RA-ship.	**Q21, 22** Question 21 asked the RA to choose among the list, as identified in the literature, or specify another reason. Question 22 asked the RA to explain whether the goal was met.

Research Question	Activity Theory and Literature	Interview Section (Appendix Two)	Questionnaire Number (Appendix Three)
2. What **outcomes** do students report as a result of the research assistantship?	**Outcomes** Intentions of the activity system Findings suggest shorter time-to-degree, higher completion rate; and research productivity with a research assistantship although RA work may be a distraction if work not related to thesis.	**Section 4 Outcomes** The interview probeds the outcomes. Although RAs may have specific intentions as considered in research question one, this interview question asked about intentional outcomes versus serendipitous outcomes.	**Q23, 24** Question 22 is open-ended although it is contextualized by asking about the possibility of development of research skills, opportunities accessible as a RA and whether the RA-ship influenced the PhD progression or professional career.
3. How do students describe their reported **activities** in the research assistantship?	**Activities** What are people doing? The theory assumes the tools and the community mediate the activity. Findings suggest growth in research skills while others recommend attention to quality research preparation.	**Section 5 Activities.** The interview questions probed the activity and interaction with other activity theory elements. The interview explores why the RA scored the task in the range of 1(not valuable) to 5 (very valuable) to their PhD or professional career and whether s/he thinks other PhD students would benefit from the same activity.	**Q25, 26** Question 25 asked about what tasks the RA engaged in and how they evaluate the tasks in terms of value to their PhD academic or professional career. Question 26 asked if the RA experienced any tensions or problems in carrying out the task.
4. What **resources** do students report they use or need in the research assistantship?	**Resources** Explicit or implicit tools and resources mediate actions and interactions. No empirical research related to resources.	**Section 6 Resources** Specific questions probed the tool/resource: why it was beneficial, how it was used, why it was necessary, when and how often it was used and where. The RA may suggest other beneficial resources and whether there might be problems gaining access to them.	**Q27 – 29** Question 27 lists possible resources or tools that might be involved in the RA tasks. Question 28 and 29 allow the students to suggest other beneficial resources and whether they might be problems gaining access to them.

Research Question	Activity Theory and Literature	Interview Section (Appendix Two)	Questionnaire Number (Appendix Three)
5. **Who** do students report as significant to their participation in the research assistantship?	**Community** People interested in the same object as the subject. Findings suggest RAs tend to be more involved in the department and may look to other RAs for support.	**Section 7 people** The RA will expand on why they interacted with the reported people and the value score and if there were tensions in the relationship.	**Q, 30, 31** These questions ask the RA to indicate who they interacted with and to score the people in terms of value to their PhD or professional career.
6. How do students describe the **rules and division of labour** in the research assistantship?	**Rules and Division of Labour:** Explicit or implicit norms; horizontal division of tasks and vertical division of power No empirical research related to rules and division of labour	**Section 8 Rules and Division of Labour** The interview probed the how the contract was negotiated and explained and subsequently how it evolved. The RA describes the relationship with the faculty member given the available choices.	**Q32, 33** Questions 32 gives the RA a choice of descriptions to explain the initial contract details. Question 33 asked how the RA would describe the relationship with the faculty member who hired him/her.
7. What **tensions or problems** do students report in the research assistantship?	**Tensions/contradictions** Contradictions result within and among the elements of the activity system and other activity systems and give rise to innovation or change. Findings suggest there may be incongruent role expectations and a conflict in authorship beliefs.	Integrated into the above questions.	Integrated into the above questions.

3.8 The Questionnaire Data

The questionnaire served to inform me about general patterns of the RA experience (Anderson & Swazey,1998, p.3). Further, Miles and Huberman (1994) suggest three broad reasons for linking different kinds of data: "(a) to enable confirmation or corroboration of each other via triangulation; (b) to elaborate or develop analysis, providing richer detail; and (c) to initiate new lines of thinking through attention to surprises or paradoxes, "turning ideas around', providing fresh insight" (p.41). Hence this questionnaire data served many analytical purposes as: a) a broad scale view of the RA phenomenon; b) corroboration of findings from the interview data; c) a means to enrich the detail of the case study and d) a tool to provoke thinking about the RA

phenomenon in a different way. The Findings and Discussion Chapters emphasis the analytical while this section discusses the process.

The questionnaire format and security

Students completed a questionnaire which was composed of relevant choices, open-ended questions and Likert scale type items. The questions were identical for all participants although the online version needed two questions in some cases as the survey tool would not accept both a check box response and open-ended comment box in the same question. However, the substance of the questions did not change. For convenience, the interviewees completed a Word "form" document prior to the interview rather than the online questionnaire. Form documents are completed electronically by typing in the grey spaces as the text is "protected', meaning that it can not be changed. The purpose of the pre-interview questionnaire was three-fold. First, it gathered electronically some demographic information prior to the interview thus using the interview time more productively. Second it allowed the RA to reflect on his/her experience at a time when convenient to him/her prior to the interview. Thirdly, the questionnaire acted as a bridge into the interview as it increased my prior understanding of the RA's views and the level of RA and education/work experience. I used the information as a starting point for the interview and then probed the questionnaire topics within the context of the particular RA's experience. I will discuss the interview process further subsequently.

Academic Computing Services (ACS) at SFU hosted the online questionnaire on a secure server. Participants viewed a consent form online and after agreeing to participate, they accessed the survey by entering their SFU computing id and password. The survey tool allows the questionnaire administrator to set access privileges, which were set to allow only Education PhD students. Further, once the participant submitted the questionnaire, the computing id was encrypted to limit access again. The tool assures anonymity as the administrator only knows a survey has been completed but not the computing id.

Pilot testing the questionnaire

I used three means to pilot test and refine the questionnaire: independent review by experienced RAs, in depth review with the pilot interview volunteer and the use of WebSurvey documentation. My intention was to gather recommendations for improving

the questions as well as confirming that a respondent knew what the question meant (Gall, Gall, & Borg, 2003, p.230). Three experienced RAs reviewed the questionnaire. Two of the RAs reviewed the questionnaire independently for meaning and as a result small changes to the wording resulted. Another experienced RA and I reviewed it together prior to the pilot interview and this resulted in further small changes to the questions. Lastly, the process of designing the online questionnaire indicated minor changes based on standard online questions as explained in the online survey tool's documentation. For example, the WebSurvey documentation discussed the type of questions and made recommendations for the type of question best suited to a drop down box or a check box for example. Also some questions required two online questions as the survey tool could not accommodate a comment box and check boxes in the same question. For instance, question twelve asked about the RA's career goal and there are several choices usually associated with an Education career such as faculty at a university or college. The "undecided" and "other' choice required a separate question as a "comment" box so that the participant could explain. The survey tool lacks the flexibility to have both comments and check boxes in the same question. While this is not pilot testing in a strict sense, it helped me to focus on the information that the system could easily compile versus the information I would like to know in detail that required a comment box. As the last step I set the survey to "live' and tested the access links and responses using my own answers. I checked to see what happened if I missed a question or did not answer. The system reminds participants to complete an answer before moving on. I reset the survey tool to delete my answers. In summary, the pilot testing of the questionnaire contributed minor changes to the wording although it was time-intensive to construct the online questionnaire.

Collection of the Questionnaire Data

I initiated the collection of the questionnaire data through two emails. Dr. Thomas O'Shea, Director of Education Graduate programs sent the first email which promoted the RA study to the Education PhD students and requested their assistance with the research study. The purpose of this first email was to create interest and act as an appeal for participation from an authoritative person with the view that it would increase response rates (Gall, Gall & Borg, 2003, p.231). Graduate programs sent Dr. O'Shea's email Monday December 3, 2007. On Tuesday, the graduate program assistant sent the second email to the restricted PhD student email list. As a restricted

list I can not send directly to the PhD student list. However it was sent on my behalf which means that my email address appeared as the sender. This second email gave the questionnaire details, instructions and the link to access the consent form. I released the questionnaire after the end of classes in the Fall semester with the view that the students would have completed course work and might have more time to complete the questionnaire. This email generated twelve responses in the first three days after its release. I closed the survey Monday December 17, 2007. Hoping to gather more responses and because the holidays may have affected the number of responses, I sent another email through the Graduate program Office January 3, 2008 just before students returned for the next semester. The email generated one response in the first day and I closed the questionnaire on January 11th . After further discussion, it was decided to open the questionnaire one last time on June 19, 2008 and it was closed July 16, 2008. This served to confirm saturation in that it generated only one more response in the first day and the last survey contained similar responses to the earlier questionnaires.

I sent the email to all current PhD students for several reasons. First, I wanted to contact all RAs not just the PhD students who held a current RA appointment. Hence the email invited all PhD students who have held a RA appointment at any time in their PhD career. Second, a current email list for research assistants includes both Masters and PhD students so this list was not useful to target the appropriate participants.

The SFU WebSurvey tool generated a summary table of the responses which showed the numerical responses and the text for the comment boxes. This report provided an overview of the results. After reviewing this information I decided to export the data to Excel for further analysis. I set a master worksheet and then generated several worksheets by copying each question to its own worksheet. This was used to report the findings. For the interpretation, I copied various questions to one worksheet to sort the data by similar answers to see if there were particular patterns. In the data analysis section I explain the development of the analytical tools, including the RA Worksheet.

3.9 The Interview Data

The interview provided the data for the thick, rich description necessary in a case study. I conducted interviews following principles from Kvale's *InterViews: An Introduction to Qualitative Research Interviewing* (1996) and Patton's *Qualitative*

Research and Evaluation Methods (2002). Because I wanted to elucidate the RA's experience, I chose to interview research assistants with recent RA experience to uncover their understanding and description of their RA experience (Kvale, 1996, p.105). The following paragraphs describe how I proceeded to collect the interview data about the RA experience.

Pilot testing of the interview

I relied on several aspects to prepare for interviewing and to test the interview protocol. First, I had conducted several interviews for the larger PhD project so I was comfortable using the equipment and an interview protocol to address key aspects during the interview. Second, when designing my interview protocol I had a model to use, being a similar one used for the PhD study which utilizes activity theory as well. This PhD interview protocol had been pilot tested for that research project so I was starting with a pre-tested model. Third, I performed an interview pilot test with an experienced RA. This involved the full process from the RA completing the pre-interview questionnaire through to conducting the interview, transcribing it and testing the analytical worksheets, which I discuss later. None of this pilot interview data has been included in the thesis as the RA currently works for my thesis supervisor and I wanted to avoid any perception of bias. The pilot test highlighted the need for an interview worksheet to record the questionnaire responses prior to the interview as a memory aid. It also allowed for smooth transitions from each theme (i.e. reasons to outcomes) during the interview. Also the pilot test pointed out the importance of understanding a particular RA's experience as unique and being prepared to follow this tangent as necessary. The questions seemed to uncover the activity theory elements, which is not surprising as I based my protocol on the PhD study interview protocol. In summary, the pilot testing of the interview contributed minor changes to the wording but assisted greatly with the process through the development of an interview worksheet based on the protocol.

Collection of the Interview data

I collected the interview data in two stages: a pre-interview questionnaire and the face-to-face interview.

The pre-interview questionnaire which was the same for all participants generally served many aspects of the interview process. To recap the previous discussion under the questionnaire section, first, the pre-interview questionnaire gathered electronically

some demographic information prior to the interview thus using the interview time more productively. Second it allowed the RA to reflect on his/her experience at a time when convenient to him/her prior to the interview. Thirdly, the pre-interview questionnaire acted as a bridge into the interview as it increased my prior understanding of the RA's views and the level of RA and education/work experience. I recorded the questionnaire information on the RA Interview Worksheet and used the information as a starting point for the interview. I probed the questionnaire topics within the context of the particular RA's experience based on my notes. I felt this step was critical to directing the interview towards the elements that seemed most interesting although the interview allowed opportunities for the RA to talk about other areas.

I conducted semi-structured face-to-face interviews using the RA interview protocol or guide. I interviewed the three RAs once for one hour each approximately. Patton (2002) suggests using an interview guide for several reasons. Using a guide allows others to review the exact instrument which makes clear the questions asked. This contributes to understanding the limitations of the data and for this case study determines a boundary. Also, this protocol is part of the explicit chain of evidence (Yin, 2003) from research questions to interview protocol. Further the highly-focused guide used the participant's interview time efficiently as I moved smoothly from one activity element to another. Lastly, the guide facilitated data analysis since the discussion was generally in the same order hence making the responses easy to find and compare (Patton, 2002, pp. 346 – 347). However at the same time the semi-structured interview left an opportunity for the participants to expand on their understandings and meaning of the RA experience. During the interview, I took notes to formulate specific questions relevant to a particular participant or to tie into the guide's questions at a later point in the interview (Patton, 2002, p.383). Please see Appendix Two for the interview protocol as modified as the RA Interview Worksheet.

Both the type of interview and the interviewer are critical instruments (Patton, 2002). "The quality of the information obtained during an interview is largely dependent on the interviewer" (Patton, 2002, p.341). I addressed Patton's concerns about control and quality through several steps.

The ability of the interviewer to choose the "best" questions and manage the interview productively is critical to obtaining answers to the research question. Patton (2002) suggests that control is facilitated by: "(1) knowing what you want to find out,

[and] (2) asking focused questions to get relevant answers (p. 375). These facilitation techniques allow the interviewer to control and enhance the quality of the responses. Previously I showed in Table 3.3 the connection from research questions to theoretical frame to the interview questions. This illustrates how the questions purposively gathered rich data within the theoretical frame of activity theory. I had a plan for what I needed to know about the RA experience and I asked focused questions within the activity theory structure.

Further the structure of the questions and word choice must invite RAs to share his/her experience in an open manner. *Why* and dichotomous questions fail to provide rich information in most cases (Patton, 2002). During the interview, I used dichotomous questions judiciously while probing the RA experience through asking the interviewees to explain or elaborate on the reported activities and how they valued those activities; the people involved and the nature of the faculty-RA relationship; what resources were necessary to complete the tasks; and how the RA negotiated tensions or problems.

In terms of managing the interview, the interview needs to be facilitated and moved along which can be achieved through prefatory statements (Patton, 2002, p.370). These statements signal transition from one topic to another, prepare the participant for upcoming questions and act as an attention-getting preface to the question (Patton, 2002, pp. 370 – 372). Prior to the interview, I completed the interview worksheet for the interviewee based on the information in the pre-interview questionnaire. I used this information to focus on key elements of the RA experience for this particular RA, to remind me as the interview progressed and to move the interview along by introducing each area in sequence. The pre-interview questionnaire information acted as prefatory sentences. I started the interview with a general question based on an important element as reported in the pre-interview questionnaire. Also as noted above, I moved to each area by suggesting we discuss something the RA reported in regards to each element. As an example, "I would like to move on to the activities and you reported several activities during your RA experience".

I believe these steps assisted with conducting a quality interview through capturing what I wanted to find out during the interview with focused questions and natural transitions during the interview.

Procedurally, I found rooms on campus that were quiet and private and provided a bottle of water to make the interviewees comfortable. I used two digital recorders to

protect the interview data should one recorder not work. I set my watch in a place where I could view it discreetly to monitor the time to be sure I covered all areas within the hour and to end the interview on time. At the end of the interview I thanked the students and also sent an email the next day expressing my appreciation for their time and setting out my understanding of the RA's desire to read the interview transcript.

3.10 Data Analysis

This section describes the process and structure used to analyze the data. The structure and process is a hybrid largely based on Stake's (2006) book, *Multiple Case Study Analysis* and Miles and Huberman (1994) *Qualitative Data Analysis: An Expanded Sourcebook*. Stake provides a structure although he frequently refers to Miles and Huberman (1994) for additional information or examples. As introduced earlier, Stake (2006) has provided case study worksheets to organize the evidence into a structure that permits the researcher to work in the trees (the *particular* RA experience) but also step back to view the forest (the *general* RA phenomenon). Stake (2006) permits modifying his worksheets. The two developed Excel worksheets include: (1) RA Worksheet, to record interview and questionnaire summarized findings; and (2) Findings and Discussion Worksheet, to synthesize interview and questionnaire findings by theme and corss-data. I expand on these worksheets when I describe the process.

Broadly, Miles and Huberman (1994) describe four analytic transformations of the data: (1) individual case synopses, aimed at describing the individual RA's experience; (2) illustrated narrative, aimed at working across cases to derive key themes as informed by activity theory; (3) general condensation, which is a compact description common to the RA experience; and (4) general integrative analysis, where the analysis is connected to a body of knowledge outside the data set (pp.86 – 87). Before looking at these data transformations, I will explain the a priori and emergent RA Codes which I used to code the data.

3.11 RA Codes

I developed the initial RA Codes, which are codes used in the analysis, from the theoretical frame and the indications from the RA literature. Miles and Huberman (1994) describe codes as tags or labels for assigning meaning to the descriptive information compiled (p.56). The authors recommend starting with provisional codes which come

from the conceptual framework and the research questions (Miles & Huberman, 1994, p.58). Following this advice, I linked the codes to the research questions, which previously had been linked to the literature and activity theory in Chapter Two. Thus I also continued the chain of evidence by illustrating how the research questions linked to the coding system (Yin, 2003). In Table 3.3 I showed the link from Table 2.3, which linked activity theory and the literature to the research questions, to the instruments. Now Table 3.4 shows the a priori RA Codes linked to the research question, activity theory and the literature. At the end of this section, Table 3.5 shows the revised codes, which are the a priori codes that survived the analysis, codes that decayed due to lack of use and emergent codes for new areas.

Miles and Huberman (1994) state that, "Coding is analysis. To review a set of field notes, transcribed or synthesized, and to dissect them meaningfully, while keeping the relations between the parts intact, is the stuff of analysis" (p.56). I used codes to analyze the data efficiently. The semi-structured interview and questionnaire for this study have distinct sections to address each research question. This structure helped in developing the codes which need to be related in a coherent way (Miles & Huberman, 1994, p.62). I developed numeric-alpha codes because together they are less ambiguous and are processed more economically (Miles & Huberman, 1994, p.56). The following Master themes or codes resulted: Reasons (1R), Outcomes (2O), Activities (3A), Resources (4 Res), Community (5C), Rules (6Rules) and Tensions (7T) As recommended by Miles and Huberman (1994) I kept the list to a single page (p.58). Within each activity theory theme, I developed sub-themes or codes which were initial thoughts based on my interpretation of the RA literature.

Table 3.4 A Priori RA Codes. Research Questions, Activity Theory and Literature linked to Preliminary Coding Scheme

Research Question	Activity Theory and Literature	Master Theme	Sub-codes
1. What **reasons** do students report for participating in a research assistantship?	**Intentions/reasons** Participants are motivated to achieve objects and outcomes. Findings suggest research assistantship is a financial variable but participants may be motivated for other reasons.	1. Reasons **(1R)**	1.1 FIN (Financial) 1.2 SKILL (Research skills) 1.3 FAC (Faculty member) 1.4 PROD (research productivity) 1.5 REQ (requested by supervisor)

Research Question	Activity Theory and Literature	Master Theme	Sub-codes
2. What **outcomes** do students report as a result of the research assistantship?	**Outcomes** Intentions of the activity system Findings suggest shorter time-to-degree, higher completion rate; and research productivity with a research assistantship although RA work may be a distraction if work not related to thesis.	2. Outcomes **(2O)**	2.1 T-T-D (time-to-degree) 2.2 GRAD (graduate) 2.3 OPP (Opportunities as a RA) 2.4 PROD (research productivity) 2.5 CAR (career) 2.6 Comm (Community) 2.7 Other
3. How do students describe their reported **activities** in the research assistantship?	**Activities** What are people doing? The theory assumes tools and the community mediate the activity. Findings suggest growth in research skills while others recommend attention to quality research preparation.	3. Activities **(3A)**	Name the activity and score. 3.1 TASK (task discussion) 3.2 WHO (who was involved) 3.3 RES (resources used) 3.4 OUT (outcome of task) 3.5 LEARN (what was learned) 3.6 OTHERS (others benefit)
4. What **resources** do students report they use or need in the research assistantship?	**Resources** Explicit or implicit tools and resources mediate the actions and interactions. No empirical research related to resources.	4. Resources **(4Res)**	4.1 WHAT (resource) 4.2 WHY (why helpful) 4.3 HOW (used the resource) 4.4 WHEN (was the resource used) 4.5 MORE (what other resources)
5. **Who** do students report as significant to their participation in the research assistantship?	**Community** People interested in the same object as the subject. Findings suggest RAs tend to be more involved in the department and may look to other RAs for support.	5. Community **(5C)**	5.1 WHO 5.2 WHY (why valuable)
6. How do students describe the **rules and division of labour** in the research assistantship?	**Rules and Division of Labour:** Explicit or implicit norms; horizontal division of tasks and vertical division of power	6. Rules **(6Rules)**	6.1 CONT (contract) 6.2 REL (relationship)

Research Question	Activity Theory and Literature	Master Theme	Sub-codes
7. What **tensions or problems** do students report in the research assistantship?	**Tensions/contradictions** Contradictions result within and among the elements of the activity system and other activity systems and give rise to innovation or change. Findings suggest there may be incongruent role expectations and a conflict in authorship beliefs.	7. Tensions **(7T)**	7.1 T-WORK (finding work) 7.2 T-GOAL (achieving initial reason) 7.3 T-OUT (achieving outcome) 7.4 T-TASK (completing or within task) 7.5 T-RES (using/accessing resource) 7.6 T-REL (relating to others) 7.7 T-RULES (of RA-ship)

It is expected that codes will need revision due to decay or lack of fit or others will emerge because there is more in the data than expected (Miles & Huberman, 1994, p.61). Table 3.5 shows the revised codes. A code with [A] after it is a provisional starter code that remained. A code with [E] after is a code that emerged during coding. A code with [D] after it is an a priori code that decayed because it was not apparent in the data.

In *Reasons* none of the codes decayed but I added an "other' code to capture reasons different from the questionnaire. For example, one RA said she worked as a RA because the topic interested her and another felt she needed to access the research community, which I thought was different from wanting to achieve research productivity.

In *Outcomes* , time-to-degree (2.1) and graduate (2.2) were only mentioned by Mary so while these codes were based on the evidence in the literature, these *outcomes* were not apparent to these RAs. Perhaps it is because many of them were mid-PhD journey so had not had time to reflect on whether the RA-ship influenced their time-to-degree or completion. I revised outcome code 2.2 to be *Thesis* to capture comments related to how the RA influenced their thesis, which could loosely then relate to graduation. Several a priori outcome codes were evident in the data: opportunities (Opp – 2.3) that arose because the PhD student was a RA; research productivity (PROD – 2.4) that indicated either writing a research paper or presenting at a conference; and career (CAR – 2.5) which indicated a comment related to their future career. Emergent outcome codes were related to community and other outcomes. Community (COMM – 2.6) was a broad code to represent the reference to community, not in terms of who the RA interacted with, but the development of their community in the RA-ship. In addition, certain aspects unique to a RA needed to be tagged so a *other* (2.7) code was added. A

common notation under other was intellectual growth. These "other" outcomes are outcomes which were not expected based on the literature.

There were no changes in the *Activity* theme. All a priori codes appeared in the data and likely the broad based tags allowed these codes to suffice. For example, "Task" covered discussion about any task. It did not seem necessary to create sub-codes to any of these *activity* sub-codes.

In *Resources* what resources (WHAT – 4.1) and why the resource was helpful (WHY – 4.2) survived while several a priori codes decayed. There were no emergent resource codes because similar to *activities*, the code was broad enough to cover discussion related to any resource. It did not appear necessary to create a sub-code for WHAT or WHY. The *resource* codes that decayed were HOW the resource was used, WHEN it was used and other resources (MORE). In hindsight, looking at the main resources utilized, it is fairly obvious how the resource was used and when it would be used. I would need to have questioned in much more detail during the interview and on the questionnaire to delve into how specific course knowledge was used in an activity. Of course there are limits to the amount of data and scope of any research project. The tools were of interest but the main focus was the outcomes of the RA experience.

There were no changes in the *Community* theme. All a priori codes appeared in the data and likely the broad based tags allowed these codes to suffice, again similar to *activities*. For example, "WHO" covered discussion about various people in the RA's community. It did not seem necessary to create sub-codes to any of these *community* sub-codes because the people indicated were a small group. Further, for the RAs interviewed, community depended on the RA's specific experience.

There no changes to the *Rules* codes for the same reasons explained previously for *activities* and *community*.

The last a priori theme, *Tensions,* received a fair amount of changes. One *tension* a priori code that remained was T-GOAL (7.2), which captured tensions related to achieving the RA's goal or motivation for taking a RA-ship. Other surviving a priori *tension* codes were: T-OUT (7.3) which was about achieving the outcomes, T-TASK (7.4) which related to completing the task, T-REL (7.6) which was about relating to others in the RA experience, and T-RULES (7.7) which captured something about the specific relationship between the RA and the RA-supervisor. One *tension* code that

decayed was T-WORK (7.1), which was related to finding RA work. It decayed as it only seemed to be apparent in Natalie's responses and the questionnaire responses indicated no difficulties finding RA work. As might be expected, T-RES (7.5) about resources was not evident as the resources utilized were few and more detailed questioning would be needed to uncover tensions in using course work, for example. Emergent tension codes were TIME (7.8) which was about RAs struggling to manage time in their RA and in some cases other aspects of their lives. OTHER (7.9) might be an overlap to *time* as it was mainly about other activity systems putting pressure on the RA activity system, which could include time to devote to their PhD versus RA work for example. Yet *other* included more than *time* issues.

Finally, I added a code to tag discussion about the RAs' life worlds. This included contextual information about their marital status, financial pressures, their work experience, their academic comments, and any other tangential discussion that flavoured their RA experience. The last code was a code to cover the RAs comments about his/her recommendation about the RA.

In summary, the important emergent codes occurred under Reasons, Outcomes, Tensions, Life World and Recommendation. The discussion of the data analysis steps follows the Table 3:5: Revised RA Codes.

Table 3.5 Revised A Priori RA Codes Reflecting Changes. Research Questions, Activity Theory and Literature linked to Final Coding Scheme.

Research Question	Activity Theory and Literature	Master Theme	Sub-codes: A priori [A] Emergent [E]; Decayed [D]
1. What **reasons** do students report for participating in a research assistantship?	**Intentions/reasons** Participants are motivated to achieve objects and outcomes. Findings suggest research assistantship is a financial variable but participants may be motivated for other reasons.	1. Reasons **(1R)**	1.1 FIN (Financial) [A] 1.2 SKILL (Research skills) [A] 1.3 FAC (Faculty member) [A] 1.4 PROD (research productivity) [A] 1.5 REQ (requested by supervisor) [A] 1.6 OTHER (E)

Research Question	Activity Theory and Literature	Master Theme	Sub-codes: A priori [A] Emergent [E]; Decayed [D]
2. What **outcomes** do students report as a result of the research assistantship?	**Outcomes** Intentions of the activity system Findings suggest shorter time-to-degree, higher completion rate; and research productivity with a research assistantship although RA work may be a distraction if work not related to thesis.	2. Outcomes (**2O**)	2.1 T-T-D (time-to-degree) [D] 2.2 GRAD (graduate) [D] 2.2 THESIS [E] 2.3 OPP (Opportunities as a RA) [A] 2.4 PROD (research productivity) [A] 2.5 CAR (career) [A] 2.6 Comm (Community) [E] 2.7 Other [E] includes intellectual growth
3. How do students describe their reported **activities** in the research assistantship?	**Activities** What are people doing? The theory assumes tools and the community mediate the activity. Findings suggest growth in research skills while others recommend attention to quality research preparation.	3. Activities **(3A)**	Name the activity and score. 3.1 TASK (task discussion) [A] 3.2 WHO (who was involved)[A] 3.3 RES (resources used) [A] 3.4 OUT (outcome of task) [A] 3.5 LEARN (what was learned) [A] 3.6 OTHERS (others benefit) [A]
4. What **resources** do students report they use or need in the research assistantship?	**Resources** Explicit or implicit tools and resources mediate the actions and interactions. No empirical research related to resources.	4. Resources **(4Res)**	4.1 WHAT (resource) [A] 4.2 WHY (why helpful) [A] 4.3 HOW (used the resource) [D] 4.4 WHEN (was the resource used) [D] 4.5 MORE (what other resources) [D]
5. **Who** do students report as significant to their participation in the research assistantship?	**Community** People interested in the same object as the subject. Findings suggest RAs tend to be more involved in the department and may look to other RAs for support.	5. Community **(5C)**	5.1 WHO [A] 5.2 WHY (why valuable) [A]
6. How do students describe the **rules and division of labour** in the research assistantship?	**Rules and Division of Labour:** Explicit or implicit norms; horizontal division of tasks and vertical division of power	6. Rules **(6Rules)**	6.1 CONT (contract) [A] 6.2 REL (relationship) [A]

Research Question	Activity Theory and Literature	Master Theme	Sub-codes: A priori [A] Emergent [E]; Decayed [D]
7. What **tensions or problems** do students report in the research assistantship?	**Tensions/contradictions** Contradictions result within and among the elements of the activity system and other activity systems and give rise to innovation or change. Findings suggest there may be incongruent role expectations and a conflict in authorship beliefs.	7. Tensions **(7T)**	7.1 T-WORK (finding work) [D] 7.2 T-GOAL (achieving reason) [A] 7.3 T-OUT (achieving outcome) [A] 7.4 T-TASK (completing or within task) [A] 7.5 T-RES (using/accessing resource) [D] 7.6 T-REL (relating to others) [A] 7.7 T-RULES (of RA-ship) [A] 7.8 TIME (issues of time) [E] 7.9 OTHER [E] other issues including other activity systems' pressures
Life World		Life World [E]	This code included contextual factors about the RA's life world, past and current life experiences, that might influence their RA experience. [E]
Recommendation		REC [E]	Discussion related to the recommendation to other PhD students [E]

3.12 Analysis of the Interviews

I followed a multi-step process with the interview data to engage fully with the analysis over a period of time. There were first steps immediately after each interview and the same procedure was followed during the coding and analysis of the interview for each RA. This section describes that process.

Previously I had noted I used a RA Interview Worksheet (Appendix Two) to record notes during the interview. Immediately after the interview I recorded first impressions on the RA Interview Worksheet. The early notes recorded immediately after the interview stimulated early insights (Patton, 2002, p.383). Also, these notes assisted with refreshing my memory before reading the transcribed interview. I downloaded the digital file to my laptop to safeguard the file. For confidentiality reasons, I erased the file on the recorder after checking the file on my lap top. I made a second copy of the file in case one file was corrupted. At the next available opportunity I saved the files to an external hard drive.

After this initial process, I listened to the audio file and made notes, including special emphasize by the RA and other non-verbal information I remembered about the conversation. This occurred as soon as possible after the interview while it was fresh in my mind. After receiving the transcript, which was about one week after the interview, I listened to the audio file and read the transcript and changed words if the context suggested that the transcription misrepresented the conversation.

A professional transcribed the audio files verbatim. The selected professional uses a secure file transfer system, has experience transcribing and has proven herself reliable and accurate through her work in the larger PhD study. The transcribed files contain numbered lines which assisted with referencing extracts for the RA Worksheet and in the Findings and Discussion chapters in the thesis.

To preserve anonymity of the RAs, I censored the transcripts and removed names and other identifying words. These files were emailed to the three RAs with a request to review it and notify me if there were changes necessary to the censored document. No changes were requested by the three RAs.

Next I read and manually coded a hard copy transcript of each of the interviews in blue ink. I transferred pertinent details to the RA Worksheet and made reflective entries in my research journal. A few days later, I read the same document and using red ink made further coding changes. Although I felt I had immersed in the interview and appreciated the RA's experience, I was feeling over-whelmed and unsure how I would actually move past Miles and Huberman's stage of simply looking at individual findings to broad assertions as Stake (2006) described.

I decided I needed a way to sort the codes to visually understand the experience and to be more clear and efficient in my analysis. Therefore I copied the word file to an excel file. This resulted in each parcel of the conversation in a separate cell as illustrated in Figure 3.2. "I" stands for interviewer and "P" represents participant.

Figure 3.2 Initial Excel Worksheet with Interview

INTERVIEW	MARY
Participant:	Mary (P)
Interviewer:	Barb Edwards (I)
Date:	22-Nov-07
I:	All right. Good Morning.
P:	Good Morning.
I:	I really want to thank you again for filling out the questionnaire and providing me with some information ahead of time and you've had a lot of RA experience—

After this initial step I added columns for coding, reminder codes at the top of the worksheet, and the line number from the Word document of the transcript as a cross reference tool and as a way to review the manually coded Word document for comparison to the coded Excel worksheet.

I took a fresh look at the interview and coded directly into the excel file using the same codes as used for the initial manual coding of the Word document. Now the excel file looked as shown in Figure 3.3. Notice that the one parcel of the interview was coded as "2O" for outcome and sub-coded for a comment I felt was about the influence on her thesis. In some cases there were sub-codes or other themes indicated in the same unit of the conversation. I compared the excel coded interview to the word file and again noted differences, likely due to the fact that there were several weeks between the Word document being coded and when I coded using the excel file. However, the changes were tweaking sub-codes rather than any changes to the major theme. I continued the reflective journal notes as I coded because some comments twigged me to other comments in other RAs' interviews.

Figure 3.3 Excel Worksheet with Codes

Theme	Sub-code	other code	other code	word line #	INTERVIEW	MARY
1R = Reasons					Participant:	Mary (P)
2O = outcomes					Interviewer:	Barb Edwards (I)
3A = activities					Date:	22-Nov-07
5C = community					I:	All right. Good Morning.
6Rules = rules						
7T = tensions					P:	Good Morning.
					I:	I really want to thank you again for filling out the questionnaire and providing me with some information ahead of time and you've had a lot of RA experience—
					P:	Yeah, I think so.
					I:	And I think that's going to be great for my study to be able to probe what your experience has been like. But first I want to get a bit of an overall picture of your research because you said in the questionnaire that your research is quite related to—
2O	2.2 Thesis			22	P:	Yes, the project I am working right now. And that's also—I think that's also my dissertation. I'm writing up my thesis right now too. So my RA-ship and my own dissertation—it just feels like the same thing.

At this point I had the complete interview coded and all coded parcels were cross-referenced to the interview line in the word document. Changes to RA codes were made as needed as explained previously. I copied the coded interview to another worksheet to preserve the original order of the interview. The new worksheet was sorted by the theme and sub-codes. This alleviated the previous concern about how I would pull together all coded comments about *reasons* for instance. It indicated the prevalence of the theme when all of the comments were grouped together regardless of where it

occurred in the interview. With the Word line page number I could review the context of the comment as well.

It also indicated to me the parts of the interview not coded. The parts of the interview not coded were read to determine if I had missed important comments. Of course this is subjective but it was consistent between the manually coded word document and the excel document.

The excel workbook now has a worksheet for the complete interview coded as the conversation unfolded. A second worksheet has the interview coded and sorted by major theme. I added another worksheet, which was the RA worksheet.

