University Alignment of Graduate Student Instructor Development: A Maximal Variation Exploration

Justin Ible

A Thesis
in
The Department
of
Education

Presented in Partial Fulfillment of the Requirements
for the Degree of Masters of Arts (Educational Technology) at
Concordia University
Montreal, Quebec, Canada

August 2011

CONCORDIA UNIVERSITY

School of Graduate Studies

This is to certify that the thesis prepared

By: Justin Ible

Entitled: University Alignment of Graduate Student Instructor Development: A Maximal Variation Exploration

and submitted in partial fulfillment of the requirements for the degree of

Master of Arts (Educational Technology)

complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Signed by the final Examining Committee:

_____ Chair

Dr. Robert Bernard

_____ Examiner

Dr. Richard Schmid

_____ Examiner

Dr. Claude Martel

_____ Supervisor

Dr. VivekVenkatesh

Approved by

_____

Dr. Richard Schmid

Chair of Department

_____2011

_____

Dr. Brian Lewis

Dean of Arts and Science

ABSTRACT

University Alignment of Graduate Student Instructor Development:
A Maximal Variation Exploration

Justin Ible

Only 6.4% of post-secondary institutions in the US are classified as research institutes. At these institutes the average full-time faculty teaching responsibilities account for 40% of their time (NCES, 2010). This observation clearly states that teaching is a significant portion of post-secondary faculty regardless of institution. Further implying that the preparation of graduate students for this reality requires a shift of the primary focus of researcher development to include substantial development as instructors. The history of University development is discussed along with a proposed holistic framework in developing alignment across an institution in graduate student development. This exploratory study incorporated maximal variation sampling to provide a detailed description of graduate student instructor development at a comprehensive university. Focused on the qualitative analysis, this study collected interview data from 4 faculty members and 2 graduate student instructors along with a focus group of 3 teaching assistants of a graduate seminar in university teaching. The progression of how graduate students develop into post-secondary instructors in 5 different academic disciplines was mapped out along with the development of the teaching assistants. The study found that there were a variety of expected learning outcomes within the individual departments. Each department had developed a unique path to meet the needs of their students within their academic discipline. The institutions expected learning outcomes established by the seminar in university teaching exceed the stated outcomes of the individual academic departments but not necessarily those of the graduate students seeking an academic career in post-secondary institutions.

Table of Contents

List of Figures

List of Tables

Chapter One:

Introduction

General Statement of the Problem

When an institution becomes concerned with improving its national rankings as a comprehensive University, factors other than research need to be considered. One of these factors is developing a common understanding among the main stakeholders regarding instructional development and strategies for collaborating on best practices. There are several crucial elements that are involved in establishing quality learning: population trends within the university environment, faculty instructional development support programs and methods of evaluation in addition to the appraisal of faculty teaching success and of student learning. A growing area of interest into this issue is what extent can graduate students be involved.

There is an ongoing increase in the production of earned Doctorates. In Canada, this production has increased from 4,251 in 2004 to 5,010 in 2007 and 5,421 in 2008 (Statistics Canada, 2008). This is a pressing issue in light of the disparity between Doctorates and available full time faculty positions. The Association of Universities and Colleges of Canada (AUCC, 2007) found that there were 5,000 new faculty positions created between 1999 and 2007, approximately 625 per year. In contrast the total hiring of faculty reached 20,000 between 1998 to 2004, approximately 3,333 per year. Of the 20,000 new faculty hired, 13,000 or 65%, earned their highest degree from a Canadian institution (AUCC, 2007). These

positions ranged from contractual and limited term appointments to tenure-track and tenure. These figures illustrate that an average of 2,166 faculty positions offered each year are filled by candidates who earned their degrees in Canada. In 2007, that number was 43% of the graduates who earned doctorates, leaving the remaining 2,845 graduates to look for employment in other employment sectors. This perceived oversupply of doctoral graduates was reported forty years ago by Gardner (1972) and present in over 25 disciplines of study.

One factor that affects universities in North America is the domination of the capitalist model. This model benefits universities by providing reduced labour through the intake and production of graduate students to meet benchmarks. These benchmarks include research, publishing and balancing administrative budgets. University departments therefore require an annual intake of candidates to fulfill these mandates, and contractual obligations. This notion, identified in the 1970's, points to how graduate students' involvement in research projects sustain and increase institutional prestige, while their overproduction "is the price one has to pay for scientific progress" (Hartnett & Katz, 1977, p 650).

The movement towards higher tuition at Canadian universities allows for paying students and other monetary stakeholders, such as parents, to expect the quality of education and learning to have an appropriate return on investment. The quality of education is then legitimately questioned when the average change in the student-faculty ratio has increased from 12:1 in the 1970's to 19:1 in 2007, (AUCC, 2007). Coupled with tenure-track commitments to research and

publication expectations, faculty lack time to invest in quality teaching and have little incentive to do so. Boyer (1990) found that to receive tenure, faculty expectations to publish at a comprehensive university had increased from 6% in 1969 to 43% in 1989. Boyer (1990) also reported that meeting stakeholder expectations of active learning and higher order thinking skills, requires more substantial faculty time commitments. If teaching and learning is to be taken seriously, the increase in student-faculty ratio needs to be supported by more recognition in teaching commitments.

Evidently, it would be to the advantage of university students if their professors were not only skilled researchers but also competent instructors. This is specifically pertinent in this day and age, when large numbers of pupils graduate from high schools without developing skills towards becoming self-organised learners. This includes students who spend significant energy on earning an income during their studies, thereby lacking the convenience of functioning as ideal students.

The problems that graduate students face are similar though the context is different. The higher levels of student-faculty ratios may be effective towards reaching faculty goals, nevertheless, the AUCC (2007) argues that faculty are not currently capable of handling a ratio higher than 4:1 at the graduate level. The use of graduate students as a source of inexpensive labour can therefore reduce the student-faculty ratio at the undergraduate level. This provides more time for faculty to work with current graduate students and effectively reduces the strain of

teaching commitments on faculty. Properly accomplished, this will improve the quality of teaching and learning in the undergraduate population and the national rankings of the institution. An additional outcome is that the training and experience provided to the graduate students in competent, quality teaching is a competitive advantage for the few tenure track positions available. Considering that only 6.4% of post-secondary institutions are classified as research institutions (Carnegie Foundation, 2010), limiting training of graduate students to becoming competent researchers provides them with insufficient skills for the majority of positions available.

Although faculty teaching development is now considered to be improving, it remains problematic. Graduate students, on the other hand develop their research skills as apprentices under mentors/advisors in preparing for their theses and dissertations. This strategy of development could also be applied to their development as graduate student instructors (GSI). Current faculty however, may not be the best mentors in forming graduate students as instructors as they themselves have not necessarily been trained to teach at the university level.

Creating this competitive graduate student involves developing a well-rounded candidate: one who is both a competent researcher and writer as is typically required for tenure track positions but also to include the attribute of being an effective tertiary classroom instructor. The principle outcome of this direction is producing a PhD candidate who has a competitive edge over their primarily research- oriented peers when applying for tenure track positions. The

maximum payoff is a tenure track position. The minimum payoff is a qualified candidate who takes on the lower paid teaching positions that universities contract out. The outcomes of this win-win situation benefit the institution, department, candidate, and students. The minimum pay-off may also create a stronger value for instructors, as lecturers, if they are capable of developing research aimed at teaching and learning within their subject matter.

It is a fact that University research has been the prominent factor in hiring for tenure track positions over the last half-century in North America (Boyer, 1990). This is changing however, as the shift towards teaching stems from current competition for fee-paying students, government and private funding and grants (Legget & Bunker, 2006). There is potential that this could also spill over to encourage alumni as donors. It seems logical that an Alumnus who felt that as a student they developed as individuals and learned significant amounts of knowledge and new skills guided by quality instruction would be far more likely to donate than one who felt that they independently earned their degree within the institution and without the assistance of faculty. This shift affects teaching in that instructors are beginning to be required to support their classroom practices with evidence from the existing field of andragogical research to ensure appropriate student learning is taking place (Kreber, 2001).This also adds to the growing interest in the Scholarship of Teaching and Learning (SoTL) that was introduced through Boyer's seminal work in 1990 *Scholarship Reconsidered: Priorities of the Professoriate*.

The Tentative Solution (Purpose): Teaching and Learning Departments

Faculty development has been improving over the last thirty years and has manifested in a variety of different venues including department based training, workshops, teaching and learning conferences and seminars. Teaching and Learning Departments, staff development centres, took root and expanded services in universities in the 1970's with a focus on providing instructional development for faculty (Centra, 1978). Boyer (1990), introduced a shift in focus from concern about developing faculty to developing graduate students for the functioning roles of a university professor. Administrators also found that it was easier to work with new faculty and mold them towards new responsibilities than retrain older faculty members (Brawer, 1990). Brawer (1990) also adds that less than 10% of faculty wanted to attend workshops for faculty development at their own institution. This logically justifies that a focus on molding graduate students within the institution would be even easier than new faculty. This leads to the purpose of this study: to explore how graduate student instructors develop alongside participation in a seminar offered by a university teaching and learning department.

Research Questions

1. Will qualitative mapping provide insight into how the alignment of the needs and objectives of the various bodies are balanced and identify areas causing disturbance in the development of Graduate Student Instructors?

2. Is there an alignment between what the Teaching and Learning Department produces through their teaching seminars and the instructional needs of the institution and the apprenticeship of graduate students developing as potential instructors?

The Nature and Significance of this Study

The literature on instructional development at the level of higher education is still relatively incipient and primarily investigates faculty development, regarding new hires and current faculty. Only a few studies explore the role of graduate students developing towards a potential Scholarship of Teaching and Learning. The literature can be traced back through Levinson-Rose and Menges (1981) who reviewed 71 studies that took place from the mid 1960's to 1980. These scholars found the studies to be lacking in quality, which restricted the ability to draw comparisons across studies. Stes, Min-Leliveld, Gijbels and Van Petegem (2010) performed a systematic review on instructional design in higher education that included 36 studies. Their review found a higher quality of research now existed in the field and that there was more variety in research methods. Stes *et al* (2010) established a framework derived from Kirkpatrick's four levels of evaluation in order to start making comparisons across studies.

Most of these studies covered by the aforementioned scholars have focused primarily on faculty and not graduate students. Stes *et al* (2010), identified 4 that included teaching assistants (Addison & Van DeWeghe, 1999; Brauchie & Jerich, 1998; McDonough, 2006; Stepp-Greany, 2004) and another that researched how

graduate students conceptions of teaching changed while participating in a formal course on instructional development (Sarayon, Dagenais & Zhou, 2009). The study by McDonough (2006) explored graduate students as teaching assistants and included elements relating to institutional impact. How the action research projects for teaching and professional development had been or were affected by the institution was nevertheless primary concern of that research however.

Before measures can be studied on changes within students in post-secondary learning environments a formative evaluation and analysis needs to take place. This analysis needs to focus on the implementation of any teaching and learning development programs for graduate student instructors. The outcomes from training and development need to be identified to understand if the programs are meeting their expected objectives. Once this alignment is identified and understood the implications on students can be explored. To explore the impact on students prematurely could lead to an improper understanding of how graduate students are developing towards post-secondary instructors.

This creates the principle aim of this study, which is to explore how a graduate seminar on university teaching is supported by the current practices across a wide spectrum of departments at a university. The framework focuses on the first component of an exploratory design, that being the qualitative data collection and analysis. This level of analysis will develop a clearer understanding of the situation and environment. The results of the study will be valuable as

material to guide quantitative exploration of the identified themes and relationships more extensively.

The results will also be useful by increasing awareness of the seminar and by identifying challenges and potential solutions that exist in different areas of the university. Allowing these to be shared across departments will create a better understanding of how to further incorporate the seminar into the university as a whole for the benefit of all stakeholders; graduate and undergraduate students, professors, and the institution. Furthermore, the potential impact on student learning can be improved across the university by developing trained graduate student instructors and introducing potential venues for research on teaching and learning within different fields of study. This can then compliment an institution's goals to improve national rankings as a comprehensive university.

An overall look at the issue demonstrates that larger institutions have a stronger ability to maintain faculty development centres and offer programs such as a graduate seminar on university teaching. Nevertheless, start-up funding is often temporary and securing funds to maintain programs and staff requires alternative sources. Developing potential venues of research in the discipline of teaching and learning that qualify for grants and other external funding can act as a supplementary source of funding. These programs are essential in providing support for faculty and graduate student instructors to engage students that come from a very diverse demographic that often includes more at risk students than leading and internationally prestigious institution will accept into their institution.

As a university rises in national standings, the ability to select higher caliber students will alter the diversity of the student demographic. This result reduces the need to maintain the programs as essential to the institution at the same level is ironic. However, funding is often linked to student retention rates at an institution and to graduate these students within a certain time frame. This is a key element that a teaching and learning department can address by establishing learning environments that promote student learning and development leading to stronger graduation rates. The findings from this study will contribute new literature in the field, provide reference data for departments and faculty and aid teaching and learning support centres to develop best practices dealing with graduate student instructors for effective teaching and learning.

Operationalization of Terms

Learning Environment: Over the last 300 years in North America this term usually refers to the classroom although there has been an inclusion of the laboratory as an extension of the classroom along with tutorial sessions. Today, the physical boundaries are located around the access points to the dissemination of the content. Distance education, mobile learning, and Web 2.0 are only the beginning components of what now classifies as an instructional course from which you can earn credit within a university environment

Operationalizing(ed) Technology: The incorporation of scientific knowledge that superintends (activities and organization of) instruments of learning. In particular to this essay: within a learning environment.

Qualitative mapping: The use of themes identified within the data that produce a path or time line of development that involve the progression of skills and knowledge attainment. For the purpose of this study, the skills and knowledge is that for teaching at a post-secondary level and the themes are those of experience, goals, outcomes and others that may arise out of the data.

Seminar on University Teaching: For the purpose of this study the seminar refers to a structured course that consists of a minimum of 25 hours in an instructional setting. The content presented deals with teaching philosophies, best practices, syllabi and lesson plan formation construction, assessment processes and understanding student diversity. It is unlike that of a program as the involvement of teaching mentors, staff from the Teaching and Learning Departments and Faculty departments does not conform to standardized policy or operation across the university when dealing with graduate students before and after the seminar.

Teaching and Learning support Departments (TLD): For the purpose of this study, instructional development is the principle criteria regarding the classification of such a unit that exists within an institution's organization. The staff, budget, and space are assigned based on the institutional goals and needs of the unit to offer activities and resources that are designed to promote and develop excellence in tertiary instruction. Other activities regarding faculty development may exist within the unit. To include the word centre as most of these departments are often called would create confusion with the structure of the theoretical aspects of the current study.

Technology (educational): This term is not limited to the use of electronic devices. Technology tends to be equated with the most recent advances and not with devices that are still technologies though older. This study uses this term to illustrate the applied use of knowledge in teaching and learning involving a medium that provides additional opportunities to facilitate understanding and development for learners.

Delimitations

This study included faculty and graduate students from 5 broad academic disciplines, Engineering, Fine Arts, Humanities, Science and Social Science within a cosmopolitan university. The sample was taken using a maximal variation strategy. The focus was on faculty who had a role in graduate student development towards university teaching and graduate students who had participated in a 25 hour seminar on university teaching as either a teaching assistant for the seminar or who had taught an undergraduate class.

Limitations

The potential limitations to this study include that not every academic discipline participated equally and there was an absence from the academic discipline of Business. The ability to generalize findings to other departments within the same academic discipline of the university or to other institutions with similar or different demographics may not be appropriate. Due to the sampling strategy, it is possible that people interviewed may not have the most holistic view or knowledge of the phenomena being studied. It is from this that it may not even

be possible to generalize about experiences within the department itself and that the maps produced regarding graduate student development represent a single understanding. The maps should not be taken to definitively represent how graduate students develop in similar fields of study regardless of institution. It should also be noted that no undergraduate students were involved in this study. This limits the understanding of the exploration into alignment and to what degree the findings can have meaning within the context of the environment in which the study took place.

Chapter Two:

Literature Review

The Helicodial Shift

Thomas Kuhn (1996) explored the idea of new paradigms and how societies move from an older perspective to a newer perspective that fits with existing observations. This process can be unique within different domains of society. In the field of educational technology, shifts in a paradigm alter "how practitioners in the field think, see, feel, and act with reference to the instructional problems they encounter" Saettler (1990). This idea of paradigm evolution and its effects on practitioners of educational technology can be explained through constructivist theories and illustrated through that of a drill bit. The principle notion or original theory of the paradigm accepted can be compared to the initial cutting point on the drill bit. As the scientist, explorer or instructional designer digs into the subject matter excavating new observations that were not previously understood or observed, the principle notion shifts from the original position to a newer one. The deeper the drill cuts the greater possibility that the accepted point of the paradigm reaches the initial cutting point. Know, only deeper embedded in knowledge. In contrast, a shallow cut, results in a superficial knowledge matter even though it deviates from the original theory, it does not produce a significant change in the paradigm. It is with deeper knowledge that the paradigm has been modified and though it may reach the same position of the initial point, the travel and excavation

has brought the person to a different understanding. This new understanding has the ability to completely alter the original views.

It is also to be understood that the point can only rest at one point at any time. This being that a scientist cannot look at the original perspective once the exploration has began because they are not longer in that context of understanding. Different perspectives may develop as the point of drill excavates and propels the direction of the study, it needs to be stated that the perspective can only look within the established parameters and within the material to be studied. In this example, the diameter of the drill bit and the type of material being drilled into act as the parameters and subject matter. The resting spot, the point in which the excavation of data ceases, does not guarantee the reflection on past knowledge and perspectives that have been explored; rather it is dominated by the position at which the focus stops building new knowledge and observations. To state this another way, the point of rest is predetermined by the scope of the investigation and the interpretation of results is therefore influenced by actions that have already been made and not the data in itself, due to the stated limitations.

As constructivist theories apply either to individual or social settings, so do shifts in paradigms. It is not necessary for each individual to become the same scientist in order to use the drill and explore the same subject matter. This is because the dissemination of knowledge will spread the changes of the paradigm to other people. This is not to say however, that the altered paradigm will not be rejected by the original scientist or by those whom the knowledge is disseminated.

This can be further explored through the paradigm shifts in the roles of post-secondary institutions in North America.

History of Higher Education in the United States of America

The history of higher education in North America, and more specifically the United States, is categorized into five eras by Cohen, (1998) or into ten eras by Geiger (1998). These periods of history are important to review in order to reform higher education (Cohen, 1998) and to acknowledge the current state of teaching and learning at this level. The three periods that are important to the current research involve clear fundamental shifts that resulted from changes in institutional responsibilities, instructional aims, and their manifestation in student development.

The first era covers a broad period of development between 1636 until the late 1700's. The second period occurs around the transformations in the mid 1800's and includes events leading into and out of that period. The third period looks at events post World War II. The three historical periods under review will be referenced using Cohen's (1998) labels: Establishing the Collegiate (EC), Emergent Nation (EN), and Mass Higher Education (MHE).

Establishing the Collegiate

The first period includes the Reformation, Colonial Colleges and Republican Education era's covering 1636-1780 (Geiger, 1998) and is defined by Cohen (1998) as "Establishing the Collegiate (EC), 1636-1789. During this period, there were 19 colleges established (Tewksbury, 1965) and by the eve of the American Revolution,

1775-1783 approximately 750 students were enrolled (Geiger, 1998). Most of these institutions, modeled after Oxford and Cambridge, remained as colleges due to a generally poor and largely dispersed population that would have found it difficult to afford a royal charter to become a university (Brubachem & Rudy, 1976). College students at this time were around the age of 15 (Geiger, 1992) and often required a private tutor or extended stay with a minister for the instruction of languages and scriptures prior to admission (Brubachem & Rudy, 1976).

The recent separation of Protestant and Anglican strains of Christianity from a largely Catholic Europe supported the need for a literate and trained clergy in the new colonies (Cohen, 1998, Brubachem & Rudy, 1976). In their beginning years, colleges were strongly desired to be controlled by a single sectarian view of the particular denomination that founded the institution (Hofstader &Smith, 1961). This view started to disappear as the nation moved into the American Revolution; Denominational colleges began to tolerate sectarian diversity out of a need to accommodate societal differences. This change did not always occur easily. Yale persisted against this growing change, defending its stance against a growing Anglican population and the Connecticut General Assembly until it was forced to change under intense student pressure (Geiger 1998). The end of the American Revolution solidified new views of higher education and that these institutions were deemed to be cultural centres that were to build homogenous citizens (Hofstader &Smith, 1961). The shift from focusing on building the church to balancing both colonial and church needs shifted even further under Thomas

Jefferson. Jefferson pushed for states to become the primary sponsors of higher education, reducing the role of the sponsoring denominational churches (Geiger 1998; Hofstader &Smith, 1961).

The educational aims of these colleges were to develop character and piety in students (Aleman, 1998). During this period, the understanding of education entailed that "piety could not be separated from the intellect" and that the Christian tradition was pivotal in developing an intellectual culture (Brubachem & Rudy, 1976, p.7). Approximately 2/3's of Harvard graduates entered the ministry, Yale aimed to educate for public employment of the Church and State and William and Mary's aimed to create a pious youth "educated in good Letters and Manners" (Geiger, 1992, p. 8). As the period drew to an end, the religious focus also shifted towards more secular pursuits. This became evident in 1745 when less than half of the graduates from Princeton, Kings College and Harvard were entering the ministry (Geiger, 1998).

Most forms of instruction, at this time, had been around since the medieval universities and classical times (Brubachem & Rudy, 1976). The most common forms of instruction at the start were recitation that sometimes included Socratic dialogue, the lecture, disputations and forensics (Brubachem & Rudy, 1976; Cohen, 1998). Recitation for the most part was used to make up for the lack of textbooks that existed at the time. The lecture then being a compliment to the recitations eventually became more important than recitations (Brubachem & Rudy, 1976). Disputations were seen as weekly sparring matches by the students and described

by Cohen (1998) as an instructional device that "clashed with the notion of experimentation and free inquiry" (p. 37). Disputations did change in the thesis of debate, from religious topics to more social related issues that included science, law and ethics but were still confined to the religious understandings maintained in the society (Cohen, 1998), which with time was replaced by forensic disputations (Brubachem & Rudy, 1976).

Exams were orally performed and public events leading into the 19th century at which time they shifted to being writing-based (Brubachem & Rudy, 1976). The public exhibition that was once used as an advertisement for the success and reputation of the college became more equitable by asking all students to answer the same questions. This could not be done in a public oral environment. Another item that was lost with the transition to written exams was the measuring of teaching. The oral exams were also about successful teaching and acted as an important function by the college and tutors to advertise the advancement of knowledge within their students to entice more students to attend their institution.

The Influence of Germany

The second period of interest is during "the Emergent Nation," (EN) 1790-1869, (Cohen, 1998), and more specifically through Geiger's (1998) breakdown of the periods into Classical, Denominational Colleges, 1820-1850, and New Departures, 1850-1890. The transitions that occurred around 1850 have some very distinct characteristics; female institutions started to develop, graduate students

were becoming part of the American institution, African Americans were being provided with an education (Geiger, 1998) and there was an expansion from 11 institutions to 240 by 1869 (Cohen, 1998). This number is different than that offered by Tewksbury (1965) and may be due to the stagnation period in which institutions struggled to survive as new ones developed and others dissolved during an era of "Retrogression," 1800-1830 (Geiger, 1992). Significant shifts of this period were influenced by the Civil War (1861-1865) and the prestige that German Universities were developing since the founding of the University of Berlin in 1810, (Brubachem & Rudy, 1976).

The Civil War changed the direction of the country and produced a movement to create a more secular population incorporating industrialization and specializations (Brubachem & Ruby, 1976). This had a profound effect on these institutions when coupled with the developments in higher education taking place overseas.

The German reputation at the university level attracted more than 10 000 American students over to Europe to study during this period. These students returned and brought back with them technical roles and rules of scholarship and instructional techniques (Brubachem & Ruby, 1976). However, Brubachem and Rudy (1976) found little evidence to suggest that these returning students returned with the driving force behind Germany's success, the Wissenchaft philosophy.

The founding of John Hopkins University, whose focus as an institution lay in graduate studies and research, was influenced by the German trends of the time. Nevertheless, it may not have been the first institution in the U.S offering graduate education styled by the Germans in 1876. The University of Michigan was moving in this direction between 1853-63 (Geiger, 1998). John Hopkins, however, had a much greater impact on the American nation. By providing well paying fellowships, it attracted some of the best students of that era, John Dewey being one of them, who then went on to shape the "new professor" at other institutions, most notably Columbia, Harvard, Wisconsin and later on Chicago (Brubachem & Rudy, 1976).

This "new professor" and their institutions directed their energies towards establishing laboratories, research libraries, organizing seminar groups, learned societies and writing research papers (Brubachem & Rudy, 1976). The curriculum that was beginning to become more specialized in the 18th century (Geiger, 1992), subdivided further and departments began to fill with like-minded individuals (Brubachem & Rudy, 1976). These instructors also brought with them new instructional approaches: the seminar, experimental laboratory and the scholarly lecture (Brubachem & Rudy, 1976). The seminar method that was imported from Germany and pioneered at John Hopkins spread to other institutions were reported to have varied in quality, significance and results.

The scholarly lecture differed from the lectures during the EC, as textbooks were no longer read to the class. These lectures supplemented texts and aimed to provide a level of understanding, transmit values and stimulate interest in the

material (Cohen, 1998). The sciences are where the lecture became popular more quickly as it was used to portray a scientific idea or recent finding and then demonstrated through an experiment (Cohen, 1998). These combined changes were supported by the vast growth in libraries and the development of librarianship as a profession (Brubachem & Rudy, 1965; Cohen 1998).

The changes in teaching and the focus of these institutions towards secular values and developing parallel curriculums of the classic program and the push for new courses did not mean a continued focus on teaching and learning. Even the establishment of the college professorship as a career and that colleges were no longer relying on their services out of loyalty to their institutions did not act as foundation for focusing on teaching and learning (Brubachem & Rudy, 1965; Cohen 1998). It is William Rainey Harper, President of the University of Chicago in 1891, who is marked with vocalizing a fundament shift in the professors' responsibilities. He remarked that faculty promotions would be based on their scholarly research and not their teaching (Brubachem & Rudy, 1976). Though his policies were not as strict as his words, the vocalization was a clear recognition of the trend that was beginning. These Presidents had the ability to hold a firm leadership during this period as they held their office for long durations, often exceeding 40 years (Brubachem & Rudy, 1976; Cohen, 1998).

Post WWII

The third era of interest begins post World War II until the 1970's. The after effects of the War changed the dynamics of higher education. International roles also changed, the past leadership offered by Germany was decimated due to a forced post war division of the country and the USA emerged as a world super power. Cohen (1998) refers to this time of university development as the "Mass Higher Education" (MHE) and Geiger (1998) refers to the changes as an Academic Revolution. The return of soldiers from duty was accompanied with the Service Readjustment Act of 1944 that added an additional 1.1 million students to the previous year's 1.5 million (Geiger, 1998). The increased enrolment was only the beginning of greater numbers to start heading to post-secondary education. By 1970 over 8 million students were enrolled (Digest of Education Statistics, 2004). Federal sponsorship of research added financial support from the Defense Establishment in the physical sciences and from the National Science Federation and NASA in the race to space (Geiger, 1998).

Through the expansion of finances, enrollment and new institutions, creating prestige formed in new ways. The University press became an integral part of an institution's reputation, which expanded from 35 in 1948 to more than 80 in 1968 (Brubachem & Rudy, 1976). Flagship institutions that inflated with the influx of new students and funding now became more selective with admission requirements. Faculty, now better paid and with a new labour organization, started to take on more administrative responsibilities such as selecting students although

institutions set the minimal standards (Geiger, 1998; Cohen, 1998). Consequently, institutions grew in stature and became an economic power that consumed monetary resources well into the billions each year (Cohen, 1998).

Educational aims entered another round of conflict during this time. What constituted as knowledge worth being taught became even more competitive. The values of scientific idealism grew in strength through the new funding. While on the other hand, the Humanities, perceived to be central in forming judgments, critical skills, humanism, religion, emotion and intuition, was reclaiming ground in stature through its construct criticism capabilities (Cohen, 1998). Furthermore, Academics were concerned with a new theory by A. N. Whitehead that learning required knowledge to be applied. The concern was that this practical component had a stronger link to vocation and not the university environment (Brubachem & Rudy, 1976). However, this concern did little to curb the introduction of new educational practices including those that had vocational qualities: work study, study abroad, collaborative and service learning, and Honours programs to name a few (Cohen, 1998).

Better wages, more funding, new practices and faculty control of instruction and curricula did not lead to improved teaching and learning during the era. Teaching became the Achilles heel of American undergraduate education in the 1970's (Brubachem & Rudy, 1976). Students protested that the curriculum selection that had expanded to be relevant, top institutions were now offering over 2400 undergraduate courses each year, had poor content selection and poor teaching

(Cohen, 1998; Brubachem & Rudy, 1976). Protest against the examinations also existed. Institutions argued that they were used to measure the objectives from the education provided. Students argued that the exams were merely forms of certification that allowed people to move on to further education or to a new position of social status and economic scale (Brubachem & Rudy, 1976).

As higher education developed in North America and in particular the USA there have been a few shifts within the paradigm. Education moved away from focusing on the ministries and developing gentlemen to professional and practical education due to the German universities that started to offer more than religious training to their students. The collection of professional oriented departments, faculties and schools such as law, medicine, business, forestry, social work, education and others grew within the institutions even more so after WWII. The other major shift was the role of professors and tutors from that of teaching content to producing content through research as the moved from being supported by the churches to being supported by the state and becoming respectable careers.

Overview of the Domains: Establishing a Framework

Developing a framework that addresses the issues within post-secondary institutions and learning has been challenging. Although, the existing literature touches upon several centres of the proposed framework, more notably the teacher-centred and learner-centred it does not identify all of them. There also lacks a comprehensive view of how these centres interact with each other and affect the learning environment. To establish this holistic view, an additional layer

needs to be added to the current literature, which addresses the domains of influence in which these centres exist. Actors in higher education perform and pursue their obligations and mandates within these domains. Yet, these domains are influenced by the centres residing within them in areas that create domain direction.

There are six domains that the proposed framework establishes. The first three involve actors and contain two contrasting centres. These are Academy, Professor, and Pupil. The following three domains involve specific knowledge and skill. The extent of the definition regarding their centres has yet to be identified and will not be addressed in this study. These domains are in Content, Pedagogy and Technology. At this time it is more likely that the former three influence and construct the domains of the latter three.

These six domains mentioned affect and are affected by a community-centre in which the learning environment occurs. This is illustrated in Figure 1 and 2. At this point it should be mentioned that there is a likelihood of the existence of a societal domain, characterized by being a larger image of the community center. An exploration of this possibility lies outside of the scope of this study. Nevertheless, the ways in which these domains and corresponding centres affect the learning environment are discussed.

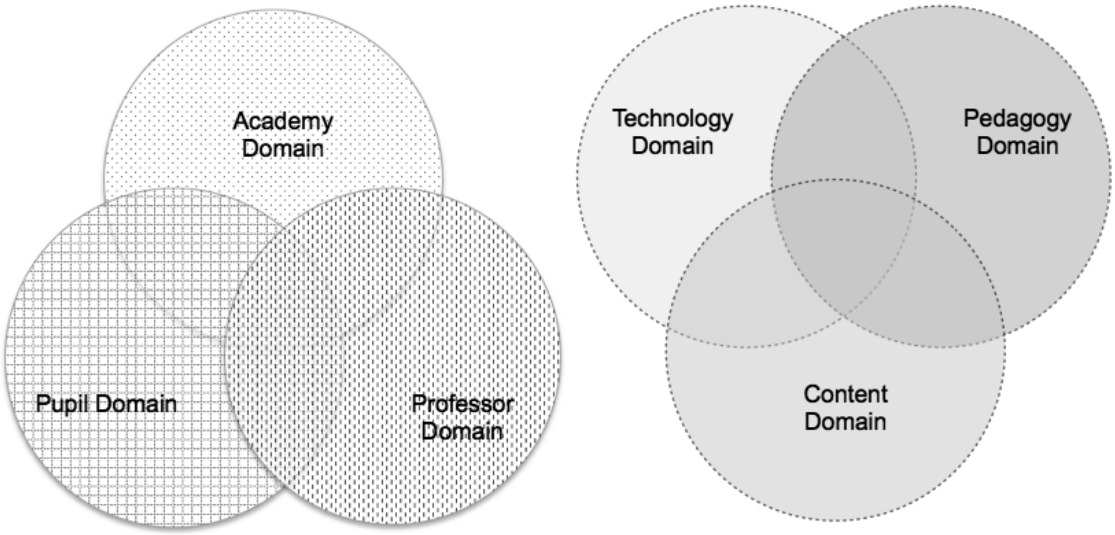

Figure 1: The Domains in two groups, those with two centres on the right and those that focus on knowledge and skills on the left.

The Academy Domain

The Academy domain has two centres. The first is an institution-centre, a term that is developed for this framework and supported by the literature. The second is the school-centre, which has already been established in the literature. The institution-centre explores how universities focus on responsibilities that are not directly related to a learning environment within the industry. This includes areas such as facilities and their management, supporting research initiatives, athletics and alumni to list a few. The idea of a school-centred concept arrives out of work done by Xu (2003), Darling-Hammod and McLaughin, (1995), Little (1993), Sparks (1995) and Timperely (2006). This centre is a pivotal component in promoting

professional development to encourage reform in teaching practices (Darling-Hammod & McLaughin, 1995; Little 1993; Sparks, 1995; and Xu, 2003).

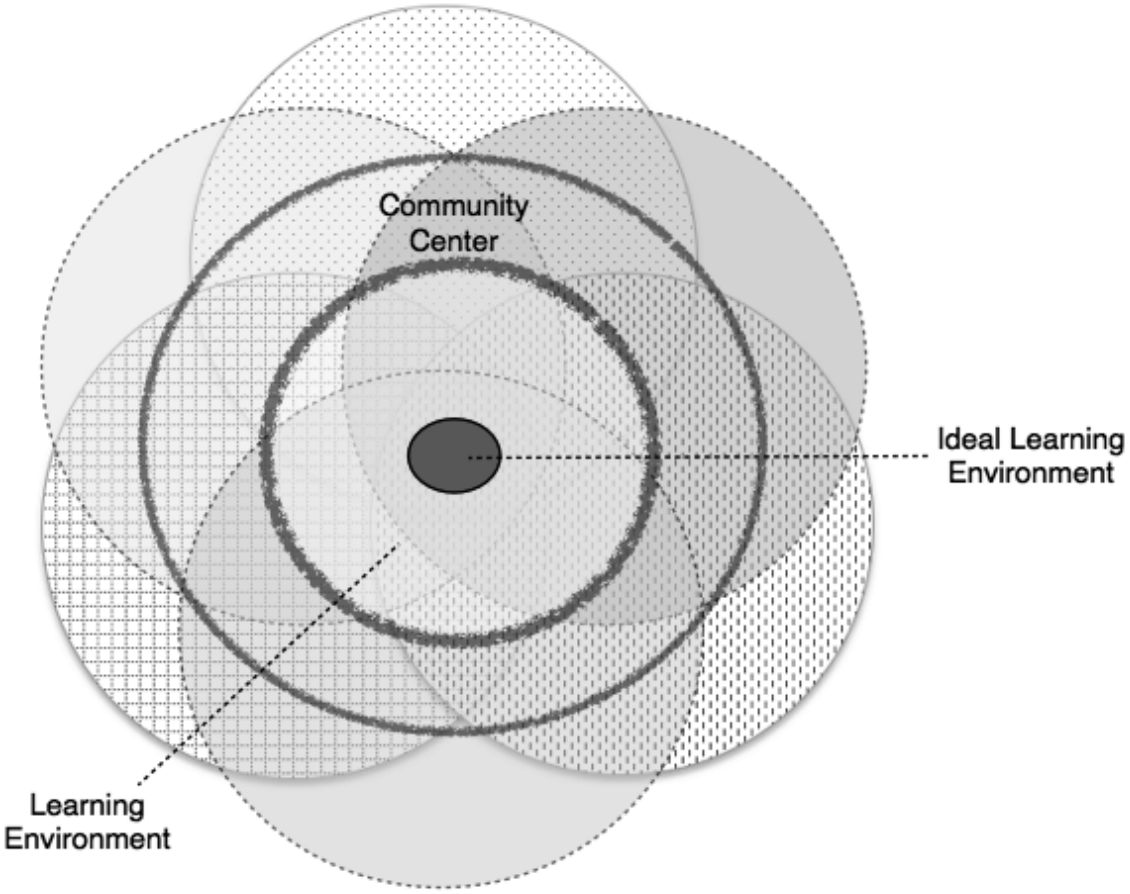

Figure 2: The Domains as one group that interact with each and influence the construction of a learning environment.

The focus of the school centre is on how subject matter is taught, the opportunities provided for a diverse student population to learn and the implementation of authentic student assessment as stated by Little (1993) to

articulate "a vision of what it means to learn, and what it means to be educated" (p. 129). This centre is argued to be more effective when a learning-centre leadership is in place to guide and facilitate proposed reforms (Timperely, 2006). In the case of university leadership, this would include positions such as graduate and undergraduate program advisors, department chairs, deans, and administrative positions that are responsible for teaching and learning departments.

Reforms and growth within a university are not focused solely on reforming teaching. In fact, it has often been a distant second consideration to other areas in the last 60 years. These institutional reforms in other areas that have taken place in the past have had several triggers. During the colonial period, the movement away from teaching and learning was due to the influence by German institutional practices that had entered the United States after the civil war (Brubachem& Rudy, 1976). This era of growth in both centres was perhaps a stage of equilibrium as the Germans earned world recognition for joining research and teaching together.