The "RA Worksheet" which I developed from Stake's (2006) "Worksheet Three: Analyst's Notes while Reading a Case Report" (p.45)[13] is shown in Table 3.6.[14] This worksheet facilitated one level of Miles and Huberman's data transformation – individual case synopsis, which describes the RA's experience. The RA Worksheet provided a single place to record the results in an organized way and resulted in a high level snapshot of the case in conjunction with the coded excel document and the manually handwritten coded word document. The RA Worksheet for each interviewee described the synopsis of the case or situational aspects such as the number of RA appointments, PhD progress etc. The RA Worksheet facilitated data reduction for purposes of describing and understanding the *particular* RA experience. I copied from the Excel interview document, sorted by theme, relevant comments that reflected in my view the essence of the RA's experience with respect to these themes.

[13] The RA worksheet is based on Stake's Worksheet 3 from Multiple case Study Analysis (2006) and the Word document available as Worksheet 3 from http://www.ed.uiuc.edu/circe/EDPSY490E/worksheets/worksheet.html Note also that Miles & Huberman (1994) illustrate a "Coded Themes Contact Summary Form" which bears some resemblance to Stake's Worksheet (p.54).

[14] Hereafter, Table 3.5 will be referred to as the RA Worksheet.

Table 3.6 RA Worksheet: Analyst's Notes for RA interview and Questionnaire

Case Code
Date/Time/Place of Interview
First Impression Notes after Interview
Second Impression Notes after listening to audio recording
Synopsis of case (I.e. some background information about number of RA appointments, PhD progress etc.):
Case Findings:
Uniqueness of case situation for RA phenomenon:
Relevance of case for cross-data Themes: Theme 1: Reasons Theme 2: Outcomes Theme 3: Activities Theme 4: Resources Theme 5: Who Theme 6: Rules Theme 7: Tensions
Other comments:
This worksheet is based on Stake's Worksheet 3 from Multiple case Study Analysis (2006) and the Word document available as Worksheet 3 from http://www.ed.uiuc.edu/circe/EDPSY490E/worksheets/worksheet.html

In the initial stages, I transformed the raw data into an individual case synopsis as reflected in the RA Worksheet. However, while reading the transcriptions and developing the synopsis, it was important to see the tree (the *particular* experience) as part of the forest (the RA phenomenon). Earlier I mentioned I made reflective notes in my research journal. This is an overall process that Miles and Huberman (1994) term, "memoing", which supplemented the RA Worksheet process (p.72). The authors describe memoing as a write-up of ideas as they happen during data coding and analysis (p.73). Memoing is primarily a personal process to record what is puzzling, surprising, or needing more thought and is ongoing until the final report (p.74). I recorded these thoughts in my research journal.

I feel that the RA Worksheet assisted greatly with managing the potential data overload warned about by Miles and Huberman (p.83). The RA Worksheets contained the interpretational and reflective analysis. During this process in the "trees", I continued the memo process to reflect on both the uniqueness of the *particular* while thinking about the *general* - the holistic RA phenomenon. I found this reflective process useful when I moved to the analysis of the questionnaires as well.

3.13 Analysis of the Questionnaires

Similar to the interview process, I followed a multi-step process with the questionnaire data to engage fully with the analysis over a period of time. In this process I utilized an Excel file to manage the questionnaire data.

First I viewed the online summarized data to get a feel for the responses and the extent of the text comments by looking at key questions, such as Question 30, regarding outcomes. Next I exported the data to an Excel spreadsheet. I tidied up the question titles and adjusted the columns for viewing and printing. This resulted in 28 pages of complete raw data from the fourteen questionnaires. I assigned each questionnaire simply RA1 to RA14 to distinguish each questionnaire. In addition I added the questionnaire responses from Mary, Terrence and Natalie to show seventeen questionnaires in the Excel questionnaire worksheet. This worksheet was designated as the master data worksheet.

I started with reading the questionnaire by RA. Since I had a snap shot of an individual RA, I reviewed each submitted questionnaire to appreciate the nuances of that RA's experience and made reflective notes in my journal.

After reviewing each questionnaire from an individual RA perspective, I returned to the Excel workbook and looked at the questionnaire responses by question number and theme. To facilitate this, I set up in the Excel workbook separate worksheets based on the master codes or themes. For each theme, I copied to an Excel worksheet key RA information (RA#, program, years of RA experience) plus the responses to particular questions. For example, I copied Question 26 data (reasons) from the master data worksheet to a separate Excel worksheet. This allowed me to read all questionnaire responses on one page related to the reasons for pursuing a RA appointment. I added basic descriptive statistics such as the number of RAs reporting a particular response. The structure afforded by activity theory suggested that the findings might be reported

based on theme. Thus, Chapter Five Findings reflects a discussion based on information from the questionnaires and the interviews from the respective worksheets.

While reading the various worksheets, I continued the memoing process (Miles & Huberman, 1994). My immersion in the data and reflective notes proved fruitful in completing the cross-data analysis.

3.14 Cross-data Analysis

Stake (2006) states that to understand the quintain (RA phenomenon), "we study some of its cases ... We study what is similar and different about the cases in order to understand the quintain better" (p.6). Therefore the analysis extends beyond the *particular* RA experience to the *general* RA phenomenon. In terms of Miles and Huberman's (1994) analytical transformation of data, this is the illustrated narrative stage where I work across the data which represents seventeen RAs' experiences (p.86). Pulling the individual RA stories together required some structure to weave the individual RA findings into assertions, as Stake (2006) refers to it or Miles and Huberman's (1994)'s propositions. This is the critical step necessary to translate the findings into a meaningful interpretation that reveals important aspects of the RA experience with consideration given to the extant literature and activity theory and ultimately leads to useful suggestions for practice and future research.

I utilized an Excel workbook based on the data from the individual interview analysis Excel worksheets and questionnaires' Excel worksheets. For each theme I reflected on the findings and then looked at the other data to see if patterns might emerge. For example, when I looked at *Reasons* I wondered if those who wanted research productivity also wanted an academic career as this would build their resume. I looked to see if they achieved their goal by looking at the activities the RA reported. I considered their time as a RA to see if this might influence their motivations. Thus for each theme I built worksheets with additional data from other questions' data. I sorted the data in these worksheets to see if the experience was different for those with more RA experience. This was supplemented with the RA interview data which allowed a deeper look at some aspects of the RA experience. For example, the questionnaire could not capture every aspect but I could gain some insight into prior work experience based on the RA interview data. This short paragraph does not do justice to the reiterative lengthy process for each theme of looking at the findings, the details in the

interview, the literature and my reflective journal. During the writing stage, further "I wonder" thoughts developed other lines of alternative explanations that might be more plausible than my initial thoughts. I considered whether any result merited further investigation and whether I had the necessary data to perform any further interpretation. As always during this analytical theme process I continued my reflective journal. This cross-data process was an intensive period of time.

3.15 Trustworthiness

Lincoln and Guba (1985) suggest that the conventional quantitative measures to establish trustworthiness can be thought of as credibility, transferability, dependability and confirmability in a qualitative study (p.300). While there is an acknowledged subjective aspect of my interpretation of the findings, I feel I have established trustworthiness through several techniques.

The most critical technique to establish credibility is member checking (Lincoln & Guba, 1985, p.314). The many purposes of member checking include giving the RAs an opportunity to assess their intentions, correct errors or wrong findings, volunteer additional information, and garner agreement of the correctness of the findings (Lincoln & Guba, 1985, p.314). I offered the three interview participants and the pilot RA an opportunity to review the transcripts and findings. Three RAs responded and substantively agreed with the appropriate censored transcript and the findings. Also I asked the FOE research coordinator, Dr. Philip Winne, about my findings to determine if he thought any of them unusual. The only unusual finding was that many of these RAs were working along with their RA-ship. He thought many FOE students who had a significant career would not work as a RA as they would not have the time or financial need to work as a RA. Unfortunately my data did not indicate the type of work so this remains a puzzle.

Triangulation establishes credibility because it helps to reduce biases from single sources or methods. Patton (2002) suggests that different kinds of triangulation can contribute to verification and validation of qualitative analysis (p. 556). Triangulating data sources "means comparing and cross-checking the consistency of information derived ... by different means within qualitative methods" (Patton, 2002, p.559). In this RA case study, data triangulation resulted from these data sources: questionnaires of fourteen

students; semi-structured interviews with three RAs; and institutional data and documents.

In addition to these verification methods, reporting of the case study through a thick rich description "allows the reader to make decisions regarding transferability" (Creswell, 1998, p.203). Lincoln and Guba (1985) emphasize this point about transferability. "The responsibility of the original investigator ends in providing sufficient descriptive data to make such similarity judgments possible" (p.298). In Chapter Four, Context of the Case Study and Appendix Four, I described the facts about SFU and the FOE, the types of graduate programs and the level of available faculty and research funding.

Lastly the audit trail recommended by Yin (2003) illustrated through-out the thesis assists with establishing credibility and confirmability in that I have shown my progression from research questions to the ultimate interpretation (p. 105). In Chapter Two, the audit trail started by illustrating how the research questions were supported by the theoretical frame and the literature (Table 2.3). In Chapter Three two tables continued this trail. I linked the research question, literature and activity theory to the instruments (Table 3.3). After this, the a priori RA coding list (Table 3.4) and the revised final codes (Table 3.5) were shown to be cross referenced to the research questions. Chapter Five illustrates the findings related to the same research questions (Table 5.11) while Chapter Six completes the process with the interpretation of the findings (Table 6.1).

In summary, trustworthiness has been established through the rigours of member checking, triangulation, think rich case description and the audit trail. The next section discusses data management and my role as the researcher.

3.16 Data Management and Researcher's Role

Data Management

While data management might be construed as an administrative task, Miles and Huberman (1989) feel it is important to plan ahead and deal with issues related to ensuring: "(a) high-quality, accessible data, (b) documentation of just what analyses have been carried out, and (c) retention of data and associated analyses after the study is complete" (p.45). In principle, the question is how to set things up so that the study

could be verified or replicated (Miles & Huberman, 1994, p.45). Previous sections have detailed the structure used to document the analysis using Excel workbooks and Word files. Administratively, I have a file for each interview and one for the questionnaires. The interview files contain: the consent form, the completed questionnaire, the interview worksheet, the transcribed interview document, the excel worksheets and the *RA Worksheet*. The questionnaire file contains the WebSurvey results and the excel workbooks. I wrote the memoing notes into my research journal. I kept multiple copies of the raw data and "marked-up" data files as well as performed regular back ups to an external hard drive to safeguard the data. Further, data management strategies included the use of appropriate equipment (new digital recorders) and software for interviewing including a back up audio recording to produce high quality data and protect against the possibility of equipment malfunction. The transcription service uses a secure online method to transfer the audio files thus preserving the original file on my computer and the external hard drive. Of course for security reasons I used confidential coded names for the participants. Data destruction will occur after graduation.

Researcher Role

My role as a researcher in this study included drafting the questionnaire and interview protocol, piloting the interview protocol and questionnaire and interviewing all participants. As a RA in the larger PhD study, I have gained experience with all of these tasks. This additional information and RA experience and knowledge gained from the PhD study served the study well in terms of the validity of the instruments, reliability of the data collection and credibility of the interviewer and data analysis.

Clarifying researcher bias is an important verification method as I am presently a RA and my world view of the RA experience is set in the context of my own experience. Professionally, I am a senior lecturer at the university so I come from a place of being a faculty member and valuing higher education and the means of acquiring knowledge and skills. I used my marking skills to code the data similar to the process I use with a marking rubric. As a chartered accountant (C.A.) ethical conduct is an imperative. Thus, I brought to this RA thesis study my personal perspectives built on my assumptions,

values and beliefs, and therefore this situatedness bounded the study.[15] While I acknowledge the bias of my RA and teaching experience, I also think this background allowed me to understand the PhD student's and RA's perspective thus bringing both an etic and emic perspective.

[15] Shields and Edwards (2005, p.73) discuss situatedness and quote Gadamer (2002): "To acquire an awareness of a situation is, however, always a task of peculiar difficulty. The very idea of a situation means that we are not standing outside it and hence are unable to have any objective knowledge of it. We find ourselves within a situation and throwing light on it is a task that is never entirely finished" (p.301).

CHAPTER 4: THE CASE STUDY CONTEXT

"How we learn from the singular case is related to how the case is like or unlike other cases we do know, mostly by comparison" (Stake, 2005, p.454)

The case study is the RA phenomenon at Simon Fraser University (SFU) in the Faculty of Education (FOE). To situate the case study, this chapter provides various facts about the university and the FOE which may assist with understanding the size of the university and the faculty, in terms of number of students, its financial information and research grants. The research focus and funding are highlighted since it is assumed that research grants provide the potential for hiring a RA. I describe the RA-ship environment at SFU as well as graduate studies since RAs are PhD students first. This chapter attempts to balance the scope and depth of information that allows comparison and understanding of the environment within which RAs function while not providing overwhelming contextual information. While serving to provide a context of the RA phenomenon for comparison purposes, some of this information also frames the discussion of the findings in Chapter Six.

As explained in Chapter Three, I relied on numerous documents and web site information found either by searching SFU's web site for a key word (i.e. research assistant) or by directly reviewing websites of SFU generally, and in particular the Faculty of Education. From the Faculty of Education I reviewed the Graduate Orientation booklet, the "Three Year Plan, 2007-2010", the Report from the External Review team, March 2008; and the "Response to the 2008 Report of the External Review Team". I attended a FOE Graduate Student Orientation to more fully understand the initial PhD viewpoint. In addition I interviewed the Research Coordinator for the Faculty of Education and the Director of Graduate Programs.

4.1 Simon Fraser University

Simon Fraser University is located in the metropolitan area of Vancouver, British Columbia, Canada. There are three campuses: Burnaby, Vancouver and Surrey. SFU opened in 1965 and it is classified as a comprehensive university meaning it has a significant research program and both undergraduate and graduate programs in a

variety of disciplines, including professional degrees. The Faculty of Education is one of six faculties.[16] To appreciate the extent of doctorate studies at SFU, according to the SFU Academic Information Report, there are approximately 967 PhD students enrolled in all years for the 2006-07 fiscal year (p.1). In the 2006-07 convocation period SFU awarded 104 doctorate degrees (SFU, Academic Information Report, p.3)

Tuition

I investigated SFU tuition costs as PhD students report requiring several financial sources to pay for their living and education costs during their PhD program (Statistics Canada, 2008, p.32). Working as RA is one of the resources and the literature indicates PhD students engage as a RA for financial reasons. Thus I wanted to understand the influence tuition might have on the motivations for these Educations RAs. In addition I gathered information about British Columbia competitors as there is competition to attract PhD students.

Tuition for SFU PhD students is currently $1,535 per semester for a maximum of eight semesters (SFU Student Services, July, 2008).[17] After eight semesters, the tuition is half of the tuition or $768 per semester (SFU, Faculty of Education, July, 2008).[18] The maximum time allowed to complete a PhD is eight years at SFU as per SFU's 2008-09 Calendar (SFU, July, 2008). In comparison, University of Victoria, which is also a comprehensive university in BC, allows seven years to complete a PhD and tuition is $1,586 per semester for nine semesters (University of Victoria, July, 2008). After nine semesters, the student pays a re-registration fee of $630 per semester. Since University of British Columbia (UBC) is in Vancouver and is direct competition to SFU, albeit a larger institution, its tuition is $1,339 per semester for a minimum of six semesters and after nine semesters a student pays a continuing fee of $1,836 per year (University of British Columbia, July, 2008). Effective September 2007, UBC announced a new award which effectively gives PhD students free tuition for four years (University of British Columbia, July, 2008). The maximum time to complete a PhD at UBC is six years

[16] SFU has six faculties: Applied Sciences, Arts and Social Sciences, Business Administration, Education, Science, and Health Sciences.

[17] Graduate students pay additional fees in addition to tuition for services provided by the university. These vary by institution.

[18] I found it interesting that I couldn't find at the Student Services web page the "continuing fee" which applies after eight semesters. It was personal knowledge of this continuing fee as it was communicated to me as a FOE graduate student.

(University of British Columbia, July, 2008). Thus at SFU, PhD students in the FOE could take two years longer than at UBC and one year longer than University of Victoria to complete their degree.

The average time for completion according to the Doctoral Graduates in Canada (2004/2005) is just under six years for all disciplines (Statistics Canada, 2008, p.30). A comparison of tuition for six years indicates that at UBC tuition would be the least of the three universities at $1,836 for two years or $3,672 due to the new tuition award. (Without this award an UBC PhD student would pay nine semesters at $1,339 and three years at $1,836 for a total of $17,559.) Six years at the University of Victoria would cost $1,586 for nine semesters (3 years) plus $630 for nine semesters (3 years) to total $19,944 for six years of PhD study. Similarly, at SFU a PhD student would pay eight semesters at $1,535 plus ten semesters at $768 to pay in total $19,960. Yet other institutional awards and scholarships may offset this tuition cost which makes comparison difficult. However, clearly the UBC tuition award has created a situation where financially it is more attractive to do PhD studies at UBC where there is certainty in tuition cost versus uncertainty in other financial awards which may be merit or needs tested. This would seem to put pressure on SFU to look carefully at funding for graduate students.

Graduate Studies at SFU

As the case study investigates PhD students who have engaged as a RA, I explored the environment for graduate students at SFU generally. At SFU, Graduate Studies is a department that all faculties report to concerning their graduate students. Graduate Studies' mandate is to ensure graduate studies through-out the university conforms to SFU's standards. The Dean of Graduate Studies approves supervisory committees, recommends the awarding of degrees, assists with program development, and ensures the academic units conform to the graduate regulations" (SFU, Graduate Studies, July, 2008).

The review of the Graduate Studies' web site indicates recent attention to supervision and funding as the department's Surveys and Data web pages lists a 2006 Supervision Report and two funding reports from 2004 and 2002. Of interest to this case study is the funding as there is an assumption that RA-ships provide funding to some graduate students. Briefly the Report of the Dean of Graduate Studies' Working Group

on Graduate Student Funding at SFU (2004) contains some interesting recommendations relevant to this RA study:

> C. That funding should be linked to the performance and enrollment of academic units. Performance should be measured as the ability of an academic unit to graduate students in a timely manner, with greater weight being placed on the graduation of students who contribute most directly to research. (p.1)
>
> E. That increased funding of graduate students be identified as a priority for maintaining a healthy research environment; that the Dean of Graduate Studies and Vice-President, Advancement work towards the development of new endowments; that the Vice-President, Research, promote the inclusion of graduate involvement and support in all research grants and contracts. (p.1)

These recommendations seem to suggest that the University is working to promote research and enhance the opportunities for RA-ships by encouraging Faculties/departments to manage their graduate student progression, encourage PhD students to be engaged in research to obtain funds, and ensure faculty members include RAs in their grant applications.

Other information that might be relevant to understand PhD studies at SFU include time to degree. SFU's Institutional Research and Planning uses a measure based on the number of semesters registered in prior to convocation. Overall, SFU shows a median measure of 16.5 semesters, which as a trimester university equates to approximately 5 ½ years (SFU, Graduate Studies Data, Fall 2000 – 2007). Education shows a median of 15 semesters or five years. In comparison, the Doctoral Graduates in Canada (2004/2005) indicates 71 months or just under six years for Education students and for all fields of study 69 months or just over 5 ½ years (Statistics Canada, 2008, p.30). Based on these figures, SFU doctorates take approximately the same time as other Canadian PhD students while SFU Education PhD students graduate slightly quicker than their Canadian counterparts.

Working as a RA at SFU

In order to look at RA-ships in general, I gathered some information that would be available to graduate students. I wanted to understand how a graduate student would perceive RA-ships and the rules and regulations surrounding the RA-ship. In some cases there is a sharp contrast to regulations for teaching assistants (TAs) which are

governed by the Teaching Support Staff Unit (TSSU), an unionized group with well-defined policies and regulations due to its organizational structure.

The Graduate Studies web site indicates to graduate students the following about being a RA:

> You may be hired as a research assistant by a faculty member. Although you will be paid through the university payroll system, you are an employee of the faculty member, not the university. As an employee, you have the same rights and obligations as other employees in British Columbia. If you have problems while working as a research assistant, you should consult the chair or director of your academic unit.

There is little substantive information here for a prospective RA! Clearly the roles and responsibilities fall to the Faculty unit and Graduate Studies is not involved notwithstanding its recommendations to tie funding to research-related activities.

Since the RA works for the faculty member and is not an employee of SFU, the rules of engagement fall under the terms of the research grant or other SFU regulations. A search of the SFU web site turns up some information in several places. While Policies and Procedures and Office of Research Services are likely sources, Human Resources and specific Faculties contain information about RA-ships as well. There does not seem to be a central place to look for information which may reflect the conditions of the RA-ship, that is, the RA appointments are linked to individual faculty members' grants and not the university.

SFU's Policies and Procedures (R50.02) "provides guidance to University researchers when employing personnel whose income is derived from research grants and contracts" (Policy R50.01, paragraph 1.1). Here it states,

> 4.3 While the University seeks to persuade grant holders to provide equitable compensation and benefits for grant employees, control and direction over wage scales, the provision of benefits, hiring, firing and the assignment of duties rest solely with the grant holder.

And in terms of responsibilities in Section 5.1:

> (j) The grant holder shall exercise sole control and direction over the assignment of duties and the work performed by a grant employee.
> (k) The grant holder shall exercise sole discretion over the decision to terminate the employment of a grant employee.

And in terms of benefits:

2.2 Optional Benefits
In addition to legislated requirements, if the grant holder so elects, the following optional employee benefits could be made available through the University to grant employees who meet eligibility requirements (if the grant terms permit the charging of related costs). These are: Medical Services Plan Homeowners'/Tenants' Insurance and Extended Health Dental - after one year of continuous service for a grant holder.

From these policy statements it is apparent that the grant holder has full power over the research personnel and the University hopes moral suasion will govern the relationship.

The terms and salary rate depends on the granting agency according to the Office of Research Services. For example, for the President's Research Grants Committee and the SSHRC Small Grants Committee, the Office of Research Services stipulates that the maximum rate be equivalent to the hourly rate of teaching assistants, which is regulated by the union TSSU. It is important to note that the Office of Research Services stipulates a *maximum* salary rate. At the website it states, the PhD minimum hourly rate is $12.00 and the maximum hourly rate is $24.75 plus 12% benefits[19]. This seems to be a significant range.

Expressed in annual salary terms, the Tri-council Federal granting agencies[20] stipulate that compensation for PhD research personnel shall be a maximum of $19,000 annually for NSERC and $15,000 annually for SSHRC grants (Program Guide for Professors, 2007). It is not clear why PhD salaries differ between NSERC and SSHRC. Thus the source of funds seems to dictate the salary scale for RAs and it is difficult to determine a comparison of hourly rates. The NSERC Program Guide for Professors (2007) clearly states that salaries plus non-discretionary benefits may be paid from grants. From the SFU Faculty Forum, an email discussion list, it seems offering these benefits is important to attracting graduate students as other institutions have different regulations and benefits favour SFU employees, such as TAs (Forde, Feb. 29, 2008). Further evidence of the importance of benefits to graduate research personnel is found at the SFU Human Resources web site which holds information sessions about benefits and hosts specific web pages devoted to clarifying the policies for research assistants.

[19] BC's general minimum wage is $8 per hour in 2008.

[20] Canadian Federal Granting councils are made of Social Sciences Humanities Research Council (SSHRC), Natural Sciences and Engineering Research Council (NSERC), and Canadian Institutes of Health Research (CIHR). These agencies are called the Canadian Tri-council Granting Agencies.

Hence it seems a potential RA might well be confused about the pay rate and access to benefits as a RA.

Research at SFU

Given the assumption that research funding creates opportunities to hire RAs, I considered research at SFU related specifically to areas that would affect graduate students and RA-ships.

SFU's Strategic Research Plan, 2005 to 2010, states that SFU's goal is, "to be the most research-intensive comprehensive university in Canada, ... and being internationally renowned for the excellence of our scholarship" (p.1). The Strategic Research Plan acknowledges the role of graduate students in the research community and sets a target of increasing graduate degrees to 25% of the university total degrees by 2010 (p.1). The report states that this target will be achieved "by improving rates of completion and time to completion through better funding and supervision practices" (p.1). Hence the V-P Research recognizes the need to fund graduate students within the research context which is central to hiring RAs.

According to the March 31, 2008 Financial Statements, SFU's sponsored research revenue totalled $67,021,000. Table 4.1 indicates that the Federal research councils contributed 44% of all research revenue. However both the Canada Foundation for Innovation and Canada Research Chairs are Federal funds. Taken together, SFU's reliance on federal research funds are $42,478,000 or 63% of all research revenue. Thus a significant portion of the research funds is tied to government agendas which are subject to economic and political forces. Depending on this political agenda, individual faculties may be affected by their access to funds as discussed subsequently under the Faculty of Education. This in turn affects RA-ships.

Table 4.1 SFU Sponsored Research Revenue, March 31, 2008

Source	Amount	Percentage
Federal research councils[21]	$29,506,000	44%
Province of British Columbia	$10,784,000	16%
Canada Foundation for Innovation	$7,597,000	11%
Canada Research Chairs	$5,375,000	8%
Other	$13,579,000	21%
Total	$67,021,000	

4.2 Faculty of Education at SFU

In this section, I consider several aspects of the Faculty of Education (FOE). First an overview of the FOE and its PhD programs sets the stage. To add to the picture, the extent of the courses and other requirements to obtain the terminal degree are described as the RAs are also PhD students. A research program is assumed to be necessary to fund RA-ships hence this is described for the FOE. To appreciate the context within which RAs work, I discussed informally with the Research Coordinator, Dr. Phil Winne, and the Director of Graduate Programs for FOE, Dr. Heesoon Bai, their views on the FOE, its research environment and the RA-ship.

Overview of FOE

The Faculty of Education began as one of SFU's founding faculties in 1965. The Faculty operates in Burnaby and Surrey with approximately fifty-six professors of varying ranks and three lecturers (SFU, FOE, Academic Information Report, 2008, p.7).[22] The FOE web site for Graduate studies describes the programs as follows:

> Graduate studies in the Faculty of Education began with an innovative set of masters' programs, which then expanded in the 1980s to include a PhD program with specializations in Instructional Psychology and in Curriculum Theory and Implementation. Since that time we have expanded our specializations to include: Arts Education; Mathematics Education; Educational Technology and

[21] Canadian Federal Granting councils are made of Social Sciences Humanities Research Council (SSHRC), Natural Sciences and Engineering Research Council (NSERC), and Canadian Institutes of Health Research (CIHR). These agencies are called the Canadian Tri-council Granting Agencies. While the details of the Federal research councils is not available for the 2007/08 fiscal year, SFU's Office of Research Services indicates that for the 2005/06 fiscal year, funds from the Tri-council Granting Agencies totalled $22,212,000 (82%) of $27,185,000 from Federal granting agencies

[22] These numbers are supplemented with approximately 100 faculty associates and sessionals who are professionals from education practice seconded for teaching in the programs (SFU, FOE, Academic Information Report, 2008, p.8).

> Learning Design; Languages, Cultures, and Literacies; and Curriculum Theory and Implementation: Philosophy.

New students have access to a FOE orientation for Education graduate students (masters and PhD) and Graduate Studies offers an orientation for graduate students from all faculties. There is a FOE orientation booklet as well which covers the basics of academic life at SFU and the FOE.

Financial Aid in the FOE

Earlier the market conditions for tuition for graduate studies were surveyed at UBC, SFU and University of Victoria. Using six years as an approximate time to complete the doctorate, UBC has the lowest tuition at $3,672 and SFU and University of Victoria are very close in total tuition at approximately $19,900. With UBC's new tuition award that offsets four years of tuition, addressing financial aid in the FOE is critical to attracting quality PhD students. In addition to market conditions for tuition fees, the importance of the RA-ship to finance the graduate degree is expressed in the RA literature and other contextual information from documents pertaining to SFU (i.e. Strategic Research Plan, 2005 to 2010; Graduate Student Funding at SFU (2004)) and the FOE (i.e. Three Year Plan (2007 – 2010)). Obviously there are compelling reasons to consider the financial aid in the FOE.

The FOE recognizes the need to attract students with funding as it states at its website:

> In regards to financial support, most of our MA, MSc, and PhD students will be awarded a Graduate Fellowship (present value $6250) during their studies. In addition, all PhD students are entitled to a President's Research Stipend on completion of their course work and comprehensive examinations (present value $6250). Students may also obtain employment as a sessional instructor, teaching assistant, tutor-marker (for distance education courses), or research assistant. In 2005/6, the average annual income provided by the university through a combination of employment and fellowships/scholarships for doctoral students in Education was approximately $13,000.

Based on an average of $13,000, the other sources of income would contribute $6,750 if the student received a fellowship or research stipend of $6,250. According to the Doctoral Graduates in Canada (2004/2005), education students combine on average 4.2 sources of financial support (Statistics Canada, 2008, p.32). The primary source for all

graduates was a fellowship (56%), followed by a research or teaching assistantship (17.8%) (p.33). The secondary source for all graduates was the same two sources at fellowships (34.9%) and research or teaching assistantship (30.0%) (p.33). It seems that FOE students are likely to be similar to other Canadian PhD students in finding various ways to finance their tuition and basic living needs.

The Programs

According to the FOE web site, the PhD programs have varying requirements although most are similar to the Curriculum Theory and Implementation program. This program requires for admission a thesis-based Masters of Arts with a minimum of 3.5 GPA and reference letters. In the program, students complete four courses, a Comprehensive Examination, and the doctoral Thesis, with an oral defence (SFU, Faculty of Education, July, 2008). To accommodate the working student, courses are offered late day or evening. According to the FAQs on the FOE website, the PhD program normally progresses through coursework in the first year and a half, followed in the third year by the comprehensive exam and finally by the thesis research and defence in the fourth or fifth year (SFU, Faculty of Education, Graduate Programs, July, 2008)

The size of the programs varies as shown in Table 4.2, PhD head count September 2007 (PhD class list, Sept. 2007).

Table 4.2 PhD Head Count September 2007

Program	Number	%
Arts Education	26	18.6%
Curriculum and Implementation	54	38.6%
Mathematics	15	10.7%
Philosophy	13	9.3%
Educational Technology and Learning Design	5	3.6%
Educational Psychology	27	19.3%
Total	140	100%

Most PhD students start the program in September. The time in the program for these students at September 2007 can be derived from information in Table 4.3, Date

started Program. For example, the student who started September 2002 has been in the program 5 years at September 2007.

Table 4.3 Date Started PhD Education Program

Year started	Number	%
1999	1	0.7%
2000	3	2.1%
2001	4	2.9%
2002	13	9.3%
2003	11	7.9%
2004	22	15.7%
2005	19	13.6%
2006	33	23.6%
2007	34	24.3%
Total	140	100.0%

For the 2006/07 fiscal year, the average age of these students was 44 and 65% were female (SFU, FOE, Academic Information Report, 2008 p.2).

Research in the Faculty of Education

Recently the FOE undertook a strategic planning exercise and produced a "Three Year Plan (2007 – 2010)". Also the FOE had an external review in March 2008. These exercises reflect the FOE's research agenda, its strengths and its challenges. Before discussing the research environment, a few facts and figures on its research capabilities are warranted.

Individual faculty perform diverse research in many avenues but clearly one avenue is through the seven Institutes and Centres, which are affiliated with the FOE. These are: Centre for Imaginative Education (IERG), Centre for Education, Law and Society, Centre for the Study of Education Leadership and Policy, David Wheeler Institute for Research in Mathematics Education, Institute for Research on Early Education and Child Health and Institute for Studies in Teacher Education. A cursory look at the associated web pages revealed information about the type of research involved and the faculty involved. Also the IERG Centre announced a RA position, which indicates the currency of the website. In addition to the seven Institutes, the Faculty web site indicates Research Groups: The Learning Kit project,

ENGRAMMETRON, Educational Neuroscience Laboratory, and Rethinking Teaching in Higher Education. These research groups seem to be collaborations with SFU Faculty and faculty from other institutions. Thus one can see a diverse environment for research and hence the potential for garnering research funds and hiring research assistants to do interesting work.

The Three Year Plan noted that in the period 2003 to 2006, the Faculty had received almost $3,000,000 in external funding and that the research clusters had attracted $11,500,000 in funding (p.4). To compare this to other SFU Faculties, the Three Year Plan indicated that FOE had a per capita grant of $57,522 in the period of 2002/03 to 2006/07, while Business was $21,173 and Arts and Social sciences was $28,891. Applied Sciences was $94,113 (p.7). In the 2006/07 fiscal year, FOE external research grants and endowments totalled $1,686,870 (SFU, Institutional Research and Planning). Thus the Faculty seems to be successful in obtaining research funds compared to other SFU faculties. Clearly its goal is to continue to attract significant research funds.

Over the next three years, the FOE's objectives for research, which relate to students, include workshops for faculty and graduate students on core activities such as writing a grant proposal, developing and managing budgets and research ethics procedures (Three Year Plan, p.24). Other objectives relate to more effective communication of research activities with graduate students and the wider community (Three Year Plan, p.24). In particular for students, the FOE plans to develop a strategy to attract highly qualified individuals who could work in the research programs.

Dr. Philip Winne is the research coordinator for the FOE. In this role, Dr. Winne is aware of research funds and programs being conducted and he works with grant facilitators to promote faculty applying for research funding. Dr. Winne described the research environment as having a large separation of areas of research and these tend to promote silos with few FOE faculty co-authoring their research together although faculty may co-author with colleagues outside of FOE (Winne, personal communication, July 9, 2008).

As noted in the SFU discussion on research, it is critical to address both writing a successful grant application and obtaining sufficient funds to implement the research and hire a RA, particularly given SFU's goal to involve more graduate students in research. In addition to these pressures, Dr. Winne noted that tenure at SFU and in the

FOE is dependent on a strong research record so faculty have a high level of concern about research funding and publication records. Some of the concern seems to rest with stability and length of funding. For example, a perception exists that longitudinal research might not be guaranteed funding by SSHRC while NSERC tends to recognize these longer-term projects differently and thus grant longer periods of research funding (Winne, personal communication, July 9, 2008). It seems that this certainty of funding would allow faculty to focus on their research and their students and less on writing prospective grant applications.

In discussing RA-ships, Dr. Winne noted that there seemed to be a wide variance of professors' intentions to ensure their RAs have exposure to a full spectrum of what is involved in becoming a scholar. However, he noted some of this relates to the nature of the PhD population (Winne, personal communication, July 9, 2008.). Very few students (estimated at 15% of the population) intend an academic career. Thus the students do not have the interest in the full spectrum of scholarship activities. In addition, FOE's programs are relatively small in comparison to University of British Columbia, Vancouver's other Faculty of Education, which indicates approximately 390 Education PhD students in 2007 (UBC, July, 2008). As previously noted, UBC seems to have an attractive funding mechanism in place to relieve students of tuition cost. Thus, with fewer applications to SFU, those who have an interest in research are quickly absorbed into the research system (Winne, personal communication, July 9, 2008).

The external review team was very complimentary to the FOE about its research. The Report reads,

> The centres, institutes and research clusters provide important mechanisms for promoting collaboration across disciplines within the Faculty, with other units in the University, and with other institutions. The graduate students who work directly with faculty members enjoy full involvement in the research enterprise, and have been well supported as indicated by their coauthored papers and conference presentations. There is no question that this Faculty has embraced research as a fundamental part of its culture: members of the Faculty of Education are committed to their research programs, to their graduate students, and to ensuring that the research they undertake has impact. (p.6)

While the Report did make recommendations about research, there were none related to issues of funding PhD students through research assistantships.