Geiger, (1998) and Cohen (1998) discuss how the era of post WWII until 1975 was a "golden age" of support and enrollment for the university institution. The extensive increase in student population from the Service Readjustment Act of 1944 created changes in the post-secondary environment. Institutions expanded in numbers through the development of new institutions and programs offerings, which in turn ensured that treasury funds grew. These elements contributed to a more thoroughly defined institution-center. Growth in these areas did not have to diminish the quality of a learning environment. Nevertheless, there was a decrease

in quality that came out of the over crowdedness: entry requirements were lowered, courses where shortened and year round operations began to be the norm (Geiger, 1998). This came with the Carnegie Foundation deploring the loss of a common experience shared by students across institutions and within at the post secondary level (as cited by Cohen, 1998).

This period also led to an increased number of PhD students who then entered the classroom with knowledge that was current and specific due to the funding made available through the Defense establishment, the National Science Federation and NASA (Boyer, 1990; Geiger, 1998). These PhD's, who were hired to teach, were evaluated on their research production and it was the research climate that they wanted to replicate in their new positions (Boyer, 1990). This period also gave instructors a free reign of the instructional practices they could implement in the classroom (Cohen, 1998). This period did not include the support or development from teaching and learning departments. These departments materialized out of a response to student criticism and the lauding of community colleges as teaching institutions placing universities in a disadvantage by the public (Brawer, 1990). In addition, these departments only started to expand in the 1970's (Centra, 1978), just as the golden age of post-secondary institutions came to an end. The ensuing Contemporary era was to be more about maintaining the system (Cohen, 1998).

This slowly created a movement towards greater academic improvement in university rather than a focus on the institutional development hence, a shift

towards a school-centre within the academy domain. The concept that the two poles are institution focused which looks at expanding treasuries and on research where the academic focus is a shift towards a Scholarship of Teaching and Learning**.**

The Professor Domain

From a hierarchal perspective, the next domain to delve into is that of the Professor. The common term used for one of its centres within the literature is that of a teacher-centre, often associated with a focus on transmitting knowledge through traditional methods of teaching (Virtanen, & Lindblom-Ylanne, 2009). This traditional method is considered to focus on content and the reliance of lecturing as the mode to disseminate the content (Lammers & Murphy, 2002) while students are seen as passive recipients in the learning process (Kember & Kwan, 2000).

The term "teacher-centred" is nonetheless not particularly accurate to the context of developing contrasting centres within a domain. For the first part, it is a misnomer as teacher-center presents an impression that one is focused on proper teaching. Instead, it is perhaps a form of teaching that arises out of a researcher-centre within a professor's contracted mandate. A research-centred professor would be more concerned with publication, dissemination, and research grants than the actual learning taking place in the classroom. This type of centre would support the principles established in an institution-centre. If there is a focus on learning, it is towards the academic discipline and the field of research in which the professor is

currently involved, not including the professional or external use of the subject matter outside of the institution.

Only a fraction of university undergraduates ever study beyond a Bachelors degree. This creates a problem when a professor does not involve the subject matter into a professional or context external to that of the institution. In contrast, an instructor-centre would then be focusing on student learning and development regarding the curriculum and expectations of the discipline of study including both the professional and academic contexts in which the knowledge and skills can be applied and transferred to new situations.

To create a new term where one exists already does not add to the literature but rather muddles it. Consequently, the use of a researcher-centre within the professor domain will not be used. The teacher-centre therefore needs to be expanded from the description previously provided in the literature to include elements of a limited focus on the subject matter within the academic discipline and an emphasis on the person's research responsibilities. Where minimal effort can be made in regards to the learning environment and not deviate time away from efforts baring more prestige for the individual professor and the institution.

During the colonial era there was a focus on teaching and learning and we see examples of highly respected teachers and acting Presidents being renowned for their instructing abilities. What the specific focus was on learning is difficult to determine and evidence supports that perhaps the practices employed were not the most effective in producing learning at higher cognition levels considering the

today's knowledge regarding learning theories. Relative to the understandings of the day, the importance of holding public exams can be understood, however they were also criticized for catering to the students presented. As some poor students would do better on the oral exam then more capable students as they were given easier questions. The reasons for this is that it was not feasible to ask each student the same question in a public environment nor would the audience want to hear the same question repeated over and over again. The tutors would also want to prove that they could teach and that the students were learning something, if a student failed the final exam this would look bad on the tutor as well as the student (Cohen 1998).

Other criticisms of the learning environments emerged again by the students who felt that they were only being tested on memory and recitation. This can be argued against in some cases by using taxonomies structured by Biggs (2001) and Bloom (Krathwohl, 2002) with some of the learning exercises.

Renowned instructors emerged in the Emergent Nation. Francis Wayland of Brown's, President from 1827-1855, gave "extemporous illustrations" to compliment students readings of the texts. His success came from the tutelage of Eliphalet Nott, President of Union College 1804-1866, who created a sense of being men amongst his students as he went into discussions of the consequences from the texts and sought out students to make their own judgments (Brubachem & Rudy, 1976)

The Pupil Domain

The pupil domain is an important component of higher education. It has a significant impact on institutional planning, goals and the attending population that expresses support of institutional practices by their application and attendance, or non-attendance of the university and through protest.

The two centres pivoting in this domain are the student-centre and learning-centre. Both are common terms found in the literature and are unfortunately used rather interchangeably. More precisely, the student-center is often used to explain a learner-center, but rarely vice-versa. A shortcoming also seen in the literature is with the terms collaborative learning and cooperative learning. Cooperative learning is sometimes defined to be similar to collaborative learning, whereas collaborative learning is clearly a different learning process than that of cooperative learning.

Here are a few examples of how the two centres are defined similarly in the literature. Smith and Cardaciotto (2011) stated that a student-centred approach is in line with active learning: an inductive learning process where students perform meaningful activities that goes beyond just interacting and discussing (Li, Dong & Huang, 2009). These activities are meaningful because they develop learning achievements that are linked to learning taxonomies. Blackie, Case and Jawitz (2010) identified that the student-centred model that comes out of C.R. Rogers work has a strong "personal-centredness." These three scholars also identify links with Rogers work with that of R. Barnett who develops a philosophical argument

that the growth and development of the student is as important as the learning of knowledge and skills. It is from this context that differences between the two centres begin to emerge.

A learner-centred approach is not limited to constructivist principles as it also relies on inductive principles or instructional methods of inquiry learning, problem-based learning, and case-based learning, to list only a few, that "impose more responsibility on students for their own learning than the traditional lecture-based deductive approach" found in the teacher-centred model (Prince & Felder, 2006 p 123). The learner-centre puts an emphasis on the professors to be knowledgeable of instructional techniques that promote learning for all students (Henson, 2003). It is this point that creates the division between the two centres, a student-centre points towards personal or individual development beyond that of learning while the learner-centre focuses on all students and the primary focus is on learning.

These differences support Weimer (2002) who also criticizes the use of student-centre as it focuses on the student and characterizes the student as a customer within a market system. This construct then devalues the learning processes as it allows not only the professor but also the academy to focus on other aspects of a post-secondary institution. This can then lead to a conflict in the pupils' responsibility for their own learning. For the purpose of this study and the developing framework the similarities towards learning between the two centres are ascribed to the learner-centre and the focus on personal development and

transformation that can take place in and outside of the learning environment is characterized by the defining of the student-centre.

Examples of the student-centre within the development of post-secondary education in North America can be found in numerous areas. The rebellious students that forced the Thomas Clap, the President of Yale, (1740-66), to abandon the institution's focus on Presbyterian doctrine and become more tolerant of the Anglican presence is an example of personal growth and development but does not necessarily provide any development of learning. Another similar occurrence arose out of the students' opposition to post-secondary practices and the military associations that came with the increased government funding post WWII. This is highlighted during the "Great Student Rebellion" that arose against the Vietnam War and racial injustices.

At this time academies were viewing students as consumers and by the 1970's the top 50 universities were offering over 2400 undergraduate courses. This was in response to student criticism that the previous curricular offerings were not responsive or catering to their needs and preferred to take courses related to their own personal desires (Cohen, 1998). This last point could be argued as learner-centred, especially considering that 60% of student majors shifted towards professional and pre-professional degrees (Cohen, 1988). The reason that it is not learner-centred relates to the transition of control that occurred between the faculty and administration regarding the curriculum and instruction. Professors were much more interested in research than developing instructional techniques and were

without the establishment of teaching and learning departments to provide support. This often left the abundance of new courses having poorly chosen content and inappropriate instructional techniques to support a learning environment. Clearly preventing the establishment of a learner-centred environment.

Content, Pedagogy, Technology Domains

The following three domains content, pedagogy, and technology are established in the literature by Shulman (1986) and Koehler and Mishra (2005). Shulman (1986) developed the framework of pedagogical and content knowledge and Koehler and Mishra (2005) added technology to the paradigm illustrating that effective use of technology in the learning environment compliments content through pedagogy. The knowledge of all three domains allows them to be used effectively in a learning environment. Innovation in the learning environment needs to be supported by academic content and applied practices (Ferdig, 2006; Littlejohn & Stefani, 1999; Salomon, 1993). Applied practices are those that stem from sound pedagogy, appropriate implementation and use of technology. For example, a textbook can be poorly used by an instructor as seen in the EC era when scholarly lectures did not accompany the recitations of texts. Individually, they hold their own domains but as the centres in the previously discussed domains fluctuate they impact the learning environment. By taking different directions, either towards or away from focusing on the creation of a learning environment affects the strength of a community that supports the goals of the Academy.

The literature often refers to these three as PCTK. However, at the post secondary level, pedagogy is not often considered a necessity in hiring. Instructors are hired for their content expertise constructed through years of training, preparing for comprehensive exams and conducting research. They are in essence, subject matter experts who understand their subject through research. Since content is the primary focus, it makes sense to build the next domains hierarchically whereby content leads followed by pedagogy and then technology, hence the acronym CPT.

Content

According to Weimer (2002) instructors are trained in content but not always pedagogy. Shulman (1986) explained that knowledge of content takes into consideration the amount of material and its organization that needs to be covered in a course along with the rules of evidence and proof required of the academic discipline. This relates then to the type of course being offered: a prerequisite course in organic chemistry or a professional qualification course that requires different amounts of content and perhaps structure than an introductory survey course offered in the Humanities or an elective course in the Fine Arts

Nevertheless this is not enough. The content needs to be understood in a context for teaching and more specifically for learning as mentioned previously. This then involves the use and propagation of content through cognitive taxonomies. Lastly, content needs to be relevant, appropriately selected, related to prior knowledge and should lead to application and post-knowledge.

When institutions of higher education developed in North America, content was influenced by medieval universities whose primary function was to educate for the ministry and produce pious citizens. These institutions chose the subject matter and the content within those subjects. Tutors and Professors followed the lead by the President and the dogma of the founding sectarian branch that supported the construction of the institution. These courses were broad and expansive in their coverage. Content changed in the 19th century. As the church had less influence on the institutions, more pupils were entering professional careers instead of the ministry and research coupled with scientific idealism started to take root. Content was still controlled by the institution and the governing body but Europe; specifically Germany was influencing what content was being covered.

After WWII the control of content changed again. It was now in the hands of the professors and faculty. Content at this time was still occasionally offered in broad survey courses but they had become more specific for the most part, and the content coverage was not lessened. The faculty constructed the curriculum that was then validated by their peers through various committees in a senate like structure. The professor controlled the content within the class. This was not always effective as it had been in the past with students.

Pedagogy

The control of content for the purposes of a learning environment needs to be adapted by actors who can understand the material through learning

taxonomies, and to be specific, through pedagogy. Mishra & Koehler (2006) elaborate that knowledge regarding this component involve the understanding of teaching and learning processes and methods that lead to accomplishing established educational objectives. This constructs the premise of the Pedagogy Domain. It includes components that would be offered by most instructional development formats, including learning strategies and theories, knowledge of student diversity, classroom management, lesson plan construction, syllabi development, assessment and evaluation and the institution's guidelines and policies.

Few textbooks on college teaching existed during the establishment of the collegiate (Cohen, 1998). The textbooks that did exist may have been only in their original languages and not in English or of the languages being taught. It would seem rare that a college with limited resources and even fewer books shelved in their libraries would allocate money to purchasing such texts. The practice of learning to teach came from mimicking the tutors and professors under whom the students had studied. The quality of teaching and learning varied as mentioned earlier under the professor domain. The art of the lecture held positive qualities as it forced students to cooperate and develop collaborative learning groups (Cohen, 1998). The extent to which this practice was intentional is not currently known. Students were not only expected to write down the words verbatim but they also needed to record the thoughts and phraseology of the professor. This then required students to meet after classes to complete their notes (Brubachem & Rudy, 1976).

This is not to overlook the amount of memorization required during this period and the common complaints by students and presidents that grades were based not on a substantive response but by verbatim recitation and that tutors heard their class rather than taught them (Brubachem & Rudy, 1976). Not everything was verbatim, as the senior class composed their own orations. Unfortunately they still extracted portions for their orations from memorized texts (Cohen, 1998).

During the Emerging Nation, pedagogy changed. The lecture grew but recitation was still strongly practiced even as it slowly shifted towards secondary and preparatory schools (Brubachem & Rudy, 1976). Lecturing improved in general as a supplement to texts, generating interest and understanding (Cohen, 1998). But lecturing also held problems and one complaint stated "thus the lecture-note-taking method might be a good way to acquire honors but not what honors signify" (Brubachem & Rudy, 1976, p 88). For the non-renowned professors and presidents lecturing was teacher-centred, as it was a persistent form of knowledge transmission that critics felt was anachronistic with the invention of a print-press and that books no were longer a scarce resource (Brubachem & Rudy, 1976).

The laboratory was one of the breakthroughs in teaching methods of this period. Demonstrations complimented the lectures in the sciences and then students participated in the process by replicating experiments in the laboratory afterwards (Cohen, 1998). However, even this stage was gradual. Laboratories were at first like lectures, the students merely observed and it was not until Amos Eaton that students became full participants in the process (Brubachem & Rudy, 1976).

Technology

Educational technology has been present in North American higher education since its doors first opened. What was considered technology over the first few centuries such as textbooks, paper, pencils and blackboards is often considered an invisible technology today. Current technology is often quickly referenced to web 2.0, computer software, student response systems and learning management systems, all of which are excellent technologies. Nevertheless, merely introducing them to a learning environment is not an effective practice. Salomon (1993) pieced together an understanding of how technology is a tool. Solomon (1993) used four components to construct this understanding: as a device it does not need to be a tangible object; it serves a purpose ascribed through culture or nature requiring skill and knowledge; designed, but not limited to, with a "goal-serving utility;" non-autonomous, and requires skilled use.

An understanding of how technology can be used in relation to content and pedagogy is vital as it allows an educator to decide what technology to use (Salomon, 1993; Mishra & Koehler, 2006). This also clarifies how a tool becomes educational technology. Keating and Evans (2001) state that it goes beyond the ability and proficiency of an instructor being able to use that technology for personal use (as cited in Wetzel, Foulger & Williams, 2009). Technology is therefore not a plug and play tool to be simply inserted into the learning environment. This is not to say that some technologies may have a pedagogy

structured into their design that allows for easy use, but it still requires a validation of pedagogy with the content matter and learning objectives.

It is not easy to ascertain what all of the educational technologies were during the EC period. The lecture and when available textbooks, complimented the recitation practices of that era. The structure of syllogisms used at this time were developed by St. Thomas Aquinas, 1225-1275, who built off the scholastic method developed by Pierre Abelard, 1079-1142 (Saettler, 1990). Abelard's Scholastic method was adapted over the centuries by predecessors as his founding instructional methods influenced the development of European universities (Saettler, 1990).

It is also contextually argumentative who the content experts were, if it was the tutors and professors or the textbooks. The issue of research placing textbooks out of date was not a common occurrence in the 17 and early 18 hundreds. Textbooks were centuries old and often written in foreign languages that were used to teach the content. Philosophically, it could be argued that instructors were a technology to the knowledge and in the case of poorly trained instructors that may very well be still the case. Today, we refer to the instructors in higher education as the content experts and the tools they use as the technologies. This framework will be used backwards through the eras. This allows us to view the textbook as a technology.

The quality of the textbook as a technology is problematic. The instructor's ability to use the text for personal use may be accepted by a professor or president of a college. This is not as easily argued for tutors who we learned that they heard their courses rather than taught them (Brubachem & Rudy, 1976). The underlying issue is that of the language, Hebrew, Latin, Greek, which students did not able use to converse in outside of classes and the pedagogical tool most often employed was memorization, adding substantive argument from the students outside of the text was reported to lead to poorer grades (Cohen, 1998; Geiger, 1998; Brubachem & Rudy, 1976).

The 19th century brought a few new technologies: blackboards, slates, and steel pens (Saettler, 1990). At the beginning of the century John C. Calhoun a professor of mathematics at Yale brought a slate to class and about twenty years later institutions began installing slates on the walls (Brubachem & Rudy, 1976). How this item was used is not easily identified in the literature and perhaps is another change in American education brought over from Germany (Cowley, 1953). The only other clear addition is that of the Laboratory and with it the equipment. Writing instruments also improved, specifically the fountain pen which near the end of the century grew in popularity due to improvements in writing ease and ink cartridges.

Post WWII technology changed significantly. The communication movement that developed in the 1920's emerged after the war had a strong influence on educational technology (Saettler, 1990). Brubachem & Rudy (1976)

describe how the introduction of electronic media established audiovisual centres that included televisions and tape recordings. Assisting the development of computer assisted instruction through IBM research and the increases of federal funding (Saettler, 1990). These advancements came with new theories in behaviourism, cognitive sciences, instructional design and the emergence of the information society (Saettler, 1990).

Faculty were not always keen to include these new technologies into the classroom, some believing newer technologies were still ahead and others looking at the few studies of the time that indicated these tools played no real significant evidence in learning achievement (Brubachem & Rudy, 1976).

The Community Centre

The community centre encases the learning environment and involves how each domain interacts with each other and functions towards the centres that individual domains gravitate towards in direction. This is where the importance of this centre rests. The current literature however, discusses the individual centres in isolation. This can be problematic as it can develop a superficial understanding of the problem. For the purpose of this study the focus remains on the learning environment but as the discussion has unfolded it becomes evident that this focus is at times in competition with the other responsibilities such as research and institutional prestige.

It becomes therefore necessary to define what a community means. John Dewey (1987) believed that "the school [university] is primarily a social institution. As Education is a social process, the school is simply that form of community life in which all those agencies [domains] are concentrated that will be most effective…" (p 88). The development of this level therefore needs to begin within the Academy Domain, whether through departments, faculties and/or senior administrators, and then engaged between the Professor and Pupil domains. "What they must have in common in order to form a community or society are aims, beliefs, aspirations, knowledge – a common understanding – like-mindness…" (Dewey, 1916, p 4). If an undergraduate population desires to be learner-centred and is not focused towards research that is regarded as a primary responsibility by the faculty and institution the community alignment is mismatched. There then needs to be factors involved that compensate for the value of a student-centre such as the reputation of the institution or other items of compromise that can create a community and a functioning learning environment. The issue that presents itself is whether that compromise is what is "most effective."