4.3 Conclusion

This chapter described the university and the FOE, with particular emphasis on aspects of the institution and faculty that might affect a PHD student in the FOE. Thus, the various sections looked briefly at graduate studies, tuition, research records and specific information about working as a RA at SFU.

Briefly, SFU as a comprehensive university seems to be able to attract research funds, which might allow the hiring of RAs. FOE seems to have a track record of successful grant applications that are a source of funding for potential RAs. There seems to be a view as expressed in the Report of the Dean of Graduate Studies' Working Group on Graduate Student Funding at SFU (2004) and in the SFU's Strategic Research Plan, 2005 to 2010, to reward or allocate funds based on academic units graduating students in a timely manner and emphasizing funding for graduate students involved in research.

Pressures that might affect PhD students include financial pressures to cover tuition costs and understanding the system for the appropriate salary and benefits that they are entitled to, depending on the grant. However, SFU PhD students enjoy the longest period to complete their PhD at eight years compared to UBC at six years and University of Victoria at seven years. While this may relieve time pressure, the longer the time, the higher the tuition cost. With this contextual picture, Chapter Five, Findings, and Chapter Six, Discussions, considers the FOE RA phenomenon at SFU.

CHAPTER 5: FINDINGS – A DESCRIPTION OF THE RA EXPERIENCE

"We know more than we can tell" Michael Polanyi

The research question was, "***How do SFU Education PhD students describe their RA experience?*** Chapter Five answers this question with an initial description of the SFU Education RA-ship thus contributing to the PhD dialogue one viewpoint on this important part of the PhD experience. In this chapter I report the findings about the RAs' experience organized by the a priori and emergent thematic codes developed in Chapter Three. Following Miles and Huberman (1994), the chapter's purpose is to describe the RA phenomena by organizing the raw data from the interviews and the questionnaires into a synopsis (p. 86). The RAs' voices illustrate the various elements of their experience as structured around the research questions. This section reflects the data from the seventeen questionnaires and the three interviews.[23] The fourteen questionnaires are referred to as RA# while the three RAs are referred to by their pseudonym (Mary, Natalie, and Terrence). While Chapter Five focuses on the RA description organized by the single themes, Chapter Six focuses on the cross-data analysis and interpretation using the subsystems of activity theory which is evaluated using the extant literature. As noted above in Polanyi's wisdom, there is much that can be said about the findings but I selected RA comments that seem to best reflect the theme rather than reporting all references by all RAs.

Yin (2003) recommends maintaining a chain of evidence to increase the reliability of the information in a case study (p.105). The principle is to show the derivation of any evidence from initial research questions through to the ultimate case conclusions (p.105). The chain of evidence started at the end of Chapter Two, Literature Review, where the research questions were linked to activity theory and the extant literature (Table 2.3). In Chapter Three, Methodology, I continued the concept of an audit trail by linking the research questions to the instruments (Table 3.3) and analysis themes, based

[23] The three RAs interviewed completed the questionnaire prior to the interview hence there are seventeen questionnaires.

on a priori (Table 3.4) and emergent codes (Table 3.5). The a priori themes reflect activity theory elements as part of the intent of this research is to provide a structured investigation of the RA phenomenon. However certain other codes emerged during the data analysis. To continue this chain of evidence I report the findings by activity theory element with the related sub-codes grouped together for ease of reporting.

Each "theme" section has two parts: an introduction and a results section. The introduction reviews the research question, as developed in Chapter Two, and the questionnaire question with the rationale for each question or theme grouping, as explained in Chapter Three. The "Results" section for each "Theme" summarizes the findings from the seventeen RAs as reported in the questionnaire and the interview.[24] The questionnaire data represented by the numeric responses and quotes from the comment boxes are enriched by the interview data and RA quotes to add depth to the theme's description. At the end of Chapter Five the findings are summarized in a similar table as produced for purposes of the literature review and methodology as discussed above. Findings Table 5.11 acts as a bridge for Chapter Six to extend the findings to a full robust discussion across themes and compared to the case study context (Chapter Four) and extant literature (Chapter Two).

This research delved into the RA experience to elucidate various aspects from the perspective of current Education PhD students who have held a recent RA-ship. While some numerical data is provided in reporting my findings, it is important to note that this is given to provide a picture of these particular students, in two programs in the Faculty of Education at SFU, and as reported at one time in their RA experience.

5.1 Who are RAs? The Demographics.

I gathered various demographic information about the RAs as shown in Table 5.1, which is a summarized version of the participant information provided in Chapter Three, Methodology (Table 3.2). Generally, these students are mature, more likely to be female and to have completed their course work.

As is typical of Education students, they started their doctorate studies later in life as fourteen of seventeen fell in the 30 to 49 age bracket. At SFU, the average age of the Education doctorate students is 44 years old for the 2006-07 fiscal year (SFU,

[24] Seventeen RAs completed questionnaires and in addition three of these RAs were interviewed. The questionnaire information was used to direct the semi-structured interview.

Academic Information Report, 2006-07 p.2). The Doctoral Graduates in Canada, 2004/2005 indicates the average age at *graduation* for education students is 45 years old (p.30). Thus these students are perhaps slightly older in terms of age of other Canadian Education doctorates as most are not in the last stages of their PhD program.

Table 5.1 Participant Demographics

Category	Number (n = 17)	% of total
Gender		
Male	3	18%
Female	14	82%
Age		
40 to 49	9	53%
30 to 39	5	29%
20 to 29	3	18%
Year Admitted to PhD program		
2007	2	12%
2006	3	18%
2005	5	29%
2004	3	18%
2003	2	12%
2002	2	12%
PhD Progression		
Completed course work	14	82%
Comprehensive Exam	9	53%
Dissertation proposal	8	47%
Data Collection	5	29%
Data Analysis	4	24%
Dissertation Writing	3	18%
Dissertation defense	1	6%
Program of Study		
Educational Psychology	6	35%
Curriculum Theory and Implementation	11	65%
Total time as RA		
one semester	1	6%
two semesters	6	35%
four or more semesters	10	59%

While there are several doctorate programs in the FOE as described in Chapter Four, the respondents represent six RAs in Educational Psychology (35%) and eleven RAs enrolled in Curriculum, Theory and Implementation (CTI) (65%). These are the two

largest program areas accounting for 82 students (58%) of all active FOE PhD students.[25]

I explored whether the thesis was related to the research project in the RA-ship. Table 5.2 shows the results. For these students, fourteen reported that their thesis was related in some way to their RA work.

Table 5.2 Research Project Relationship to PhD Thesis

Relationship	Number	Percentage
Not related in any way	3	17.6%
Somewhat related (i.e. research method or theory applicable to my thesis)	8	47.1%
Very related (i.e. my thesis is part of a larger study)	3	17.6%
Related in a different way (explanation requested).	3	17.6%
Total	17	100%

Even though RA6 reported that it was not related, she stated, "One can make some connection between the topic and my thesis research. I have presented conference papers, and co-authored as a result of the RA -ship so it has been valuable".[26] RA9 reported, "Initially my research was quite different, but has slowly merged with a larger project because of interest from the districts regarding my field of study".

In terms of RA experience and their PhD progress, ten of the respondents report four or more semesters of RA experience. Almost all RAs have completed their course work and nine have completed their comprehensive exams. Eight have also completed their dissertation proposal. Five RAs report completion of data collection, four report completing data analysis, three are in the midst of dissertation writing and one preparing for her thesis defense. Thus many of these PhD students are in the heart of their PhD journey.

Despite being employed as a RA and in the midst of their PhD program, sixteen of these seventeen respondents reported working, most part-time, in addition to the RA-ship. This likely reflects their age and mid-career decision to augment their work experience with further education. Four RAs are elementary or secondary school

[25] There were 140 Education PhD students registered in the Fall 2007 semester.

[26] For the RAs' comments from the questionnaire I have referenced them by the RA# as there is not a line number.

teachers, six are employed in the post-secondary system, four are self-employed professionals and the remaining two are employed in an "other' unspecified category.

Notwithstanding the nature of their current employment in the education field, the career goals vary for these RAs. Nine of the sixteen (56%) stated they wanted a position in college or university (academia). Two stated a government organization while five are undecided. The five RAs who are undecided include the four elementary or secondary school teachers and one post-secondary professional. Of the five undecided, three RAs have one or two semesters of RA experience. They may be exploring their career options, including their interest in research.

5.2 What are the Stated Reasons for Taking a RA-ship?

The research question was, "What reasons do students report for participating in a research assistantship?" I was seeking to understand their motives and intentions. The selected choices for the reasons was based on the extant doctorate literature plus the "other" category to uncover reasons not evident from the literature. The intent of the question was to uncover RAs' motives. The question asked the respondents to indicate all of the reasons they chose to be a RA and a second question was whether they felt their goal was met. The choices included: opportunity to learn a specific research skill, opportunity to work with a specific faculty member, opportunity to enhance your research productivity such as scholarly publications or presentations, financial resource and requested by thesis supervisor. There was a comment box as well to explain the "other" choice and to comment on why they did or did not achieve their goal.

Motivations Results

Table 5.3 summarizes the reasons these RAs reported for engaging as a RA. Fifteen of the seventeen RAs reported they engaged in a RA-ship for financial support, while working with a specific faculty member and learning research skills were indicated by more than half of the respondents. Just under half reported they chose a RA-ship to enhance research productivity.

Table 5.3 Reported Reasons to Work as RA

Reason	Number	Percentage
Financial Support	15	88.2%
Opportunity to work with a specific faculty member	11	64.7%
Opportunity to learn research skills	10	58.8%
Opportunity to enhance research productivity	8	47.1%
Requested by thesis supervisor	2	11.8%
Other	3	17.6%

Only two reported being asked by their thesis supervisor which suggests other students are proactive in their decision to work as a RA. For example, RA6 reported she decided to be a RA because, "the research topic interested me immensely and I wished to become more knowledgeable about the area of research". RA5 explained her reason for taking a RA-ship as an opportunity "to learn more about research methods, the research population, and data analysis". For the two RAs who were asked by the RA supervisor, one was Terrence who noted during the interview that the financial support was appreciated as it covered his tuition but "it is not the prime motivating reason. The prime motivating reason was that Dr. C offered it to me and Dr. C is a good voice to have in your corner". (line129) Perhaps Terrence felt Dr. C would benefit his PhD career as he is not his thesis supervisor.

Eleven of the seventeen RAs reported that the RA-ship would give them an opportunity to work with a specific faculty member. For example, in Mary's interview it was clear it was her thesis supervisor she wanted to work with. Mary noted, "I have my own interest in research and that is part of why I chose him to be my supervisor because my list of interests matched his list of interests" (line 30). She specifically sought out a position as a RA with her supervisor.

RA6 has had more than six semesters of RA experience and she started in 2002. RA6 indicated when elaborating on her reasons that she had an opportunity "to be mentored by faculty members". Interestingly, RA6 feels her thesis is not related in any way to her RA tasks. Here it seems that RA6 sought out the local community for support although the RA tasks did not have significant relationship to her PhD thesis. Perhaps this is a story about, "it takes a village to raise a child", which is an African proverb.

RA13 reported under the community her RA supervisor and other faculty members. RA13 is in her first year of the PhD journey. She feels that her RA work is somewhat related to her thesis. In discussing her overall RA experience, RA13 stated, "it [RA-ship] is also a chance to engage with the wider academic / scholarly community, to

participate in their practices and to learn their language and procedures.". RA13 seems to have a view of her PhD journey to be involved in the local community similar to RA6.

All but one RA felt that they had achieved their purpose for taking a RA-ship. Many RAs noted benefits that they did not anticipate. For example, while RA6 started with an interest in the topic, she appreciated the "opportunity to... [gain] membership in [to the] scholarly community - [and have] opportunities to contribute to scholarship." RA2 noted, "I also learned from a team of researchers in the faculty."

Following this idea of community, three RAs reported that they achieved their purpose because of the faculty members and their interests. RA9 stated, "I achieved these goals because of my supervisor and the nature of the project provide ample opportunity for publications and conference presentation". RA13 felt her goal was attained because, "my supervisor's attitude was that of a colleague engaged on a mutual exploration of specific educational questions". Lastly RA4 felt her goal was reached because, "I am working with the faculty member whose research interests I share." The RAs and faculty member had common interests.

5.3 What is the Reported RA Experience? Outcomes.

The research question was, "What outcomes do students report as a result of the research assistantship?" The questionnaire was open-ended although directed to some likely outcomes. The question was,

> Please think about the RA experience as a whole. Please describe the outcome (beneficial or otherwise) of your participation in the research assistantship. For example, did you come away with specific knowledge or skills or have opportunities available to you because you were a RA? Did the RA experience influence your thesis (i.e. topic, methodology) and if so, in what way did it influence your thesis? Did the research assistantship influence your PhD progression or professional career? If so, please explain how it was influential.

The rationale for this question is rooted in activity theory which suggests an activity system is invigorated by subjects wanting to achieve an outcome. The RA literature suggests several possible outcomes, some of which were stated in the questionnaire. Because the RA-ship system may influence the PhD system, students were asked to subjectively value the RA-ship in terms of their PhD thesis/career or professional career.

Outcome Results

The story told by the RA respondents about the outcomes of their RA experience tends to focus on many opportunities that the student enjoyed because of their RA-ship. Further several of the RAs report research productivity in describing their overall research assistantship experience in addition to reporting it as a specific activity. Connection to faculty and the community is mentioned by several respondents, which were foreshadowed in "reasons" as unexpected benefits. The outcomes are explored in the respondents' words.

These RAs report many opportunities that they enjoyed because of their RA-ship. One of these is the opportunity to be exposed to new or different areas – intellectual growth (an emergent sub-code). RA1 reported, "I was involved in several different research projects as RA ... that enriched my experience and expanded my horizon". Similarly, RA6 noted that she "widened my research areas and expertise" in the RA-ship. This idea of broadening their knowledge was reported also by RA8, who mentioned her "opportunity to engage in many aspects and stages of research and in different research than just what my thesis is on". Also RA9 stated she gained "extensive research experience in a new field (my MA was in a different field)". RA12 reiterated this construct, as the RA-ship "broadened my reading, taking me into areas and introducing me to authors I perhaps would not have otherwise read". Natalie similarly stated, "I learned a great deal about an area I might not otherwise have explored (at least at that time)" (Questionnaire).[27] Mary explained how she learned and collaborated on software development,

> Because at the beginning I didn't know there would be such software which can log everything. So I didn't think about this. But later on because we are developing this and it seems it is something we can do and we should do, so I found it quite exciting and interesting and the work helped me solve my research problem so I just took the initiative on this methodology department. (line 872)

Other opportunities related to understanding how a research team works, which was an emergent code. RA2, a female PhD student in Educational Psychology noted, "I also came away with some knowledge about running a research team". Mary explained her experience in the research team and noted,

[27] The three RAs who were interviewed also completed a questionnaire. Thus there are comments/quotes from Mary, Terrence, and Natalie with a line number from the interview or a notation of "Questionnaire" after a quote.

> ... the coordination within this project with different people because everybody has his or her own working style, you know. So I think that interpersonal skills is something that I have never thought about, right, because in this project collaboration is really key. Everybody is in charge of a part of the project and finally we put them together and, you know, make something out of it. (line 234)

Further, other opportunities related to connecting to the academic community and building relationships, another emergent code. Natalie noted that she "developed a relationship with the faculty member that has been a support to me during doctoral studies" (Questionnaire). Building relationships was mentioned by RA13 as well who stated she "developed a relationship with a faculty member who I admire and respect". Terence stated that he, "Got to work closely with RA supervisor [and] ...got invited into a university team setting".

Besides connections to other faculty members, the students relate several examples of people outside of the RA activity system. Terence stated that he noted the pleasure he felt at being included in the proceedings at a conference and the ensuing networking. He recalled,

> Dr. C asked me to introduce him as a keynote speaker. And this is a big conference. I think it is a big conference. So I was quite honored by that. And so, to be involved in a network of that and I've met a load of people through that, you know. (line 519)

RA9 felt the networking was valuable as she remarked the RA-ship "has allowed me to connect with teachers and school district (often difficult to do on my own)". RA8 also noted the connection to others in the community as it was an opportunity, "to work more closely with both my own supervisor as well as other faculty members". RA12 felt the RA-ship, "has kept me connected with other graduate students and given me more opportunities to continue discussions long after courses are done for a semester and everyone typically goes their separate ways". Also, Mary mentioned other RAs,

> I did know some RAs for other professors and other projects. I don't think—well, it is valuable to interact with them—that is how I know what other professors are doing in my faculty even though that is not my interest—but at least I know and sometimes we have—for example, the other day an RA for some professor doing some—I think English as a second language or something—he came up to me with his data and to discuss with me how to analyze the data. So that is how we sort of work together. We will have these discussions. (line 746)

Terrence mentioned the impact of interacting with Dr. C and his introduction of Terrence to his colleagues,

> Even if you just kind of walk around the hall with Dr. C talking about whatever, you know, it is like 'Oh, do you know Dr. F?' You know, these are more people that I've met and whenever I can say 'Oh yeah, I was talking to Dr. C' I can learn about people by their reaction to that. I know who is who. Do you know what I mean? 'Cause he is one of those strong poets out there (l. 538).

Terrence feels it is important to be part of the university community. He said,

> Cause I think plugging yourself into the university to the extent that you can when you are working full-time elsewhere is beneficial 'cause you feel like you are a part of it, you are motivated to keep going, you can ask questions, you get to meet more people—You know how it goes. (line 712)

Natalie agrees as she said with considerable energy during the interview,

> We are participants in the community and that we have to be participating in the community in various roles. ... That this is a community of scholars that you are joining and that there are a lot of practices and discourses that you only become familiar with through that participation. Not through taking a course and writing a paper. (line 873)

The questionnaire asked, "Did the RA experience influence your thesis (i.e. topic, methodology) and if so, in what way did it influence your thesis? Did the research assistantship influence your PhD progression or professional career? If so, please explain how it was influential". Not all students responded to this question in describing their overall RA experience. However, several students noted some positive aspects while others noted some concerns. RA1 wrote, "The variety of research experiences made it difficult for me to determine an appropriate thesis topic as well as focus on some significant issues in depth". RA7 felt the RA-ship was stressful. She stated, "The stress of taking on such a position while attempting to complete my own research project has made me reluctant to seek out any further RA-ships. I would rather focus on my own research."

> Some RAs wrote about the influence on their career decision. RA5 wrote,
>
> After two years we are still waiting to figure out how to analyze our data, or whether what we have is sufficient to do an analysis. This lack of productivity vs the time invested has made me much more interested in pursuing a job at a college than a university. From what I have learned, university professors appear to dedicate well beyond the hours in a regular work week to all of their different roles, and there is a continuing struggle to meet the requirements of the job without much time for anything else in their lives.

Similarly, Mary has decided to seek a research position but not at a university. She feels, "Faculty position that is one of my options but I'm not really keen on that because I later found out I was really interested in researching more than teaching" (line 142). She goes on, "But I know faculty have to teach, right" (1.147) [and] "... so that would take up a lot of time"(line 151).

Natalie also expressed her career path clearly, "I don't want to do tenure-track. I know that having lived in this community for a while now" (line 416). She remarked,

> [I] found that in faculties of education because of the publish or perish and research imperative, the teaching is less important and I actually think teaching is very important and I like teaching. So I would preferably like to work in a college where my work as a faculty member would be teacher education. (line 449)

Besides clarifying career goals, others reported an indirect influence on their thesis. RA4 felt the RA-ship was a help to "clarify my research interests in an indirect way". RA6 noted this indirect influence, "The RA experience did not specifically influence my thesis, except it gave me more confidence to proceed with my own independent study." Natalie also stated, "This [new knowledge] may have some relevance to my dissertation, although I am not yet far enough along to be sure. The topics I explored were certainly related to the area I propose to do research in" (Questionnaire).

A more direct influence on their PhD thesis was reported by some students. For example RA8 felt,

> "Because my main RA experience was for the larger study for which my thesis is from, it did influence my thesis greatly. I also think that the opportunity to engage in different research projects will be helpful for me once I finish my PhD and am looking for an academic career".

Similarly Mary's thesis is highly integrated into her work as a RA. She states,

> I'm writing up my thesis right now too. So my RA-ship and my own dissertation—it just feels like the same thing. ... So I feel my dissertation is part of his project—I mean my supervisor's project—so there is no conflict at all in terms of the topic, the methodology we are using and, you know, so it feels very integrated (l. 22). She feels her RA work has influenced her PhD thesis; ""Now that I'm working on my dissertation I feel like I know what I'm doing and I know how to do it, right, so it is more like a big assignment for me—the dissertation. (line227)

RA9 felt a positive influence as she wrote that the RA-ship, "has definitely influence[d] my thesis topic- expanded it and deepened it".

Many RAs reported support to attend conferences, to write publications and to pursue research grants. RA2 reported, "A particular beneficial outcome of my RA is the support that I had in attending conferences and presenting multiple papers." Mary described how her RA supervisor assisted her with publication endeavours,

> I'm not quite familiar with this academic world even though I did my masters ... how it [this academic world] works in terms of how to present and make your work [available] to the public, you know—that sort of thing. Because we have co-authored in quite a few occasions—conference presentations, book chapters, journal articles—so he has brought me along this long path from beginning how to prepare manuscripts and then how to keep in contact with editor (line 42).

In summary, I feel that RA11 nicely captures the outcomes. RA11 wrote, "The RAs helped me gain exposure to a number of different professors and projects, and this was helpful to my budding understanding of the academy and what was possible for my own research."

5.4 What are RAs doing? Activities

The research question was, "How do students describe their reported activities in the research assistantship? The questionnaire asked,

> Please indicate below all activities you engaged in (either individually or with others) during any of your research assistantships. For each activity, indicate on a scale of 1 (not valuable) to 5 (very valuable) how valuable these activities are/were to your PhD academic career or your professional career.

There were 15 activities and an "other" box and comment box to explain the other activity. The list was prepared from the extant literature, most notably Roaden and Worthen (1976), Ethington and Pisani (1993), Weidman and Stein (2003) and Nettles and Millett (2006). The rationale for this relates to activity theory which is directed to understanding what people are doing and the extant literature which discussed some of the RA activities.

Activities Results

For this theme a table reporting the findings is the most efficient presentation format when there is a range of activities. Table 5.4 shows the activities in rank order of

the number of RAs who reported that activity from highest to lowest. Considering the nature of the activities listed, it is noted that RAs seem to be involved in several authentic tasks.

Table 5.4 Reported RA Activities

Activity	# RAs reporting activity	%	# RAs reporting 4 or 5 rating	% of reporting activity
Performed a literature search	15	88.2%	11	73.3%
Presented a research paper	11	64.7%	11	100.%
Designed a research study	11	64.7%	8	72.7%
Conceptualized a research problem	11	64.7%	8	72.7%
Performed data collection	11	64.7%	8	72.7%
Interpreted data	10	58.8%	9	90.0%
Proof-read papers	10	58.8%	8	80.0%
Filing or other administrative duties.	9	52.9%	2	22.2%
Wrote a research proposal	8	47.1%	8	100.%
Prepared a grant application	8	47.1%	7	87.5%
Authored/ co-authored a research paper	8	47.1%	7	87.5%
Constructed qualitative analysis or instruments	8	47.1%	5	62.5%
Prepared a bibliography or annotated bibliography	7	41.2%	3	42.9%
Other (please specify) discussions	6	35.3%	6	100.0%
Designed quantitative analysis or instruments	6	35.3%	5	83.3%
Used computer software to analyze data	6	35.3%	4	66.7%

The most common activity was a literature search, which was reported by fifteen of the respondents (88.2%). Eleven of these rated it as a 4 or 5 on the subjective scale of value to their PhD academic or professional career. Given the nature of a research process and writing a thesis, the finding that many performed this task and found it useful for their PhD is not surprising.

The "other" category generated highly rated activities such as collecting video data, conducting focus groups, preparing the ethics application and conducting and recording of discussions that informed the research project. Given the importance of obtaining ethics approval, I wonder if other RAs would have indicated this task as important too if it had been listed as an activity.

In terms of breadth of activities, Table 5.5 indicates these respondents indicated a low of three activities to a high of fifteen activities with an average of 8.5 activities.

However, note that seven RAs reported five or fewer activities and six RAs reported more than ten activities.

Table 5.5 Breadth of Reported Activities

Lowest number of activities	3
Highest number of activities	15
Average Number of reported activities of 16	8.5
Number of RAs reporting 1 to 5 activities	7
Number of RAs reporting 6 to 10 activities	4
Number of RAs reporting 11 to 16 activities	6

In terms of depth of activities, as measured by a rating of 4 or 5, several activities were rated very high by those who experienced that activity. Looking at Table 5.6 all eleven of the RAs who presented a research paper and all of the eight RAs who wrote a research proposal rated the activity as 4 or 5 in terms of value to their PhD career. Interpreting data, preparing a grant allocation and authoring or co-authoring a paper were also highly rated by RAs. Designing a quantitative analysis or instrument was a similarly highly rated and proof-reading papers added value according to these respondents. With the exception of proof-reading papers, these activities are genuine research tasks based on Roaden and Worthen (1976). Thus it is not surprising perhaps to find respondents highly value these tasks in relation to the PhD.

Table 5.6 Activities Rated as 4 or 5 by Greater Than 80% of the Respondents

Activity	# reporting activity	%	# reporting 4 or 5 rating	% of reporting activity
Presented a research paper	11	64.7%	11	100.%
Wrote a research proposal	8	47.1%	8	100.%
Interpreted data	10	58.8%	9	90.0%
Prepared a grant application	8	47.1%	7	87.5%
Authored/ co-authored a research paper	8	47.1%	7	87.5%
Designed quantitative analysis or instruments	6	35.3%	5	83.3%
Proof-read papers	10	58.8%	8	80.0%

The activities reported with a high value, seem to be authentic activities that would enhance a PhD career and a future academic career. These are the type of activities that Perna and Hudgins (1996) refer to in their findings (p.30) as do Roaden and Worthen (1976). Thus FOE RAs seem to value highly for the PhD genuine research

activities in their RA-ship. On the other hand, one can see the low level activity of filing and other administrative duties was experienced by nine of these RAs. While it is a fairly common experience among these respondents, perhaps it is not surprising that many of them found little value towards their PhD.

5.5 What do RAs use in their RA-ship? Tools and Resources

The research question was, "What resources do students report they use or need in the research assistantship?" Students were asked to indicate all resources used in their RA-ship and then rate them in a range of not essential (1) to very essential (5) in contributing to their PhD career. The list was generated from logical reasoning based on my experience as a RA and informal discussions with other RAs. The rationale for this question was rooted in activity theory which suggests that resources mediate the activity in the activity system.

Resources Results

For this theme with a range of resources, Table 5.7 reports the findings efficiently. The resources are listed in order of reported frequency, highest to lowest. Considering the nature of the resources listed, it is noted that RAs seem to draw on various sources of knowledge and skills, which are mainly "soft" resources.

Table 5.7 RA Resources

Resource	# RAs reporting activity	%	# RAs reporting 4 or 5 rating	% of reporting activity
Intellectual knowledge from courses or workshops	16	94.1%	13	81.3%
Intellectual knowledge from prior or current work experience	16	94.1%	10	62.5%
Computer	14	82.4%	14	100.0%
Time management skills	13	76.5%	11	84.6%
Project management skills	13	76.5%	11	84.6%
Other technology (software, digital recorder)	10	58.8%	8	80.0%
Intellectual knowledge from prior RA experience	9	52.9%	5	55.6%
Financial	7	41.2%	5	71.4%
Other resources	3	17.6%	3	100.0%

Intellectual knowledge from courses and prior or current work experience are both utilized by almost all of the RAs. Most RAs feel the course work they used in the RA-ship was also essential to their PhD career. Yet Mary reflected on her course work in these ways: "I would have to say yes, I learned a lot from my course but in order to do a real analysis with a real data that comes from my RA-ship" (line 483). Further she remarked,

> Because in a course those are more theoretical or some with some fake data, you know. But for real study, you have—the question right here—you have to figure out how to approach this question with what kind of methodology and how to interpret and report it. (line 488)

She noted that "I found them [courses] useful, but I did not put a lot of time and effort. I think I used more of my time in my RA-ship" (line 590).

In contrast, only 10 of the 16 RAs reporting the use of work experience in the RA-ship felt the work experience essential for their PhD career. This is interesting as many SFU FOE PhD students are mid-career and are seeking the credential for career purposes. Yet Dr. Winne, Coordinator of FOE Research, noted that the career PhD students are not likely to work as a RA due to time constraints in their work and that financially, it is not to their benefit given their school position (personal communication, July 9, 2008).

All RAs that reported the use of a computer valued it as essential for their PhD career, perhaps not surprisingly. Perhaps what is surprising is the number of RAs who indicated time management and project management skills. These are life skills in many respects and might be categorized as work skills. Similarly, I thought that technology used in a RA-ship might be used in the PhD, but only 10 respondents (58.8%) reported it with eight (80%) scoring the resource as a four or five (out of five) in terms of its value to their PhD career.

Seven RAs reported needing to use personal financial resources to complete their RA tasks and five of these thought it was essential to their PhD career. The data did not capture the nature of these expenditures but perhaps students purchased a computer or software given the finding on that resource. Three RAs reported other resources and they all felt these resources for them were essential to their PhD career. The other resources utilized included technical programming skills, statistical knowledge,

scientific thinking, communication skills and a workshop on topics related to the research project.

5.6 Who do RAs interact with during the RA-ship? Community

The research question was, "Who do students report as significant to their participation in the research assistantship?" The questionnaire stated, "On a scale of 1 (not significant) to 5 (very significant) please identify and rate how significant each person that you interacted with during your RA experience was to your PhD academic career or professional career." The intent was to identify who the RA interacted with in the course of their RA-ship and whether that person was significant to the PhD career. Activity theory suggests that the RA will interact with others who have a common interest in the activity, object or outcome. The RA literature suggests the interaction is beneficial for various reasons.

Community Results

Table 5.8 lists the people in the community, sorted highest to lowest in terms of reporting frequency. Considering the nature of the people listed, it is noted that RAs seem to draw on various members from the community in the RA-ship.

Table 5.8 The RAs' Community

People	Number reporting activity	%	# RAs reporting 4 or 5 rating	% of RAs reporting activity
Other faculty members not included above	12	70.6%	7	58.3%
RA supervisor NOT thesis	11	64.7%	7	63.6%
Research team members	11	64.7%	5	45.5%
Your thesis supervisor	10	58.8%	10	100.0%
RA supervisor and thesis	10	58.8%	9	90.0%
Other RAs	10	58.8%	5	50.0%
Other: those with requisite knowledge	1	5.9%	1	100.0%

An interesting finding was that other faculty members were the highest reported person in the community. Twelve RAs reported interaction with other faculty members in the RA-ship with seven indicating that this interaction was significant to their PhD career. Who are these faculty members and what is the nature of their involvement? The three

RAs interviewed indicated the nature of their interactions with other faculty members in the RA-ship. For example, Natalie felt the person who recommended her to the RA supervisor was significant because of what she gained out of the RA-ship. Mary's context was through preparing a grant application.

> Dr. A is applying for a grant which I think is a huge amount of money and he wants me to be involved in their weekly meeting because it is supposed to be interdisciplinary project and in the meeting, professors from education, linguistics, computing science, natural language—you know—so those professors will have a weekly meeting every Friday and he wants me to be there. I really enjoy it—their discussion—how to come away with a bigger and almost perfect proposal, right. (line 402)

Terrence identified his sensei, the Japanese word for teacher.

> I look up to him as a familial big brother and he comes over and he knows my kids and, you know, not nearly enough as either one of us would like to kind of hang out and talk, right. But with him he's really kind of spiritually in my corner as it were. (line 861)

RA5 identified as other faculty a co-researcher. "We met a few times with other professors to look at methodology". Thus there is a variety of "other" faculty.

It seems the involvement of the thesis supervisor, either alone in that role, or as a dual RA-thesis supervisor was very significant to all RAs reporting this individual. This is not surprising given the role of the thesis supervisor in guiding the PhD student's career. In contrast, while eleven RAs noted the RA supervisor only seven RAs thought their RA supervisor was significant to their PhD career.

Research team members were reported by eleven RAs and five RAs felt they were significant to their PhD career. Mary, who rated her research team as a three out of five in terms of value to her PhD, reported, "Because in this project there is some other professors who got involved. So sometimes I would go to them to discuss my ideas as well" (line 813).Terrence, who rated his team as four out of five, reflected on his team in this way,

> It is kind of like walking into your favorite pub, right. Like you go in there [research team office], they [research team] know who you are and you are able to talk PhD shop with a couple of them and being able to talk about when is the new book coming out, when is the conference—you know—Just that community of it. (line 712)

RA6 stated her "team modeled harmonious collaborative work and scholarly relationships. Most illuminating!" Given this reflection it is not surprising RA6 rated her team as a five in terms of value to her PhD career. Similarly RA9, who rated the team as four out of five, felt her "group is very close and are working on a common goal- so we get along". This idea of similar goals was reiterated by RA12 who stated, "We selected the group, so most participants shared similar goals, educational philosophies, etc". RA12 rated the value to her PhD career as a three. Overall there seems to be many people in the community or the village to support the RAs in their endeavours.

5.7 What are the Rules and Division of Labour in the RA-ship? The Relationship

The research question was, "How do students describe the rules and division of labour in the research assistantship?" The intent of this question was to understand if there were implicit or explicit norms and whether there seemed to be any implicit or explicit horizontal or vertical division of power. The questionnaire focused on two areas. The first area was how the contract was initiated and discussed: no discussion, minimal, some, full and other in case students felt the contract discussion could be described in a different way. The second area was about the description of the relationship with the last or current RA supervisor. The choices provided were:

- Employee – employer. I am hired to perform a specific task;
- Apprentice - expert. I am an apprentice learning from the expert;
- Protégé-mentor. I am being taken under the wing by a mentor who is providing training, support, encouragement and access to opportunities to enhance my academic and professional career;
- Junior colleague. I am considered a colleague, albeit less experienced;
- Other description of your choice.

Relationship Results

Table 5.9 summarizes the contract discussions. Seven RAs reported no or minimal contract discussion. Seven RAs had some discussion while only three had a full discussion of hours, tasks and wage rate. It is not clear whether the level of discussion affected the overall RA experience. While there are standards for paying research personnel for SSHRC grants, I would have thought students would want to know details on the type of work and time commitment. This no doubt reflects my personal bias.

Table 5.9 Reported Contract Discussion

Level of Discussion	Number	Percentage
No discussion. I was asked to sign the standard written contract.	3	17.6%
Minimal discussion of hours, tasks and wage rate and I signed the standard written contract.	4	23.5%
Some discussion of hours, tasks and wage rate and I signed the standard written contract.	7	41.2%
Full discussion of hours, tasks and wage rate and I signed the standard written contract.	3	17.6%

Table 5.10 reports the description of the relationship between the RA supervisor and the RA. Interestingly, seven RAs described their relationship with their RA supervisor as a junior colleague. Another eight described their relationship as protégé-mentor. One RA felt it best described as apprentice-expert. Thus sixteen of the respondents reported their relationship in terms usually associated with a positive relationship. Only one felt it was an employee-employer relationship.

Table 5.10 Reported Relationship Between RA and RA Supervisor

Relationship	Number	Percentage
Protégé-mentor. I am being taken under the wing by a mentor who is providing training, support, encouragement and access to opportunities to enhance my academic and professional career.	8	47.1%
Junior colleague. I am considered a colleague, albeit less experienced.	7	41.2%
Apprentice-expert. I am an apprentice learning from the expert.	1	5.9%
Employee and employer. I am hired to perform a specific task.	1	5.9%

Some students did articulate in their outcomes the nature of the relationship. RA4 stated, " I am thankful to work with a faculty member who is helping me in this pursuit [clarify research interests]". RA6 specifically noted in her reasons that she wanted to be mentored and in the outcomes stated, "[I] wish all PhD students could have such a mentorship". RA4 and RA5 both spoke about the great or excellent relationship they have with their RA supervisor. Unfortunately the RAs did not elaborate on what made the relationships "great" or "excellent". Since they felt compelled to note this in their outcomes, it seems to have been important to them. RA12 felt that her RA supervisor "encourages graduate student involvement and contributions". Terrence felt, "I'm trying to build a nice balance there and I guess just develop those relationships and be cognizant that these are the hands that feed me, you know, intellectually and

emotionally and everything else" (line 107). These students' comments suggest a supportive relationship.

5.8 What Types of Problems arise in the RA-ship? Tensions or Contradictions.

The last research question was, "What tensions or problems do students report in the research assistantship?" The intent of this question was to identify the activity theory contradictions which trigger change in an activity system. The question about concerns was integrated into each activity theory element or theme. Understanding the types of concerns RAs have may affect how the RA and the RA-supervisor function and the nature of the RA-ship.

Tensions Results

One concern raised by these RAs was about time. This is not surprising as we know they are juggling their PhD studies, some are working in addition to the RA-ship and given their average age is 44, they may have family obligations. RA6 stated her "only difficulties were in juggling my own research time lines, with the project time". RA14 expressed a similar concern in that she was "balancing research and course work with paid work". I was surprised that more RAs did not speak to this balancing act given their life worlds. Perhaps the structure of the questionnaire did not lend to the RAs thinking outside of their RA-ship.

Two RAs (Terrence and RA11) both felt some lack of supervision or organization on the part of their RA supervisors and/or in the team. RA11 stated, "I had difficulty writing on theories that I was not able to grasp well. I had difficulty pulling together large amounts of data and analyzing it by myself. I felt as if sometimes I was not capable of doing the work that needed to be done, and that I was not the right person for the job". Does RA11 lack the confidence because of insufficient training or supervision? On the other hand, PhD students must demonstrate that they can do independent research. Yet some of this could be attributed to lack of supervision or management of the tasks. RA11 also noted,

> I found some in the middle which were both clearly defined and interesting, but some were over my head and others were poorly run. Some were delightful to be a part of, and were interesting and fun and engaging, and I worked hard on those. ... For the project that was not thought-through well, I felt as if the

professor was just hoping I would do all the work, and I didn't really know what we were trying to do.

In conclusion, managing their time and their "projects" require a careful balancing of priorities. The tools used in the RA-ship described by the RAs included time and project management skills. While these tools were indicated as part of the RA-ship tool kit, it seems these are critical skills to juggle the competing interests. Further, supervision could be an issue for some thus both the RA and RA supervisor might discuss the amount of supervision necessary which may depend on the task. It seems supervision needs to be more explicit and intentional to ensure the RA work meets everyone's expectations.

5.9 What is the Overall Evaluation of the RA-ship? Why?

These questions were wrap-up questions and not directly linked to a specific research question. The first question was, "Please indicate how you would rate your OVERALL RA experience in terms of its value to your thesis, PhD career or professional career: Poor, Fair, Good, Very Good or Excellent. The intent of the question was to test the temperature of the experience, notwithstanding the foregoing comments in the questionnaire. The second question was, "Would you recommend other PhD students seek a research assistantship? Yes or No. Please explain your recommendation." Like the first question, the intent of the question was to test the temperature of the experience but in terms of whether the RA felt their experience might be replicated such that others would benefit. That is, the RA's belief about the value of a RA-ship for other PhD students and that his/her experience is not an isolated unique experience.

Overall Evaluation Results

The question about the overall evaluation was added to the questionnaire after the interviews were conducted.[28] As a result, only thirteen respondents addressed this question. Nine reported an excellent or very good overall RA experience. Three reported a good RA experience while one felt it was poor. All seventeen respondents

[28] The interviews were conducted before collection of the questionnaire data for pragmatic reasons. The timing of the release of the questionnaire was considered important to attract responses. It was felt a mid-semester release would conflict with course priorities and thus the questionnaire was released near the end of the semester through to the beginning of the next semester. In contrast, interviews were conducted when the individual PhD student was available.

stated that they would recommend other PhD students seek a RA-ship. Their explanations for the recommendation are interesting. One from each rating will be discussed here as their reasons reflect their RA experience as discussed under "Outcomes" above.

RA13 rated her experience as "excellent". Her comments were a fair representation of others' comments, who also rated it excellent, "Not only is it [RA-ship] an opportunity to practice skills you will be using in other areas of your program and to inform your work, ... This is a necessary step in joining communities of practice".

RA2 rated her experience as "very good". She reflected that, "Not having an RA is detrimental and you are left trying to figure out many things on your own. You have opportunities to work with other graduate students while having some financial support so you have the freedom to consider such opportunities."

RA5 rated her experience as "good". She stated, "It is money earned on campus which allows you to learn more about the university community and looks good on a CV".

RA7 rated her own experience as "poor". However she felt that, "In most RA situations students can learn a lot from the experience; however, I would stress that they be selective in what positions they take on and, most importantly, whom they work with".

5.10 Conclusion

The respondents have indicated many aspects about their RA experience. Generally we see a PhD student who has sought out the RA-ship for financial reasons but other reasons played into the decision for many of these respondents. These reasons include wanting to work with a specific faculty member, proactively looking for research productivity and learning research skills.

The outcomes articulated by these respondents include various opportunities to collaborate, enhance their knowledge, achieve research productivity and build community. Many RAs thought the RA-ship had some influence in their PhD career, although not always portrayed favourably.

In terms of what these RAs do, the most common task was a literature review. Yet a wide range of tasks were reported by many respondents. These tasks included designing a research study, conceptualizing a research problem, performing data

collection, presenting at a conference and interpreting data. There seemed to be breadth of activities as many reported several tasks and depth of experience since many reported a high value for the task in relation to their PhD career.

RAs in the study seem to draw on various sources of knowledge and skills. Intellectual knowledge from courses and prior or current work experience are both utilized by almost all of the RAs. Most RAs feel the course work they used in the RA-ship was also essential to their PhD career. Interestingly, time management and project management skills were both reported by thirteen RAs (76.5%) of the respondents and rated quite high in terms of value to their PhD career.

These respondents seem to interact with various members of the community in the RA-ship. An interesting finding was that other faculty members were the highest reported person in the community. An unsurprising finding was that the involvement of the thesis supervisor, either alone in that role, or as a dual RA-thesis supervisor was very significant to all RAs reporting this individual.

An interesting finding was that sixteen of the seventeen respondents reported their relationship in a favourable manner as a junior colleague, protégé-mentor or apprentice-expert.

Lastly these respondents are satisfied with their own RA-ship experience as all but one indicated a good to excellent rating. All RAs stated they would recommend a RA-ship to other PhD students.

To continue the chain of evidence, Table 5.11 indicates the activity theory element, the RA literature that was relevant in establishing the research questions and now the findings as reported here in Chapter Five. This "Findings Table" is a bridge for further analysis in Chapter Six, The RA Experience: Activity Theory and the Literature. Chapter Six extends the findings to a full robust discussion across themes and respondents and is interpreted using appropriate literature and within the specific context of SFU and FOE as described in Chapter Four.

Table 5.11 Research Questions linked to Activity Theory, the Extant Literature and Findings

Activity theory	Literature	Research Question. (Themes in bold)	RA Study Findings
Intentions/reasons Participants are motivated to achieve objects and outcomes. To understand the activity system, one needs to understand the participants' motives and goals.	Findings suggest research assistantship is a financial variable but participants may be motivated for other reasons such as research productivity.	1. What **reasons** do students report for participating in a research assistantship?	• Financial support • Work with a specific faculty member • Proactively achieve research productivity • Learn a specific research skill
Outcomes intentions of the activity system	Findings suggest shorter time-to-degree if a RA although also RA distraction if work not related to thesis; higher completion rate; research productivity	2. What **outcomes** do students report as a result of the research assistantship?	• Opportunities to collaborate; develop software; enhance knowledge and exposure to other ideas • Research productivity • Influence thesis/career • Build community
Activities What are people doing?	Findings suggest growth in research skills while others recommend attention to quality research preparation	3. How do students describe their reported **activities** in the research assistantship?	Most common tasks: • Literature review • Design a research study • Conceptualize a research problem • Perform data collection • Present at a conference • Proofread papers • Interpret data
Resources Actions and interactions are mediated by explicit or implicit tools and resources.	No empirical research related to resources.	4. What **resources** do students report they use or need in the research assistantship?	• Course or workshop knowledge • Knowledge from previous work experience • Computer skills • Time and project management skills • Knowledge from prior RA-ship
Community People interested in the same object as the subject.	Findings suggest RAs tend to be more involved in the department and may look to other RAs for support.	5. **Who** do students report as significant to their participation in the research assistantship?	• RA supervisor • Thesis supervisor who is NOT RA supervisor • Thesis supervisor • Other faculty members • Research team members

Activity theory	Literature	Research Question. (Themes in bold)	RA Study Findings
Rules and Division of Labour: Explicit or implicit norms; horizontal division of tasks and vertical division of power	No empirical research related to rules and division of labour	6. How do students describe the **rules and division of labour** in the research assistantship?	• Most students describe their relationship as either junior colleague or mentor-protégé.
Tensions or contradictions Contradictions result within and among the elements of the activity system and other activity systems and give rise to innovation or change.	Findings suggest there may be incongruent role expectations and a conflict in authorship beliefs.	7. What **tensions or problems** do students report in the research assistantship?	Concerns: • Managing time • Balancing PhD work, RA-ship and other paying work

CHAPTER 6: THE RA EXPERIENCE: ACTIVITY THEORY AND THE LITERATURE

"Many interpretations of this material are possible, but some are more compelling for theoretical reasons or on grounds of internal consistency"
(Miles and Huberman, 1994, p.7)

Chapter Six contributes to the PhD dialogue a cross-data thematic interpretation of the RA description (Chapter Five Findings) using the structure of activity theory. While Chapter Five considered the data from individual themes to produce an initial description, in Chapter Six I use the structure of activity theory, specifically its subsystems, to explore significant relationships among the key elements of the RA activity system. I discuss this interpretation in light of the extant literature and the context of SFU Faculty of Education, as described in Chapter Four. Thus Chapter Five's description of the RA experience is a foundation for scaffolding to a more detailed interpretation of the RAs' experiences. Chapter Six follows Miles and Huberman (1994) data transformation steps which connect the synopsis of the findings (Chapter Five) to a wider body of knowledge (p.86). In particular the following RA literature provides useful comparisons since the data included Education: Roaden and Worthen (1976), Worthen and Gardner (1988), Perna and Hudgins (1996) and Nettles and Millett (2006). As noted above by Miles and Huberman, there may be many interpretations of the same data. These are my interpretations of the findings while others are possible. However in placing the discussion within the context of the case study and the theoretical frame, I believe this interpretation tells a plausible story about these RAs experience of the RA-ship in the Faculty of Education at SFU.

In this chapter I start with a brief activity theory primer and an activity system graphic which describes the RA activity system based on the Chapter Five findings. From here I unpack the RA experience by investigating the findings through cross-data themes. Each section briefly recalls the findings and then considers the activity theory subsystems by weaving the findings from single themes together to produce a thick description of the RA experience. The first section discusses the reported reasons to engage in a RA-ship as the subject's motives drive the activity system. The findings are

connected to other data, such as time as a RA, the case study context and the literature to elucidate the motives. Similarly, the next section investigates the production subsystem which links the subject, tools, object and outcomes. The Chapter Five findings are considered in light of the profile of the SFU Education PhD student, their reported career goals, and the reported activities and outcomes. Again relevant literature is brought to bear on my interpretation. The production subsystem is followed by the consumption subsystem – subject – community – objects –outcomes. In this section I limit the discussion to the community element because the previous sections discussed the subject, object (activities) and outcomes. This section briefly looks at the distribution and exchange subsystems as they relate to the community. At the end of the activity theory section, the thesis trail continues with a table. I have added my interpretations to the previous chapters' summary tables demonstrating the progression from the research questions supported by the literature (Chapter Two) to the methodology (Chapter Three) to the findings (Chapter Five). Following this activity theory section, I present a critical evaluation of activity theory as the theoretical frame for the RA study.

6.1 Activity Theory and the RA Experience

Activity theory – A primer

Activity theory assists with answering the question, "*What is an individual or group doing in a particular setting*? As a framework, activity theory focuses on an *activity system.* Engeström (1990) describes activity theory as an interdependent view of human activity involving the individual (subject), tools, a problem space (or object), the community of people who are similarly concerned with the problem, the division of labour between community members, and the conventions (rules) regarding actions (p.79). As Engeström and Miettinen (1999) explain, "The analyst constructs the activity system as if looking at it from above. At the same time, the analyst must select a subject, a member (or better yet, multiple different members) of the local activity through whose eyes and interpretations the activity is constructed" (p.10). Generally, the subject interacts with the community using mediating tools according to rules or cultural conventions including division of labour to transform the object into an outcome. The activity system produces an object or artefacts. "Whether physical, mental or symbolic, they [the objects] are the product that is acted upon by the subject" (Jonassen, 2000, p.100). Mediating tools and instruments construct certain objects and transform the object into an outcome. Tools

are culturally specific means through which the subject acts on the object. The tools can be physical, such as computers, or abstract, such as knowledge or theories. Jonassen (2000) describes the outcome as the intention of the activity system (p.99). Thus investigating the RA experience using activity theory allows for "understanding the totality of human work and praxis, that is, activity in context" (Jonassen, 2000, p.38). The next section maps the findings from Chapter Five to the activity system triangle.

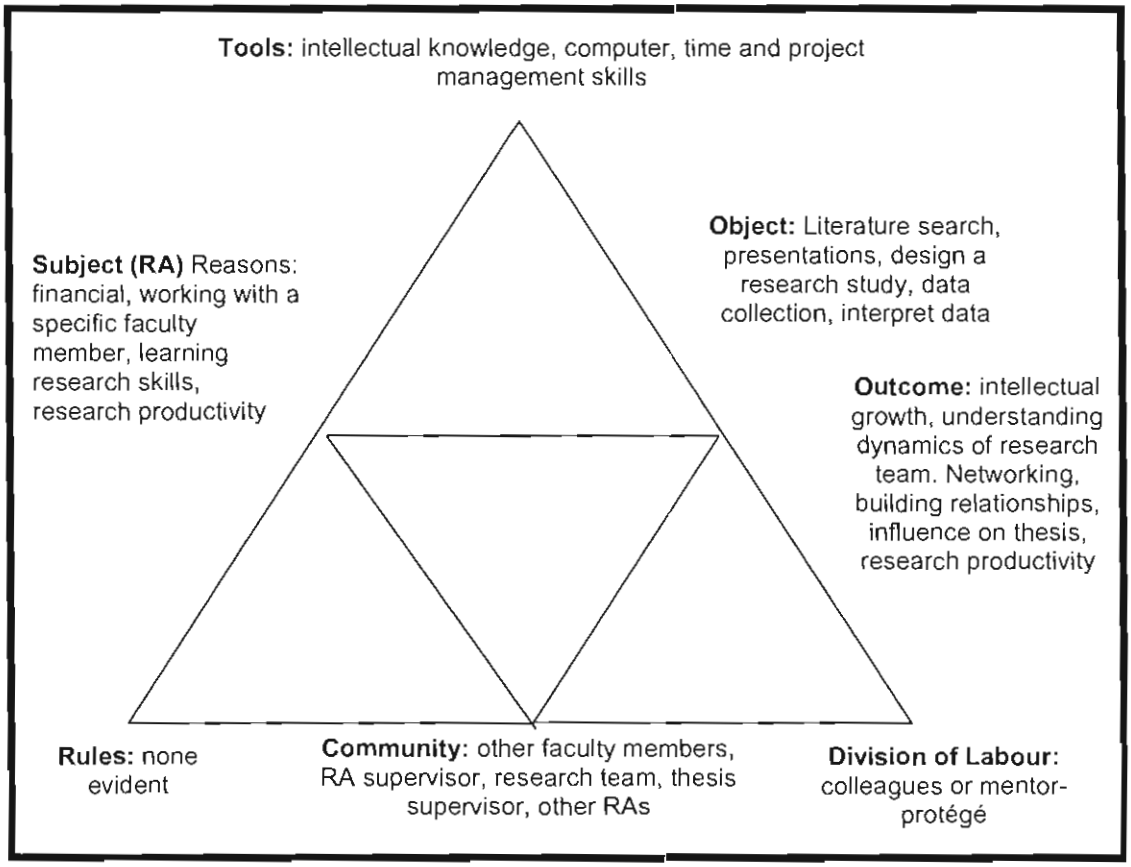
The RA Activity System

Chapter Five Findings, Table 5.6, showed the link from activity theory to the literature to the research questions to the findings. These findings are now illustrated in Figure 6.1 which shows the RA activity system based on these respondents' experiences. The RAs' perceptions are the *subject* or viewpoint of the activity system. Their reported *reasons* for engaging in a RA-ship include financing their degree, wanting to work with a specific faculty member, achieving research productivity or learning research skills.

The *tools and resources* reported by these RAs varied but were generally soft or abstract tools given the intellectual nature of the endeavour. Many RAs use their intellectual knowledge from their prior work experience or PhD courses to facilitate their RA work. In addition computers seem to be an essential tool. Interestingly, RAs report using time and project management skills.

The *community*, who these RAs reported as being interested in the RA-ship's outcomes, varied with some surprising results. It is important to note that according to activity theory, the community is the group of people who are interested in the activity system's outcomes. Based on the literature which suggests that a RA-ship is beneficial to the PhD student's academic career, it was assumed a priori that one outcome might be related to the respondents' theses. Thus I was attempting to understand people who share the same outcome and interact in both the RA-ship and the PhD student's activity systems. Interestingly, first and foremost, these RAs report other faculty members as important people in their RA-ship. As expected the RAs interact with their RA supervisor and thesis supervisor. Lastly other RAs play a role in the RA-ship.

Figure 6.1 Activity Theory Elements for the RA Experience



The RAs report few indications of implicit or explicit *rules or norms* that govern the relationships. For many RAs, there seems to be very little discussion about wage or tasks. However, one RA did question authorship "rules" and another felt she had to take a RA-ship when she couldn't handle it.

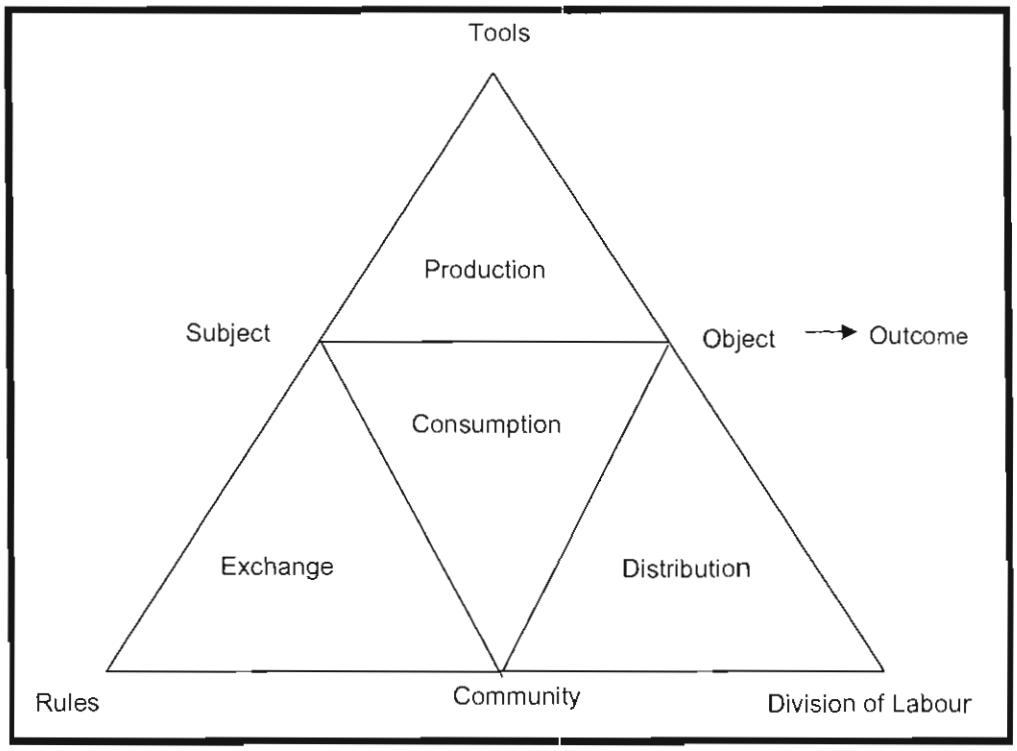
In terms of *division of labour* and these norms, the lack of reported norms could be because there appears to be supportive relationships. The RAs described their relationship with their RA supervisor as either collegial or as a mentor-protégé in most cases.

The *object* of the activity system relates to the tasks these RAs reported they engaged in during any of their RA-ships. They list many activities including reviewing literature, designing research studies, conceptualizing a research problem, collecting data, interpreting data, and filing or administrative tasks. To a lesser extent, some RAs have written a research proposal, prepared a grant application, and participated in authoring or co-authoring research papers and presentations.

The *outcomes* may be intentional or serendipitous. Interesting outcomes of their RA experience include developing intellectually, networking with the research community, building relationships, understanding the dynamics of research teams, and producing research articles and presentations. The RA-ship influenced the PhD student's thesis in several ways. Some felt it enriched the thesis or gave them confidence to proceed with their own research. Others felt tensions in choosing a topic or disappointment at not experiencing data analysis as a task in their RA-ship. Others realized that their initial plan to pursue an academic career was no longer desirable given their observations of the faculty they interacted with during the RA-ship. These outcomes are developed fully in the following sections.

To analyze the various elements of the activity system and their interaction with other elements, that is, cross-data analysis, I relied on breaking the relationships down through the activity system's subsystems. The four subsystems are: production, exchange, consumption and distribution, which are shown in Figure 6.2 (Engeström, 1990, p.79; Jonassen, 2000, p.99).

Figure 6.2 The Activity Subsystems. (Adapted from Engeström, 1990, p.79; Jonassen, 2000, p.99)



The four subsystems are ways to look at the elements as they interact with each other. Very briefly, the production subsystem looks at the subject, tools and object. What are the reasons to engage in the activity? How do the tools mediate between the subject and the object? The consumption subsystem replaces tools with community such that it is subject, community, and object. How does the community mediate between the subject and object? The distribution subsystem replaces subject with division of labour as it is how the community divides the work to achieve the outcome. Lastly the exchange subsystem considers the subject, rules and community – that is, what are the implicit and explicit norms that govern the relationships between the subject and the people who have an interest in the object. To unpack the Chapter Five findings, the next section looks at the elements of the activity system and certain subsystems to discuss the cross-data analysis. In each major section, I discuss the findings briefly, explain why they are significant and then report my interpretations based on cross-data analysis, reference to the literature and the specific SFU FOE context and activity theory.

6.2 Reasons and Motives

I start with considering the subject's reasons and motivations as the RA intentions drive the activity system. Leont'ev (1974) states, "It is precisely its object that gives an activity its specific direction. ... Behind the object there always stands a need or desire, to which it [the object] always answers" (p.22). Further, Engeström (1990) suggests that how the subject frames and constructs the object is a key determination of understanding the activity system (p.112). Thus not only is the reason of interest, how the RA frames the reason is of importance. I was seeking to understand whether students look for specific assistantships intentionally, and/or whether students might articulate intrinsic reasons for engaging in a research assistantship. How do they frame their reasons for a RA-ship? Jonassen and Rohrer-Murphy (1999) feel a structured analysis using activity theory requires clarifying motives. The authors feel it is important to understand the context within which activities occur and to have a complete understanding of the motivations (p.70). If we can understand why FOE PhD students engage as RAs then perhaps we can ensure the experience is beneficial by addressing their motivations.

To recap the findings, as expected, fifteen of the seventeen RAs reported financial support as one of their reasons to engage as RA. In addition to financial support, more than half of the respondents reported a desire to work with a specific faculty member and learn research skills. Just under half reported they chose a RA-ship to enhance research productivity. Only two reported being asked by their thesis supervisor. Thus RAs seem to be motivated for more reasons than simply financial to engage as a RA. The next few sections look at the various reasons through the activity theory lens while bringing in other relevant contextual data, such as time as a RA and career goal. How do the motivations give direction to the activity system?

Reason #1: Financial Support

The financial support was one of their reasons for engaging in a RA-ship. Fifteen of the seventeen RAs (88%) reported they engaged in a RA-ship as a financial resource. In Worthen and Gardner's (1988) study 89% indicated their reason was financial support. This finding is consistent with Worthen and Gardner (1988) and other literature that suggests a RA-ship is an important financial variable (i.e. Baird, 1990; Sheridan, 1990; Bowen and Rudenstine; 1992; Lovitts, 2001). However it is interesting that none of the RAs reported this financial resource as an outcome that came to mind when asked to discuss their overall RA experience and the outcomes. Yet financial reasons were articulated when the RAs were asked why they would recommend others to work as a RA. Perhaps financial support was self-evident to them at the time they responded to the outcomes question or perhaps it was of lesser importance to these RAs. It is noted that sixteen of the seventeen respondents were employed other than as a RA, mostly on a part-time basis. The importance of the financial support cannot be minimized though. As RA2 noted, "I achieved my intended purpose because I have had financial support throughout my program which enabled me the time necessary to conduct several research studies".

As Jonassen and Rohrer-Murphy (1999) point out, the specific context for the activity system is important. In Chapter Four it was noted that tuition for SFU PhD students is currently $1,535 per semester for a maximum of eight semesters (SFU Student Services, July, 2008).[29] After eight semesters, the tuition is half of the tuition or

[29] Graduate students pay additional fees in addition to tuition for services provided by the university. These vary by institution.

$768 per semester (Faculty of Education, July, 2008). Since the average age of FOE PhD students is 44, it seems likely that beyond paying for tuition and other PhD-related costs, these RAs have family commitments. It makes sense that there would be some over-riding financial concern. Further the financing need seems to be highlighted in the academic market place. With UBC's new tuition award that offsets four years of tuition, addressing financial aid in the FOE is critical to attracting quality PhD students and qualified RAs.

In addition to market pressures on tuition fees, the importance of the RA-ship to finance the graduate degree is expressed in documents pertaining to SFU (i.e. Strategic Research Plan, 2005 to 2010; Graduate Student Funding at SFU, 2004) and the FOE (i.e. Three Year Plan, 2007 – 2010). The university administration understands the importance of easing the financial burden so students may concentrate on their studies without delays caused by work commitments. Perhaps the SFU and FOE documents reflect the numerous PhD studies which point to the importance of adequate funding with a RA-ship as one source. As Bowen and Rudenstine (1992) state, "money plainly matters" (p.178). Further Baird (1990) refers to a Berelson (1960) study where he noted that "the more support a field has, in the form of fellowships or research assistantships that contribute to the dissertation, the faster its students complete their degrees" (p.370). Thus financing the degree through an RA-ship is well recognized in the PhD process. It would seem that a RA-ship related to the RA's thesis is even better based on this prior research. However, these RAs have other motivations as well as financial. In the next section, I look at the desire to work with specific faculty members.

Reason #2: Working with a specific faculty member

Eleven of the seventeen RAs reported that the RA-ship would give them an opportunity to work with a specific faculty member. I wondered if the community element might reveal some clues about this reported finding as the consumption subsystem suggests the subject interacts with the community to achieve the outcomes. Under the community element the RAs reported that other faculty members were the most significant in their RA-ship. The eleven RAs, who reported this as a reason, identified various people as significant to their PhD career. As reported in Chapter Five, Mary, Terrence and RA4 all intentionally sought out faculty members who they believed would benefit their PhD career. For example, under the community element RA13 identified

several people including the RA supervisor, her thesis supervisor, other faculty members and research team members.

In terms of activity theory, as Engeström (1990) suggests, how the RAs frame and construct the object is a key determination of understanding the activity system (p.112). In this case it seems the RAs frame their reason to work with a specific faculty member in terms of choosing someone who will support their PhD career, either through a direct influence to their thesis, as in Mary's case, or shared research interest, as in RA4's case. Terrence seemed to be influenced by the faculty member's credentials and experience. Other RAs seemed to be looking for a community of practice or village as in RA13 or RA6 circumstances. It seems there is an underlying force driving that need to work with the specific faculty member as Leont'ev (1974) suggested. These interpretations might be examples of the Perna and Hudgins' (1996) findings that the RA-ship provides opportunities for doctoral students to learn from faculty. Understanding that RAs might want to work with someone other than their thesis supervisor suggests there needs to be opportunities for prospective RAs to meet other faculty and hear about their research. This type of activity was identified in the FOE Three Year Plan which listed as an objective to more effectively communicate research activities with graduate students and the wider community (p.24). Next, I turn to research skills.

Reason #3: Research Skill Development

Many of the RAs reported wanting to develop research skills as their motivation for taking a RA-ship. Often there is an assumption that research training occurs in a RA-ship (Worthen & Gardner, 1988, p.5) so perhaps that is why more RAs did not indicate it as a reason. Was it implicitly assumed? In this study ten or 59% of the respondents reported wanting to develop or learn research skills. In the Worthen and Gardner (1988) study, 74% expressed a desire for research experience (p.12). While learning research skills could be interpreted to mean something different from wanting a research experience, I think the ideas are similar. In a research experience, you use research skills. While the motivation is the same, the fact that many RAs did not report this as a reason might be troubling for the academy. If students do not have an interest in developing research skills (and research productivity as discussed subsequently), will these students be under-prepared for academic careers? Even if many RAs do not want an academic career, the question remains whether adequate training occurs in the RA-

ship. These questions cannot be answered in this study but are of broader consequence.

Of the ten RAs, nine had six or more semesters of RA experience. Hence I wondered if the RAs became clearer on their research needs as their PhD progressed. Generally these students had completed more of their PhD steps as would be expected given their length of time as a RA. All had completed at least their course work and their comprehensive exam.[30] At this stage, the PhD students would be clear on their research focus as the comprehensive exam often takes the form of individual papers directed to the literature review and methodology approach to the research question. In contrast, all seven of the RAs who did not select wanting research skills had only completed course work. Perhaps the RAs wanting to hone their research skills knew more about what they needed for their research having completed their comprehensive exams.

Given their intent to enhance or learn research skills I looked at the activities these nine RAs reported that they engaged in during their RA-ship. Again, their length of time as a RA seemed to be reflected in the number of activities or breadth of tasks. There were fifteen activity choices and these nine respondents with six or more semesters of RA experience indicated involvement in a range of eight to fifteen activities. Next I looked at the activities to see what types of activities they were involved in. All of these nine respondents had designed a research study, conceptualized a research problem, and collected data. All but one had written a research proposal, performed a literature search, and interpreted data. This seems to indicate these RAs were involved in development of their research skills although the depth of the development or scope is not determinable from the questionnaire. Nevertheless, on the face of it, the students who wanted to develop research skills seem to have had opportunities across a wide spectrum of research-related activities. RA6 feels strongly about development of research skills. She stated,

> I have noticed that many PhD students undertake empirical research with no RA experience or research methodology course under their belt. This is simply not acceptable at the doctoral level. Faculty must find ways of ensuring that doctoral

[30] One student was an anomaly as RA1 indicated he had completed data collection and analysis but not the course work even though he had started his PhD in 2002. I think the question must have been misinterpreted as all others did not indicate steps after the previous one unless they answered in the affirmative.

students get some exposure to research (either course or field work) if their own work involves these areas of skill.

Another interesting aspect of the group of RAs who wanted to develop research skills is that all of the six Educational Psychology students in the sample were in this group. Perhaps these RAs had a particular interest in research skills due to the type of research involved in their educational psychology program.

Lastly I wondered if career goal would motivate RAs to want to learn research skills. Generally an academic career at a university requires a publication record. Career aspiration did not seem to be important although six of the ten respondents in this category did want an academic job and two others had indicated a research position in the government. Yet there were three RAs who also indicated an academic career and they did not indicate they wanted to learn research skills, perhaps surprisingly. These three RAs all had less than three semesters of RA experience which possibly indicates that their current expectation of the RA experience is limited. However, it would seem research productivity would follow from at least perfunctory research skills.

Referring again to activity theory, how do these students frame their motivation to achieve research skills? Jonassen (2000) argues, "Intentions emerge from contradictions that individuals perceive in their environment, such as differences between what they need to know in order to accomplish a goal and what they do, in fact, know at any point in time" (p.106). It would seem given the respondents comments that they did seek out opportunities deliberately. For example, RA11 wanted to see many projects, RA5 desired experience with data analysis, RA2 sought hands-on laboratory experience while RA6 seemed critical of the lack of exposure to research training. These four students all seemed to be clear on their needs and it would seem plausible they determined they needed these skills to be successful in their PhD career.

Reason #4: Research Productivity

Besides financial reasons and wanting to learn research skills, eight respondents indicated they wanted to achieve research productivity (47%). The fact that many RAs did not report this as a reason might be a concern for the academy similar to the previous discussion about research skills. If students do not have an interest in publishing or presenting the findings from their RA-ship, will these students be under-prepared for academic careers that highly value the publication record? Some scholars

suggest they may have difficulties with their dissertation if they have inadequate research training including writing publications (Baird, 1995; Nettles & Millett, 2006; ASHE-ERIC Higher Education Report, 2001).

Like research skills, I looked to the activities and outcomes to see how this played out in their experience. Of the eight RAs who indicated research productivity was a reason to engage as a RA, six had both authored or co-authored a paper and presented or co-presented a research paper. One had presented a research paper but not published which is perhaps understandable given her two semesters of RA experience. It takes a considerable amount of time to write and publish. The other RA only had one semester of RA experience so again it makes sense she might not have had the opportunity to author or present a paper. Of the six RAs, all rated the experience as a four or five out of five in terms of its value to their PhD career. Hence it seems of some significance that RAs are motivated to achieve research productivity. Yet only two of these six RAs mentioned research productivity in describing their overall RA experience (RA2 and RA8). Does this mean it was not valued as highly as other aspects of their RA experience? I don't believe so because three others RAs (RA1, RA7, and RA9) all stated when elaborating on their reasons for wanting research productivity that they were successful in achieving research productivity. Further it was evident in these respondents' overall evaluation of their RA-ship that they would recommend it for others who wanted to pursue academia and needed the research skills and/or publications for their resume.

Following this lead about career, I looked at the eight RAs who indicated they wanted to achieve research productivity and their indicated career goal. Five RAs wanted an academic career, two were considering a government research job and one was undecided (RA12). Since RA12 just commenced her studies in 2007 it is understandable that she might be undecided in her career. It seems that the RAs are fairly clear on the need for research productivity for their academic CV.