If this does become a give and take situation Dewey (1916) argued that this can produce results but it does not provide for shared purposes or interests. "Like the parts of a machine work with a maximum of cooperativeness for a common result" they do not form a community (Dewey, 1916, p 5). Dewey further elaborated that the virtue of a community shared in common requires communication, which becomes the bonds that allows the intersecting areas of

shared aims and aspirations of a common understanding to balance the learning environment. This not only brings together the various domains and actors through consent but also their emotional and intellectual disposition (Dewey, 1916). Dewey (1936) explained this in an essay, *The Dewey School: Appendix 2,* that the school was community centred, and that a focus on the child or other responsibilities that broke the sense of community inappropriately ignored the social relationships and process involved with mental development. This goes back to what Dewey (1971) wrote in his *Pedagogical Creed* "that education fails because it neglects this fundamental principle of the schools as a form of community life" and that the focus on machine like parts working as a system instead aids this failure (p 88). This leads to conclusion that the community centre is that of a balanced environment that effectively communicates a shared understanding and that the domain's directions reflect the impact of each other and produce the learning environment.

When a research environment is the dominant focus, professors hold several community environments that support their research, through research departments, research assistants, peers and colleagues. The service environment also exists and holds a level of importance that varies in relationship to the focus of the Academy and other domains. To elaborate, service is often the less respected role a professor fulfills. In contrast the majority of graduate students surveyed by Golde and Dore (2004) had a strong interest in these roles. Yet, preparation for these roles within programs is largely non-existent.

Building the potential to innovate.

As mentioned within the CPT domains regarding innovation, there needs to be support from the other domains as well toward innovation in learning environments. The Academy needs to be responsive and supportive in training and providing applicable technologies. Support also requires leadership and encouragement to be innovative in the learning environment. This can lead the Professor to bring considerable attention to improving teaching and learning strategies within the learning environments within their responsibility. The Pupil domain is that last component of the community domain that interacts with the framework put into place and provides feedback through a variety of different mediums: student evaluation, research planning polls, class participation and class attendance and nominating people for awards.

Alignment

As it becomes evident through the development of the framework regarding domains, quality is not an individual performance. Quality, is in fact produced by the performance of a system (Seymour, 1993, Biggs 2001) that in this case is a system that develops a balanced community allowing for the creation of an ideal learning environment. To strive for quality then requires an alignment of shared common understandings amongst the domains. Figure 3 illustrates how the domains and their centres shift the balance towards or away from creating learning environments.

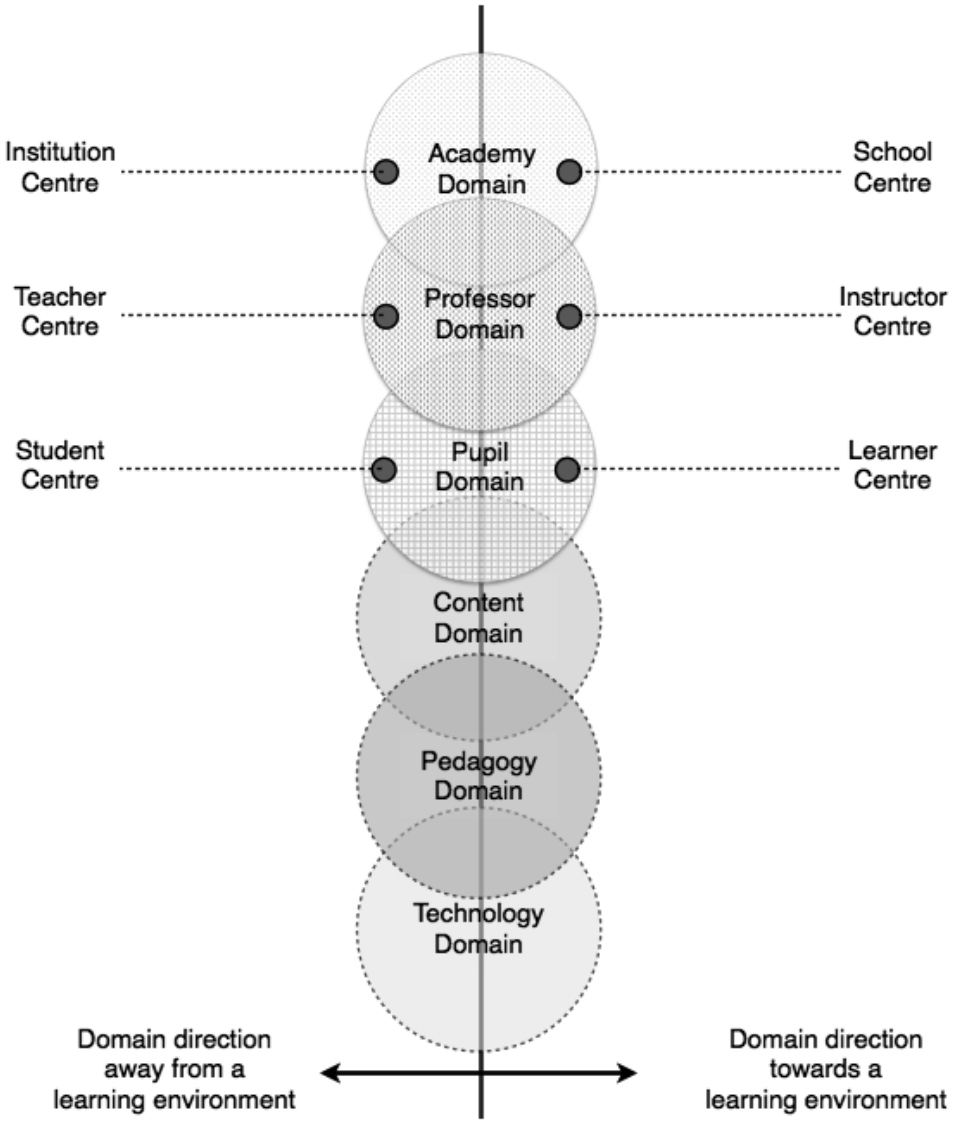

Figure 3: Aligned domains and implications of centred directions

---

Alignment has its own framework and it is the work of John Biggs (1996, 1999, 2003) that is pivotal in bringing forth an understanding of how these domains can function together in a system. Biggs (2001) does not focus on alignment specifically when he discusses the reflective practices of an institution and the relationship of

those practices on producing learning environments. However, alignment is a central component of this article. This is because he is in essence making the argument that the development of learning environments through his framework of alignment is multileveled.

Biggs (1996, 2003) focuses on alignment within a learning environment at a micro level. At this level the dominant relationship involves the pupil and professor. How the professor establishes the learning objectives, utilizes the operational technologies, and evaluates the learning outcomes is only part of the equation. This is laid out in Figure 4. The pupil is required to construct meaning through the provided instructional catalyst thereby demonstrating learning achievement. This is then assessed through the level attained of the learning objectives.

Figure 4: Phase 1 of the Alignment framework

At the micro-level, within the professor domain, different effects result depending on whether it is teacher-centred or instructor-centred. Biggs (1996) identifies that alignment is possible within an objectivist approach. This approach however, represents a teacher-centre perspective and espouses that knowledge is independent, quantifiable, and transmitted by the professor to the pupil. This process fails to produce students capable of using knowledge and skills learnt from

this approach in explanations or new situations (Cole, 1990). This creates an ineffective use of alignment especially in light of a learner- centred framework.

Using a learner-centred approach, one that Biggs (1996) refers to as constructivist, moves the focus to the pupil who is then responsible for creating meaning. This approach sees knowledge qualitatively and reduces misstated assessments of teaching and learning by professors that are prone to occur in the teacher-centred approach due to teaching for tests and the absence of questions dealing with analysis, judgments and reflection (Frederiksen & Collins, 1989).

Focusing on the micro-level is not enough as it allows inconsistent use of alignment within classrooms. Leaving alignment up to individual professors to incorporate into a learning environment does not produce sustainable learning, even if their approach is learner-centred. There needs to be a continuity of continuous active learning environments to perpetuate life-long learning into the external contexts that exist outside of traditional learning environments (Medel-Anonuevo, Ohsako, & Mauch, 2001). This cannot be achieved if only one professor in a department practices constructivist alignment, it needs to be practiced by a large portion of the department.

At the macro-level, an academy needs to develop staff and instructors to focus on teaching throughout the institution, specifically those who do not voluntarily attend workshops and seminars on teaching and learning (Biggs, 2001). This not only involves the leadership to encourage faculty to attend instructional development opportunities but also to support the instructional practices in the

learning environments. A school-centred approach brings out the importance of developing knowledge of content pedagogy and technology to be effective and continuous through the pupil's duration at the academy.

Historically, university teaching has been modeled on the abstract approach that grew out of ancient China (Biggs, 2001). This can play a viable role in certain institutions where pupils are either naturally endowed with the ability to learn from abstract approaches, or have had the privilege to be brought up in environments that afforded them the skills to learn abstractly. However, this brings out a form of academic discrimination, which does not necessarily work in the modern context of student demographics, learning differences, multiple intelligences and the diversity of student interests. Biggs (2003) explained that a poorly structured system that lacks alignment allows only a select few students to use higher-order learning processes. This discrimination exists because the approach alienates the student body by teaching to a select few who possess the skills and 'academia' mind set. Those who have paid to receive the same quality of education of their peers are victimized by professorial preference. Especially when the knowledge exists to create learning environments that compliment the ability of each student to use higher order learning processes.

Consequently, a comprehensive university cannot rely on the abstract approach for teaching and learning because it does not behave as a research institution and has a diverse student population to whom they have to cater. Cohen (1987) illustrates that instructional alignment produces significant learning

achievement. He does this through offering an instructional design concept that produces four times the rate of learning than classrooms that ascribe to a teacher-centred, dualist/objectivist approach. The consequences of instructional alignment have been seen to produce an effect size of 1.2 sigma with lower aptitude students, a higher level of performance than those achieved by high aptitude students, who did not receive the same instructional alignment in their learning environment (Fahey, as cited by Cohen, 1987)

The higher-order learning processes that Biggs discussed can best be reviewed through learning taxonomies. Two taxonomies that present themselves are those of Biggs (1999, 2003) and Krathwohl (2002) who revised Bloom's taxonomy of 1956. Biggs (1999, 2003) Structure of the Observed Learning Outcome, is often described as the SOLO taxonomy. This taxonomy builds off work by Martin and Saljo (1976) that identified themes in student learning levels that they classified as either surface learning which for the most part is students expressing remembering and a descriptions of what they have been taught and deep learning which focuses more on understanding the material and the intention of the content. Biggs (1999, 2003) breaks this division up into five levels. The first three are prestructural, unistructural and multistructural and refer to a quantitative phase and a surface level of learning. The last two levels are relational and extended abstract and refer to a qualitative phase and a deep level of learning.

Biggs (1999, 2003) explained that these quantitative and qualitative phases refer to the way the knowledge outcomes are measured. Quantitative being

unidimensional and relying on parametric statistics and is useful to compare individual students with each other and to population norms. The qualitative measurement can be used as multidimensional, looking at more than one objective and assesses the level learning illustrated by the student. To better understand this Biggs (1999) discussed how declarative knowledge and procedural knowledge needs to be brought together through theory that develops a conditional knowledge. The importance of this conditional knowledge is that when formed, it allows the individual to understand the circumstances of when, why and how one action should be chosen over another. Once this is established, functional knowledge becomes flexible allowing for the use of the knowledge developed to be applied in a wide range of areas.

Bloom's taxonomy has been revised along with the supporting structures of knowledge to keep in line with developments in cognitive psychology. Krathwohl (2002) provides a six level taxonomy of cognitive processes without the division between surface and deep learning. The six levels are: remember, understand, apply, analyze, evaluate, and create. In a comparison between the two taxonomies only "remember" clearly corresponds with surface learning and the cognitive process that Biggs describes as unistructural. Bloom's process of understanding corresponds to both multistructural and relational, maintaining qualities of both surface and deep learning. The surface learning being the processes of classifying, summarizing and perhaps exemplifying while the deep learning processes of understanding are explaining, comparing, and inferring are part of Biggs' relational

level. The relational level also includes Bloom's level's of apply and analyze while evaluate and create are part of Biggs' extended abstract.

Biggs' and Blooms' taxonomies have additional differences in how the knowledge is structured, the four types of knowledge are otherwise similar though different names used: declarative/factual, conditional/conceptual and functional/metacognitive. The difference is on the positioning of where conditional/conceptual knowledge fits in with declarative /factual knowledge and procedural knowledge. Bloom's taxonomy places conceptual knowledge as preceding that of procedural, whereas Biggs places procedural after conditional. Where the differences could be significant is avoided as both Biggs and Bloom place the criteria for determining when an individual decides on an action at the same level. Bloom ascribes that ability to procedural knowledge rather than within conceptual knowledge, as Biggs does with conditional knowledge.

The distinction between cognitive processes and knowledge structures in Bloom's taxonomy is that the processes are verbs and the structures are nouns. What this allows to do more clearly in Bloom's taxonomy is to look at the quality of learning for each process. When an individual remembers or understands a component of their responsibilities to teaching and learning it can be evaluated at whether the knowledge is factual, conceptual, procedural or metacognitive.

This produces the core of the alignment framework: learning objectives derived from learning theories that incorporate operationalized technology under

the guidance of learning taxonomy to produce the desired learning outcomes or levels of learning achievement. This is represented in Figure 5.

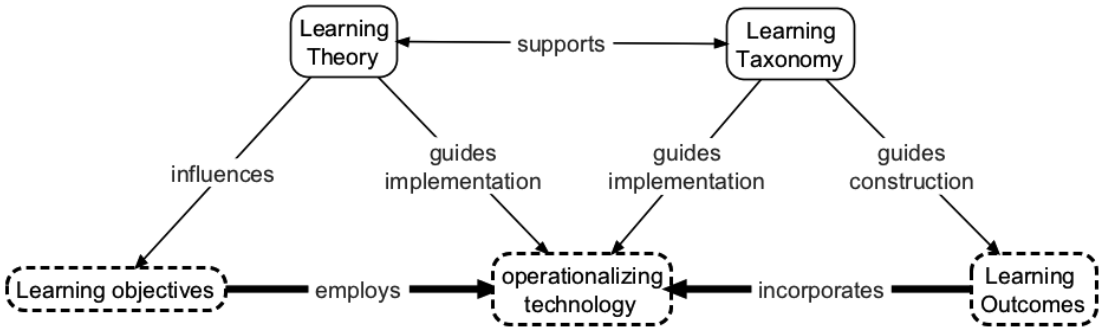

Figure 5: Core elements of an Alignment framework

In reference to the current study, the learning objective are the goals in developing graduate student instructors (GSI) with respect to teaching competences and experience that will allow them to have access to the types of careers that are available for them in the academic field. The operationalizing technologies are the experiences as teaching assistants and graduate students instructors as well as any seminars and training that they receive. The learning theory implements how the training and guidance by instructors occurs. The learning taxonomy relates to what skills and experiences are being provided at a cognitive level, as Biggs and Bloom's taxonomy state, you cannot teach GSI's to create a course and evaluate student learning until they have a strong development of declarative knowledge and have

memorized and applied the terms needed to construct these teaching components. The learning outcomes are then the result that the process has created.

Chapter Three:

Research Methods

Purpose of the Study

The purpose of this study is to explore and describe how graduate students develop teaching abilities in a comprehensive university through the exploration of the following points: 1) the development of teaching skills and competencies through available Teaching Assistant (TA) and Graduate Student Instructor (GSI) positions relative to different academic disciplines 2) the alignment of needs and objectives of procedures involving training with needs of individual academic disciplines 3) the possible existence of gaps in the developmental process of graduates students towards teaching knowledge and skills. Teaching Assistants of a graduate seminar, Graduate Student Instructors and Faculty, were asked about the processes of teaching development regarding graduate students. These questions included inquiry into the objectives of the seminar in university teaching, and the needs related to teaching in addition to graduate student responsibilities within the academic disciplines.

Research Questions

1. Will qualitative mapping provide insight into how the alignment of the needs and objectives of the various bodies are balanced and identify

areas causing disturbance in the development of Graduate Student Instructors?

2. Is there an alignment between what the Teaching and Learning Department produces through their teaching seminars and the instructional needs of the institution and the apprenticeship of graduate students developing as potential instructors?

Design and Sampling

This study employs qualitative research methods as it aims to describe complex phenomena and provide an understanding of individual experiences that can be responsive to situations and conditions localized to the stakeholders (Johnson & Onwuegbuzie, 2004). The use of purposeful sampling is employed to locate central phenomena and develop an understanding, making it a preferential choice in qualitative research (Creswell, 2008). This form of sampling also brings forward experiences, perceptions and attitudes that may not arise in random sampling (Strang, 2000). There is a need to take different perspectives into account and random sampling would accomplish this. However, random sampling may fail to provide a range of diversity that would provide rich data. Nonprobability sampling would be more effective and supports the study's direction of focusing on a specific characteristic sought out, in this case the graduate seminar and the development of graduate student instructors. Convenience sampling, on the other hand fits; not to mention there is some degree of convenience in all samples as

researchers are required to gain consent, which then identifies the participant as willing to be studied (Creswell, 2008).

The criterion of importance is that one characteristic is not enough to develop a broad picture and understanding of the phenomena being investigated; that being the graduate seminar and the development of GSI's. It is from this that the study employs maximal variation sampling to isolate different characteristics from other participants (Creswell, 2008) allowing for the description of commonalities and variances to be brought out (Strang 2000).

The design of this exploratory study was to uncover data that provides insight into the two questions stated in the beginning of Chapter 3

Participants

The population of interest can be divided into three, each having some role with either the graduate seminar or the development of GSI in a comprehensive university. See Table 1 for a break down of the participants and sample size. The first component was that of Teaching Assistants. They were drawn from a list provided by the Teaching and Learning Department. Representing the faculties of Engineering, Humanities, and Social Science, they also came from Master's (1) and PhD programs (2). Additional levels of variance included whether they had worked within the intensive format (1) or semester format (1) or both (1) and if they had worked with one professor (2) or with more than one (1) for the seminar. Teaching assistants for the graduate seminar were recognized for the commitment and

interest while partaking in the seminar as participants themselves. From this, these students have the opportunity to work with professors who have been recognized by the university for quality teaching.

The Teaching and Learning Department provided a list of graduate student instructors who had taken the graduate seminar and had subsequently taught. Different faculties and course level taught were variations that were desired and participants along those lines were sought out. Of the two that participated in the study one was from the Humanities and the other, from the Sciences. One had also taught a 200 level course and the other a 400 level course.