While not stated explicitly, I wonder if the reason to want to achieve research productivity in the RA-ship is connected the reason to work with specific faculty members. These faculty may have the reputation or the CV to support they know how to get it done! Six of the eight who indicated research productivity also reported wanting to work with a specific faculty member. Weidman and Stein (2003)'s findings might support this perspective as they found that professional socialization fostered research

and scholarly productivity (p.653). Again we see the possibility of the village elders supporting their children.

While there are some indications of instrumental reasons to obtain research productivity for their CV, another reason might be to obtain funding. As noted under Chapter Four, it seems SFU would like to assist graduate students with financing their degree in particular for those who contribute to research and graduate on a timely basis (Report of the Dean of Graduate Studies' Working Group on Graduate Student Funding at SFU, 2004, p.1). I wonder if students would be willing to take on a RA-ship if funding was tied more to research activities and less funding was available through fellowships. Dr. Winne, FOE Coordinator of Research, mentioned this idea as an example of improvements to doctoral education (personal communication, July 9, 2008). Similarly Nettles and Millett (2006) noted in the conclusion of their research study that next steps might be to investigate "whether starting with a fellowship and then moving on to a research or teaching assistantship is more helpful than an early assistantship followed by fellowships and how each of these combinations contributes to optimizing student success" (p.225). Thus there are many interrelated issues of financing and utilizing research experience to meet funding goals coupled with research productivity.

Bringing all of this back into focus using activity theory, how do these students frame their motivation to achieve research productivity? As noted previously, in activity theory it is assumed that individuals act intentionally because of the difference between what they do know and what they may need to know to achieve the outcome (Jonassen, 2000, p.106). If students want an academic career, a record of research productivity is necessary. In their recommendations of the RA-ship many RAs reported it as essential if a student wants an academic career. Also, students need funding often to pursue their PhD. Linking funding to research activities could serve to meet two of the RA's intentions - financing and research productivity. Notwithstanding the possibility that the RAs are acting intentionally to publish or present, of concern is the low number who have this intention.

Reason # 5: PhD completion and Progress

While the previous sections discussed the reasons reported by the RAs, it is significant to note what the RAs did not report.[31] The Chapter Two Literature Review indicated that many researchers feel there is a relationship between having a RA-ship and PhD progression and/or completion (i.e. Cook & Swanson, 1978; Baird, 1990; Sheridan, 1990; Lovitts, 2001, Nettles & Millett, 2006). In fact, part of the motivation to study the RA-ship stemmed from wanting to understand what happens in a RA-ship that might contribute to favourable PhD outcomes. However, none of the RAs mentioned that the RA-ship would benefit them through a steady progression or assist with completing their degree. The only mention was made by Mary who acknowledged that she was on track to complete her degree in slightly less than four years. SFU's Institutional Research and Planning uses a measure based on the number of semesters registered in prior to convocation. For Education the report shows a median of 15 semesters or five years. In comparison, the Doctoral Graduates in Canada (2004/2005) indicates 71 months or just under six years for Education students in Canada (Statistics Canada, 2008). Perhaps these RAs are anticipating the five years to complete their PhD and do not see this as an important factor in their doctorate.

Reasons Summary

In summary, RAs report many reasons for engaging in a RA-ship. Understanding these motivations leads to ensuring the proper resources and processes are in place to assist the RA with achieving their desired outcomes. Clearly financial support is one reason and given that there is a tuition cost, it makes sense that these PhD students appreciate the monetary value of the RA experience. In addition I suggest that the other reasons articulated by these respondents are significant as well. Many RAs mentioned that they sought a RA-ship to work with a specific faculty member. By looking at cross-data, there seems to be various reasons from choosing someone who will support their PhD career, either through a direct influence to their thesis, as in Mary's case, or a shared research interest, as in RA4's case, or because of who the faculty member is, as in Terrence's case, to looking for a community of practice or village as in RA13 or RA6' circumstances. It seems there is an underlying force driving that need to work with the

[31] The questionnaire offered several reasons for engaging as a RA including an "other" category, which was given to allow for an RA to indicate other reasons not listed.

specific faculty member as Leont'ev (1974) suggested. According to activity theory, what drives the need for research skills and research productivity seems to be related to students understanding the gap between what they do know and what they need to know to accomplish the goal. For many RAs, research skills and productivity are necessary for their PhD career and future academic career. Working with specific faculty members is a way to achieve those outcomes. It might well be that the RA-ship is about weaving many experiences into the one RA blanket such that the importance of faculty members blends with other reasons. The analysis of the tools, activities and outcomes may also elucidate these underlying motivations.

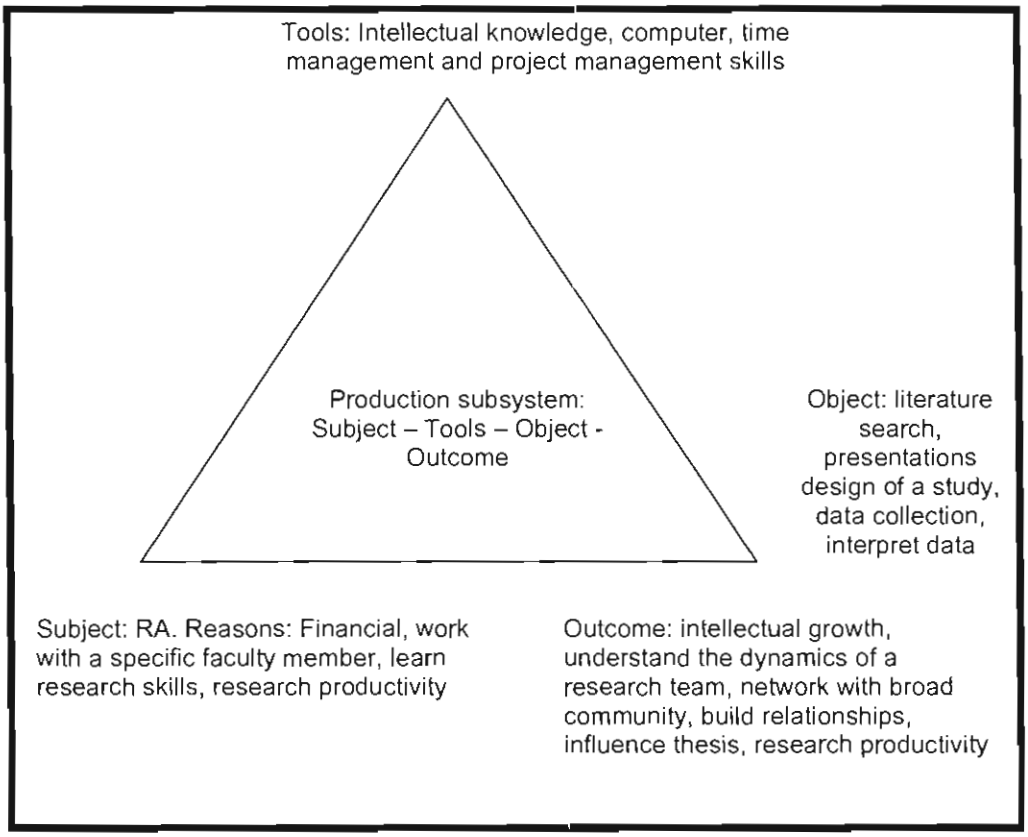
6.3 Production Subsystem: Tools and Resources

In activity theory, the subject acts on the object through cultural specific mediating tools and instruments (Jonassen, 2000, p99). The tools can be physical, such as computers, or abstract, such as knowledge or theories. Due to the mediating role of tools in the RA activity system, I explored the nature of the tools and their use in the activities through the lens of the production subsystem, which is one of the four subsystems. The three interacting elements in the production subsystem are the *subject, tools and object*. Jonassen (2000) believes the production subsystem is the most important as "the object of the system is transformed into the outcome, that is, the intentions of the activity system" (p.99). The previous section analyzed the RAs' motives. Thus the cross-data analysis here looks at the mediating element in the production subsystem – tools and resources.

Figure 6.3 recaps the elements of the production subsystem based on the findings. In theory, the RA uses the tools to produce the object. The RAs were asked to indicate tools used in the RA-ship and then rate them in terms of value to their PhD career from one (not essential) to five (very essential). If certain tools or resources are used primarily by RAs then this awareness might spur more thought on how these resources are implemented and reflection on how they are utilized. Are the resources effectively maintained, integrated and made current or relevant? In this analysis, I am mainly looking at how the tool might have been utilized in the RA tasks and/or to achieve the objects and outcomes of the activity system. In addition I was curious about the value of the tool to their PhD career. The main resources identified include: intellectual knowledge from courses, intellectual knowledge from prior or current work experience,

computer and other technology, time management skills, project management skills, intellectual knowledge from prior RA-ships and financial resources.

Figure 6.3 Production Subsystem for the SFU FOE RA Activity System



Resource #1: Intellectual Knowledge from Courses

Sixteen of the seventeen RAs reported using intellectual knowledge from courses or workshops in their RA-ship. Intellectual knowledge is not a surprise finding given the nature of the RA tasks. What knowledge and how does the knowledge from courses influence the research tasks and how does it influence their theses topic? A greater awareness of the use of course work in a RA-ship that is valued for the PhD career will help in curriculum development.

Since the CTI PhD students are the majority of these respondents, I considered the nature of their course work. The CTI students generally take four courses: EDUC 901-5 Seminar in the History of Educational Theory, EDUC 902-5 Interdisciplinary

Seminar in Contemporary Educational Theory, EDUC 911-5 Colloquium in Curriculum Theory I and EDUC 912-5 Colloquium in Curriculum Theory II. The SFU calendar indicates EDUC 901's focus is the historical roots of educational thought while EDUC 902 focus is contemporary educational theories and both emphasize the relationship between theory and educational practice. The 911 and 912 Colloquiums based on Dr. Grimmett's course outlines suggest the courses relate the previous courses and further exploration in the course to empirical research. Students are asked to reflect on the course readings in relation to their research interests. I recognize there is little information in the data to fully understand how the courses might have been used in the RA work and thus have influence on their PhD career. The scope of the questionnaire limited the depth of data collection. Yet students are being exposed to empirical research and are requested to make a connection to their research interests. Thus superficially we have some context in which to consider the data collected and appreciate why many of the RAs indicated the resource was used in the RA-ship and influenced their PhD career. After all, the PhD students are grounded in education through prior education degrees and their work and they are pursuing education-related research.

Thirteen of the sixteen RAs rated the value of course work as essential to their PhD career. As noted above, this personal assessment might reflect the way the course content melded with their RA work and the requisite reflection on their thesis. As such, I considered whether the RA work was related to their thesis. For the thirteen who indicated a high rating, all but three indicated their RA work was related in some way to their thesis. It is interesting to note that of the three RAs who rated course work highly but their RA-ship was not related to their thesis, two have had six or more semesters of RA experience. It would be interesting to know what their motivations were given it does not relate to their thesis. Clearly they see some value among the course work, their RA work and their thesis given their high rating. Perhaps the motivation is related to research productivity.

Gall, Gall and Borg (2003) recommend looking at exceptions or outliers during analysis (p. 464). For the three RAs who did not rate the course work highly, perhaps this might reflect the uniqueness of the RAs' theses so I looked at the three RAs to see if their RA work was related to their thesis. One RA indicated her RA work and thesis were closely related and the other two RAs' theses were related in a different way. Thus the

nature of the RA work does not assist with understanding this result. RA11 reported, "I am very interested in the project, and it is in my field of study although the project is quite different from my own doctoral research". Unfortunately the questionnaire did not ask for specific comments about the resources so it does not shed light on the specific course or the type of knowledge drawn upon in the RA-ship that benefited their PhD career. There are limitations in the scope of the questionnaire in terms of length of time to complete it and the information desired.

One could speculate given the type of RA activities that the knowledge was related to research skills as discussed in the previous section. For the thirteen RAs who rated course work highly, eight had been involved in over 50% of the specified RA tasks while the other five all had at least three tasks identified. As discussed in the previous section on research skill development, many of the RAs had at least performed a literature search and it seems likely that a doctorate course would require a written paper thus needing a literature search. Thus it is possible that the course work influenced their RA work and their PhD through this one activity.

Again looking at the three RAs who did not rate highly their course work, I explored the type of activities they engaged in as a RA. RA8, with six or more semesters of RA experience, had performed many tasks and rated them all very high in terms of her PhD thesis. RA11, also with six or more semesters of RA experience, had many tasks although not all were rated highly. RA10 with only one semester rated her RA tasks as a three and has been involved in only three tasks so she did not have the breadth of PhD career or RA experience. Thus the types of activities do not seem to assist further with speculating on the course work for these students.

Finally, I considered whether the outcomes might shed some light on this connection among course work, RA work and the PhD career. The students' written comments under outcomes did not seem to indicate the use of course work as a mediating tool. In fact, it was the reverse as RA13 and Natalie expressed how the RA work affected their course work. RA13 wrote, "I learned a lot which has informed my work in courses and my own studies" while Natalie reflected, "I was introduced to some authors that I have used in my own class (as an instructor) and in coursework (as a student)" (Questionnaire). This is an example of the RA activity system interacting with the students' PhD activity system.

In summary, many students indicate they use their course work in their RA activities. Of this group, many of them also feel it influenced significantly their PhD career, albeit a subjective personal view of this value. This suggests that attention be given to the curriculum to ensure it continues to add value to both the RA-ship and the PhD career. If RAs are productive due to their course work, it benefits the RA supervisor's project. The next section looks at another intellectual resource – work experience.

Resource #2: Intellectual Knowledge from Work Experience

Besides intellectual knowledge from courses or workshops, current or prior work experience is of some significance in the RA-ship and to the PhD career as reported by some of these RAs. Awareness of this resource draws attention to whether faculty recognize it and how it is utilized in both a RA-ship and in their PhD careers. Is it recognized and if so, how is it recognized and how effectively is it put to use?

Sixteen of the seventeen RAs reported using knowledge from prior or current work experience (not a RA-ship) in their RA-ship. These PhD students are mainly mid-career individuals who are returning to school to obtain a credential to further their career (Winne, personal communication, July 9, 2008). Some want to change their career path and the doctorate would facilitate that move. However they are grounded in the education field and it is likely that many would choose a topic related to their work. Unfortunately I did not ask the RAs if their PhD thesis was related to their work interests. Yet this is assuming that the intellectual knowledge drawn upon is related to the thesis instead of other skills developed in the workplace. For example, it could be team skills or computer skills. Given that ten RAs reported their work experience as four or five out of five in terms of value to their PhD career, it would be interesting to know in what way the experience benefited it. Terrence and Natalie, who were interviewed, allow more opportunity to understand their life worlds and a glimpse of how work experience might interact with the RA work.

Terrence is a secondary school teacher and his courses include a diverse range from English, art, and social studies to history and aboriginal support. His RA work includes curriculum review which is directly related to his work experience. Other RA projects have been related to facilitating Masters students' studies and his work experience and course work as a PhD student have been useful for that RA work.

Terrence indicated his thesis is somewhat related and that the RA has increased his theoretical understanding. He reflects, " you are talking about a theory and what it would look like in an actual classroom" (line 519). It would seem that Terrence's work experience as a teacher brings him credibility when discussing the theories in practice.

Natalie's work experience also has been useful in her RA work. She has lived and taught in different parts of Canada, Africa and Japan. This work experience assisted with her RA work and she feels her future thesis work may be somewhat related to her RA work. Natalie feels her teaching experience abroad and in diverse communities has informed her RA work. She reported, "Not just the teaching experience but because I've worked overseas a lot and also in the ESL community in Canada. So a lot of those things that come up in teacher education for critical approaches ...talk about oppression and difference—politics of difference—power positioning" (line820). Like Terrence it seems her work experience brings credibility to her ability to discuss knowledgeably critical approaches to teacher education.

Information about prior and current work experience might be useful to ensure the previous work experience is utilized effectively in both a RA-ship and in their PhD careers. The students who rated their work experience highly seem to believe their work experience plays a critical role in both their RA tasks and their PhD career. Perna and Hudgins (1996) found that the RAs held the perception that their prior work experience was under-valued (p.19). While this RA study did not ask for these RAs perception, they did value it highly for their PhD career. Given the significance of the resource, I wonder to what extent faculty consider prior work experience in selecting a RA and assigning tasks. Dr. Winne suggested that when he hires he reviews the student's PhD application and thus earmarks those with relevant work experience (personal communication, July 9, 2008). To what extent do other faculty consider work experience and do students consciously think about their work place skills and knowledge when choosing a RA-ship? Is there an intentional process to reflect on what a RA knows from their prior work history to their current education endeavour?

Resource #3: Computer and other technology

With its prevalence, the use of a computer in the RA-ship is an expected resource. A computer brings two issues to mind – first, funding to keep the technology current and second, training to use the software efficiently and effectively.

All fourteen RAs who reported a computer also rated it as essential to their PhD career. Given the ubiquitous resource, I'm a little surprised that all RAs did not report using a computer in their RA-ship, even if they did not rate it highly for their PhD career. Thus again I looked at those RAs who did not report this resource and the nature of the RA tasks to discern possible reasons (Gall, Gall, & Borg, 2003, p. 464). RA6 indicated many tasks some of which I would have thought would include using a computer, such as a literature search. RA6 has over six semesters of RA experience so this seems to be odd that she did not use a computer in any of her RA tasks. RA7 and RA10 have two or less semesters of RA experience and fewer tasks, although both of these RAs also had performed a literature search. Perhaps it can be explained as tacit knowledge that the respondents take for granted so they do not report it. Nevertheless, efficient use of the computer's software is really the essence of this tool. Where do PhD students receive their training to be efficient and effective with this resource? Is there an assumption that working students have gained these skills elsewhere? By the time SFU graduate students complete their thesis they are aware of the features of Word for example or they have paid someone to format their thesis document to the SFU library's specifications. To some degree, these are essential academic skills as research publications must be produced to journal standards. Perhaps a tangential benefit of the research productivity is the need to learn and utilize Microsoft Word effectively.

Resource #4: Time and Project Management Skills

An interesting finding was the use of time and project management skills. These skills are life skills and as mid-career PhD students, no doubt they have had the time to learn and practice effective time management in juggling family, work and their studies. However if these skills are important to RAs, it suggests that training outside of the usual PhD curriculum might be in order. Efficient RAs would contribute to the overall efficiency of the RA project, thus benefiting the RA supervisor.

Thirteen RAs reported the use of time and project management skills in the RA-ship and eleven rated these skills as essential to their PhD career as well. Yet, I wonder where in the program do students learn or sharpen their time management skills? In my personal experience teaching graduate Business students, who are largely employed full-time, is that they often think the course work will just fit in around their "normal" schedule. They haven't given any thought to what they will have to give up or change to

successfully complete graduate studies to their own high expectations. Perhaps this is an area for discussion at the Education Orientation.

Considering how these time and project management skills mediate between the RA and outcome or object, I considered whether any outcomes might have been achieved with these skills. One outcome identified by these RAs is connection to the community in the form of the research team. As the FOE contains many Institutes and Centres, it is possible that students were exposed to large research projects requiring management of knowledge, time and other resources. As reported in Chapter Five, several RAs felt their exposure to the research team increased their understanding for practice (i.e. RA2, Mary). Ten of the eleven RAs who indicated research team members rated the project management skills as a four or five out of five in terms of their PhD career. Perhaps there is a connection among research teams, project management skills and their thesis. Yet the majority of these RAs did not report their thesis related to the RA project. Nevertheless, it seems the RA thought of these skills in terms of managing their own theses given the high value assigned relative to PhD value. Now that the tool has been identified, the next step is to sharpen these skills. Effective time and project management skills could lead to less stress as time is managed more efficiently resulting in greater productivity in the research project which benefits all involved.

Resource #5: Intellectual Knowledge from previous RA-ships

Like prior or current work experience, awareness of previous RA work draws attention to whether faculty recognize it and how it is utilized in both a RA-ship and in their PhD careers. Is it recognized and if so, how is it recognized and how effectively is it put to use?

I found it interesting that only nine RAs reported utilizing their prior RA work in their RA-ship. I would have thought that as students progressed and experienced more RA-ships they would find some synergy and value to their subsequent RA work and their thesis as well. As might be expected, of the nine, eight had six or more semesters of RA experience. Perhaps I should not have been surprised as logically you need some base of RA experience to be able to draw on it but how much experience do you need to find it helpful in subsequent RA-ships? In addition, I was surprised only five felt it was valuable for their PhD career. These five RAs reported a minimum of nine RA tasks so

their experience seems to have encompassed many aspects of a RA-ship and these would likely have some value to their thesis since the tasks include designing a research study, conceptualizing a research problem, designing quantitative and qualitative analysis, and collecting and interpreting data. Thus I think the mediating tool, prior RA experience, likely was beneficial to their PhD career because of the nature of their RA tasks. Further, when I look at PhD progression, all of these RAs have completed as a minimum their comprehensive exams. Perhaps a combination of PhD progression and length of RA experience allowed the value to be recognized by the students but not until the RA had sufficient RA and/or PhD experience.

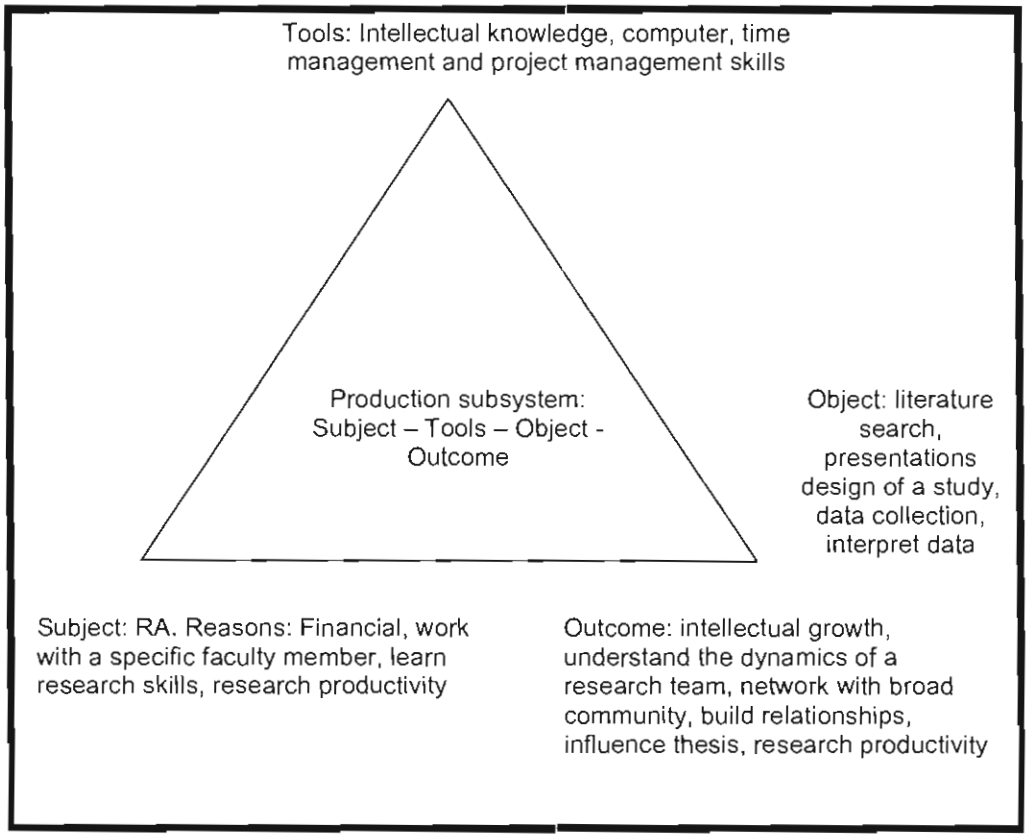
Tools and Resources Summary

The tools and resources these RAs identify include intellectual knowledge from course work and prior or current work experience. Many RAs found value in the course work for their PhD, and as such the nature of the courses are important. It seems critical that the curriculum continue to emphasize the connections of theory to practice and research to add value to their RA-ship and PhD career. Prior work experience was valuable to some RAs and again it is worthwhile to reflect on how mature students can best utilize their practical knowledge from their work in their PhD studies and RA-ship. As might be expected computers play a role in mediating between the subject and the outcomes. The ubiquitous nature of technology makes it almost impossible to imagine performing many tasks without a computer. However, the question becomes who is responsible for the funding and training to ensure effective and efficient use of this tool. Likewise, time and project management skills are valuable for both the RA's current tasks and their future careers. Yet, where are these skills taught? Lastly, it seems that there may be lost opportunity to capitalize on prior RA-ships' experience. Do faculty consider prior experience and how do RAs think about current RA tasks in relation to what they have previously done and what they may need to do for their research? While these tools identified are not necessarily complex, awareness and proper utilization are critical to make the most of RA opportunities. The types of opportunities are explored next.

6.4 Production Subsystem: Outcomes

In the previous two sections I discussed the reasons and motivations articulated by the RAs and the tools used to mediate between the subject and object. While students expressed the need for financial support, they also noted they chose a RA-ship to work with a specific faculty member, achieve research productivity and develop their research skills. The tools used in the RA activities include intellectual knowledge from course work and prior or current work experience. Computer, time and project management skills were indicated by the RAs as well. We have some understanding of the RA's motives and the tools used in the RA activity system. To complete the discussion of the production subsystem, introduced earlier, I turn to the analysis of outcomes as this is the essence of the RA experience in this study. For convenience, the production subsystem is reproduced below (Figure 6.4) to emphasize the relationships between the activity system elements and refresh the findings. I feel the findings indicate both intentional and serendipitous outcomes.

Figure 6.4 Production Subsystem for the SFU FOE RA Activity System



Chapter Five, Findings, noted that the RAs seemed to enjoy several opportunities because of their RA-ship. Some of the opportunities might be expected, such as research productivity, but others such as intellectual growth and building of relationships were not noted by the RAs as reasons to engage as a RA yet many reported these benefits. In this section I explore the findings in conjunction with other data, such as reported activities while viewing the findings through the activity theory lens.

Activity theory suggests a limitation in my ability to interpret the data due to the RA's ability to articulate his/her motives and outcomes. As Foote (2002) notes an analyst must be cognizant that "at any point in time participants may be at different stages in the contingent process of need consciousness and object formation, thus shaping their ability to perceive and articulate the object of the activity in which they are engaged" (p.135). Similarly Kaptelinin (2005) argues that

> Objects of activities are dynamically constructed on the basis of various types of constraints. These constraints include the needs that the activity system at hand is striving to satisfy, available means, other potentially related activities, and other actors involved, each with their own motives and objects (p.17).

An activity system is dynamic so my interpretation is limited to the RAs' reported perceptions and their needs at this one point in time. Nevertheless to continue the analysis from the previous section looking at the motivations, this section attempts to unpack further the activities and outcomes, in particular.

Outcome #1: Intellectual Growth

These RAs report many opportunities that they enjoyed because of their RA-ship. One of these is the opportunity to be exposed to new or different areas – intellectual growth (an emergent sub-code). This outcome appears to have occurred naturally rather than as a planned outcome. Perhaps it is not surprising that the RAs experienced intellectual growth. They are in a PhD program after all! They are here to stretch their thinking and to develop new knowledge themselves. Students self-select generally to be a RA as all but two chose to be a RA. These are the keen students likely! Yet the students did not report intellectual growth as a reason to work as a RA, which they could have reported under the "other" category. Also Perna and Hudgins (1996) found in their sample that RAs did not find their RA-ship intellectually stimulating and challenging

(p.34). The contrast in the Perna and Hudgins' (1996) findings is curious and requires some investigation. In what ways do students describe their intellectual growth and how might it influence the RA tasks, the course work and other aspects of the PhD program? What facilitated this development? Two ideas come to mind. The nature of the research activities or research project could create opportunities for intellectual growth. Also the nature of the relationship could foster growth through a faculty member who encourages it. I expand on these possibilities in the next paragraphs.

Research activities

It is possible that the nature of the research activities created the opportunities for intellectual growth. As explained in Chapter Five, thirteen of the seventeen RAs' seemed to express intellectual growth. Looking at their activities, eight of the RAs had eight or more RA tasks perhaps reflecting their time as a RA as all of these RAs had six or more semesters of RA work. The five other RAs had one to four semesters of RA work and had been involved in three or four tasks. A literature search was the only task common to twelve of the thirteen RAs. The rating of the activity ranged from three to five in terms of value to their PhD career.

Is it possible that a literature search would create intellectual growth? Based on my experience, I would argue that this foundational activity is a hot bed for growth. Most research-oriented publications emphasize the importance of a proper literature search for the project. For example, Gall, Gall & Borg (2003) explain various purposes of a literature search including: delimiting the research problem, seeking new lines of inquiry, gaining methodological insights and identifying recommendations for further research (pp90 – 91). The careful selection and review of the literature exposes the RA to many ideas which require critical thinking skills that could lead to intellectual growth. Understanding the potential for RA tasks leading to intellectual growth is an important finding because the way the task is presented to the RA may change his/her interest in the work.

For example, Perna and Hudgins (1996) reported one RA felt that a literature search was grunt work (p.28). In contrast, the RAs in this study valued it in the range from three (somewhat) to five (very valuable) in terms of value to their PhD. I wonder if the faculty explicitly plan tasks or explain tasks in a way that capitalizes on the opportunity to enhance the RA's knowledge and connection to his/her thesis. With

students reporting this construct of intellectual growth, it seems it is important to them. Yet it wasn't planned by the students with the exception of research skills. What if they actively considered each task as a learning opportunity? What if the process involved a last intentional step where the RA reflected on what they learned from that task and thought about how it related to their thesis and career? Would it enhance or change their RA experience? These students are primarily mid-career adults with significant work experience. Principles of androgogy suggest connecting new knowledge with something the adult learner already knows and then asking them to reflect back on it (Brookfield, 1986, p.10). Are those "teachable moments" recognized and could they be utilized effectively to enrich the PhD's experience?

Activity theory speaks to this process of creating intellectual growth because inherently, learning is integral to activity theory. Fundamentally the theory assumes that activity and consciousness coexist and that "as we act, we gain understanding, which affects our actions, which changes our understanding" (Jonassen, 2000, p.105). Engeström (1999) states that activity theory "approaches human cognition and behaviour as embedded in collectively organized, artefact-mediated activity systems" (p.380). Activity theory views the RAs' involvement in an activity as a transformative process.

Besides the assumption that learning will occur in an activity system, the production subsystem may elucidate the construct. In the production subsystem, the subject is motivated to achieve an outcome and they use cultural-specific tools in the process. Previously I noted that the reported reasons for engaging as a RA included achieving research productivity, learning research skills and working with specific faculty members. While intellectual growth was not articulated other than in terms of research skills, the respondents reported growth in various ways as an outcome. The reported tools that mediated between the subject and the outcome were intellectual knowledge from past and current work experience and course work in addition to computer skills, and time and project management skills. The finding of serendipitous growth suggests that it is one outcome that might benefit the RA's career and thesis if it is more explicit and intentional.

If we consider what we do know about the RAs, we know the students are here to immerse themselves in learning and development of new knowledge as PhD students. We know these students are mid-career adult learners who use their prior or

current work experience in obtaining outcomes. As noted previously, if the tasks were framed as a learning opportunity, there would be expected learning objectives and the RAs might find a more explicit link between their work experience and their thesis to the RA task. However, the RA might need to be working on a RA project related to their thesis to make this connection.

Returning to the literature search task, is there any connection to their thesis? In total fifteen RAs reported the task with eleven RAs reporting a rating of four or five out of five in terms of value to their PhD career. I wondered if the other four RAs did not find value because it was not related to their thesis. However, they indicated the RA project was related in some way to their thesis. What are other plausible explanations? RA11's thesis was related in a different way (i.e. research method or theory applicable to the thesis) so it could have been too tenuous of a connection to bring value to RA11's PhD career. For the other three RAs there are no indications about the value assigned.

Other possible reasons for the other RAs not valuing the task even though the RA project was related in some way could be the discussion of the task or the fact it was not explicitly framed as a task that could be connected to their work experience or thesis. There may be this tacit knowledge, this taken for granted view, that the RA-ship is a learning exercise. Thus there is not a conscious effort to frame the learning opportunity with learning objectives and self-reflection on the part of the RA or the RA-supervisor.

An activity theory explanation relates to Kaptelinin's (2005) argument that the subject (RA) may have various needs they are striving to satisfy although constrained by other aspects of their life world and "other actors involved, each with their own motives and objects" (p.17). At the time of the questionnaire the RAs may have had other competing needs and they did not view the task as important at that time. The RA-supervisor's motivations may be focused solely on the research project without thinking broadly about the RA's involvement.

While the learning opportunity may not be explicitly framed as a "reason" to work as a RA, RAs didn't report intellectual growth as an intended outcome either. It could be because the RA supervisor did not raise it to the RA's consciousness or it could be for other reasons. Earlier it was noted that eight of the thirteen RAs reporting intellectual growth had six or more semesters of RA experience. These students have all completed their comprehensive exam and some have completed data collection. I wondered if this PhD progress reflected on the ability to articulate the intellectual growth as an outcome.

Engeström (1999) suggests that goals are "commonly explicated clearly only retrospectively" (p.381). Thus the RA may be able to best articulate his/her goals or object upon reflection and after achieving the object or outcome. Further, Engeström (1999) argues that "the object determines the horizon of possible actions" (p.381). As the RA progresses in his/her RA experience, the horizon of possible tasks increases his/her outcomes.

Perna and Hudgins (1996) found in their study that RAs did not find their RA-ship intellectually stimulating and challenging (p.34). The authors felt this finding might be attributed to early assignment of students to research supervisors because students who were further along in their degree were able to connect their RA duties to their dissertation (p.35). It seems that this study's finding that many RAs report intellectual growth is not consistent with Perna and Hudgins' findings. However, the data here does not allow direct comparison as these students could have worked with more than one RA supervisor whereas in Perna and Hudgins' sample it appears the students were assigned to a RA supervisor on commencing their PhD program. Further, an "assignment" suggests the RAs did not choose their RA supervisor and thus might not have been interested in the research project.

Of the eleven RAs, all but two indicated they chose to be a RA for reasons other than being asked by their thesis supervisor. In addition, five RAs with one to four semesters and who had completed only their course work still found their RA work worthwhile for various reasons, including intellectual growth. Thus it seems that for these respondents' intellectual growth did not depend on PhD progress as in the Perna and Hudgins (1996) study. Although, again, I must emphasize that these RAs chose to work as a RA and thus knew the RA supervisor generally. These RAs were not assigned to a research supervisor which I feel could significantly change the outcome due to the nature of the research project or the fit between the RA and the RA supervisor. The relationship is discussed next as this is another avenue to explore to understand this intellectual growth construct.

Relationship between the RA and RA supervisor

RAs report intellectual growth as an outcome which could be a function of their research activities as just discussed. Also the nature of the relationship could foster growth through a faculty member who encourages it. One type of relationship associated

with encouragement is that of mentor-protégé. The literature suggests a mentor is conducive to the PhD career (i.e. Nettles & Millett, 2006). Further the literature suggests that the way faculty treat their RAs enhances their self-confidence and contributes to the RAs' socialization (Worthen & Gardner, 1988; Bragg, 1976; Perna & Hudgins, 1996). The findings in this study indicate the relationship between the RA and the RA-supervisor as reported by the RAs as either a colleague or mentor-protégé generally. It is important to understand how RAs view the relationship as faculty might need to develop the skills to effectively mentor and/or socialize students. Even just raising awareness that students view their RA supervisors in a certain light might change how faculty interact with the students. Socialization is a critical role for RA supervisors and others in the RA activity system.

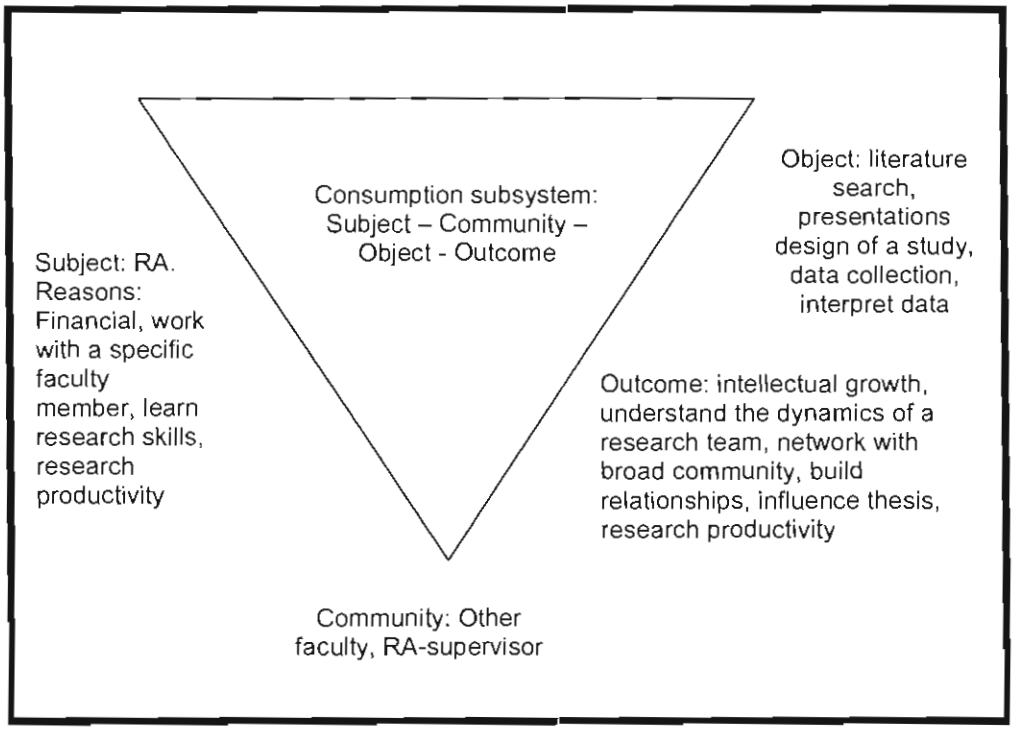
These thirteen respondents, who reported intellectual growth, described their relationship with their RA supervisor as either a junior colleague (seven) or as a mentor-protégé (six). The junior colleague was described as, "I am considered a colleague, albeit less experienced". Students were given the definition of a mentor-protégé as, "I am being taken under the wing by a mentor who is providing training, support, encouragement and access to opportunities to enhance my academic and professional career". It would seem that both types of relationship might create the opportunities where intellectual growth could occur.

As summarized in Chapter Five, some students did articulate in their outcomes the nature of the relationship. For example RA6 specifically noted in her reasons that she wanted to be mentored and RA13 developed a relationship with her RA supervisor, who she views as a colleague. RA4 and RA5 both spoke about the great or excellent relationship they have with their RA supervisor. Since they felt compelled to note this in their outcomes, it seems to have been important to them. RA12 and Terrence felt their RA supervisors facilitated their intellectual well being. These students' comments suggest the possibility that the intellectual growth occurred within a relationship that would support it.

Activity theory may provide another way to interpret the intellectual growth construct in terms of the relationship. While the production subsystem considers the interaction of the subject, tools and object/outcome, the consumption subsystem involves the interaction of the *community* with the *subject* in the process of acting on the *object* (Figure 6.5). The individuals in the community mediate between the subject and

the object. The community includes multiple individuals who collaborate to act on the same general object (Jonassen, 2000, p.101). Thus the key aspect of the "community" element is that the individuals have a *common interest*, being the object. Further, Jonassen (2000, p.101) notes that individuals are concurrently members of different communities hence there can be conflict between the roles in the overlapping communities. In this section I will focus only on the RA-supervisor as one member of the community while focusing on one outcome, intellectual growth. The section on community will discuss other members of the community.

Figure 6.5 Consumption Subsystem for the SFU FOE RA Activity System



When asked about who they interact with in the RA-ship that was significant to their PhD career, eleven indicated the RA supervisor but only seven thought it was significant to their PhD career. As indicated previously, thirteen RAs described their RA supervisor relationship as collegial or mentor-protégé. In this light, it suggests that the while the relationship may be favourable, it is not always important to their PhD career. Further, fourteen of the respondents reported that their thesis was related in some way to their RA-ship. This combination of RA-supervisor relationship, its importance to PhD

and if it is related to the thesis is intriguing. One interesting aspect is that thirteen RAs indicated intellectual growth but it seems it is possibly attributable to other individuals than the RA supervisor since more indicate the construct than report the RA supervisor as a key person in the RA-ship. Second, I would have expected the combination of a related thesis and a favourable relationship with the RA supervisor would result in more RAs attributing a high value to the RA supervisor in terms of their PhD career. Thus the assumption that the RA supervisor as a key individual who might offer PhD support seems to be questionable since only seven thought the RA supervisor was of value to their PhD career. I found this puzzling. Perhaps the connection between the RA work and their PhD was too tenuous to create value. Further, the description of the relationship (i.e. colleague or mentor) did not change how RAs reported the value of their RA supervisor to their PhD. Notwithstanding this incongruence, which will be addressed under the discussion of the "Community in the RA Activity System" (next section), some RAs did report intellectual growth and indicated their RA supervisor as significant to their PhD career.

Two other aspects of the consumption subsystem seem to be of interest in the RA activity system. First, the community members have a common interest in the object, the RA tasks. Yet, these community members themselves are subjects in other activity systems so they are motivated for their own reasons (Kaptelinin, 2005; Jonassen, 2000). Second, if individuals are members in more than one community, I wondered if this would affect the mediating process.

The RA may have a need for intellectual growth, such as research skills, or other growth not articulated initially for various reasons. A member in the RA's activity system is the RA-supervisor who needs to have certain tasks performed to complete the research project. The RA and RA supervisor have a common interest in the research task. Just like the RA, the RA supervisor will have motivations. While this research study did not gather data about the faculty's role in the RA-ship, it is accepted that faculty need research productivity to achieve tenure, for example. Thus there is the common interest in publishing the result of the research study that the RA worked on. In the case of encouraging intellectual growth, the motivations of the RA-supervisor are less clear than for research productivity.

While the data does not offer many examples, Mary offered one example, which she initiated, where her RA supervisor's experience influenced her approach to expanding her conceptual research knowledge. She shared this example:

> I was wondering why he always knows what type of methodology is the most suitable for this kind of research question. And how he develops his research skills in this regard and he told me a lot of his own experiences. For example, he told me after he got a position as professor at SFU, within the first five years he chose to read different types of textbooks for research statistics—one book a year. So he was trying to approach the same question from different points of view. So that gives him, I think, a fuller picture of what this whole world is like and that is now what I'm doing right now. I pick up book from library and I was trying to read it thoroughly 'cause I really feel that is something that I have to develop throughout my research process. That is not something somebody can teach you. (line 186)

Thus Mary took the initiative to improve her conceptual knowledge but it was the RA supervisor's credibility and experience that influenced her.

In hindsight, it would have been useful to know the RA supervisor's faculty position. I wonder if there would be differences in the RA experience based on faculty appointment. Would RA-supervisors with recent RA experience themselves relate more to the RAs? On the other hand, would more experienced faculty provide greater opportunities based on their experience working with many RAs? I do not know what the faculty's beliefs are about their role in the RA-ship. Do they see themselves interacting with RAs as colleagues or as a mentor? Are they motivated to put the energy into a developmental relationship when the usual pressures are on research, teaching and service to the university? Other than raising questions, my data does not support much speculation but it is important to acknowledge in activity theory that the individuals are a member of one community (i.e. in the RA activity system) while being the subject in another activity system (i.e. the faculty research system). The interaction of these activity systems influences the RA experience either through different or competing motivations of the subject/community member and/or the cross-membership of the community members. Understanding this interaction may lead to intentional focus on aspects of one activity system that influences another.

In summary, intellectual growth as a construct is not surprising as a PhD is all about growth although it seems in a RA-ship this intellectual growth, other than for research skills, was not an intended result. The activities engaged in by RAs, such as a literature search, indicate opportunities for growth at least theoretically. I feel framing

the exercise in terms of the RA's work experience or PhD thesis may enhance the learning opportunity. The RA supervisor might foster RA growth through their encouragement or the way they convey the level of the relationship. It would seem based on the activity theory perspective that the learning opportunities need to be more intentional and the tasks framed to assist the adult learner in connecting their RA tasks to their career and thesis. Further, one must be cognizant that the RA supervisor may have different motivations than the RA in the activity system. Lastly, as discussed next, the assumption that the RA interacts primarily with the RA supervisor is challenged as other faculty in the community seem to be important to these respondents.

Outcome #2: Community in the RA Activity System

The previous section discussed the development of intellectual knowledge in the RA-ship. I speculated that this could have been the result of the RA and RA supervisor relationship. I had noted that how faculty treat RAs influences the RAs' self-confidence and contributes to their socialization (Worthen & Gardner, 1988; Bragg, 1976; Perna & Hudgins, 1996). At this time, I will consider other individuals in the community. If we have some understanding of the RAs' community and how they value these people then opportunities can be explored to intentionally network with these people rather than leaving it to chance. Further, it might be useful to think about how the opportunities might be utilized fruitfully to enhance the thesis experience, particularly socialization.

The findings indicated that other faculty members were significant to these RAs' PhD career. In fact "other faculty" was the highest (twelve) reported person in the community that the RAs interacted with in their RA-ship that they found significant to their PhD career. As stated previously, the RA supervisor may not play the leading role. After "other faculty", research team members were reported by eleven RAs and five RAs felt they were significant to their PhD career. The RA supervisor was reported by eleven and seven RAs felt they were significant to their PhD career. It seems the involvement of the thesis supervisor, either alone in that role, or as a dual RA-thesis supervisor was very significant to all RAs reporting this individual. This is not surprising given the role of the thesis supervisor in guiding the PhD student's career. These findings which indicate a range of people in the community suggests that the RA's well being is nourished by many and not just the RA and/or thesis supervisor. As mentioned in a previous section, this brings to mind the African proverb – "It takes a village to raise a child". These

community findings are explored by looking at other data and then considering whether these findings framed by activity theory suggest other interpretations.

Other faculty members

An interesting finding was that other faculty members were the highest reported person in the community. Twelve RAs reported interaction with other faculty members in the RA-ship with seven indicating that this interaction was significant to their PhD career. I wondered if those RAs who had longer RA experience might have been exposed to more faculty and thus felt a greater value to their PhD. Looking at the twelve RAs, eight of the twelve did have six or semesters of RA experience. Of the remaining four, Terrence had four semesters while the other three RAs had one or two semesters of RA experience. Thus time as a RA does not seem to influence who the RA interacts with in the community.

Activity theory might assist with the interpretation. Activity theory is predicated on the assumption that the activity is accomplished collectively. Leont'ev (1981) states that, "the human individual's activity is a system of social relations. It does not exist without those social relations" (in Jonassen, 2000, p.101). The community consists of individuals and subgroups that have at least some interest in the object (Jonassen, 2000, p.101). Jonassen (2000) argues that

> knowledge in any activity system is distributed among the members of the subject group and the community with whom it interacts, the tools they use, and the products they create. Human cognition is always situated in a complex sociocultural world that affects individual cognition (p. 101).

As a result the community is a critical element in the RA activity system. The previous section discussing intellectual growth occurs because the community contributes to the RA's development. These other faculty members may not realize the role they play in supporting research, socializing or providing the encouragement and support to sustain the students through their PhD career. Also, research teams may support RAs as discussed next.

Research Teams

Another member of the community indicated by many RAs was the research team. This was a category separate from "other Faculty". Initially it would seem that this group would be very important in the RA activity system. Research team members were

reported by eleven RAs and five RAs felt they were significant to their PhD career. The number of RAs reporting research teams is consistent given the number of research institutes and groups in the FOE as described in Chapter Four. However I would have thought more RAs would have felt the team influenced their PhD career as the team might be a ready community of support. As reported in Chapter Five, five of the twelve RAs rated their research team as a four or five out of five in terms of value to their PhD career. With varying ratings, I wondered if the thesis was related to the RA project.

The two RAs (RA2 and RA6) who rated it as five for their PhD career indicated somewhat related and not related at all. This is interesting as I would have thought there would be synergy from a research team, with many people to resort to for feedback and discussion. I had this personal experience when a member of the research team reviewed the activity theory section in this thesis. Both RA2 and RA6 have more than six semesters of RA experience as well so it is curious they are working on a project not really related to their thesis but it provides benefits to their PhD. At the other end of the thesis scale, the two RAs (RA3 and Mary) who indicated that their theses were very related only indicated a value of three for their research team. Both RA3 and Mary also have six or more semesters of RA experience thus having extensive experience with the research team presumably. There were no reported tensions so I am unsure why the research team would not add value to the RA's thesis when it is very related to the research project. One explanation could be that the RA didn't consider the research team as a resource to consult for their thesis but only for the research project. Possibly research teams function differently and the RA tasks are assigned. Other RAs reported a value of one to four out of five and their theses are somewhat related or related in a different way hence it is reasonable to see how the PhD value could range as well.

In summary, the community in the RAs' activity system seems to play a critical role to facilitate the RA's motivations to engage in the RA-ship and perform the RA tasks to achieve worthwhile outcomes. Besides the stated RA-ship outcomes, socialization is a desired PhD outcome. Other faculty members and the research team are groups that assist with building knowledge and supporting the RA. As discussed in their intellectual growth section, the RA supervisor plays a role although it seems that others play a larger role for these RAs. However the findings suggest that the RA is nourished by many people. Thus it would seem that this awareness of the people the RA interacts with might lead to opportunities for RAs to meet other faculty and to ensure these

opportunities are utilized fruitfully to enhance their thesis experience, particularly socialization.

Outcome #3: Community outside the RA Activity System

The respondents indicated other opportunities related to connecting to the academic community and building relationships, another emergent code. This is an interesting finding as these people are outside of the RA activity system as they do not have a direct interest in the RA activity system's object or outcome. As reported in Chapter Five, the range of "others" include conference participants, teachers in a school district, previous education contacts, other RAs, and other faculty members generally. Several RAs expressed this notion of joining a community of practice (Natalie, RA13, Terrence).

It is important to be aware of this external community for similar reasons as noted above for the community in the RA activity system. Being aware of these people and their value may lead to the creation of specific opportunities to network or the RA supervisor may realize the benefit from the RA's perspective. These students have identified the importance of people outside of the RA activity system to their PhD career. There are the specific research community external to SFU but also the FOE community. These findings are consistent with Ethington and Pisani (1993) who found that graduate assistants were significantly more active within the external community than those who were not graduate assistants (p.353).

Outcome #4: Influence on PhD Career

The respondents' comments suggested that they experienced some influence on their PhD career. Could it be useful to identify and make explicit these areas of influence? Identifying the influence might suggest areas that could be addressed intentionally for other RAs and PhD students. Next, understanding how these RAs perceive the influence of the RA-ship might shape how those activities are presented. If RAs reported that the RA-ship influenced their PhD career, I wondered if it was connected to the amount of time as a RA. As noted previously, the longer the RA's experience, the more activities the RA had engaged in a RA-ship. Thus perhaps the more opportunities to scaffold this RA experience to their PhD research. Also if the RA's

thesis was related to his/her RA work, then perhaps this might lead to a reported influence.

To recap from the Chapter Five findings, the reported nature of the influence might be categorized by direct or indirect influence. The direct influences seem to relate to the RAs' thesis or their chosen career. The indirect influences relate to confidence in performing their own research or clarifying research possibilities. In this section I will consider other data (i.e. time as a RA, thesis relationship to RA project), the extant literature and how these influences might be viewed through the activity theory lens.

Ten of the seventeen RAs indicated an outcome that seemed to suggest an influence on their PhD or career. In terms of time as a RA, seven of the ten RAs had six or more semesters of a RA experience. Reviewing the nature of the influence as indicated in Chapter Five Findings, the RAs reported a direct influence on their career. For example, four RAs reported a change in their career goal as a result of their RA-ship.[32] Worthen and Gardner (1988) reported that 11% of their sample indicated a shift away from research as a career (p.18). The work experience provided insight into the life as an academic that this study's RAs perceived as stressful due to the pressures of research, teaching and community work. These students see the working conditions as stressful but could it be presented differently as stimulating to integrate research and teaching? As suggested previously, by identifying the influence (perception of career) and the nature (stressful) appropriate seminars might be offered to give alternative viewpoints. Regardless, it does not seem that these influences are affected by time as a RA. The length of time as a RA does not seem to create opportunities to scaffold to a thesis or affect the nature of the influence on their PhD or career for these RAs.

I wondered if the relationship of the RA project to their PhD would affect the influence yet it was not as expected. Curiously, six of the ten RAs reported that their thesis was not related or only somewhat related to their RA project yet the RAs reported an influence. Within the seven RAs with six or more semesters of RA experience, the RAs reported a range from no relationship to very related to their thesis. RAs perceive an influence on their thesis or career even if their thesis is not related to their RA work. Ten RAs indicated influences ranging from a positive direct influence on their thesis since the topic was related to a poor direct influence as the RA project distracted the RA

[32] Four RAs is 40% of the ten RAs who reported an influence but it is 23.5% of the total seventeen RAs.

from his or her own research. Four other RAs (of the ten) reported that the RA work indirectly benefited them because it gave them confidence to produce their own independent research. There does not seem to be comparable literature hence perhaps this can be explained by activity theory.

One aspect of activity theory that is of interest relates to the various systems RAs operate in. First, these RAs are the subject of the RA activity system. At the same time, they are the subject of their PhD experience. The two activity systems are dynamically related and it is expected that there would be influence between the two activity systems (Kaptelinin, 2005, p. 17). The RAs articulate an influence because their reality involves both activity systems. They are involved in two systems and tasks simultaneously - their PhD research and the RA project. Thus the amount of time as a RA or whether the RA project is related to their thesis are not relevant based on the principles of activity theory.

In summary, the RA-ship influenced some RAs' perspectives on the academy, detracted from their work and for others, enriched their thesis. Again, I wonder if making the RA experience more like a learning exercise would benefit the RAs. These students articulated various levels of influence on their PhD when asked. If they were asked to reflect on the RA-ship and their thesis as part of a project review process, would the communication between the RA and RA supervisor identify the poor influences and give proper recognition to the great influences? Would this process build an important relationship? The challenge for PhD students will be to find the appropriate project to work on such that it enriches their PhD experience and contributes positively to their thesis. I suggest they remind themselves to reflect on this experience as part of the process.

Understanding that there is a cross-relationship due to the interacting activity systems highlights the need to be intentional in the activities and the guidance given in the RA-ship. As noted above, putting in place a process to test the temperature of the RA-ship might be one way to recognize the influences. Another idea would be for the thesis supervisor, who is not the RA supervisor, to understand the RA work and think about the value to the PhD for the student. We have seen that value can result even when the RA work is not related to the thesis. Next, I unpack one valuable aspect of the RA work - research productivity.

Outcome #5: Research productivity

Research productivity has been discussed under "Reasons". In this section I bring forward the discussion and add further interpretation. As noted previously, the apparent lack of interest in research productivity as an intentional goal might be troubling for the academy. If students do not have an interest in publishing or presenting the findings from their RA-ship, will these students be under-prepared for academic careers that highly value the publication record? Some scholars suggest they may have difficulties with their dissertation if they have inadequate research training including publishing experience (Baird, 1995; Nettles & Millett, 2006; ASHE-ERIC Higher Education Report, 2001).

Of the eight RAs who indicated research productivity was a *reason* to engage as a RA, six had both authored or co-authored a paper and presented or co-presented a research paper. All six RAs rated the experience as a four or five out of five in terms of its value to their PhD career. Five of these six RAs indicated their intended career was in the academy. The other RA indicated a research position in the government. Five of these six RAs also indicated that the RA work was related in some way to their thesis. This could pave the way to achieve research productivity through greater understanding of the topic. Hence it seems of some significance that some RAs are motivated to achieve research productivity and that they achieved it. Further, it may be related to their future career as a researcher for these six respondents.

While eight reported being motivated to achieve research productivity, four different RAs reported it as an outcome suggesting it wasn't planned. In fact RA6 stated, "the opportunities to present and publish were bonus benefits that I hadn't thought about when I first thought about working in this study". I wonder why she didn't think about it. Was it that she didn't have an interest in publishing or the way the project was discussed? RA6 has had six or more semesters in RA experience and she rated the publication as a four out of five and the presentation as a five in terms of value to her PhD career. I would speculate her RA supervisor encouraged her to participate in these RA tasks even if not discussed initially at the start of the RA-ship.

I was curious why some RAs achieved research productivity and others did not. It is one thing to want it, although it doesn't mean you will achieve it even though many RAs did. When we consider that nine of eleven had four or more semesters of RA experience it seems this might indicate it takes time to immerse in the topic and to get to

a point where the RA might be involved in writing. Generally, the more time as a RA, the more tasks the RA reported. I wondered if the type and number of activities might shed some light on how research productivity comes about for some RAs and not others.

Reviewing the tasks, it seems that data collection and data interpretation might put the RAs in a position to contribute intelligibly to a research paper or presentation. Indeed all but two RAs who reported that they had performed data collection and data analysis had indicated research productivity. Worthen and Gardner (1988) felt these tasks would require some sophistication on the parts of RAs and hence this is why few RAs reported research productivity in their study (p.15). Of interest are the two RAs who did not achieve research productivity. RA4 did not intend to achieve productivity and did not mention it in other parts of the questionnaire so there are no clues. In contrast, RA5, with six or more semesters of RA experience, clearly worked as a RA to achieve research productivity. She stated she had not achieved any research productivity. However curiously RA5 commented that, "During the RA work we collected video data. I conducted two focus groups for part of my thesis research, and my experience with video data collection was helpful for that". This comment is interesting as RA5 had indicated her thesis was not related in any way. Nevertheless, it would seem the more involved the RA in genuine research tasks, the more likely the RA might produce a research paper or presentation similar to Worthen and Gardner's (1988) findings.

Looking at those RAs who did not indicate research productivity as an activity, they reported three or four tasks. They also had two or less semesters in RA experience. As such, it would seem to support the view that a longer term RA experience and involvement in rich research activities might be a necessary prerequisite to research productivity. Certainly Nettles and Millett (2006) findings for Education students support the notion that students need time in their program. The authors state, "the longer students were enrolled in their doctoral programs, the more likely they were to produce all forms of research productivity" (p.165). If so, students need to be made aware of the time it takes to achieve research productivity and the work that is involved. This can be made explicit during course work and at the time the RA supervisor explains the tasks. Further, faculty must be willing to hire for the long term in order to provide the ideal RA experience, complete with many tasks including research productivity. However a very significant hurdle is securing research funds. No matter how willing the faculty, if research funds are not available, then RAs are not hired. However, a RA may feel the

tension between the time required in a RA-ship to be capable of contributing to research productivity and the pressure to complete the PhD program.

Research productivity is seen as valuable by many stakeholders in the academy. Faculty need it to build a CV that will gain them tenure. Continued research and publications are needed to garner research grants that signal the value of the faculty member to the Faculty and the university. It is a sign of an academic's personal achievement as a researcher. For the university it is a measure of its research success and contribution to society. Given the importance of research to various stakeholders, it is curious that only eight PhD students were motivated to achieve it and that twelve of seventeen RAs have research production. Yet the RA research data here does not capture research productivity generally in the FOE PhD population. In some ways achieving 70% participation of RAs in research productivity might seem acceptable. Nettles and Millett's (2006) study indicated only 51% participation for Education students in the U.S. (p.199). The authors felt that this finding might suggest research productivity is not an established expectation for a doctoral program (Nettles & Millett, 2006, p.199). Worthen and Gardner (1988) reported that 26% of their study's respondents had sometimes or often wrote a research article and 17% had presented a research paper (p.33). These authors speculated that the low research productivity related to the short length of time in a continuous RA-ship (p.25). Thus one might suggest that more has to be done to emphasize the importance of research productivity, particularly when only eight RAs or 47% reported research as a goal in this study. In addition it seems it is not a coincidence that RAs with six or more semesters of RA experience are the RAs publishing and presenting at conferences. While the data does not allow me to know the continuous nature of the RA-ship, it seems that the length of experience contributed to their ability to achieve research productivity. Emphasizing the benefits of research might be initiated at the FOE Orientation or it might be helpful to arrange a meeting with prospective or novice RAs and experienced RAs. This would allow other PhD students to learn from other students and understand the value of research productivity. It might create a community of practice.

The literature indicates that a RA-ship is beneficial for achieving research productivity as a PhD student (Nettles & Millett, 2006) and in future careers (Roaden & Worthen, 1976). Nettles and Millett (2006) extend this to having a mentor and a RA-ship are predictive of research productivity (p.200). Thus I considered of the eleven RAs who

did achieve research productivity (planned or not), how did they describe their relationship with their RA supervisor? Six RAs described the relationship as mentor-protégé, three as colleagues, one as an employee and one as an apprentice. Nettles and Millett used the definition of a mentor as "a faculty member to whom they turn for advice, to review a paper, or for general support and encouragement" (p.266). This broad mentor contrasts with this study where the respondents were asked to report a description of the relationship with the last or current RA supervisor. The protégé-mentor was described as, "I am being taken under the wing by a mentor who is providing training, support, encouragement and access to opportunities to enhance my academic and professional career" while the junior colleague was described as, "I am considered a colleague, albeit less experienced". The mentor definitions are similar. However Nettles and Millett identified any faculty member in the PhD student's sphere while I considered only the RA supervisor. In hindsight, given that many students reported other faculty as important, I wonder if some of these acted as mentors, notwithstanding that many RAs did identify their RA supervisor as a mentor. Perhaps the label put on the relationship is less important than how the RA is treated in the RA-ship.

How RAs are treated seems to be important. The literature suggests that faculty treatment enhances RAs' self-confidence and contributes to their socialization (Worthen & Gardner, 1988; Bragg, 1976; Perna & Hudgins, 1996). While there is little in the data to interpret the nature other than the reported description, RA14 did comment, "As a mature student, I found it sometimes difficult to be treated as "the student" by people who would have viewed me as their peer had I kept working at[institution name] and not gone back to school". Likewise, RAs in Perna and Hudgins' (1996) study felt their prior status was not acknowledged as one remarked, "Once you become a doctoral student they think you're an idiot all of a sudden. Six months ago they would have been paying me $100 an hour to come be a consultant for them" (p.19).

There is considerable research about graduate students and mentoring (Ehrich, Hansford, & Tennent, 2004;Jacob, 1997; Jacobi, 1991; Rose, 2005;Weil, 2001). It is interesting to contemplate though the idea that "good" students are those who are RAs by choice and thus might be seen as having "potential". Johnson (2007) argues that faculty "are drawn to invest in students who show considerable aptitude and who have a greater chance of academic and career success" (p.28). If this is the case, is it the mentorship relationship or the quality of the student? While this is beyond the scope of

this RA study, I raise this only to suggest that labeling the relationship is likely not as important as the RAs' motivations and the access to opportunities. All eleven students who achieved research productivity rated it highly in terms of their PhD. While it takes a willing RA supervisor to provide these opportunities, activity theory argues that the RA is motivated to close the gap between what they know and what they need to know to accomplish their goal. As Leont'ev (1974) states, ""It is precisely its object that gives an activity its specific direction. ... Behind the object there always stands a need or desire, to which it [the object] always answers" (p.22). I would argue that RAs' motivations to work with specific faculty members might be a function of wanting a particular relationship as well as achieving the other outcomes.

In addition to considering the RAs' motivations, we must remember that the RA supervisor has his/her motivations as the subject of another activity system. As discussed previously, the RA's supervisor may have a clear motivation for research publication consistent with the RA's motivation. Whether they also want to develop a mentor-protégé relationship seems to be a function of time and energy and perhaps their own experience as a graduate student (Johnson, p.28).

In this section I discussed research productivity and it seems that a RA needs a few semesters as a RA to be able to immerse in RA tasks that lead to research productivity. This view is supported in the literature (Worthen & Gardner, 1988; Nettles & Millett, 2006). It is important to emphasize the length of time to prospective RAs and for faculty to be able to secure sufficient funding for a project to enable the long-term RA-ship. Further, it seems that more needs to be done to promote the value of research productivity in a PhD students' career (Worthen & Gardner, 1988; Nettles & Millett, 2006). This might be achieved through seminars directed to educating prospective RAs in a discussion with experienced RAs. While the nature of the relationship seems to be important, using activity theory as support, I question whether it is the label on the relationship as much as a driven talented RA who is motivated to achieve research productivity. The RA supervisor may have different motivations although they may be more inclined to hire that driven talented RA as well. Likely it is a combination of both productivity and a special relationship but I suspect a mentoring relationship on its own might not result in research productivity. The RA has to want the research productivity to some degree and the RA project needs to come to a stage where conference presentations and publishing are feasible, which all takes time.

Outcome Summary

I felt that several outcomes resulted from the RA engaging in the RA-ship. The intellectual growth seemed to be more serendipitous than planned by the students. However the nature of the activities and the fact that PhD students are immersed in a learning culture seem to make this a logical outcome. Further learning is integral to activity theory so through this lens it is not surprising. Also if work experience is raised in our consciousness, then perhaps there is an opportunity to intentionally look for a link between what RAs know and what they can scaffold in the RA-ship.[33]

It is possible that growth or research productivity occurred due to the nature of the relationship. There seemed to be some evidence of students describing a relationship which might encourage growth. Further many RAs did report the relationship in favourable terms. Yet we don't know how RA supervisors view the relationship. Also, it could be less about the nature of the relationship and more about the self-selected RAs and their need to achieve research productivity. Activity theory suggests that the RA is motivated to close the gap between what they know and what they need to know to accomplish their goal.

A surprise finding was that other faculty play a larger role than initially thought. Also research teams figure in these respondents' RA activity system, most likely due to the number of research institutes and centres at the FOE. By using activity theory it is understood that knowledge is distributed and that it takes a village to raise a child – that is, the RA supervisor does not act alone in the RA-ship.

These students have identified the importance of people outside of the RA activity system to their PhD career including the specific research community external to SFU and others in the FOE community. These findings are consistent with the literature (Ethington & Pisani, 1993).

These students articulated various levels of influence on their PhD when asked. I wonder if making the RA experience more like a learning exercise would benefit the RAs. The challenge for PhD students will be to find the appropriate project to work on

[33] For example, I am proficient at using an online teaching tool (eLive by Elluminate) to connect synchronously with my students. The tool combines audio and sharing of files. This tool might have facilitated team meetings if team members were interested in a tool to replace the teleconference meetings.

such that it enriches their PhD experience and contributes positively to their theses. I suggest they remind themselves to reflect on this experience as part of the process.

It seems that a RA needs a few semesters as a RA to be able to immerse in RA tasks that lead to research productivity. However more needs to be done to promote the value of research productivity to a PhD's student career.

Being aware of these outcomes and the people in the RA life world and their value may lead to the creation of specific opportunities to network or the RA supervisor may realize the benefit from the RA's perspective.

6.5 Community, Norms and Division of Labour

Community has been discussed under other sections in the context of motivations, tools and outcomes. This section completes the discussion about other aspects about the community, norms and division of labour not discussed to this point. Briefly, the discussion about community has identified the importance of many people who can influence the RA and his/her thesis. Understanding the work conditions and the implied culture are important to ensure the environment encourages PhD students to work as a RA. This awareness may supplement other actions taken to promote the RA-ship.

In activity theory, the distribution subsystem involves the three interacting elements of *community, division of labour* and the *object*. The distribution subsystem reflects how the community deals with tasks and recognizes both horizontal division of tasks and vertical division of power and status. Jonassen (2000) notes, "how work is distributed throughout the organization determines to some degree the nature of the work culture and the climate for those involved in any activity system" (p.102). The individuals interested in the object (community) are the overlapping element of the distribution and exchange subsystems.

The exchange subsystem captures the interaction of the *subject, community* and the *rules or norms* that constrain the activity. As might be expected, the exchange of personal, social and cultural norms determines the nature of the work culture and the climate for those involved in any activity system (Jonassen, 2000, p.103). The rules may explicitly or implicitly guide the actions and activities found to be acceptable to the community. The community negotiates rules and norms.

In this section I review the findings related to the rules and norms found in the exchange subsystem and the division of labour found in the distribution subsystem. It is important to know about the culture, rules and norms and consider how they may affect the RA experience.

The questionnaire asked about the contract discussions, which may be part of the rules (remuneration) and the division of labour (tasks). I wondered if the RAs invested time in understanding the remuneration and the tasks. Seven RAs reported no or minimal contract discussion. Seven had some discussion while only three had a full discussion of hours, tasks and wage rate. It is not clear whether the level of discussion affected the overall RA experience as all but one reported a good to excellent evaluation on their RA experience. Only one RA mentioned specifically remuneration. Terrence explicitly stated, "I wanted to kind of get a sense of the university life and so I said yes to it without knowing what the remuneration was" (line 138). It seems there would be shared responsibility between the RA and the RA supervisor to discuss the remuneration and the tasks. I wonder why only three RAs had a full discussion.

In thinking about this lack of contract discussion for most RAs, I wondered if they didn't approach it as much as a job as an avenue to obtain something else they wanted. However we know fifteen of these RAs indicated one of their reasons was financial support. If they accepted the RA-ship on the basis of a combination of reasons, then perhaps they would be less concerned about the remuneration, the type of work and the time commitment. We know that many wanted to work with a specific faculty member and learn research skills for example. However if you had a specific goal, would you talk about the nature of the work? Is there a tacit assumption about the pay and the tasks? We also know that while there are various ways to find a RA-ship, thirteen were invited by their RA supervisor, who is not their thesis supervisor. So perhaps it is simply the opportunity to work with a specific faculty member? This remains a curiosity point for investigation in future research.

While there are standards for paying research personnel for SSHRC grants, I would have thought students would want to know details on the remuneration and time commitment. The data indicates that three RAs work five or fewer hours a week, eight RAs work six to ten hours a week, three RAs work ten to fifteen and three work more than fifteen hours a week. For the six RAs working over ten hours a week, this may be a significant work load with their other commitments. All but one RA had six or more

semesters of RA experience and their current contract for four RAs was three semesters or more. This seems to be a long-term commitment on their part. However their RA work was related in some way to their thesis so perhaps the RAs were counting on synergy to maximize the RA-ship in terms of their PhD and thus were not concerned about the salary and tasks. From previous sections, we do know that those with longer RA experience have enjoyed a greater range of tasks.