Faculty were selected to represent different disciplines within the 6 constructed faculties. Four faculty members agreed to participate in the study and each participant represents one of the following faculties: Fine Arts, Humanities, Science and Social Science. Another criteria used to identify specific disciplines was the involvement of their students in the graduate seminar. Departments were sought out for both high (2) and low (2) participation rates.

All participants were given anonymity and are identified in the broadest terms possible while still identifying important differences between them. They are then referred to by their position as a TA, GSI or faculty and from their respective academic disciplines within a Faculty. Biglan's (1973) theoretical model based on the subject matter and organizational structure of academic disciplines is not used as it may provide information that would reduce the anonymity of participants. The

academic disciplines are then divided into the following categories: Business/Commerce, Engineering and Computer Science, Fine Arts, Humanities, Science and Social Science. There are two participants from the Humanities, Sciences and Social Sciences; both participants from the Humanities represent the same academic discipline.

Table 1: Participants by academic discipline and teaching responsibilities

Academic Discipline	Faculty Members	Teaching Assistants	Graduate Student Instructors	Totals
Business & Commerce	0	0	0	
Engineering & Computer Science	0	1	0	1
Fine Arts	1	0	0	1
Humanities	1	1	1	3
Science	1	0	1	2
Social Science	1	1	0	2
Total number of perspectives	4	3	2	9

Note: The participants from Science and Social Science represent different disciplines. The Humanities participants are from the same discipline and that the TA and GSI is the same person.

Instrument

The purpose of the instrument development was to uncover a broad range of information that would come naturally in discussion without heavy leading from the interviewer. This study included three different types of interviews: a focus

group for the teaching assistants (Appendix A); telephone interviews for graduate student instructors (Appendix B); and in person interviews with faculty members (Appendix C). A Likert scale questionnaire (Appendix D) was borrowed from the Teaching and Learning Department that was used in the seminar evaluations for the interviews with faculty members. This questionnaire was to provide background information about topics the university teaching seminar covered and to act as a reference tool during the interviews.

Questions were developed out of a review of the literature and were of an open-ended nature. Follow-up questions were not pre-constructed and arose depending on the nature of the interview and the ease with which the participants were discussing the subject.

Data Collection

Data was collected in three different formats. Each format was digitally recorded. All TA's of the seminar from the previous 18 months were contacted through email and effort was made to conduct several focus groups within the second month of the semester. Several times were set in order to seek out a convenient time from the participants. The focus group took place in a student conference room.

Graduate students instructors were contacted by telephone two weeks prior to the last day of class for the semester. Five graduate students were contacted. Two were willing to participate in the study. One was available to be interviewed

when called; the other asked to schedule the interview for the following week. Both telephone interviews were recorded using software on the phone to record the conversations.

An email was sent out to eight faculty members asking them to participate in the project. From the initial email, an interview with four faculty members and their consent to participate in the research was obtained. Faculty members were met at their convenience ranging from 1 week to 2 months after the first email was sent. The interviews took place in their offices and followed the semi-structured protocol that was developed: allowing them time to review the evaluation questionnaire and then answer the open-ended questions.

Data management

All digitally recorded interviews were transcoded from .amr to .mp3 in order for them to be read by transcribing software. The new files were named by abbreviated position (F, TA, GSI) and academic discipline (fine arts, humanities, etc.) and stored on the researcher's personal computer and encrypted external hard drive. Original recorded files were deleted once participants had the opportunity to review transcriptions of the interview or focus group.

Transcriptions were named in the same fashion as the digital recordings and stored on the researcher's personal computer, jump drive and encrypted external hard drive. Identities of the participants were not kept with either the interview recordings or transcriptions and identifying remarks made during the interviews

were generalized and made less specific. For example if a participant made a comment about previous studies at a specific institution it was either referred to as a North American Institution or International Institution.

Data Analysis

The stages of analysis were adapted from research literature on exploring and coding data (Creswell, 2008), phemonography (Sjostrom & Dahlgren, 2002), Codebook development (DeCuir-Gunby, Marshal and McCullogh, 2010; Namey, Guest, Thairy & Johnson, 2007)) and the use of spreadsheets for qualitative data analysis (Mayer & Avery, 2009). The approach to understanding the data aimed to allow categories to emerge naturally and with a focus on purpose. The two research questions each take a slightly different approach in what they seek to address. Both questions are structurally driven and the coding needs to draw out of specific goals identifying text that links the experiences of the participants (DeCuir-Gunby, Marshal and McCullogh, 2010; Namey, Guest, Thairy & Johnson, 2007).

This led to the following path in analyzing the data. A period of familiarization involving transcribing the files, careful readings and the correction of errors took place. During this time participants were allowed to review the transcripts and initial coding was made in the margins of the documents. Afterwards, interactions towards instructional development and relationships between stakeholders were mapped qualitatively. The data was then compiled into a spreadsheet and notes were made in separate columns as potential ideas and

codes started to shape. Codes and concepts were identified and comparisons made within groups. A codebook was then created by compiling the codes and reducing them to specific themes with definitions. The data was reviewed under that direction.

The literature review was than reanalyzed and the theory was used to revise coding and explore connections across groups. At this time, narratives for the participants were written up and the qualitative maps were reviewed. Corrections were made to both the narratives and the maps as supported by the data. A review of the findings was then made available to the research participants to respond to the researcher's interpretations. Participants were given a digital copy of the write-up involving their participation and the discussion which then gave them the opportunity to respond to any clarifications or corrections they felt were necessary along with the opportunity inquiry about the findings.

Researcher Biases

The researcher was part of the process regarding the development of teaching and learning competencies amongst graduate students. This involved being a participant and a TA for the seminar on university teaching a year prior to the development of this study. Leading up to the development of the study the researcher was part of an ongoing evaluation of the seminar. It was from the participation in the evaluation that this study was developed.

Chapter Four:

Results and Findings

This chapter provides information regarding the demographics of the participants, description of the process involved in collecting the data and background information on the seminar in university teaching offered by the university of which the participants belong. The chapter then presents the findings to the research questions separately. The first question is divided into the categories that are present within the sample: Teaching Assistants (TA), Graduate Student Instructors (GSI), and faculty, and provides a narrative of the data collected from the individual interviews and one narrative is provided for the focus group.

Demographics of the Participants

There were a total of eight different participants in the study. As the strategy used to determine the sample was for a maximal variation within the participants, the description will focus on the differences of the participants within each category. Gender, age, and ethnic culture were not considered as reason to select participants and describing these elements was felt to provide information that may lead to the identification of the participants. It is therefore not included.

Four TA's from the seminar in university teaching participated in the focus group. One of the participants was late to the proceedings and did not participate in the first two questions. The fourth participant was deemed to have withdrawn consent, as they were no longer contactable to review the transcripts and further

participate in the study. The data from this person was then removed from the transcript and the data was not entered into the table for analysis. Each of the three remaining TA's represented different academic disciplines and worked with different facilitators of the seminar. The TA from the Social Sciences comes from a different discipline than that of the faculty participant from the same faculty. Additional information is provided in Table 2.

Table 2: Differences between Teaching Assistants

Academic Discipline	Degree	Seminar Format as Participant	Seminar Format as Teaching Assistant
Engineering	Masters	Semester format	Both Formats
Humanities	PhD	Intensive Format	Intensive Format
Social Science			Semester Format

Note. The information in the table does not correspond with an individual. Instead the table is in alphabetical order for each column

There were two GSI participants who participated in interviews by telephone during the last two weeks of their course. They represented the academic disciplines of Humanities and Sciences. The Humanities participant came from the same department as the faculty participant. The GSI Science participant was not from the same discipline as that faculty participant from the Sciences. The four faculty participants who participated in face-to-face interviews represented the academic disciplines of the Fine Arts, Humanities, Science and Social Science.

Additional information regarding the differences between the GSI participants and faculty participants is provided in Table 3 and Table 4 respectively.

Table 3: Differences in Graduate Student Instructors

Academic Discipline	Seminar Format	Contract	Course Level	Number of Students	Type of Course
Humanities	Semester	After seminar	200	50+	Survey (required for major)
Science	Intensive	Prior to seminar	400	25-30	Elective

Faculty members took completely different approaches to the face-to-face interview. One participant who earned their degree at a renowned research institution did not provide elaborate answers to the open ended questions and required several follow-up questions to clarify points that the participant raised. Another participant who had earned their degree from a comprehensive university that placed a focus on instructional development, started discussing GSI development within their program before the recorder was even taken out and a question asked. Moreover, the last two participants, regarding the faculty, took a different route and addressed each item on the sample questionnaire used to provide background information regarding the seminar.

The first participant was the only participant to have all the intended questions asked. On the other hand the remaining three participants addressed

most of the questions without requiring them to be asked or in the case of the latter two participants, questions were asked to follow-up on elaborations they gave in response to items on the questionnaire.

Table 4: Differences in Academic discipline and their student participation in the seminar

Academic Discipline	Seminar Requirement	Department Student Participation in Seminar
Fine Arts	Mandatory	High
Humanities	Optional	High
Social Science	N/A	Low
Science	N/A	Low

Note. The N/A for the Social Science department is because they have yet to implement the teaching component into their PhD program. The N/A for the Science department is because they it is rare for the department to provide courses for graduate students to teach.

Background Information on the Seminar on University Teaching

The Teaching and Learning Department began offering the 25-hour seminar on university teaching in 2004. The original version of the seminar was a multi-disciplinary format and offered to PhD students during the Fall and Winter terms. The seminar is now open to Masters students as well and offered four times a year, twice in a semester format, during the fall and winter and twice in an intensive

format, during the spring and summer. The seminar has developed towards offering single-disciplinary formats for Engineering and Computer Science and for Fine Arts.

The seminar focuses on developing confidence in skills and knowledge in eleven aspects of university teaching with a focus on active learning and shifting participants' views of instruction from a teacher-centre to learner-centre. The seminar focuses on 11 components regarding teaching practices. These components are branched out into three distinct processes that develop deliverable products and knowledge. The introduction to the development of the teaching dossier develops four of these components: a teaching philosophy statement, course syllabus incorporating learning outcomes, concept map and student assessment. The students participate in a mini-lesson that allows them to apply another three components: teaching and learning strategies, and capturing student engagement through the development of a 10-minute lesson plan. Theory and active learning opportunities are dealt with in the remaining four aspects: best practices, academic integrity, developing a sense of community, and using technology in the classroom.

The Process

All interviews were transcribed using HyperTRANSCRIBE™, transferred to a word processing file and proofread. The documents were then printed and an initial analysis was done by hand. At this stage participants were contacted regarding their participation in the study with the option to review their transcriptions to verify the contents and to clarify any points if necessary.

Afterwards the texts were placed into groups: TA's, GSI and Faculty. These groups were then imported into a spreadsheet, Numbers™ and placed into individual sheets according to their group. The text was further divided when necessary into areas that related to the specific questions of the interview and to each research question. VUE™ was the software used to construct the maps from the narratives.

Items identified in the literature that were used for structural coding in Question 1 were listed and a preliminary coding took place. There were four sets of codes used in this first reading: experiences, relationships, domains and outcomes. Experience was further divided into prior experience and provided experience. Relationships included interactions and identified the components of the relationship. The domains, academy, professor, pupil, content, pedagogy, technology, was found to relate to the relationships code. The last was objectives from the seminar in university teaching. After the first coding, a new theme arose, one being objectives that were identified by participants that were not included in the seminar. This changed the sub-components of the code experience to include needed experiences.

A second coding that took place involved the five themes identified in the literature to understand Question 2. These codes were: learning objectives, learning theory, operationalizing technology, learning taxonomy and learning outcomes. These codes were explored from the perspective of each participant, including the seminar in university teaching. During this process, themes that the

participant was addressing were identified even if they did not relate specifically to the established codes.

After the second preliminary coding was finished, a narrative discussion was composed for each participant. It was from the creation of the narrative discussions and the coding that the mapping for Question 1 was produced. After this, a review of all the codes took place and a codebook was developed. At this time the theme of disturbances was added and a more thorough coding took place for each question with a focus on axial components. This produced a few corrections, made in both the narratives and the mappings.

During the writing up of the analysis another theme was recognised, progression, within the data. A review of the data took place to develop a better understanding of the theme and to see if it existed across the participants. A definition was then created for the theme and an additional round of coding took place.

Analysis of Data to the Research Questions

Question 1 Will qualitative mapping provide insight into how the alignment of the needs and objectives of the various bodies are balanced and identify areas causing disturbance in the development of Graduate Student Instructors?

The development of the maps involved using data collected from all of the questions in the interviews and focus group. Because of the development of the maps from the narrative discussion, the narrative discussion is included in this section. The breadth of the open-ended questions was to allow participants to discuss what they felt was important or what they recalled about the process in

relationship to GSI development without the interviewer guiding them to specific items.

The idea from the mapping was to explore relationships and types of interactions taking place between actors and how the centres were oriented with the domains when possible. Therefore, codes were attached to relationships between actors, experience, alignment, domains, GSUT objectives and course development. A legend is provided in Figure 6.

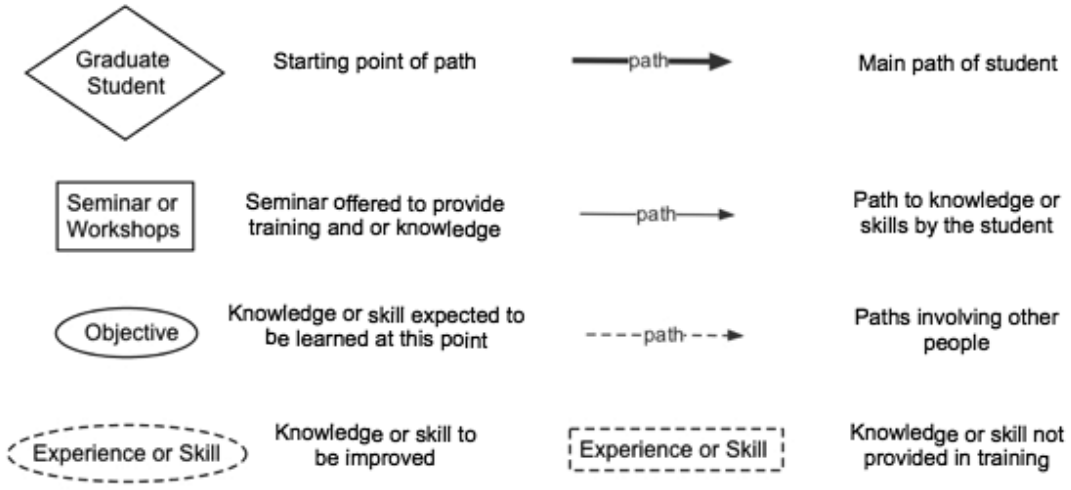

Figure 6: Legend: identifying features regarding the map construction

---

The mapping illustrates the path that a student took or is expected to take within their academic discipline to develop skills regarding teaching and learning. The maps point out skills and knowledge that the participants recognized with certain experiences and activities that aided the development process of GSI's. The map also identifies interactions that occurred discussed by participants during the

interviews and focus group that involved a focus on developing a learning environment.

Teaching Assistants of the Seminar in University Teaching

The overall objective of the seminar described by two of the participants is an introduction to the theory and practice of university teaching. This incorporates the idea that teaching is a constant evolution that involves reflection and reshaping of practices. The third participant did not add anything to this part of the discussion but agreed with what was stated by the others.

The participants from the focus group agreed that the graduate seminar created a "fundamentally different approach" from "just delivering information" and content as they were exposed to as students to the importance of "understanding about students as learners" and the importance of how "student contribution in a class can make the course [...] very productive." This different approach was supported with the building of confidence in a variety of teaching components. The extent to which confidence developed depended on the type of role the Teaching Assistant was given by the seminar facilitator.

The Teaching Assistants identified two distinct roles that TA's fulfill and the related responsibilities with corresponding outcomes see Figure 7 for further details. The group preferred the role of co-instructor to that of an assistant. The responsibilities of a co-instructor were stated to have provided more opportunities for student and facilitator feedback on their performance. These opportunities included distinctions between demonstrating, assisting and preparing class items as

an assistant and contrast with being responsible for, developed, and shared load work tasks when treated as a co-instructor. This included the same of the same tasks for each role but changed what actions they performed for those tasks. The role of the co-instructor also increased confidence in more areas regarding teaching. One participant stated:

> "… that [when] we had more of a chance to play the instructor role. It was really about doing the things for the first time and building confidence."

The TA's identified three experiences that were considered to be incomplete in the process of being a TA for the seminar. This included the opportunity to completely develop and practice an assessment strategy. It was felt by one participant that after an activity took place, a discussion needed to be added that linked the activity to teaching practices, current or potential. The participant elaborated that this addition would allow for "meta-cognitive" components on how the activity would change or be implemented into teaching practices. The last component was in respect to receiving formal feedback from the facilitator of the seminar regarding their performance as a teaching assistant.

Technology was a topic that took a considerable portion of the focus group. The participant from Engineering identified problems of technology use within the academic discipline; one being that in the position as a tutorial leader, the institution provides a limited amount of technology that is applicable, such as black boards for working out problems, scanners to provide illustrations when communicating through email with students. The participant stated that a tablet could be useful but the institution does not provide them. In addition the tablet

limits the movement of the teacher whereas a blackboard provides a much larger space. In the classroom the use of PowerPoint™ to present problems was stated to hinder students' understandings because the students were limited to skypes, a static presentation.

The participant from the Humanities used the expression “an embarrassment of riches” to express the difficulty in identifying technology that will work or not when “you first go into the classroom.” This participant also agreed that the use of technology was problematic because it limited the space a teacher was able to command. Another issue that was identified was that consistency of technology in different classroom environments caused issues when pictures would be clearly visible in one room and obscured in another due to different projectors and related settings.

The third TA advocated for technology “as long as technology really facilitates what you are doing pedagogically". This person stated that the seminar might focus on a new technology but there should be a focus on developing the “ability to make very effective instructional decisions in a very low tech environment.” The participant also brought up the fact that with the limited amount of time the seminar has to focus on technology focusing on one would be a better approach. This would allow for providing the best practices of using that specific technology and incorporate how that technology can be used by the students in their own teaching through the theories and activities provided.

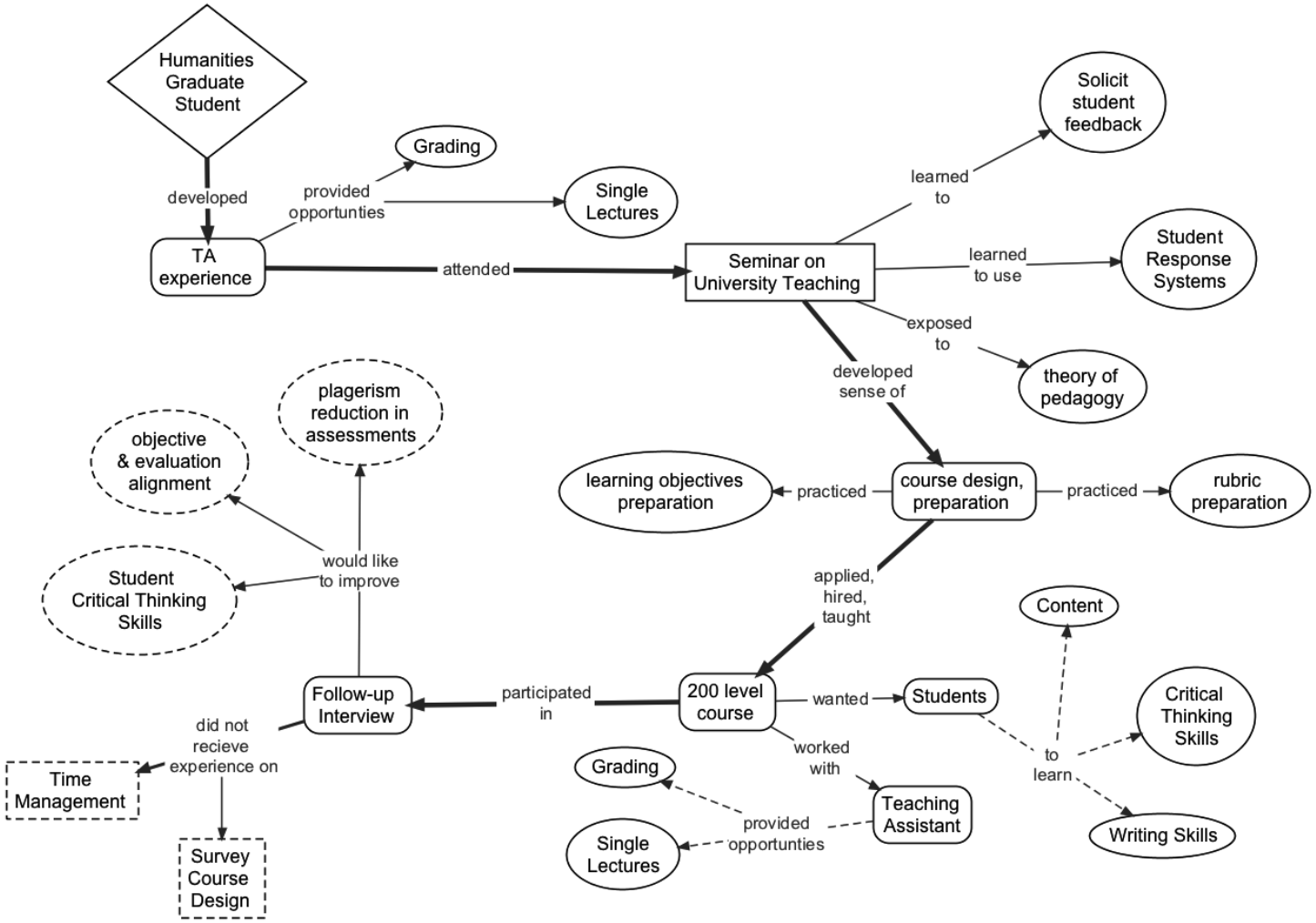

Figure 9: Humanities path for a graduate student development in knowledge and skills regarding teaching and learning

Graduate Student Instructors

GSI Humanities

The graduate student participant from the academic discipline of the humanities took the seminar in university teaching to develop "a sense of what it meant to teach an entire course." The experiences leading up to this included "individual lectures" and the grading of assignments as a TA. The participant claimed that the exposure to the "pedagogical theory" allowed them to identify pedagogy when it was taking place and to talk about the theory with others. The other component was that the seminar allowed for practice: "a mini-lecture, preparing learning objectives, preparing rubrics," that developed "a sense of confidence to do it in the real world." This participant took the seminar to prepare for the eventuality of teaching at the post-secondary level, and acknowledged that the role the seminar played in receiving of a teaching contract cannot be made.

The process of development towards becoming a GSI involved three stages: experience as a teaching assistant, participating in the seminar on university teaching, including as a TA and fulfilling a contract to teach an undergraduate 200 level course. As a TA within the academic discipline, opportunities were provided for experience to be gained in grading undergraduate work and presenting single lectures. The seminar in university teaching introduced the participant to soliciting student feedback, how to use student response systems and pedagogical theory.

The overall sense of course preparation included learning objectives and rubrics. The participant did mention that there could be a little less focus on

technology within the seminar as the participant did not incorporate the use of student response systems into the course they taught but, specified that this view could be limited to the "old fashion humanities." As a TA for the seminar, the participant learned to use learning management software, a technology that was incorporated into the course and other components discussed in the previous section involving the TA's. The path is diagramed in Figure 9.

A key product of this experience that was discussed by the participant was confidence. As a GSI, this confidence was important and maintained through the course because when soliciting student feedback:

> … the feedback was positive and [...] my confidence stayed high cause I could see what I had learned [was] working with this system

This participant also had a TA for the course and used the same developmental process that they went through with the TA. This included sharing the responsibility on grading the students' work, delivering of lectures and providing office hours and review sessions before exams.

The interview did reveal areas that need to be addressed however. One of the problems faced by the participant was that course preparation that was offered did not cover issues that can occur in survey courses. This included the development of a capstone project, moving from one distinct topic to another and allowing the material to maintain a form of continuity. A second area was that of time management. The amount of energy spent was problematic as the GSI stated: "I find it is easy to let the course take too much of my energy."

Areas for self-improvement as an instructor were identified by the participant and the person stated that they would like to work more on integrating learning objectives into the student assessment and developing the assessment to reduce plagiarism without resorting to a "scare technique." The other element addressed was that developing "meta-techniques" such as critical thinking and writing skills was difficult to balance with material, assessment and learning objectives.

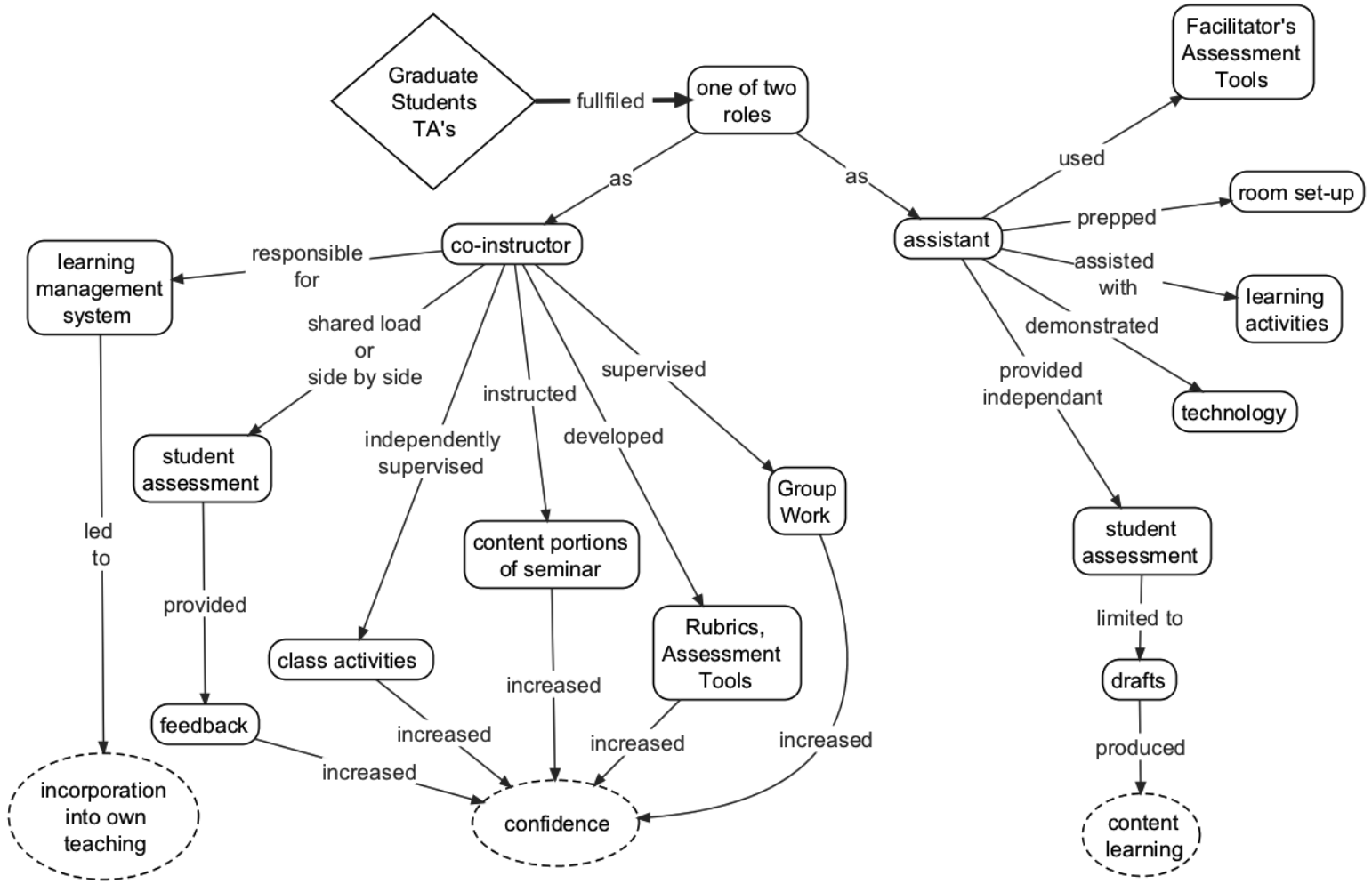

Figure 7: Teaching Assistant roles and associated responsibilities

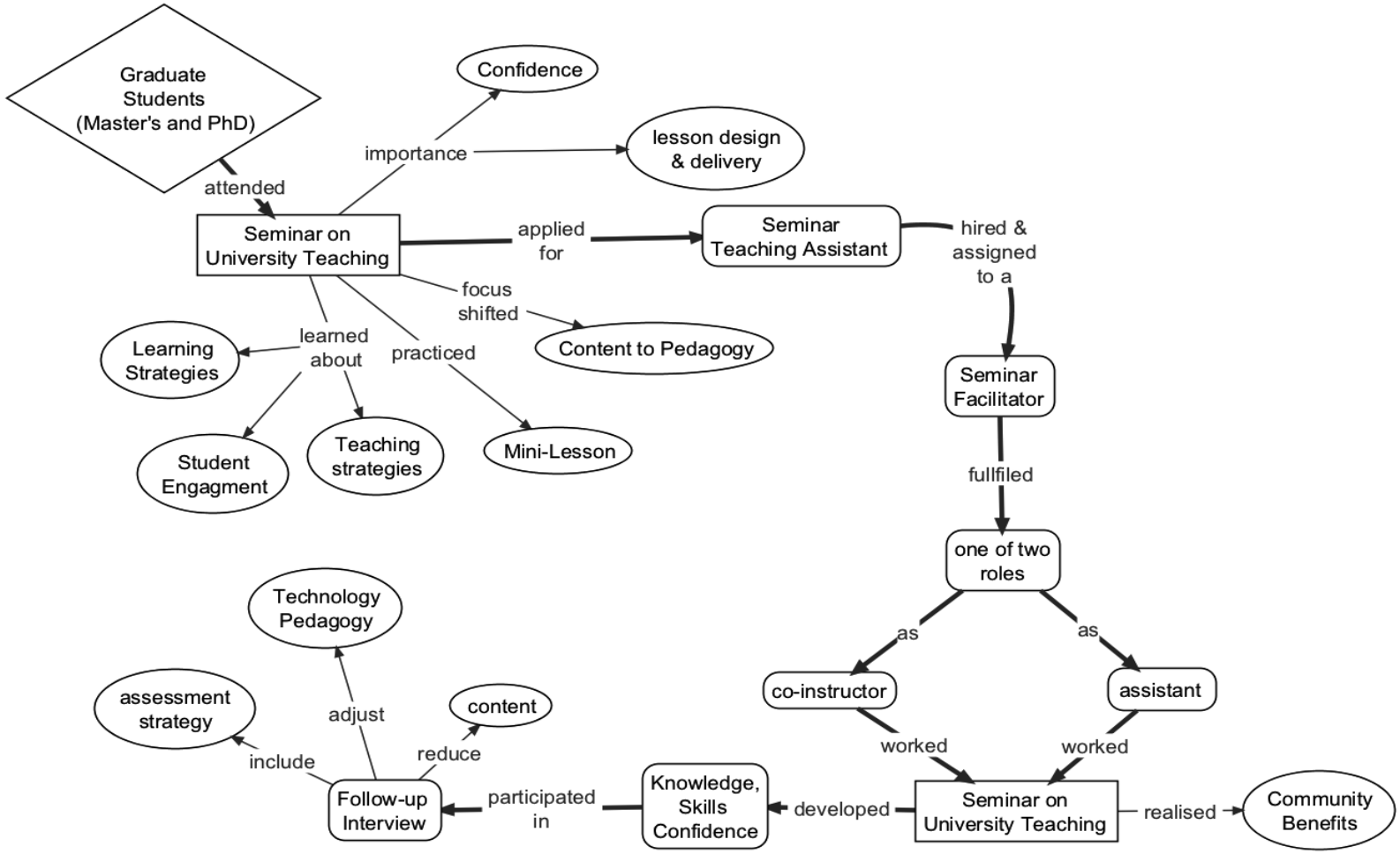

Figure 8: Teaching Assistant path for the seminar, development in knowledge and skills regarding teaching and learning

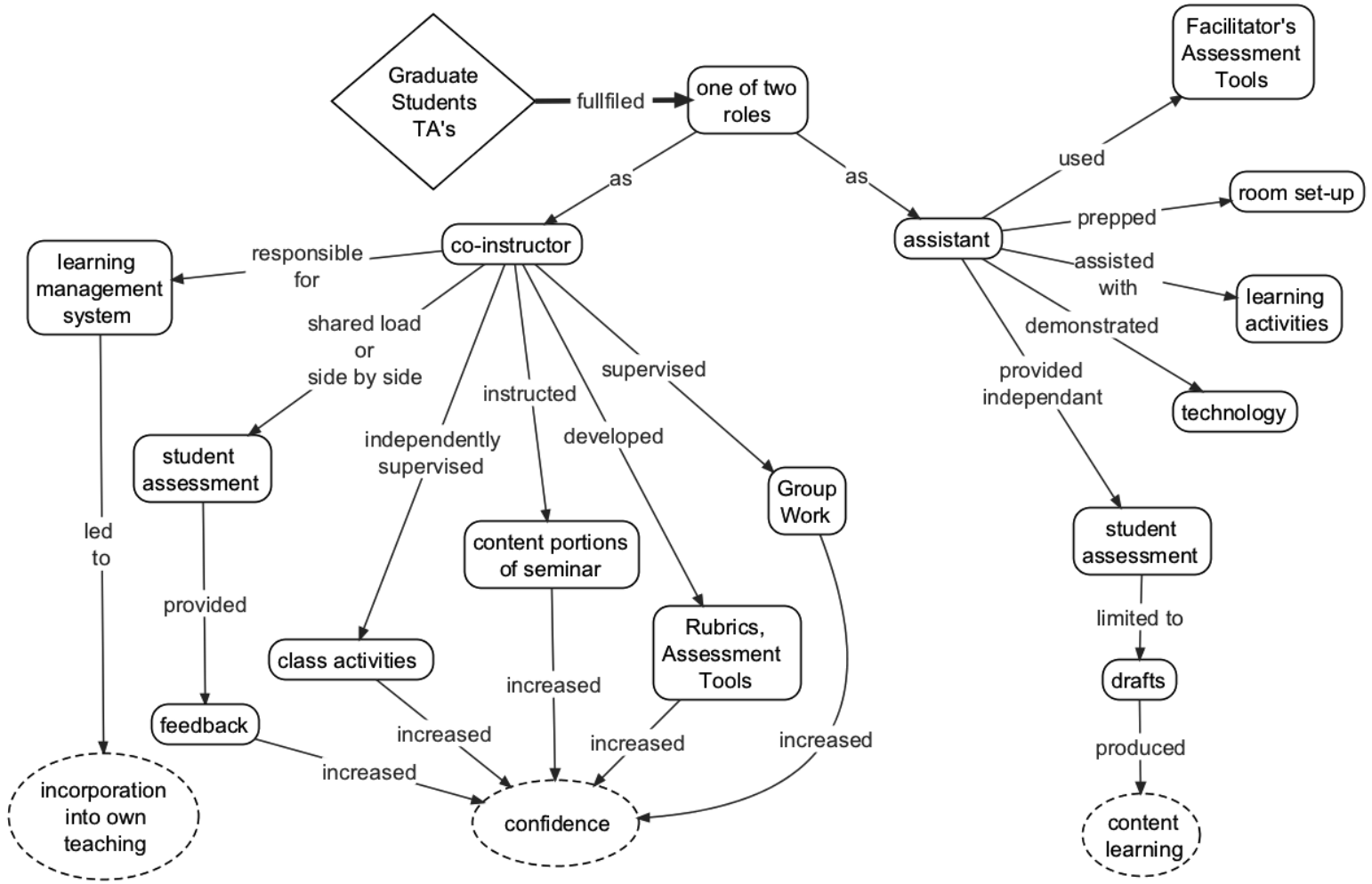

Figure 7: Teaching Assistant roles and associated responsibilities

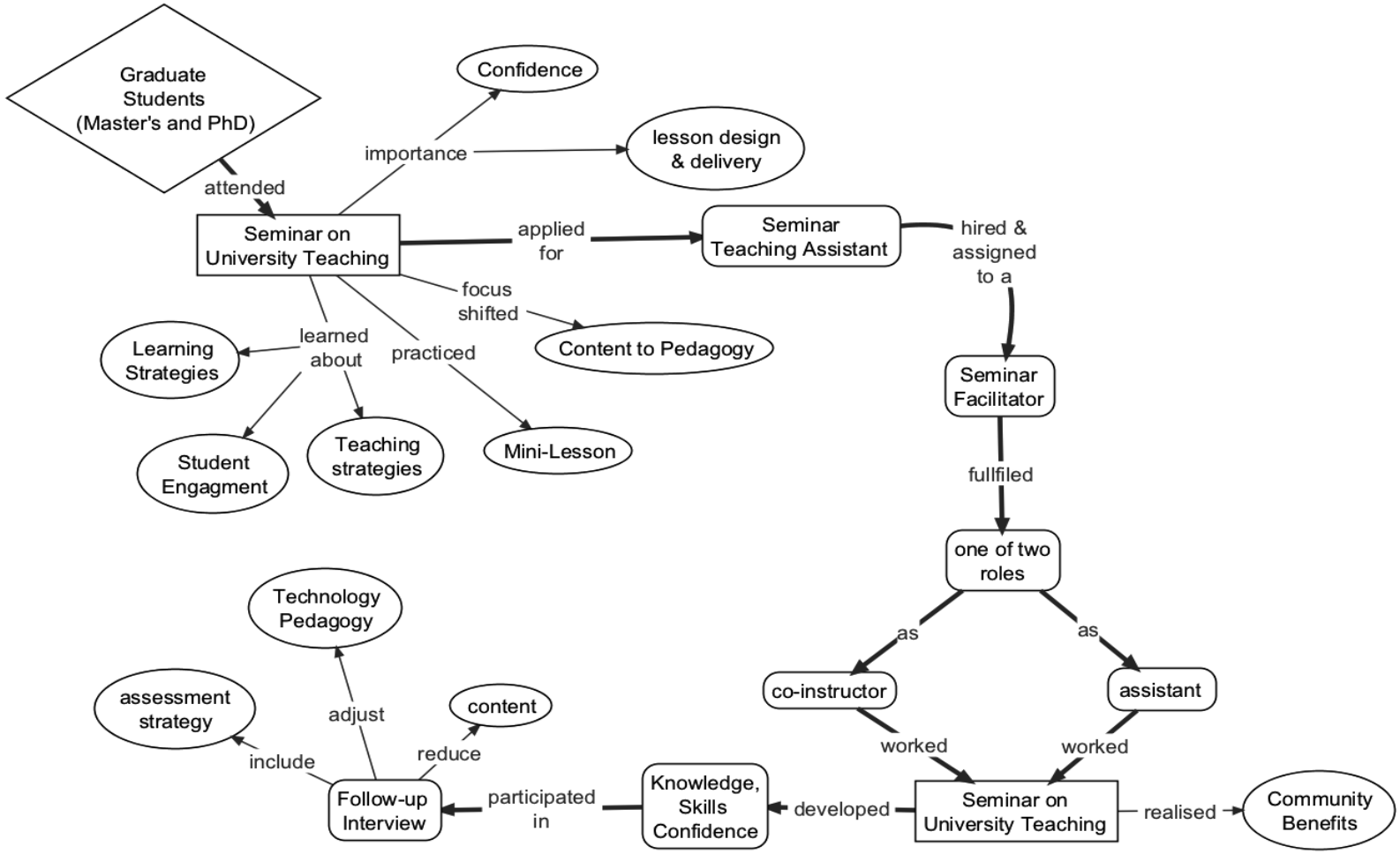

Figure 8: Teaching Assistant path for the seminar, development in knowledge and skills regarding teaching and learning

Graduate Student Instructors

GSI Humanities

The graduate student participant from the academic discipline of the humanities took the seminar in university teaching to develop "a sense of what it meant to teach an entire course." The experiences leading up to this included "individual lectures" and the grading of assignments as a TA. The participant claimed that the exposure to the "pedagogical theory" allowed them to identify pedagogy when it was taking place and to talk about the theory with others. The other component was that the seminar allowed for practice: "a mini-lecture, preparing learning objectives, preparing rubrics," that developed "a sense of confidence to do it in the real world." This participant took the seminar to prepare for the eventuality of teaching at the post-secondary level, and acknowledged that the role the seminar played in receiving of a teaching contract cannot be made.