To understand the culture, I considered the "rules". In Chapter Four I noted that the SFU Policy R50.02,stated, "While the University seeks to persuade grant holders to provide equitable compensation and benefits for grant employees, control and direction over wage scales, the provision of benefits, hiring, firing and the assignment of duties rest solely with the grant holder" (section 4.3). All control appears to rest with the RA supervisor. This has the potential to establish power with no over-sight. In Chapter Five, I reported from the data a few incidences of dissatisfaction and the RAs seemed to suggest they could not question the practice. Given the university structure, it is not clear who a RA would talk to if s/he were dissatisfied with the RA experience. Activity theory considers these incidences "contradictions'.

In activity theory, Kuutti (1996) describes contradictions as "a misfit within elements, between them, between different activities or between different developmental phases of a single activity. Contradictions manifest themselves as problems, ruptures, breakdowns, clashes" (p.34). Chapter One outlined the types of contradictions which include four levels. In this research study I noted two levels. As Kuutti (1996) noted, the secondary contradictions occur between two elements (level two). Here I noted that some tensions were reported between the RA (subject) and the RA supervisor (community). In addition it appears that the tertiary (level three) contradictions manifested through the RA introducing their PhD motives or their career motives into the RA-ship. First I consider the secondary contradictions in light of the literature.

As reported in Chapter Five, some students felt there was a lack of organization or supervision (Terrence, RA11). The issue of RA and TA supervision was part of the Anderson and Swazey (1998) study although it involved students in chemistry, civil engineering, microbiology and sociology and not education. However, the study found that 28% of RAs reported they felt they were not carefully supervised by faculty. Worthen and Gardner (1988) surveyed Education and social science RAs and they reported a

similar response – 26% felt they had been supervised inadequately or not at all (p.20). Perna and Hudgins (1996), which was in a School of Education, reported,

> Most students felt that faculty provided little direction or guidance over their work. Some students viewed this positively and enjoyed the freedom to work independently, while others were uncomfortable with what they perceived to be a low level of faculty supervision and feedback (p.23).

Thus it seems across disciplines and in this RA study, lack of supervision could be an issue. Also the tasks assigned must be carefully thought out to determine the extent of supervision required. If the RA is not productive, it does not serve the RA supervisor as well. In activity theory, these contradictions give rise to change. Also, in activity theory where it is assumed that the RA and the RA supervisor have an interest in the same object (i.e. the research project), they need to work together fruitfully. Perhaps faculty might assess a RA's need for close supervision and RAs need to be proactive and seek feedback. RAs may need to be reminded to communicate this need. Perhaps a review process needs to be introduced into the RA-ship.

However, there might be implicit norms that give the faculty member power over a student in terms of asking for further direction, accepting work and in the writing of the final research paper. Explicitly the SFU Policies give this right to the RA supervisor. Yet there are two parties in this relationship and it seems some RAs might not feel confident in their role as a RA to speak out. The faculty might organize a RA session, similar to the regular "TA Day" organized by the TSSU. This seminar would promote the opportunities to do research and network prospective RAs with experienced RAs and let them know how to find RA-ships and how to deal with any difficulties in the RA-ship.

The last identified contradiction seemed to manifest through the interaction of the RA activity system with a student's PhD or career activity system. In other sections I discussed how the RAs felt an influence on their PhD and career. For some RAs, there was a positive influence in terms of thesis work or indirectly through increasing the RA's confidence to perform the independent research. It is important to note that contradictions are not necessarily undesirable consequences. In some RAs' experience it has been a positive contradiction and the question becomes how the awareness of this influence might be made useful for other RAs or PhD students.

In conclusion we note that RAs chose to accept RA-ships with little discussion generally. Wage rates may vary according to the various SFU policies and other

documents as discussed in Chapter Four. Either RAs don't know this or are accepting of whatever the RA supervisor completes on the standard contract. While the tasks seem to be important to RAs based on their reasons to take a RA-ship, again there seems to be little discussion at the beginning to define what the RA will perform. Lastly, I was surprised that RAs, who are mid-career, and working at both a regular job and as a RA, coupled with family obligations, would not inquire about time commitment. Perhaps all of this can be explained by ten of the RAs having four or more semesters of RA experience so the question about contract is not as important to them now since they have the RA experience. They may know what to expect.

6.6 Activity Theory Conclusion

Activity theory assists with answering the question, "*What is an individual or group doing in a particular setting*? As a framework, activity theory focuses on an *activity system*. I interpreted the data using activity theory, in particular the subsystems, as the theoretical frame.

The activity theory analysis suggests that RAs are motivated to support themselves financially while interacting with other faculty to learn research skills, possibly for research productivity. These RAs use various intellectual resources, a computer and skills to manage their time and the project. They work on various RA tasks, depending on the length of time they have been a RA. In the end the reported outcomes include intellectual growth, valuable interaction with the community, research productivity, various influences on their PhD and networking outside of the RA activity system's community. Table 6.1 summarizes very briefly the interpretation of the data with a comparison of the findings and interpretation to the literature.

In reviewing the literature and the results of this study as shown in Table 6.1, it seems appropriate to reflect and summarize on the findings relative to the extant literature. While there are numerous studies advocating the RA-ship as a financial resource, which this study supports, it is important to be aware that for many of these RAs the RA-ship is more than a financial resource. All of the RAs reported other motivations. Other studies have assumed it is all about a financial resource (Abedi & Benkin, 1987; Baird, 1990). It is awareness of these other motivations illuminated by the activity theory analysis that reveals the importance of the community. These RAs derived value from the interaction with "other faculty" in the community. Thus the

presumption that the RA-ship is mostly about money and a dyadic relationship is questionable and leads to viewing the RA-ship in a new light. It is the village that contributes to the RAs' growth. In Chapter Seven I propose ways to use this knowledge about the community to enrich the RA-ship and the PhD experience generally.

There is a presumption that the RA-ship is about research (Worthen & Gardner, 1988). Yet these findings suggest the RAs were seeking the community interaction as described above as well as research productivity. However, the more experienced RAs (six or more semesters of RA experience) seemed to desire research productivity more than the novice RAs. Perhaps this is because the experienced RAs participated in many authentic tasks which would be conducive to research productivity. Like Worthen and Gardner (1988), this study concluded that the RA-ship needs to be long enough to train the RAs and involve them in the research sufficiently to lead to the desired publishing and conference presentations.

The literature has focused on the correlation of time to degree and PhD completion with some current literature suggesting research productivity as an outcome (i.e. Nettles & Millett, 2006). This study found these RAs did not report an influence on their PhD career related to time to degree or completion. Instead the outcomes seemed related to opportunities to collaborate and build community and enhance their intellectual knowledge. Further some RAs reported a positive direct influence on their thesis if it was related to the RA project or an indirect influence though increased confidence in their ability to perform independent study. Others did report that the RA-ship was a distraction so a RA needs to be selective in his/her choice of projects. Revealing these outcomes contributes to understanding the notion that the RA-ship is beneficial.

Previously the 'tools" used in a RA-ship have not been identified in the literature. This study found these RAs relied on the obvious intellectual knowledge from course work but also their previous work experience, computer, time and project management skills and their knowledge from previous RA-ships.[34] Identifying the kinds of resources utilized assists with structuring the RA-ship to use the resources in a productive way. Further it may suggest other non-academic (computer, time and project management) skills require sharpening.

[34] The questionnaire indicated some resources including an "other' category to allow a RA to indicate resources used.

The evidence in this study suggests that the RAs view their RA supervisor as a mentor or colleague thus portraying their relationships in a positive light. Further all of these RAs would recommend a RA-ship to other PhD students. While there are no specific previous research studies about the RA and RA supervisor relationship, numerous studies support the idea of a mentorship being conducive to the PhD experience (i.e. Ehrich, Hansford & Tennent, 2004; Rose, 2005). Allowing that this might be transferable to RA-ships, we don't know how the RA supervisors view the relationships. For example, is it the calibre of the student that contributes to the positive relationship which is interpreted as a mentor-protégé?

Chapter Seven builds on these findings and Table 6.1 by considering the implications for practice given the awareness of certain aspects of the RA-ship. While some findings are not new, the awareness of the activity in this backyard is of value to this SFU Education practice. Other findings shed new light on previous research and this may lead to further research in related areas.

Table 6.1 Research Questions linked to Activity Theory, the Extant Literature, Findings and Interpretations

Activity theory	Literature	Research Question.	RA Study Findings	Interpretations
Intentions or reasons Participants are motivated to achieve objects and outcomes. To understand the activity system, one needs to understand the participants' motives and goals.	Findings suggest research assistantship is a financial variable but participants may be motivated for other reasons such as research productivity.	1. What **reasons** do students report for participating in a research assistantship?	• Financial support • Work with a specific faculty member • Proactively achieve research productivity • Learn a specific research skill	• Financial support matters • Choosing to work with a specific faculty member supports their PhD career • Generally, experienced RAs desire research skills and productivity but the low number may be a concern • RAs do not relate their RA-ship to time-to-degree or PhD completion
Outcomes intentions of the activity system	Findings suggest shorter time-to-degree if a RA although also RA distraction if work not related to	2. What **outcomes** do students report as a result of the research assistantship?	• Opportunities to collaborate; develop software; enhance knowledge and exposure to other ideas • Research	• Intellectual growth facilitated by RA tasks and the community • Experienced RAs achieve research productivity • RAs connected to the community in FOE, including research

Activity theory	Literature	Research Question.	RA Study Findings	Interpretations
	thesis; higher completion rate; research productivity		productivity • Influence thesis/career • Build community	teams and outside FOE • PhD influence varied from a distraction to an enrichment
Activities What are people doing?	Findings suggest growth in research skills while others recommend attention to quality research preparation	3. How do students describe their reported **activities** in the research assistantship?	Most common tasks: • Literature review • Design a research study • Conceptualize a research problem • Perform data collection • Present at a conference • Proofread papers • Interpret data	• Longer the RA experience the more RA tasks performed • Literature search is a common experience and might be mined for application to their theses • The complex RA tasks are performed by RAs with more RA experience
Resources Actions and interactions are mediated by explicit or implicit tools and resources.	No empirical research related to resources.	4. What **resources** do students report they use or need in the research assistantship?	• Course or workshop knowledge • Knowledge from previous work experience • Computer skills • Time and project management skills • Knowledge from prior RA-ship	• Course work and prior work experience valued for the PhD career • Non-PhD skills related to computer, time and project management are important
Community People interested in the same object as the subject.	Findings suggest RAs tend to be more involved in the department and may look to other RAs for support.	5. **Who** do students report as significant to their participation in the research assistantship?	• RA supervisor • Thesis supervisor who is NOT RA supervisor • Thesis supervisor • Other faculty members • Research team members	• "Other faculty" play a key role in supporting and socializing RAs • Many people influence the RA's experience. RA supervisor not alone.
Rules and Division of Labour: Explicit or implicit norms; horizontal division of tasks and vertical division of power	No empirical research related to rules and division of labour	6. How do students describe the **rules and division of labour** in the research assistantship?	• Most students describe their relationship as either junior colleague or mentor-protégé.	• Students do not invest time in discussing the terms of their RA-ship despite having specific intentions for outcomes • Some evidence of developmental relationships but may be a result of calibre of RA

Activity theory	Literature	Research Question.	RA Study Findings	Interpretations
Contradictions Contradictions result within and among the elements of the activity system and other activity systems and give rise to innovation or change.	Findings suggest there may be incongruent role expectations and a conflict in authorship beliefs.	7. What **tensions or problems** do students report in the research assistantship?	Concerns: • Managing time • Balancing PhD work, RA-ship and other paying work • Adequate supervision and organization of the RA project	• Balancing RA, PhD and "life" suggest RA toolkit could be fruitfully employed in other aspects of the RA-ship • Important to ensure adequate supervision to achieve all expectations

6.7 Evaluation of Activity Theory as a Theoretical Frame

In Chapter One I explained activity theory and earlier in Chapter Six I provided a primer. This section reflects on the use of activity theory in this research study. As explained in Chapter One, a PhD student may choose to work as a RA, hence this role is within the context of the PhD experience. Thus I felt it was necessary to find a theoretical frame that would allow for understanding the activity while allowing for the contextual interpretation of the data. Second, the literature did not indicate a structured exploration of the RA-ship and as such activity theory was used to provide this structure. Third, despite a RA-ship being identified as an important variable in correlational studies, the RA experience had not been studied qualitatively.

The RA phenomenon is complex because it occurs within the larger PhD context, which itself is influenced by many factors. To deal with this complexity, I chose activity theory to investigate the RA experience as I felt the exploration would benefit from the theory's principles. One of these is that the analyst views the activity system from the subject's viewpoint (or multiple members) of the local activity system (Engeström & Miettinen, 1999, p.10). As such, I investigated the RA activity system through the viewpoint of seventeen RAs to produce a description of the SFU FOE RA-ship.

In addition, as Jonassen (2000) notes, activity theory allows for "understanding the totality of human work and praxis, that is, activity in context" (p.38). The idea of using activity theory stems from its basic use - to understand what people are doing. The principles directed me to consider the reasons why a student would want to work as a RA, what resources they might use in the RA-ship, who they would interact with and what outcomes might result. I considered how the elements interacted by using the sub-systems in the activity system. To this extent, the framework met this need of

understanding what a RA does and how the resources might interact with the outcome, for example. On the other hand, I think students' PhD experience and their RA-ship are somewhat unique because of their personalities and personal life circumstances. I'm not sure whether it is the short coming of activity theory, the limited number of interviews or the limited scope of a questionnaire, or perhaps all of these that I could not capture some of the nuances of the RA experience. In particular, on the surface I could see differences in experiences due to time as a RA but I wonder if that is all there is to it. I sense it would take a very large study looking at several view points and perhaps with RAs all at the same level of experience to understand how novice RAs view the system for example.

In addition, I wanted to understand something about what the RA was doing in one activity system while still part of many other activity systems, chiefly the PhD activity system. Initially I felt that activity theory could handle this complexity. Yet while analyzing the data, I could speculate perhaps superficially what other activity systems might be influencing the student but I could not draw the links. In this respect, a much larger study which investigates several activity systems might work or perhaps a different theory like social network theory might be better suited to explore the social implications of the research community as suggested by this data.

Another complicating part of activity theory is the complex interaction of many systems. Kaptelinin (2005) believes that the subject (RA) may have various needs they are striving to satisfy although constrained by other aspects of their life world and "other actors involved, each with their own motives and objects" (p.17). RAs are PhD students but they are also employees, parents and social beings. Just as the PhD research indicates, many factors influence the PhD experience. It is not linked to a single factor. Similarly, the RA experience for these RAs was influenced likely by other competing interests, whether work or their own research or family. In addition, the RA-supervisor is a member or subject of other activity systems and they are driven by their motivations. I see a swirl of activity systems as the RA is a member of many systems and everyone they interact with is a member of a constellation of other activity systems. I did not address these various activity systems unless raised by the RAs.

Nevertheless, the structure afforded by the specific elements in the activity theory triangle and the subsystems were very useful for this initial exploration. I was able to carefully choose questions and draw up instruments following the activity theory

elements. It also gave me a starting place to determine the analytic codes for analysis although other codes emerged during analysis. As you have read, it also allowed a frame for discussing the findings and the interpretation. I was able to consider interacting activity theory elements using the sub-systems to group elements. These starting points have been fruitful. However, when thinking about the data at times I did feel constrained by a particular subsystem as it seemed of greater interest to look at resources, outcomes and community perhaps but that group of elements are not one of the defined subsystems. Yet, these interactions were framed by the existing subsystems adequately. I did scaffold from the sub-systems to look at other possible interacting elements and data beyond the activity theory elements such as time as a RA and the nature of RA tasks. In this case, it was a matter of thinking logically about the experience rather than relying on the framework exclusively.

Another limitation is that one must also ask what is not revealed using this framework. I countered this with understanding what the literature suggested and then contemplating how previous research manifested in this study or was not apparent. Some of the literature has suggested the RA-ship is related to PhD progression or completion. These RAs did not report an influence on their PhD progression. It could be because it is not a concern or because this outcome is part of another activity system.

In terms of using activity theory in a qualitative study, and in particular a case study of the RA phenomenon, I believe activity theory was useful. Yin (2003) writes that case study inquiry,

> copes with the technically distinctive situation in which there will be many more variables of interest than data points and as one result relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as another result benefits from the prior development of theoretical propositions to guide data collection and analysis (p.14).

As the research question was "How do SFU Education PhD students describe their RA experience?" I needed to probe many aspects to build the description of the Education RA experience. I used multiple sources of data including questionnaires, interviews, and institutional documents. Activity theory guided the data collection and analysis. As explained previously, activity theory gave me a structure to systematically build the RA description. It is modelled in Figure 6.1 which illustrates the RA activity system for these respondents.

Lastly, as discussed in Chapter Seven, I feel my interpretation of the findings using activity theory, suggests that stakeholders can make changes to the practice because of the greater understanding of the motivations, tools, community and outcomes.

In summary, I believe the use of activity theory met the intentions of the research study to provide a theoretical framework to describe the RA experience. Also, it gave me principles to consider the complex and intersecting RA and PhD experiences. Lastly, the triangle model served to create the structure to conduct the investigation and model these respondents' RA activity system.

CHAPTER 7: IMPLICATIONS FOR PRACTICE AND FUTURE RESEARCH

"the key to the utility of any study is the extent to which it affects actual behavior"
(Baird, 1993,p.11)
"*The unexamined life is not worth living.*" Socrates

In Chapter Seven I make suggestions for practice based on the findings and my interpretations of the data. As Baird noted above, I would like my RA study to change practice with a view of enhancing the learning opportunities for PhD students and enriching the RA-ship. I feel my suggestions are reasonable given the environment at SFU. Further, I make suggestions for future research some of which may address the several limitations of this study. Finally, heeding Socrates, the conclusion seems to be an appropriate place to examine the doctorate process for myself and how this research and its process transformed me.

7.1 Implications for Practice

At the outset I must refer to external factors that influence the proposed suggestions for practice. First and of great significance is funding. Without funding, faculty do not have the resources to hire RAs. Second, assuming adequate funding is available, some faculty likely prefer to hire a PhD student who has some interest in the research project and ability to do research. Thus attracting qualified students is important as well. Third, there is the assumption that faculty are interested in or have the energy or time to invest in training RAs. I would speculate that there must be a trade-off between efficiency and training a RA. RA supervisors need to balance their research-teaching-community service work load. Fourth, the literature (i.e. Worthen & Gardner, 1988) suggests, as does this study, that the rich RA tasks are performed by those with four or more semesters of RA experience generally. To sustain a long-term RA relationship, the faculty must have the funding, the qualified individual and the interest in developing the student – in other words, all of the first three constraints noted above.

These four constraints are not insignificant. Funding is highly uncertain as is recruiting PhD candidates. For example it was noted that SSHRC's success rate is 29%. Government funding is at the mercy of the current political wind to some degree as well. However the hiring of two grant facilitators in the FOE is an encouraging sign for faculty and RAs alike. Recruiting students is outside the scope of this research as well as understanding the faculty's intentions. I am unable to address the external factors that influence significantly on the practice although I must take them into account to make feasible suggestions for practice.

Notwithstanding these external pressures, I believe this research contributes generally to the understanding of what RAs do albeit it limited to Education and two of its programs. The intent was to conduct a structured exploration of the RA-ship to understand what RAs do, who they interact with, the tools they use in their RA-ship and the articulated outcomes. This research study challenges some of the assumptions made about the RA-ship based on other research studies. I feel that while research activities may be a part of the RA-ship, community seems to be more important to these respondents than the tasks. Further, my interpretations of the findings suggest that stakeholders can make changes to the practice because of the greater understanding of the motivations, tools, community and outcomes. The following paragraphs discuss the implications of the study and the suggestions for practice.

The external limitations together with contextual factors suggest the idealistic scenario with all PhD students experiencing a RA-ship as envisioned by Nettles and Millett (2006) might not be realistic in the SFU FOE context. First, Dr. Winne, FOE Research Co-ordinator, noted that many PhD students maintain working relationships while progressing in their PhD program. As mid-career students, they may not have the time or financial need or the academic motivation to work as a RA if they are seeking a credential to progress in their current career. It seems that particular research skills and productivity are more relevant to those PhD students who are considering an academic career. Second, financially it is not possible to fund a RA-ship for each FOE PhD student, even if it was determined appropriate to do so. Budgetary pressures and uncertainty in external funding make funding many RA-ships very unlikely. Third, it seems that the nature of the research project would determine the number and longevity of the RA-ships. It is not clear that the capacity exists to provide the RA-ship opportunities based on the amount of research and available faculty. Thus my

suggestions are directed to means to make available learning opportunities through wide dissemination of certain aspects of the RA tasks and experiences. After all, part of the scope of the research was to understand not only what RAs do, but how it influences their PhD career. In addition, the findings suggest ways that a RA-ship might be enhanced to enrich the RA experience. I discuss these ideas in the following paragraphs.

Learning Opportunities for PhD Students

In this section I discuss suggestions for practice for all PhD students based on my RA findings. RAs identified various aspects as important to their PhD career. Based on my interpretation, I feel these suggestions are plausible because they are linked to the reported findings and economically do not require a large financial commitment. However I do recognize there is a time commitment which is an intrinsic valuable commodity for all.

My findings suggest that community and intellectual growth are key elements in a RA-ship. For these students community included other faculty members not just the RA-supervisor. These RAs reported wanting to work with a specific faculty member as a motivation to work as a RA and many reported a high value in terms of their PhD career from community interaction. I'm not clear how these students identified these faculty members. In addition, I identified the intellectual growth construct from RAs' reported experiences. It seems seminars and workshops designed to create opportunities for networking and learning might be useful. These seminars require a designated person to organize them and faculty and student willingness to attend. The topics must be timely and relevant and delivered at a convenient time. The benefits include fostering a healthy research community and socializing PhD students.

These seminars would be open to all PhD students. Networking seminars have been identified in the FOE Three Year Plan already so this research study lends additional support to this recommendation. In the seminar, the students would learn about the research being conducted and come to appreciate the challenges in both obtaining funding and implementing the project. Faculty may meet prospective RAs while PhD students generally learn about techniques to conduct their own research. The seminar could be combined with a course that all PhD students enrol in such that busy students are easily available. After course work is complete, these workshops could act

as a means to bring together students so that they are not isolated in the unstructured phase of their PhD journey. These networking seminars create the opportunities to meet other faculty, maintain momentum, and to learn about research methods as discussed further in the next paragraph.

The findings indicated only some of the RAs wanted to learn research skills in their RA-ship which might be troubling for the academy. If students do not have an interest in developing research skills, will these students be under-prepared for academic careers? Even if students do not desire an academic career, do they have the skills necessary to conduct the requisite research for their doctorate? Golde and Dore (2001) found in their large US study of third-year doctorates, that 35% of the students reported that they were not prepared to conduct research (p.13). Since the PhD is a research-oriented degree, Golde and Dore's finding might be troubling. Which activities do these respondents report and value? The RAs in this study reported seven activities in their RA-ship that all received a four or five rating in terms of value to their PhD career. These activities or tasks were: presented a research paper, wrote a research proposal, interpreted data, prepared a grant application, authored-co-authored a research paper, designed quantitative analysis and proof-read papers. Further these RAs noted time and project management skills as resources utilized in their RA-ship which they valued highly for their PhD career. Seminars aimed at these tasks and skills might facilitate a PhD's academic progress and future career.

Faculty have the experience to comprehend the nature and extent of research skills students need to progress and complete their degrees. Perhaps a faculty discussion or survey might determine which research skills are perceived as most important or needing attention for all PhD students. This information would provide the basis for the workshop (s). The workshop would serve many purposes. First the workshop would communicate the importance of obtaining base line research skills to all students. Second, by conducting skills-based workshops, the workshop might alleviate some of the supervisory tasks. Third, these workshops would cover the strategies to obtain and develop the skills, resources to support students and identify faculty who have the experience and knowledge in that area. Fourth, the skills likely have value in their future careers, even if not in the academy. Anecdotally I understand teachers must prepare a "business' case for funding from the government which is like preparing the grant application or research proposal. Many professionals are required to perform

presentations, so workshops aimed at effective presentation skills would be useful. The time and management skills seem to be important to these RAs and hence these workshops might attract both faculty and students.

In terms of other types of practical workshops, all PhD students must clear the ethics review process. Sharing information about how to proceed and practically fill out the forms could save students time while teaching them the importance of the ethics review process. Another example relates to my own experience using SFU's WebSurvey tool. While SFU's Academic Computing Services was helpful in my work, I shared with another student some tips when designing the survey based on the limitations of the program. These are practical workshops. Other workshops or seminars might be designed for a particular program such as a reading group on selected scholars.

Another workshop comes to mind because RAs identified the importance of their current or prior work experience to their PhD career. These RAs reported examples where they had credibility because of their life experiences (i.e. Terrence, Natalie). Another RA reported that the RA-ship was beneficial because she gained access to school districts. I am wondering about a means to share work experience and research interests. Some PhD students may find the necessary access to a population from colleagues. Peers may find similar research interests and thus might establish reading and support groups. If there seems to be particular research required by school districts, stakeholder representatives from outside the FOE might be invited to hear about the research or offer support, either financially or in other ways. It might be possible to develop an online community although there is perhaps more cost and planning required to organize and maintain the online presence. Perhaps current courses could assume some of the burden in developing community.

Besides looking for synergies from PhDs' work experience, since these RAs felt it was important to their PhD career, faculty and students might explicitly look for connections to the thesis. Is there an intentional process to reflect on what the PhD student knows from their prior work history to his/her current education endeavour? The idea would be much like constructing a resume as one identifies their skills that might best promote them for that job. Often skills have value in a different context. Personally, my accounting/audit skills assisted with maintaining my data and organizing it.

The findings indicated that some RAs felt that they did not want an academic career after observing the academic life. A similar finding was noted by Golde and Dore (2001) in their large US study of third-year doctorates. They found that 35.4% of the students reported their interest in a faculty career declined during their studies (Golde & Dore,(2001, p.6). The PhD students reported concerns with the tenure process, onerous workload expectations, difficulty obtaining research funding and low salaries (Golde & Dore, 2001, p.9). The concerns raised here by the RAs seem to reflect Golde and Dore's findings. As such, I wonder if students' perceptions reflect reality. Would it be helpful to have a frank discussion about the academic life so that the academic rewards might be shared with prospective and current PhD students? There seems to be an indication that many faculty will retire in the next decade and that universities need to play a role in ensuring adequate supply to meet the demand. Might the FOE ensure academic careers receive a fair consideration through the seminar? In addition to academic careers, since it seems that many PhD students are not seeking a post-secondary career, perhaps the faculty might host prospective employers like a career fair that one sees for under-graduate students.

These RAs indicated their course work influenced significantly their PhD career, albeit a subjective personal view of this value. If not already done so, the FOE might review their courses and be clear on both faculty and students perceptions on their value in their PhD career. It seems it would be worthwhile to review the curriculum and its application to ensure it is current and relevant. There may be opportunities to align some learning objectives to the research conducted in the FOE and the research proposed by students. Students might be encouraged to reflect on how the course influences their thesis.

The various workshops described above come to mind based on my findings and interpretations. I bracket these suggestions with a caveat. These workshops may exist already in the FOE, either formally or informally. My experience as a doctorate student in an off-campus professional program precludes me from receiving notices about PhD events. Yet, the types of workshops might benefit RAs in other Faculties at SFU. Perhaps the Dean of Graduate Studies might explore opportunities for cross-disciplinary seminars/meetings with PhD students and faculty which focus on some of the above ideas. For example, all PhD students must complete an ethics review. Qualitative research is not unique to Education. There are indications that SFU sees research as a

priority as discussed in Chapter Four. No doubt this is not unique to SFU. As such intentional workshops to promote research skills seems appropriate and beneficial to many stakeholders.

Enriching the RA-ship

I now turn my attention to ways to enrich the RA experience based on the reported findings and my interpretations. These are additional to the above noted workshops for PhD students generally as suggested by the RAs' experience. As previously reviewed there are over-riding factors that limit the suggestions. Availability of funding and faculty preferences and intentions are significant constraints. Nevertheless the following suggestions for practice are feasible as they are about making intentional the benefits of the RA-ship.

An important finding relates to the richness of the experience based on length of time as a RA. RAs experience more tasks and more complex tasks the longer they have been a RA. It seems a RA needs a few semesters as a RA to be able to immerse in RA tasks that lead to research productivity. This view is supported in the literature (Worthen & Gardner, 1988; Nettles & Millett, 2006). It is important to emphasize the length of time to prospective RAs and for faculty to be able to secure sufficient funding for a project to enable the long-term RA-ship. Faculty must make a commitment to hire and train for the long-term as well. However there are potential tensions here. If we assume a RA needs at least four semesters to move from the status of novice to the experienced, then this one RA position is unavailable for anyone else. Thus an opening for a new student does not surface for maybe two years. Another possible tension with the long-term RA-ship might arise between the highly qualified RA who wants some experience but not on a long-term basis and the faculty who want to retain the highly-qualified RA. Some students might work as a RA during their master's degree which might make them more attractive in their PhD program. Yet there are limited RA positions so a RA awarded to a master's student means a PhD student is passed up.

In this study, the respondents who were clear on their career in the academy also seemed to be clear on the need for research productivity to build their CV. It might be worthwhile to try and ascertain what portion of the PhD population has an interest in an academic career. Does it make sense to interview these students and attempt to find a RA-ship fit between these PhD students and faculty rather than a random or haphazard

fit. Of course a limitation of this study is that it only considered RAs and their reported research productivity. I wonder how many PhD students want an academic career and do not work as a RA and have research productivity. There seems to be a need to gather more information on the PhD population and track their experiences generally. As mentioned in Chapter Three, information is not available to identify the PhD students that have worked as RA – in any part of the university. FOE could start by recording from the contracts whether the student is a master's or PhD student, the program and the length of the contract as well as compensation. As Engeström demonstrated in his research, one could look at this as a pure administrative function while someone else might consider this data as a diagnostic tool.

The above database might be required if funding becomes tied to research and successful student progression. As noted under Chapter Four, it seems SFU would like to assist graduate students with financing their degree in particular for those who contribute to research and graduate on a timely basis (Report of the Dean of Graduate Studies' Working Group on Graduate Student Funding at SFU, 2004, p.1). I wonder if students would be willing to take on a RA-ship if funding was tied more to research activities and less funding was available through fellowships. Dr. Winne, FOE Coordinator of Research, mentioned this idea as an example of improvements to doctoral education (personal communication, July 9, 2008). Similarly Nettles and Millett (2006) noted in the conclusion of their research study that next steps might be to investigate "whether starting with a fellowship and then moving on to a research or teaching assistantship is more helpful than an early assistantship followed by fellowships and how each of these combinations contributes to optimizing student success" (p.225). Thus there are many interrelated issues of financing and utilizing research experience to meet funding goals coupled with research productivity. To receive additional funding internally for students who contribute to research, the FOE must be able to demonstrate their contribution, either through work as a RA or through research productivity. As such, here is another part of the database that needs to be tracked – research publications and presentations.

Previously I made mention of the value of course work to the RAs. Faculty might review the PhD courses and refresh their knowledge about the course content. There may be opportunities to align some learning objectives to the specific research conducted in the RA-supervisor's project and the research proposed by students.

Students might be encouraged to reflect on how the course influences their thesis and their RA work.

In the previous section I wondered if sharing current and prior work experience might assist with connecting people. Here I wonder if information about prior and current work experience might be useful to ensure the previous work experience is utilized effectively in the RA-ship. The students who rated their work experience highly seem to believe their work experience played a critical role in both their RA tasks and their PhD career. Perna and Hudgins (1996) found that the RAs held the perception that their prior work experience was under-valued (p.19). Given the significance of the resource, it seems advisable that part of the RA-ship involve a discussion about current and prior work experience. This makes explicit the skills and knowledge a RA brings to the table and creates the possibility of recognizing and applying these valuable work experiences.

Productivity of a RA enhances a RA-supervisor's project. If the project progresses in a timely manner and the work performed meets the needs of the project, the RA-supervisor will be able to produce research in an efficient manner. If RAs were trained in some basic research skills or computer/time/project management skills, would the faculty be able to do more with their RA time and budget? Would RAs move from novice to experienced at a faster pace and thus spend more time on authentic tasks? There seems to be a win-win here with PhD/RAs receiving training that complements their individual research and that also creates efficiencies in the RA-supervisor's project. Reducing training at either the RA-supervisor level or at the thesis-supervisory level, as discussed above, seems to provide efficiencies that opens up time for all faculty to spend on other aspects of their career. There could be duplication of efforts in training and/or gaps. The FOE faculty will need to discuss the "necessary" skill set and then determine the optimal way to make training accessible. There is an initial time investment no doubt if not financial cost to deliver the training.

If we assume that the RA-ship is a learning opportunity, then perhaps it should be framed as such using appropriate androgogy principles. Learning objectives would make intentional what the RA-supervisor believes the RA will learn. There will be a prior assessment of the current knowledge and a scaffold to new knowledge. Explaining what RAs will learn may enhance the value from the RA's perspective. Explicitly discussing the tasks might assist with determining the appropriate amount of RA-supervision

required for each task. This discussion might eliminate some of the tensions mentioned by these RAS in their RA-ships.

The findings indicated that these RAs describe their RA-supervisory relationship in positive terms – as a colleague, mentor-protégé or apprentice-master. Whether RA-supervisors perceive it the same way is not known from this study. The literature suggests that faculty treatment enhances RAs' self-confidence and contributes to their socialization (Worthen & Gardner, 1988; Bragg, 1976; Perna & Hudgins, 1996). It is important to understand the relationship as faculty might need to develop the skills to effectively mentor and/or socialize students. Even just raising awareness that students view their RA supervisors in a certain light might change how faculty interact with the students. Socialization is a critical role for RA supervisors and others in the RA activity system.

Lastly I feel the findings suggest that there may be a more transparent contract discussion. RAs need to be aware of the compensation, work-load and the nature of the work. This kind of information might be conveyed through a "RA Day" similar to TA Day directed at providing TAs with information pertinent to their job, regardless of faculty. As such the Dean of Graduate Studies might host this event. I know when I hire a TA I must budget time for the TA to attend the TA day each semester. RA-supervisors could follow this practice as well. There also needs to be a central place to find out information about the policies affecting a RA and postings for a RA-ship. In performing my context review, I noted the difficulty in determining many aspects of the RA policies. This likely affects the nature of the RA being an employee of the faculty member rather than SFU but I argue that if research matters to the university it is in everyone's best interest to make the process transparent.

In conclusion I have made some possible suggestions for practice that are applicable to the FOE. I believe both PhD students and RAs can benefit from organized training of research and other skills. As community is very important to socialize students, making those opportunities frequent and worthwhile are critical. I have suggested various workshops that might enhance the PhD career and/or the RA experience. In many ways these workshops might reduce thesis-supervisory or RA-supervisory time as efforts are duplicated. Further, creating a database of information about the PhD students and those holding RA-ships may be necessary to demonstrate the FOE's ability to produce research utilizing their PhD students. Also, it might be a

marketing tool to attract prospective students in terms of number of RA-ships and the type of work conducted.

7.2 Limitations of the Study

This section reviews the limitations of the RA research study.

First, it is clear that this is a modest exploration of seventeen RAs in the FOE in two of its programs. In addition, the data indicated generally satisfied RAs. One must ask about the many RAs who did not participate. Do these seventeen RAs truly represent the RA experience in the FOE? Is the Math or Arts program different structurally or in terms of funding that may influence the RA experience? If there are PhD students not satisfied with their RA experience, I wonder why they did not take the opportunity to "air" their grievances. For example, I know when I use an anonymous survey tool in the classes I teach, students feel safe to make known their course issues. Of course the possibility exists that the Education RA experience is fulfilling for the majority of PhD students. The sample size and overall satisfaction limit suggestions as enough is not known about the Education RA population. The extent that my suggestions for practice are generalizable to other faculties depends on how similar the FOE is to the reader's faculty. For example, if funding is not a constraint, there may be remarkable opportunities to put in place Nettles and Millett's recommendation that every PhD should have a RA-ship and a mentor.

A second limitation of this study is that I gathered the RAs' perspectives at one point of time in their RA experience. How some novice RAs might view their RA experience after a year could be of interest. Were they able to continue working as a RA and did they progress to the experienced RA as suggested by the data?

Third, these are my interpretations of the data. Someone more familiar with the FOE might have a different perspective. I'm also biased by my experience as an instructor and a RA although being a doctorate student myself, albeit in the professional program, allowed me to relate to the RAs' stories.

Fourth, by using the activity theory framework, I may have missed other possible interpretations. As I noted, I used the literature as a way to reflect on what the activity system did not identify. If the literature had not revealed a certain aspect of the RA

phenomenon, it was not raised in my consciousness. I attempted to counter the third and fourth limitations through discussions with my supervisor.

Lastly there are methodology limitations. In Chapter Three I noted that a PhD-RA database that would flag a PhD student who had ever worked as a RA at any level at SFU does not exist. Thus while I collected a sample of seventeen RAs, it is not known the total number of possible RAs in the FOE PhD population. Another limitation is that I chose an online survey. Some RAs emailed may not feel comfortable completing an online survey or the email may have been filtered in the inbox. Yet to maintain anonymity and secure the survey to one response, the only choice was to make additional appeals for a response rather than distributing a paper survey to PhD mail boxes on campus. Lastly while the interview intended to uncover the nuances of the RA experience, both the questionnaire and the interview are limited in the scope of the questions that can be covered in a twenty minute questionnaire or a one hour interview.

Notwithstanding these limitations, I believe the RA study contributed to the PhD dialogue in many ways, including identifying future research implications.

7.3 Future Research Implications

There are many possible avenues for future research. Some suggestions consider the faculty perspective while others look more deeply at the RA's perspective.

As this RA study considered the students' perspectives, clearly one avenue to explore is a faculty study. It could be a focused on their perceptions of the RA-ship using activity theory to identify their motivations in their work, the tools used, the community and the outcomes. It might reveal some interesting points about the cross-activity system relationship. These RAs report value from their RA-ship for their PhD program. Do faculty recognize this and work intentionally to support their RAs' PhD process? Is there a disconnect between the RA activity system and the RA-supervisor's activity system?

Another study might consider the RA experience in a different faculty at SFU as a cross-disciplinary study. How is it similar and how is it different? This information could assist SFU's administration with selecting support for RAs particularly as there seems to be a focus on PhD students contributing in the research arena.

Following this idea of comparing other RA experiences, the FOE might be interested to know how other Education PhD students experience their RA-ship. Several Canadian universities have education faculties and the scope of the RA study could be as a broad as all Education faculties or another similar-sized institution in Canada.

Looking only at the FOE, it might be interesting to compare the PhD experience for those with a RA-ship to others who have chosen to focus only on their PhD studies. In what ways do the PhD students experience the same outcomes as these RAs reported and in what way are the outcomes different?

A longitudinal study with RAs over time might help the PhD community understand the developmental process in the RA-ship. At what point do students move from a "novice" RA to an "experienced" RA that can handle the complex RA tasks?

The literature indicated that a RA-ship relates to PhD completion. A retrospective study of recently graduated RAs might indicate how the RA-ship affected their PhD. This RA study revealed certain outcomes but these respondents did not indicate time-to-degree or completion as linked to their RA-ship.

In addition to these avenues, a study building on specific findings could investigate how the resources, such as course knowledge and prior work experience, influence the RA tasks and the PhD career. This could take two perspectives – students and faculty. It might be helpful to study the foundational courses and create a deeper understanding of how they influence the PhD progression and the RA-ship. What do students identify as value as compared to the value perceived by faculty. Are the valuable aspects of the course congruent?

Similarly, prior work experience seemed to be useful. A future study could look more explicitly at the kind of work experience students report and then how faculty perceive the usefulness of that experience in a RA-ship.

The significance of community to these RAs is an important finding and future research might explore in greater detail the people in the community, what facilitates their interaction and how both RAs and faculty perceive the community. For example, social network theory might reveal other people in the RA community or the PhD community. Yet another study might look in more detail at the RA tasks. What is the breadth and depth in the assigned tasks and are they achieving effectively the faculty's intended goal for the research project while maximizing the training opportunity for the

RA? A study might be an action study with a group of faculty intentionally reframing their approach to the RA-ship as a learning opportunity linked to the RA's thesis and work experience for example.

In summary, future research could build on these findings and drill down to consider more explicitly the tools, activities, outcomes and community. Other research could focus more on the faculty's perspective or other disciplines and/or other Faculties of Education.

7.4 Conclusion

When I started the doctorate journey, I had specific goals for my personal and professional life. I started by reflecting on my successful Chartered Accountant's (CA) journey. The CA journey had proven to be a rigorous trip but planning and commitment to the goal held me in good stead. While the African proverb refers to a village raising a child, my view is that it takes a village or community to support CA students or PhD students. I relied on various kinds of support during the journey. As the end of the doctorate road appears on the horizon it is time to reflect. What outcomes resulted from this rigorous doctorate journey, which is indeed a road less travelled in Canada. I can reflect on my doctorate journey using activity theory. Clearly I have gained some understanding about myself, which I will discuss, but first a few concluding remarks about the RAs' experience in the Faculty of Education at SFU.

In Chapter One I reported that Baird (1990) dispensed specific sage advice to new or prospective graduate students who would like to keep their time in graduate school to a minimum: "*if you can't get a fellowship, try to find a job as a research assistant*" (p.383). Further he advised graduate departments and faculty, "*Try to obtain funds ... that will allow as many graduate students as possible to have assistantships*" (Baird, 1990, p.383). Given Baird's correlational study, I speculate that the RA-ship was viewed as a financial resource primarily. Given my findings, I suggest it is possible that the community element contributes significantly to the RA-ship. The RA-ship is not just about research and a dyadic relationship.

The findings and my interpretation suggest the community plays an extensive and important role in the RA-ship. It seems it takes a village to facilitate a RA's growth. The social network is a complex web of interactions and support. Community was a

common thread starting with wanting a RA-ship in order to work with a specific faculty member through to the outcomes, where the research community both in the FOE and externally were identified by these respondents. While it is taken for granted that the RA-supervisor is of significance in the RA-ship, other faculty clearly influenced the RA-ship for these RAs. The SFU village is extensive involving course instructors, the RA-supervisor, the thesis supervisor and "other" faculty. Outside of SFU, the RAs noted working with research teams and networking at conferences.

Within the community, most of these RA respondents describe their relationship with their RA-supervisor in terms of a mentor-protégé or as a junior colleague. The nature of the relationship seems to suggest a developmental aspect that would influence socialization. Nettles and Millett (2006) argued that a RA-ship and a mentor are predictors of PhD completion (p.200). While I am not convinced the relationship needs to be a mentor-protégé, it seems from these RAs that they seek out specific faculty members as part of their RA-ship. From my research it was not clear why these faculty members were seen as valuable, but activity theory suggests it is because the RAs were looking to fill the gap between what they do know and what they need to know to achieve their outcome. Thus the RA-ship provided access to a community and opportunities to achieve research productivity in some RAs' experiences.

While not previously researched, activity theory revealed the importance of course work and prior work experience. In addition, computer skills, time and project management skills were identified as tools these RAs use in their RA-ship and that have value to their PhD career. Next steps might include determining whether other PhD students find these resources useful and if so, workshops might be arranged to enhance the skills.

Reflecting on my doctorate journey, how has activity theory, community and my work experience influenced my doctorate journey? I have been fortunate to interact with several people that have supported me during the journey. Briefly, there are the "sisters" as we fondly named ourselves. The "sisters" are four mid-career women who embarked on the doctorate journey together. Of course there is my RA-supervisor and the research team I worked with during my RA-ship. Within the Faculty of Business, certain faculty have taken the time to be cheer leaders and a sounding board. In my running group, a few friends asked consistently over the years how my thesis was progressing and some were quite keen to hear about it as their children were starting graduate

studies! Upon reflection my son, who was seven in 2005, unwittingly supported me with his clear, not always simple solutions to my research dilemmas. His support became clearer one day when in 2005 his summer day camp leader told me he had explained he was at camp because his mom was in school to be a doctor. Indeed, without this community it would have been a lonely journey. Thus in my village I had many people from inside the academic community and from my life-world.

Like the RAs in the study, my work experience assisted in many ways. My organizational and time management skills assisted with breaking down the tasks and being disciplined in parsing time away from work and my personal life for the academic work. To understand accounting information, you must think critically about what is reported and what is not reported that might be curious, particularly when other environmental factors might suggest some scrutiny of those accounting numbers might be advisable. This same thought process served me well in considering the data. As explained earlier, my Excel skills were useful to organize the literature and to analyze the data. Marking accounting papers using a coding scheme assisted with developing and applying a coding scheme to the data.

The final outcome? Even within the village, it is a very personal individual journey and the ultimate outcome rests *within* me. As Leont'ev (1974) suggested, I had my own underlying forces driving my need to complete a doctorate. I recognize I am very close to achieving my goal of a doctorate, which I had set aside earlier in my professional life in order to pursue a CA career instead. However, my initial personal reasons seem inconsequential to other outcomes.

Dr. Geoff Madoc-Jones stated in the first doctorate class that we would be different people at the end of the doctorate journey. We would be *changed*. I do not recall if he elaborated on the nature of the change but I doubt I would have appreciated it as I was barely down the block in my road trip. Since many of the cohort are in the education field, we all are in the business of maintaining our currency. How could this new knowledge *change* us? Yet, it has of course. I learned how to struggle with new ideas and concepts unrelated to accounting and allow transformational learning to occur at its intended time. In terms of specific knowledge from this thesis, I see many applications of activity theory in my work as a post-secondary instructor. In my current work, I view decisions in a very different way now both because of new knowledge and who I am now. For example, I have used activity theory to model activities which

identifies many aspects important in understanding the activity before making a decision. I think critically about the research reported and I know there is much more to any issue than what the media reports. I knew that before but now I have the knowledge and/or the skill to find out about what is not reported. I have a different skill set at the end of this journey that complements my current work experience.

I make decisions in a different way now. It is difficult to explain, but in one respect I see broader implications beyond the classroom or the program. Before the doctorate I suffered from tunnel vision at times. Previously I tended to focus on the immediate concerns and implications for the classroom. Now I ask myself (and others) broader questions about the implications to the education practice and our role in "cultivating humanity" as argued by Martha Nussbaum (1997). Thus there is a change to my education practice.

The ultimate change? As Plato warned, once you see the light outside of the cave, it is a new world. You start to question assumptions and beliefs. There is a change in me and my thought process as a result of new knowledge and the journey. Thus as Dr. Madoc-Jones predicted the goal of this education journey was not to put sight into blind eyes but to act as an instrument to turn the soul towards the light (Plato, Republic VII). Aristotle wrote in the *Nicomachean Ethics* of "goods" and that "goods of the soul" are goods to the fullest extent (Cohen, Curd, Reeve, 2000, p.772). Indelibly, the goods of my soul have changed.

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APPENDIX ONE: INFORMED CONSENT

Title: Education PhD Student perceptions of the research assistantship experience
Investigator Name: Barbara Edwards
Investigator Department: Faculty of Education

The University and those conducting this research study subscribe to the ethical conduct of research and to the protection at all times of the interests, comfort, and safety of participants. This research is being conducted under permission of the Simon Fraser Research Ethics Board. The chief concern of the Board is for the health, safety and psychological well-being of research participants.

Should you wish to obtain information about your rights as a participant in research, or about the responsibilities of researchers, or if you have any questions, concerns or complaints about the manner in which you were treated in this study, please contact the Director, Office of Research Ethics by email at hweinber@sfu.ca or phone at 778-782-6593.

Your signature on this form will signify that you have read the statements below which describe the procedures, whether there are possible risks, and benefits of this research study, that you have received an adequate opportunity to consider the information in the documents describing the study, and that you voluntarily agree to participate in the study.

Purpose and goals of this study:
The study is designed to investigate how Education PhD students describe their experience in the research assistantship. The goal is to increase the understanding of the research assistantship which is a common experience in the PhD career.

What you will be asked to do:
You will be asked to complete a pre-interview questionnaire and engage in a 45 to 60 minute interview.

Benefits of study to the development of new knowledge:
This study will elucidate the experience of RAs in the SFU Faculty of Education. Since approximately 50% of Education PhD students have a research appointment, it is important to better understand this experience. Current research indicates a relationship between a research assistantship, research productivity and PhD completion. This thesis will investigate the experience using a structured theoretical approach to increase our understanding of the research assistantship in the PhD experience.

Risks to you as the participant
I do not foresee any potential risks or discomfort to you as a result of participating, and participation is entirely voluntary.

Statement of confidentiality:
The data of this study will be confidential. Your name and the contributions you have made will be held confidential to the extent allowed by the law. It is my intent to maintain your confidentiality through an alias in the data stored and in writing the case study.

You may obtain copies of the results of this study, upon its completion by contacting: Barb Edwards at bjedwards@sfu.ca

In order for you to participate, the university requires that you understand the nature of the study in which you have agreed to participate. *After reading this document, please sign below if you agree to participate.*

.....

Please make sure you understand and agree to the following statements before giving consent to participate.

- I understand the purpose of this study and know about the risks, benefits and inconveniences that this research project entails.
- I understand that this research will not affect the evaluation of my progress in the program.
- I understand how confidentiality will be maintained during this research project.
- I understand the anticipated uses of data, especially with respect to publication as a dissertation.
- I understand that observation notes, or audio tapes may be made of the interview.
- I understand that I may withdraw my participation at any time. I also understand that I may register any complaint with the Director of the Office of Research Ethics.

  Dr. Hal Weinberg
  Director, Office of Research Ethics
  Office of Research Ethics
  Simon Fraser University
  8888 University Drive
  Multi-Tenant Facility
  Burnaby, B.C. V5A 1S6
  hal_weinberg@sfu.ca

I have read the above and I understand all of the conditions. I freely give consent and voluntarily agree to participate in the interview. I understand that my identity will be protected and that all records will be coded to guarantee anonymity; and audio tapes will be used only for research purposes.

Name (please print) _____
Signature _____
Date _____
Email address: _____

APPENDIX TWO: RA INTERVIEW WORKSHEET

RA interview Worksheet 35	
Protocol	Barb's Notes during Interview
CODE Name:	
• timing of interview (about 45 to 60 minutes) • consent form • purpose of study • the means to assure confidentiality • ask if s/he has any questions.	
1. Reasons [Questionnaire Q 12 – 17, 21, 22]	
number of appointments____ length of time_____ reasons _____ _____ _____	
Motivations? Financial, research skills, access scholarly activities, interact with specific people, career goal	
Goals Met? Why do you feel this way?	
found the RA position through _____. How did this come about? Problems?	

[35] Complete worksheet with key information from questionnaire to assist with memory and interview flow.

Appendix Two: RA Interview Worksheet (continued)

Protocol	Barb's Notes during Interview
2. Outcomes (discuss each question for two of the outcomes) [Questionnaire Q23, 24]	
outcomes of the RA was _____ intended or unexpected, serendipitous? influence your knowledge/skills/PhD completion/career progression/interactions with others etc.	
difficulties achieving this outcome? OR if unfavourable, what tensions or problems lead to this outcome?	

Appendix Two: RA Interview Worksheet (continued)

Protocol	Barb's Notes during Interview
3. Activities [Questionnaire Q25, 26]	
Activity _____ Why did you score the task as a ____?**How** assigned & explained? **Who and/or what resources** **What was accomplished?** What did you **learn**?	
problems in performing the tasks? Resolved?	
Do you think other PhD students would benefit from having performed the same activity? Why or why not?	

Appendix Two: RA Interview Worksheet (continued)

Protocol	Barb's Notes during Interview
4. Resources [Questionnaire Q27 - 29]	
Resources _____ Value _____ **Why** do you think it helped you as a RA? **How** did you use it? **Why** was it necessary? **When** and how often did you use it? **Where** did you use it?	
Additional Resource:_____ **Why** do you think it would be helpful? **In what situations** would you use it? **Problems** obtaining/accessing?	

Appendix Two: RA Interview Worksheet (continued)

Protocol	Barb's Notes during Interview
5. People [Questionnaire Q30, 31]	
People _____ _____ Value _____. Other: _____ **Why** did you interact with this person? **How** did it come about? **Why** valuable?	
Tensions/problems? Resolved?	

Appendix Two: RA Interview Worksheet (continued)

Protocol	Barb's Notes during Interview
6. Rules & Division of Labour [Questionnaire Q32, 33]	
details of the contract (task. Wage, hours, length) were explained _____ _____ _____ In hindsight, do you feel the details were **adequately explained**? Were the hours & tasks similar to the expectation? If there was a need to change the hours/tasks, how was it handled?	
relationship to the faculty member was _____ (employee – employer; apprentice-expert; junior colleague; protégé – mentor or other). Please explain why you feel this way? If lengthy appointment, did it change over time/	
Other/wrap-up [Questionnaire Q34, 35]	
Would you recommend that other PhD students seek a RA appointment? Why or why not.	
Is there anything that we haven't talked about that you think is interesting or relevant that you would like to explore?	
Thank you for your time today.	

APPENDIX THREE: RA QUESTIONNAIRE

This is a Word form meaning that you type in the grey spaces which expand as you type. There are 35 questions, many which require a X in the box. Others are comment areas where you type in your response. It is estimated this questionnaire will take about 15 minutes. At the end, save the file and email it to Barb at bjedwards@sfu.ca. Thank you.

Name:

Demographics

1. Gender

- ☐ Male
- ☐ Female

2. Please indicate your age:

- ☐ 50+
- ☐ 40 to 49
- ☐ 30 to 39
- ☐ 20 to 29

3. Year admitted to the doctoral program: (drop down list)

- ☐ 2007
- ☐ 2006
- ☐ 2005
- ☐ 2004
- ☐ 2003
- ☐ 2002
- ☐ 2001
- ☐ 2000
- ☐ before 2000

4. Program:

- ☐ Mathematics Education
- ☐ Arts Education
- ☐ Educational Leadership
- ☐ Educational Psychology
- ☐ Educational Technology and Learning Design
- ☐ Curriculum Theory and Implementation

5. The requirements that you have completed towards your PhD are: (Please check all that apply)

- ☐ course work
- ☐ comprehensive exam
- ☐ dissertation proposal
- ☐ data collection
- ☐ data analysis
- ☐ dissertation writing
- ☐ dissertation defense

6. Please indicate your education career:

- ☐ completed masters degree in 2006
- ☐ completed masters degree in 2007
- ☐ completed masters degree prior to 2006
- ☐ other pre-PhD education path

7. Are you employed at a position other than the research assistantship while pursuing your PhD?

- ☐ Yes as an employee
- ☐ Yes, self-employed
- ☐ Yes but I am on a leave from my employer to pursue doctorate
- ☐ No

8. If you are employed now in addition to your RA, do you work:

- ☐ full-time (as an employee or self-employed)
- ☐ part-time (20 hours or less per week)

9. If you are NOT working now, other than the RA, prior to your PhD studies did you:

- ☐ work full-time
- ☐ work part-time
- ☐ did not work.

10. Please indicate your current position if employed or your position prior to PhD career if not employed now:

- ☐ K to 12 school teacher
- ☐ university or college instructor
- ☐ school administrator (i.e. vice-principal, principal, superintendent)
- ☐ self-employed consultant (i.e. consultant)
- ☐ other role in a school (please specify)
- ☐ other position (please specify)

11. Please indicate your career goal upon completion of the PhD:

- ☐ return to current or prior employment as stated in question 10
- ☐ seek a position as university or college instructor
- ☐ seek a position as a school administrator (i.e. vice-principal, principal, superintendent)
- ☐ seek a position as another role in a school (please specify)
- ☐ seek a position in a government organization as a researcher or administrator
- ☐ other position (please specify)
- ☐ undecided

Details of RA-ship

12. Number of research assistantships that you have held:

- ☐ one
- ☐ two
- ☐ three
- ☐ four
- ☐ five or more

13. Please indicate the length of the appointment as stated in the employment contract for your current or last appointment:

- ☐ less than one semester (less than 4 months)
- ☐ one semester (4 months)
- ☐ two semesters (5 - 8 months)
- ☐ three semesters (9 - 12 months)
- ☐ greater than one year

14. In total, the semesters that you have been employed as a RA is:

- ☐ less than one semester (less than 4 months)
- ☐ one semester (4 months)
- ☐ two semesters (5 - 8 months)
- ☐ three semesters (9 - 12 months)
- ☐ greater than one year

15. Please indicate the average hours you work(ed) per week in the current or last research appointment:

- ☐ 5 hours or less per week
- ☐ 6 to 10 hours per week
- ☐ 10 or more hours per week

16.Please indicate all of the ways that you have found a research assistantship

- ☐ Responded to a class announcement or email request
- ☐ Invited by the faculty member who supervised the research assistantship
- ☐ Invited by my thesis supervisor
- ☐ Initiated the opportunity by asking a particular faculty member(s).
- ☐ Other (please specify)

17. Did you have any difficulties obtaining a research assistantship?

☐ Yes
☐ No

If yes, please describe the difficulty and if it was resolved, how it was resolved.

18. Have you worked as a teaching assistant (TA) or tutor marker (TM) during your PhD career?

☐ Yes
☐ No

19. For your current or last RA appointment, is the faculty member who hired you also your thesis supervisor?

☐ Yes
☐ No

20. Please indicate whether your thesis topic is related to the research appointment project:

☐ Not related in any way
☐ Somewhat related (i.e. research method or theory applicable to my thesis)
☐ Very related (i.e. my thesis is part of a larger study)
☐ Related in a different way (please explain)

Reasons

21. Please indicate below all of the reasons why you chose to be a RA.

☐ Opportunity to learn a specific research skill
☐ Opportunity to work with a specific faculty member
☐ Opportunity to enhance your research productivity such as scholarly publications or presentations
☐ Financial resource
☐ Requested by thesis supervisor
☐ Other (please specify).

22. Do you feel that your goal was met?

☐ Yes
☐ No

Please explain.

Outcomes

23. Please think about the RA experience as a whole. Please describe the outcome (beneficial or otherwise) of your participation in the research assistantship. For example, did you come away with specific knowledge or skills or have opportunities available to you because you were a RA? Did the RA experience influence your thesis (i.e. topic, methodology) and if so, in what way it influence your thesis? Did the research assistantship influence your PhD progression or professional career? If so, please explain how it was influential.

24. Were there any difficulties involved in the outcomes?

☐ Yes
☐ No

If yes, please describe the difficulty and if it was resolved, how it was resolved.

Activities

25. Please indicate below all activities you engaged in (either individually or with others) during any of your research assistantships. For each activity, indicate on a scale of 1 (not valuable) to 5 (very valuable) how valuable these activities are/were to your PhD academic career or your professional career.

Activity	Value from 1 (not valuable) to 5 (very valuable)
☐ Designed a research study	
☐ Conceptualized a research problem	
☐ Wrote a research proposal	
☐ Prepared a grant application	
☐ Performed a literature search	
☐ Prepared a bibliography or annotated bibliography	
☐ Designed quantitative analysis or instruments (ie. Statistical analysis)	
☐ Constructed qualitative analysis or instruments (i.e. interview protocol, survey)	
☐ Performed data collection (i.e. Conducted interviews, administered surveys)	
☐ Used computer software to analyze data	
☐ Interpreted data	
☐ Authored/ co-authored a research paper	
☐ Presented a research paper	
☐ Proof-read papers	
☐ Filing or other administrative duties.	
☐ Other (please specify)	

26 .Thinking about the activities you engaged in during your research assistantship, were there any difficulties, tensions or problems involved in carrying out the tasks assigned to you as a RA?

☐ Yes
☐ No

If yes, please describe the difficulty and if it was resolved, how it was resolved.

If no, please explain why you think you had no difficulties.

Resources

27. Please indicate below all resources that you used during any of your research assistantships. For each resource please indicate on a scale of 1 (not essential) to 5 (very essential) how essential these activities are/were to your PhD academic career or your professional career.

Resource	Value from 1 (not essential) to 5 (very essential)

- ☐ Financial (personal expenditures made for items necessary to discharge your duties)
- ☐ Intellectual knowledge from courses or workshops
- ☐ Intellectual knowledge from prior experience in a research assistantship
- ☐ Intellectual knowledge from prior or current work experience other than as a RA
- ☐ Time management skills
- ☐ Project management skills
- ☐ Computer
- ☐ Other technology (software, digital recorder)
- ☐ Other (please rank and specify)

28. Are there any additional resources (intellectual, financial, personal etc) that you feel would facilitate your ability to perform your RA activities?

- ☐ Yes. Please describe how these resources would be beneficial.
- ☐ No

29. What problems might exist in gaining access to the resources identified?

People

30. On a scale of 1 (not significant) to 5 (very significant) please identify and rate how significant each person that you interacted with during your RA experience was to your PhD academic career or professional career.

Person	Value from 1 (not valuable) to 5 (very valuable)
☐ The faculty member who hired you who is NOT your thesis supervisor	
☐ The faculty member who hired you who is your thesis supervisor	
☐ Your thesis supervisor	
☐ Other RAs	
☐ Other faculty members not included above	
☐ Research team members (not included above)	
☐ Other (please specify and rank)	

31. Thinking about the people you interacted with during your research assistantship, did you experience any difficulties, problems or tensions in your interactions with these people?

☐ Yes
☐ No

If yes, please describe the difficulty and how it was resolved.

If you experienced no difficulties, please explain why you think you had no difficulties.

Rules & Division of Labour

32. When you started the RA appointment, please indicate how the details of the contract were explained, such as the hourly wage, the hours of work, the tasks to be performed or other areas related to the appointment:

☐ No discussion. I was asked to sign the standard written contract.
☐ Minimal discussion of hours, tasks & wage rate and I signed the standard written contract.
☐ Some discussion of hours, tasks & wage rate and I signed the standard written contract.
☐ Full discussion of hours, tasks & wage rate and I signed the standard written contract.
☐ Other (please specify)

33. Please indicate which of the descriptions best fit your relationship with the current (or last) faculty member who hired you:

☐ employee – employer. I am hired to perform a specific task.

☐ apprentice - expert. I am an apprentice learning from the expert.

☐ protégé-mentor. I am being taken under the wing by a mentor who is providing training, support, encouragement and access to opportunities to enhance my academic and professional career.

☐ junior colleague. I am considered a colleague, albeit less experienced.

☐ Other description of your choice.

Wrap-up

34. Would you recommend other PhD students seek a research assistantship?

☐ Yes

☐ No

Please explain your recommendation.

35. Other comments you have about your RA experience.

Please save the file and email the file to Barb at bjedwards@sfu.ca
Thank you for your valuable time. I look forward to hearing about your RA experience.

APPENDIX FOUR: INFORMATION ABOUT SIMON FRASER UNIVERSITY (SFU)

The Appendix includes various information that may assist the reader with seeing a broader picture of Simon Fraser, its programs and its research agenda. Further there is a section describing the funding from SSHRC, for those unfamiliar with Canadian research organizations.

General information about SFU

Simon Fraser University is located in the metropolitan area of Vancouver, British Columbia, Canada. There are three campuses: Burnaby, Vancouver and Surrey. SFU opened in 1965 and it is classified as a comprehensive university meaning it has a significant research program and both undergraduate and graduate programs in a variety of disciplines, including professional degrees. The Faculty of Education is one of six faculties.[36] While it is a contested measure, SFU ranked second in the Macleans 17th Annual University Rankings (Dwyer,2007), after another BC university, University of Victoria, and before two Ontario universities, University of Waterloo and the University of Guelph.[37] The ranking reflects a weighted average of thirteen performance measures ranging from spending on student services and scholarships to funding for libraries and faculty success in obtaining national research grants (Dwyer, 2007, p.1).

Students & Faculty

Recent statistics indicate enrolment at SFU of approximately 26,000 undergraduate students and 4,000 graduate students (SFU, Institutional Research and Planning, Fingertip Statistics, 2007/08). Graduate students include diploma, master and

[36] SFU has six faculties: Applied Sciences, Arts and Social Sciences, Business Administration, Education, Science, and Health Sciences.

[37] The Macleans ranking is contested due to questions surrounding methodology. The Macleans editors note that in 2007many measures were based on publicly available information, including federal research grants. Some Canadian universities do not participate.

doctorate programs. According to the SFU Academic Information Report, there are approximately 967 PhD students enrolled in all years for the 2006-07 fiscal year (p.1). In the 2006-07 convocation period SFU awarded 768 masters and 104 doctorate degrees (SFU, Academic Information Report, p.3).

In the 2006/07 fiscal year, there were 561 tenure-track faculty and 111 non-tenure track instructors/lecturers (SFU, Academic Information Report, p.7). However the full complement of teaching resources increases with faculty that are not "continuing" meaning their contracts are for a limited period. Sessionals, visiting professors, limited term associates and faculty associates exceed 341 on a full-time equivalent basis (SFU, Academic Information Report, p.8).

Financial Information

In Canada, post-secondary education is a provincial mandate hence public post-secondary institutions are funded partially from provincial budgets, which reflect the current government's priorities each year. According to the March 31, 2008 Financial Statements, SFU's revenue totalled $518,505,000 with government grants and contracts totalling $274,280,000 (52.8%) (p.6). Student fees totalled $141,993,000 (27.4%) (p.6). Total expenses totalled $511,789,000 of which salaries and benefits totalled $308,287,000 (60.2%) and supplies and services $104,628,000 (20.4%) (p.7).

Research Context: SSHRC

Canadian Federal Granting councils (SSHRC, NSERC, CIHR) or the Canadian Tri-council Granting Agencies are the largest source of funds for research. The greatest source of funding for RA appointments in the FOE is from research grants awarded to faculty from SSHRC (SFU, Office of Research Services, Research Grants to Academic Departments by Source of Funds, p.2). Thus I will focus on SSHRC, which is a federal program and as result reflects Federal political priorities. The number of awards and the amount of the research grants might influence an institution's ability to fund RA positions. To appreciate the extent of funds and the nature of the program the next paragraphs describe SSHRC and the level of funding to SFU.

At SSHRC's webpage it states:

> The Social Sciences and Humanities Research Council (SSHRC) is the federal agency that promotes and supports university-based research and training in the humanities and social sciences. Through its programs and policies, the Council enables the highest levels of research excellence in Canada, and facilitates knowledge sharing and collaboration across research disciplines, universities and all sectors of society. ... SSHRC's Grants and scholarship budget for 2007-08 is $312.7 million (excluding the Indirect Costs program and the one-time program Centres of Excellence for Commercialization and Research). SSHRC's budget is determined each year by Parliament. SSHRC reports to Parliament annually on how it spends its budget, but the Council has full authority to set its priorities, policies and funding programs and to make granting decisions.

It is noted that the 2007 Federal Budget documents indicate that there was $1.6 billion in funds to be allocated by SSHRC, NSERC (Natural Sciences and Engineering Research Council) and CIHR (Canadian Institute of Health Research) (SSHRC, July, 2008). SSHRC's budget at $312.7 million represents approximately 19.5% of available federal research funds. SSHRC allocates funds to twenty-six disciplines and over various programs. For the SSHRC 2007-08 Budget, SSHRC disclosed its allocation as shown in Appendix Table 4.1. As expected research is the largest allocation at $128 million or 41% of the total. This research category is of interest as this includes the funding to faculty members who might in turn create the RA opportunities.

Appendix Table 4.1 SSHRC 2007-08 Budget Allocation (millions)		
SSHRC Grants/scholarships	Amount (millions)	Percentage
Research	$128.0	41%
Canada Graduate Scholarships	65.9	21%
Canada Research Chairs	59.2	19%
Other fellowships & awards	34.3	11%
Networks of Centres of Excellence	11.8	4%
Dissemination	13.4	4%
Totals	$312.7	100%

The research category is further subdivided into a few types of research categories, with the major one being Standard Research Grants. In the 2007-08 fiscal year for SSHRC, it allocated $65,576,801 in awards as shown in Appendix Table 4.2 which indicates the provinces and the BC institution break-down. Since Ontario and Quebec have more universities than the other provinces, they garner the majority of the

research dollars. Simon Fraser was awarded $2,998,982 or 28% of the BC allocation or 4.6% of the national total.

Appendix Table 4.2 Allocation of Standard Research Grants for the 2007-08 fiscal period		
Area	Amount	%
Atlantic	$2,613,960	4.0
Quebec	19,189,125	29.3
Ontario	25,408,193	38.7
Prairies	7,673,836	11.7
British Columbia	10,691,687	16.3
Total	$65,576,801	100.0
British Columbia		% of BC
University of BC	5,743,803	53.7
Simon Fraser	2,998,982	28.0
University of Victoria	1,765,163	16.5
Other BC institutions	183,739	1.7
Total	10,691,687	100.

The relative size and type of institution must be taken into account in evaluating or comparing research grants. Macleans uses grant information from the SSHRC web site. The 17th Annual University Ranking (2007) noted in the comprehensive university category that SFU had $12,868 per full-time faculty and 24.36 grants per 100 full-time faculty members. In comparison, University of Victoria had $6,034 per full-time faculty and 16.78 grants per 100 full-time faculty members. UBC is in the primarily medical doctoral category. Macleans indicated UBC had SSHRC funding of $14,345 per full-time faculty and 37.74 grants per 100 full-time faculty members.

SSHRC indicates of the $65,576,801 in Standard Research Grants, $9,437,029 (14.4%) was allocated to the discipline of Education in Canada (SSHRC, July, 2008). Relative to other humanities & social sciences disciplines, Education might seem well funded as it is the highest discipline after Psychology at $7,022,004 (10.7%). Yet due to the twenty-six disciplines funded by SSHRC, the awards are spread thinly. Even new SSHRC funding is being targeted at disciplines other than Education. The Federal Budget documents indicate new SSHRC funding of $11 m. targeted to business and management (SSHRC, July, 2008). Scarce funds might create competition among faculty at SFU in Humanities and Social Sciences as well as within Education. As an indication of the national competition for funds, SSHRC documents indicate an overall

33.2% success rate for applicants to SSHRC. Education has a 29% success rate. Fortunately for SFU researchers in general over all disciplines under SSHRC, they enjoy a 52% success rate (SFU, July, 2008). SSHRC does not provide the success rate for Education by institution though. It seems possible that vying for funds may create stress for faculty and the success rate affects the funds available to hire RAs. Thus the level of research dollars and success rate are critical.