The process of development towards becoming a GSI involved three stages: experience as a teaching assistant, participating in the seminar on university teaching, including as a TA and fulfilling a contract to teach an undergraduate 200 level course. As a TA within the academic discipline, opportunities were provided for experience to be gained in grading undergraduate work and presenting single lectures. The seminar in university teaching introduced the participant to soliciting student feedback, how to use student response systems and pedagogical theory.

The overall sense of course preparation included learning objectives and rubrics. The participant did mention that there could be a little less focus on

technology within the seminar as the participant did not incorporate the use of student response systems into the course they taught but, specified that this view could be limited to the "old fashion humanities." As a TA for the seminar, the participant learned to use learning management software, a technology that was incorporated into the course and other components discussed in the previous section involving the TA's. The path is diagramed in Figure 9.

A key product of this experience that was discussed by the participant was confidence. As a GSI, this confidence was important and maintained through the course because when soliciting student feedback:

> … the feedback was positive and [...] my confidence stayed high cause I could see what I had learned [was] working with this system

This participant also had a TA for the course and used the same developmental process that they went through with the TA. This included sharing the responsibility on grading the students' work, delivering of lectures and providing office hours and review sessions before exams.

The interview did reveal areas that need to be addressed however. One of the problems faced by the participant was that course preparation that was offered did not cover issues that can occur in survey courses. This included the development of a capstone project, moving from one distinct topic to another and allowing the material to maintain a form of continuity. A second area was that of time management. The amount of energy spent was problematic as the GSI stated: "I find it is easy to let the course take too much of my energy."

Areas for self-improvement as an instructor were identified by the participant and the person stated that they would like to work more on integrating learning objectives into the student assessment and developing the assessment to reduce plagiarism without resorting to a "scare technique." The other element addressed was that developing "meta-techniques" such as critical thinking and writing skills was difficult to balance with material, assessment and learning objectives.

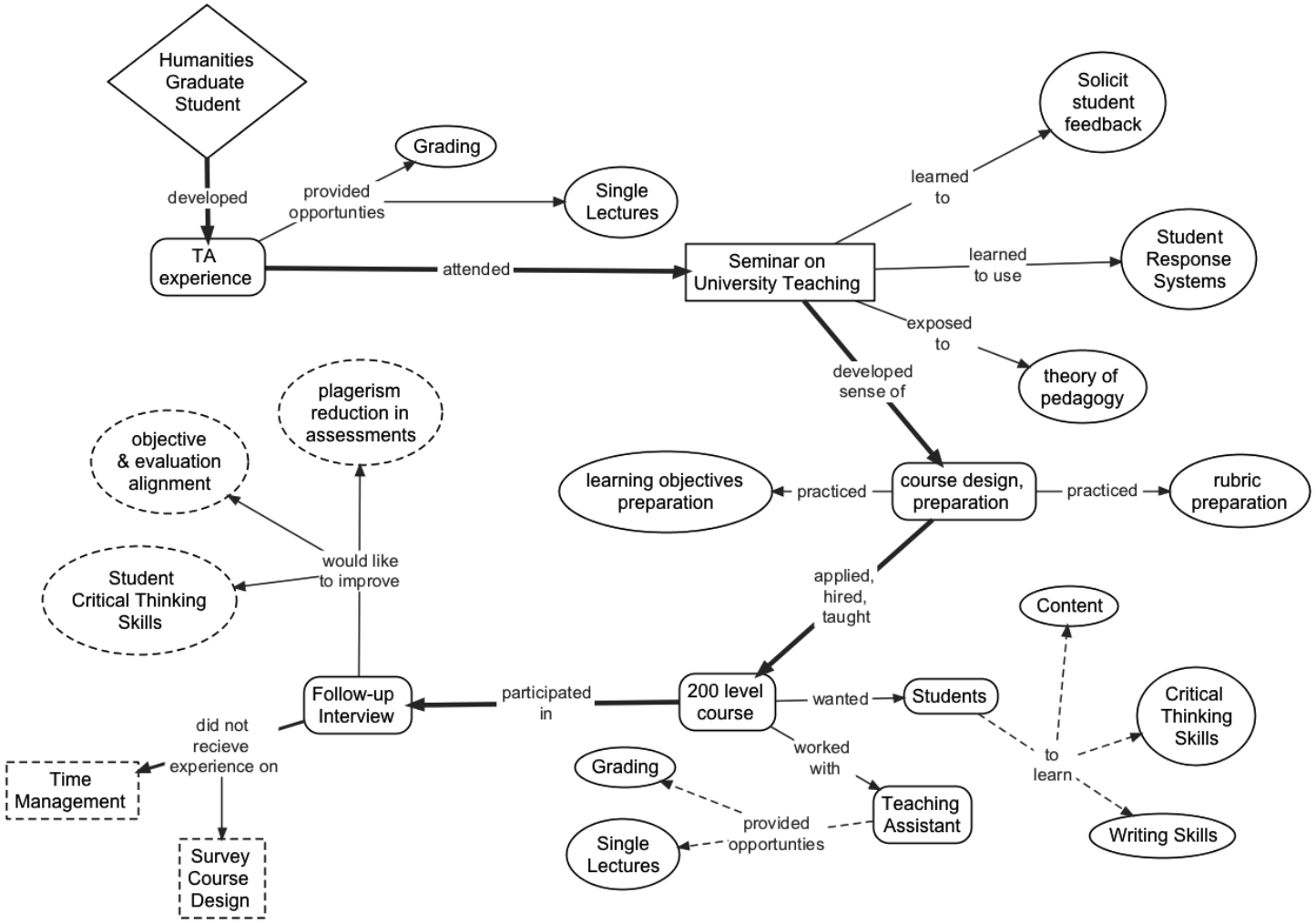

Figure 9: Humanities path for a graduate student development in knowledge and skills regarding teaching and learning

GSI Sciences

This graduate student enrolled in the seminar after receiving a teaching contract. The purpose of the seminar for this participant was to develop course components for the course they would be teaching, such as the course outline and concept map. This person also took the opportunity to "think about other strategies other than lecture" and "to try to make [the course] more interactive." This was preformed with a focus on aligning learning objectives with assignment evaluations.

The process of development for this student had three components that were identified from the interview. While there was no mention of TA experience from this participant during the interview, the graduate student took the initiative to identify a listed course that had not been taught within the department and proposed to teach the course. The course did not contain content that was related to the student's research projects.

The second component, after finding a course to teach, was getting the training and knowledge to develop and teach it. This involved attending the seminar and initiating meetings with the undergraduate program director. The reasons that the student took the seminar have already been stated. The meetings with the undergraduate program director (UGPD) provided the participant with insight on the content knowledge undergraduate students would have when entering the course. Furthermore, tips on teaching undergraduates in the specific

academic discipline were provided by the UGPD. The path is displayed in Figure 10.

The participant for the further improvement of their teaching abilities identified three items. Firstly, the student spoke of designing exams as this information was not specifically covered in the seminar and that "it was a challenge when I set the exams [...] I had never written an exam before." The other two elements were about learning more methods regarding class participation and evaluating student work.

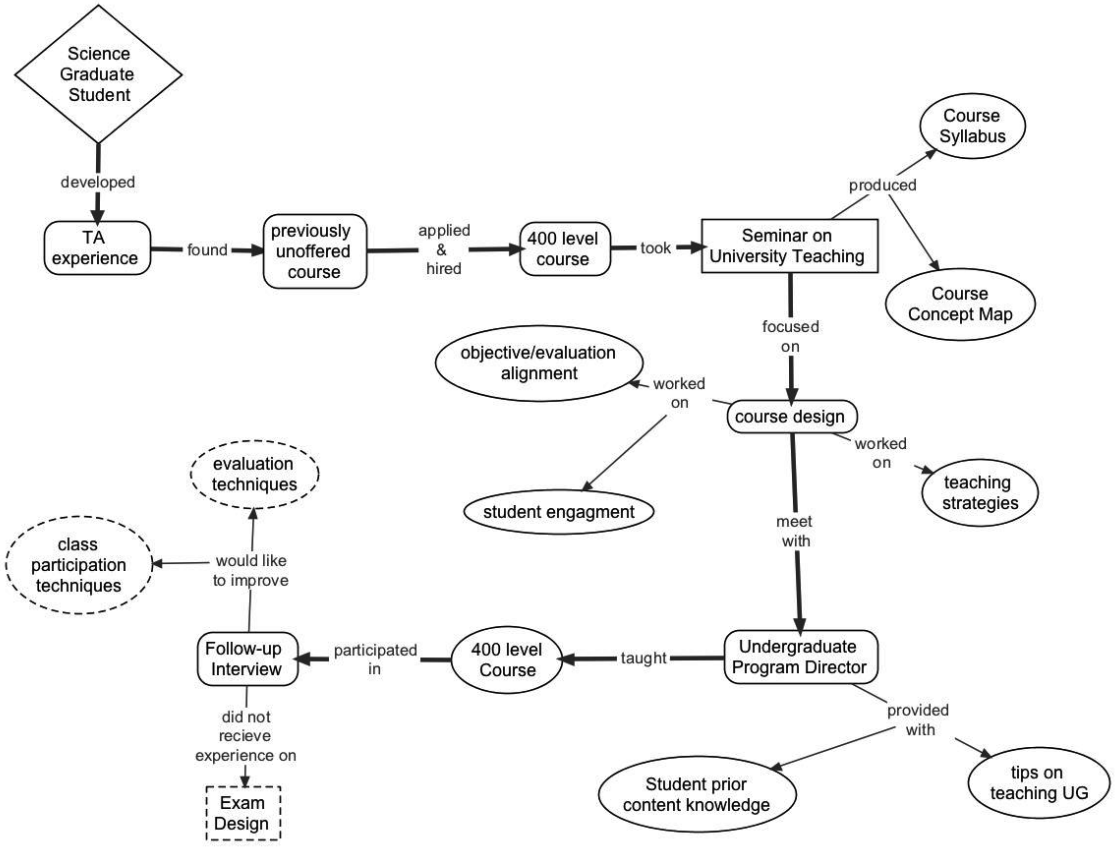

Figure 10: Science path for a graduate student development in knowledge and skills regarding teaching and learning

Faculty: The Academic Disciplines

Fine Arts

The participant from the Fine Arts department expressed interest in a graduate being able to understand and incorporate the information processes involved in learning into the classroom. The information process was elaborated to include that of learning through "class sharing," "collective contribution" and by "individual participation [and] contribution." This included that graduate students need to know who the undergraduates are in terms of being students in their classroom and how they will understand the subject matter presented to them.

The process of developing graduate students as GSI's described by the participant clarified that this was the first year that the academic discipline offered teaching opportunities. All efforts were made by the department to provide classes that related to the graduate student's area of research. This was not a guarantee and on occasion students may have had to learn new content prior to their teaching assignments. The selected graduate students given teaching assignments, were supervised by full-time professors who had previously taught the course. Prior to the teaching assignment, the graduate students were required to take the intensive format of the seminar in university teaching offered by the Teaching and Learning Department. Following this, the construction of the course syllabi needed to be approved by the undergraduate program director. The participant also noticed that the GSI's were expending a lot of energy from the experience.

The roles of TA's within the academic discipline were not discussed as a component of GSI development. The responsibilities that were addressed involving TA's were that they would "teach a class from time to time" and would be able to mark at the Master's level if they took the seminar. The interview did bring forward constraints in resources regarding the hiring of TAs and the reduced ability to offering Teaching Assistantships to graduate students. An issue regarding grading with TAs arose based on student numbers, scenarios occur where TA's are only able to mark half of the assignments due to contracts and budget constraints. Figure 11 marks the intended path of the department in Fine Arts.

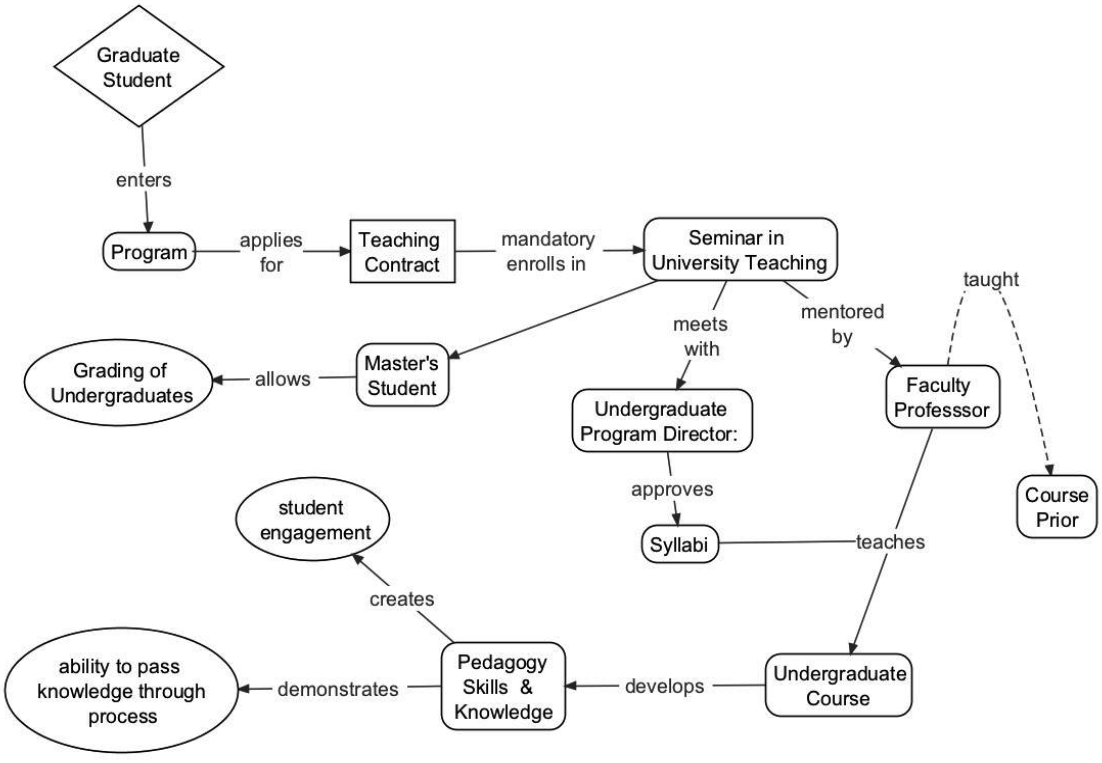

Figure 11: Expected path for a fine arts graduate student to develop knowledge and skills regarding teaching and learning

Humanities

The academic department in the Humanities held the view that graduate student instructor development was an "integral part of their program." Two skills were identified as being key for graduate students to develop before becoming lecturers. Classroom dynamics, which permits teaching to be an interactive, as a two way process, based on the Socratic method. The other skill is that of being able to create student engagement.

The department was described as taking an active approach in developing graduate student instructors. Each faculty member would encourage TAs to give single lectures and seminars would be offered when needed for further training. Faculty members would also provide feedback on the TA's performance. The seminar on university teaching was described as a good investment of student time but no evidence supported that the seminar was mandatory or recommended by professors for students to take. The department was described as being able to offer most graduate students teaching experience as TA's and further offered a few reserved courses each year for GSI's. These courses were described as being highly competitive as there were around 30 graduate students for every one course available. Figure 12 maps out the intended path within this Humanities department.

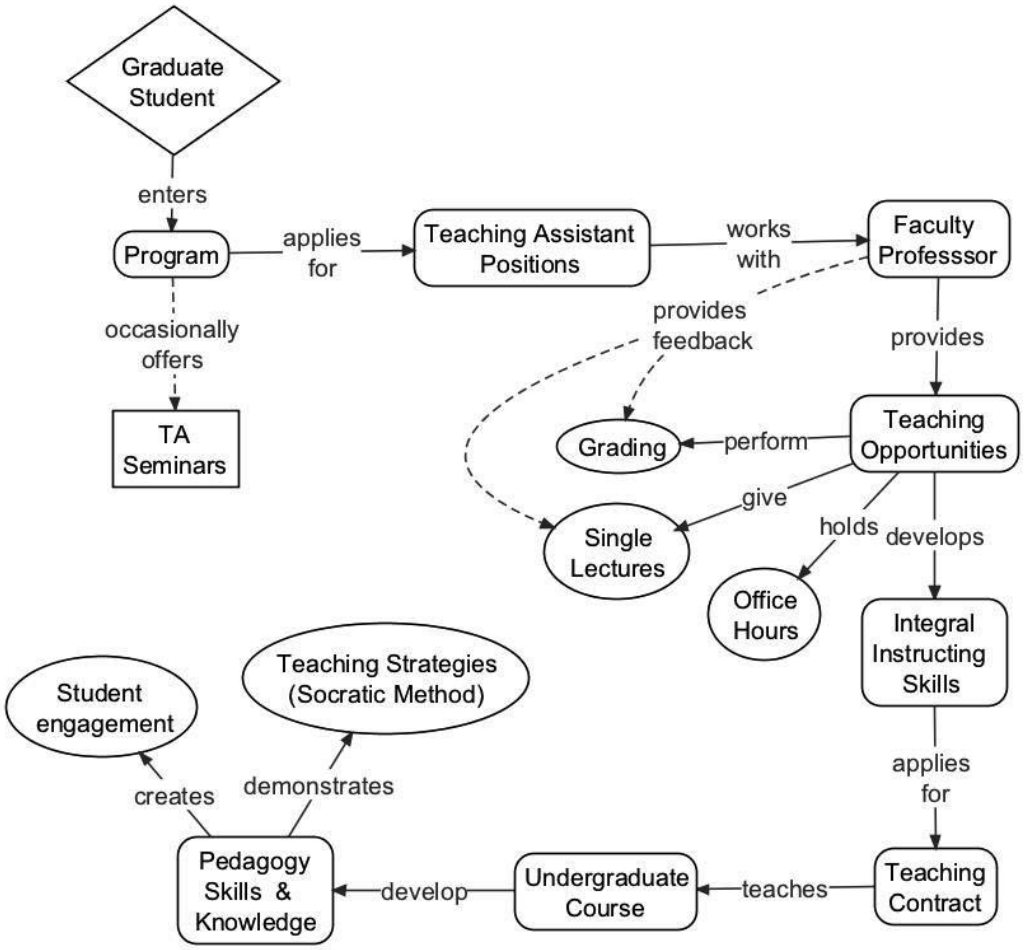

Figure 12: Expected path for a humanities graduate student to develop knowledge and skills regarding teaching and learning

---

Science

The majority of students from this academic discipline were described as being interested in careers other than in academia. The academic department therefore orients their graduate student development towards research. Graduate students are required to be teaching assistants and laboratory assistants (LA) and most fulfill these roles throughout their period of study within the program. The

students are required to attend the semester seminar related to TA and LA responsibilities. The participant did state that the TA's could be over exposed to the TA seminar due to continuous repetition every semester. In these positions, the opportunity existed for the students to develop presentation skills and teaching skills associated with tutorials. Grading by graduate students within the department is limited to laboratory reports.

Content knowledge is developed through the students' relationship with the professor and research group. The knowledge is developed through course work and two mandatory seminars: one regarding the literature surrounding the student's research and the other in a presentation seminar regarding the student's research. These seminars are expected to demonstrate the student's knowledge of the content and to develop presentation skills.

This Science department was one of the few departments that clearly talked about content, pedagogy, and technology within the classroom. An element that emerged from the interview was that a graduate student would not need to know pedagogy, as it would not be part of the hiring process. The focus was on being able to present research findings well. If accomplished, then the individual satisfies the teaching requirements.

Lecturers hired in this department are required to conduct a seminar on a topic related to the type of courses they would be scheduled to teach. The Department is looking for the ability to lecture using audiovisual, black boards and presentation software. Qualities expected to be demonstrated by the potential

lecturer are pace, the accessibility of the content presented, and the ability to field questions. The process within this department is mapped out in Figure 13.

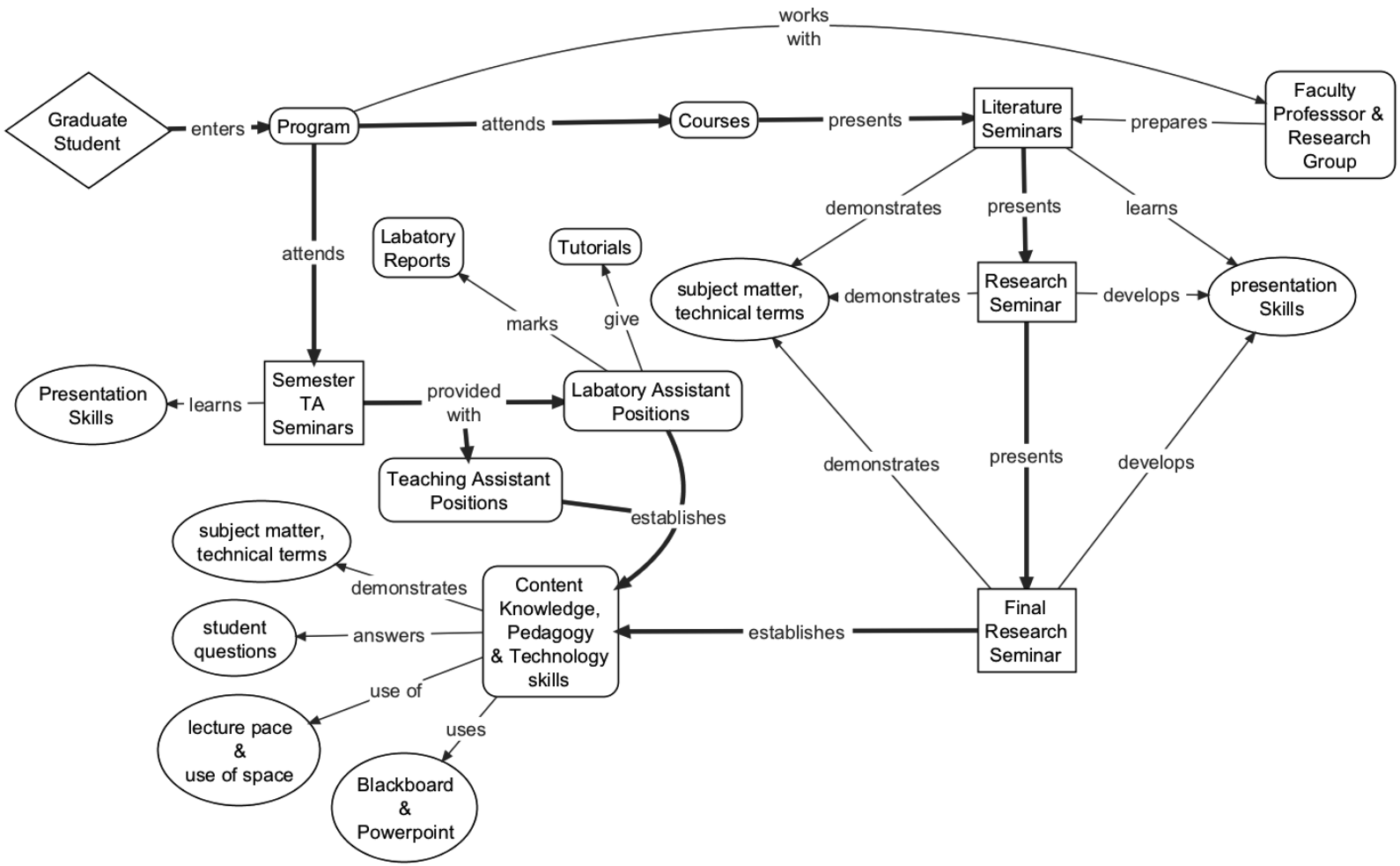

Figure 13: Expected path for a science graduate student to develop knowledge and skills regarding teaching and learning

Social Sciences

Within the social sciences department, it was expressed that when hiring graduates for teaching responsibilities, they expect the graduate to be able to articulate knowledge of teaching during the hiring stages. This is to include confidence in the "whole package" of university teaching with the specific ability to create student engagement. It was also expressed from the participant that graduates should know how to use a teaching assistant effectively and be able to provide the TA with a learning experience.

Content knowledge is expected within this department. It was stated that a PhD student is required to pass the comprehensive exams before being able to teach an undergraduate course. This content knowledge is not enough as it was expressed that a knowledge of pedagogy needs to exist. Graduates should not "assume [that they] can teach ridiculous amounts of material," the content needs to be facilitated into appropriate amounts that the students can comprehend.

The process for graduate student instructor development that existed at the time of the study involved three specific components. The graduate student is expected to develop as a TA through in house seminars and under the guidance of a Faculty professor. It was stated that not all faculty have provided the same type of experience and are unaware or are resistant of their roles as a "supervisor" to guide and develop grading skills in graduate students. The second component is that of preparing content knowledge expertise through preparation for the comprehensive exams and the area of research of the graduate student. The third component was

not a finalized structure, the focus to provide graduate students with teaching opportunities involves making courses available that reflect the content knowledge of the graduate student. This would be through 200 level content courses that deal with an intro to their specialty or 300 level courses that deal with their specific content areas. Figure 14 illustrates the intended process within this department. Table 5 highlights the differences between the each department.

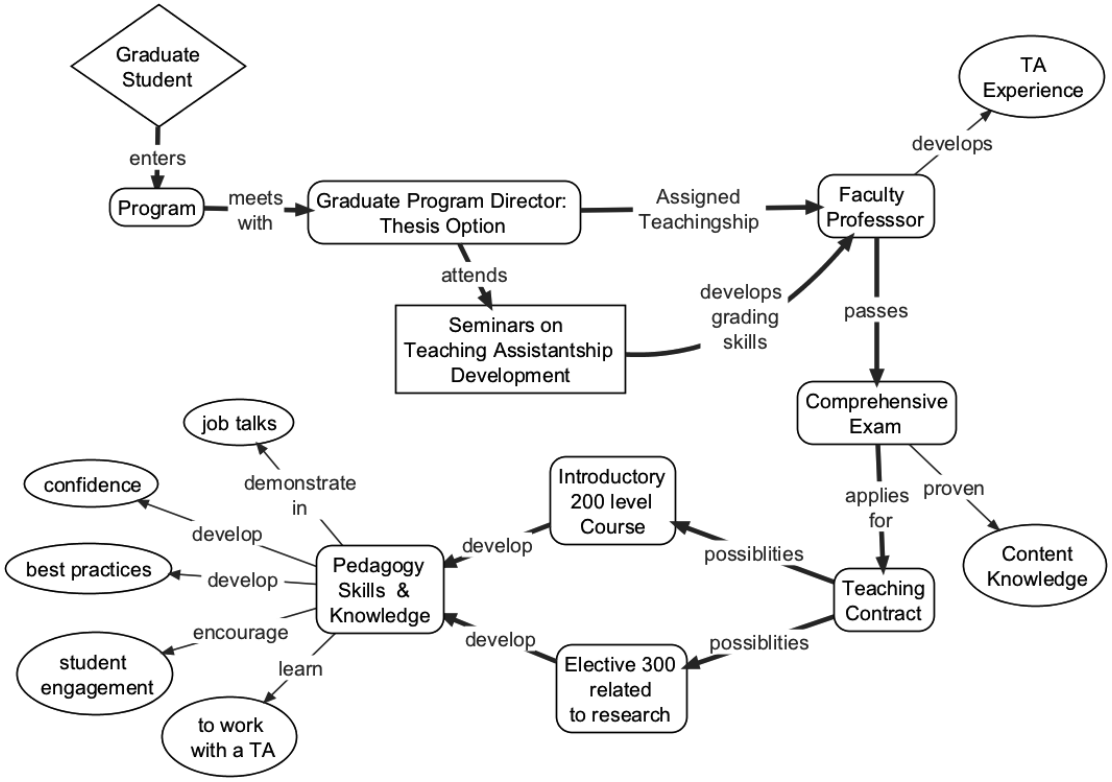

Figure 14: Expected path for a social science graduate student to develop knowledge and skills regarding teaching and learning

Table 5: Differences between Faculty in Graduate Student Instructor Development

		Fine Arts	Humanities	Science	Social Science
Teaching Assistant Experience		Yes; structure not discussed	Yes; with detailed structure	Mandatory, with structure	Yes; with structure
TA Training		- *No department training discussed*	- Seminars, occasionally - Faculty supervised development	- Every semester for all TA's and LA's	- Seminars for LTA's and new faculty to work with TA's - Faculty supervised development
Teaching Assistant Responsibilities		- Occasional teaching - Grading, if qualified	- Single Lectures - Grading	- Laboratory Presentation - Lab Report marking - Tutorials	- Grading - No mention of presentations
Teaching Opportunities		Yes	Yes	Extremely limited	In progress
Student Research and Course Relationship		Preferred, but not always	Not mentioned	N/A	In progress
Seminar		Required	Optional	Not Applicable	Not yet determined
Lecturer: Expected Skills	Content	- Research focus when possible	*Not identified*	- Specific content knowledge and technical terms	- Comprehensive exam - Research focus
	Pedagogy	- Discussion based - Student learning process	- Student engagement - Interactive teaching strategies	- Competent lecture skills	- Best Practices - Pedagogy Knowledge - Student Engagement
	Technology	- Audio visual	- Not mentioned	- Audio visual	- Not Mentioned

Disturbances in the alignment

A few areas are mentioned by the participants that can be identified as creating a disturbance in the development of GSI's. These disturbances prevent a graduate student from developing teaching and learning competencies through exposure to the full spectrum of what teaching at the university level entails. This includes presenting course content, grading a variety of assignments, holding office hours and other administrative duties and developing components of a course: syllabus, learning objectives, assignments, assessment strategies.

The TA's of the seminar claimed that when they were assigned a role as an "assistant" they did not feel that it raised their level of confidence in teaching abilities. The only positive side note from the role is that as a grader they had a chance to increase their content knowledge. This disturbance is further supported by the faculty participant in the Social Sciences who mentioned that not all professors know how to properly supervise and train graduate students as TA's.

Another area that emerged in the Science discipline is that not all programs provide opportunities for graduate students to teach a full spectrum within the discipline. Graduate students would be given the opportunity to present portions of a class lecture but there was no indication in the discussion that the allowance enabled the graduate student to develop a lesson plan for that class. This includes grading of a variety of assignments, as the students within the academic discipline of the faculty member interviewed stated that only professor's mark and grade student work. LA's mark one type of assignment that being lab reports.

It should be noted that developing a lesson plan for an entire class was a general disturbance across the participants at the faculty level. Though it was mentioned that opportunities did exist where a graduate student would be able to present an entire class worth of content. Nevertheless, there was no mention that they needed to develop a lesson plan for that presentation.

One of the disturbances in the Fine Arts is oriented around the issue of teaching assistants and the role they play in developing GSI. It is not clear from the interview what development practices take place within the Faculty but there is evidence to suggest that the opportunity to provide teaching assistantships to all graduate students may not be possible. This reduces the ability of students to develop skills through TA experiences. Creating a potential lack in a valuable experience that builds skills and knowledge towards being a successful GSI.

The faculty participant from Fine Arts also mentioned that there is a potential for GSI's to have a problem with time management. This also came up within the interview from the GSI of the Humanities. This can be a disturbance as putting too much effort into grading, lesson planning, and content preparation can take away from other responsibilities such as course work and research. This participant also raised the issue of specific course design, of which may be a factor to time management. Identifying a possible disturbance as that of being not enough provision to the different types of classes that may exist was offered and/or that taking the seminar prior to receiving a teaching contract did not benefit the

participant as well as those who had taken the seminar after receiving the teaching contract.

Lastly, are minor disturbances raised by GSI participants. The GSI from the Sciences felt that there was not enough experience provided prior to the setting of exams to make that process easier. This participant also felt that opportunities to learn more about class participation and evaluation techniques would benefit their teaching in a following opportunity. The latter view was also raised by the GSI from the Humanities clarifying an interest with aligning learning objectives to the evaluation process. This participant also mentioned that further development in how to reduce plagiarism through assignment construction and developing meta-techniques to improve student critical thinking skills would be beneficial. Table 6 offers an overview of identified disturbances across the participants.

Table 6: Disturbances identified through the participants that prevent GSI development

Teaching Assistants	Graduate Student Instructors	Fine Arts	Humanities	Science	Social Science
Treated as an assistant	Setting exams	Time management	Few reserved courses for GSI's	Not part of the hiring process	Training is developed when needed
	Time management	Limited resources		No courses offered for GSI	Not all faculty act as supervisors

Question 2: Is there an alignment between what the Teaching and Learning Departments produce through the graduate seminars with the instructional needs of the institution and the apprenticeship of graduate students developing as potential instructors?

When analyzing this question, it is possible to direct one's attention to the learning outcomes to understand if they match across the departments of the institution. However, this is not an effective approach as there is a deeper understanding of how learning outcomes are produced that affect how these outcomes will be practiced. It is the implementation of a learning outcome that requires a larger investigation of alignment. The model that arises out of Biggs (1996, 1999. 2003) work and the literature review is the basis for this question, Figure 5.

Alignment needs to be addressed at the following levels: learning objectives, learning theories, operationalizing technologies, learning taxonomies and learning outcomes. Table 7 provides an overview of what can be identified from the data by participants regarding the five categories.

The themes identified in the literature regarding alignment have been defined the following way in relation to this study. The definitions vary depending on who is being described as responsible for training, TLD and faculty, have a slightly different role than those undertaking the training, TA's and GSI's. Both definitions are described when present.

Learning objectives have two definitions. For the trainers it is what the program or seminar aims to cover during the student's period of studies. For the graduate students it is what they aim to learn and develop from the process.

Learning theories are defined to illustrate an idea or context in which the participant wants to develop the learner's within their control. For the trainers this would be towards the graduate students and the graduate students towards the students in their class, either as TA's or GSI's

Operationalizing technology are the resources used as tools to develop the experience and produce the learning outcomes.

Learning taxonomy is based from Biggs' (1999) views on surface and deep learning along with Krathwohl's (2002) revised version of Bloom's taxonomy.

Learning outcomes are the results from the process. For the trainers, this refers to expected outcomes and for the graduate students their actual outcomes

There are two analyses that have to be done with this section. This involves

separately comparing the components of alignment from the seminar in university teaching with the graduate students and the seminar with the faculty participants. This analysis is performed continuously, first comparing the seminar with the graduate participants and then with faculty.

The seminar in university teaching alignment of learning objectives with graduate students is quite similar. The objective to prepare graduate students for teaching positions is matched by the GSI's. Similar in nature to each other though slightly different as one GSI's objective was to prepare a course while the other was to learn and understand what it took to teach a course. The TA's discussed more specific learning objectives through building confidence in teaching components and the ability to design and deliver lessons. This relates to their teaching responsibilities as TA's to deliver single lessons or components of a course lecture.

The seminar's learning objectives is also aligned with the academic disciplines of Fine Arts and the Humanities that participated in the study. In different ways, both of these departments expressed that they want their graduate students to be prepared to teach with an understanding of how teaching relates to undergraduate students. The Social Science discipline's objective is developing and is currently focused on providing a beneficial TA experience for their graduate students. As their strategies develop to include graduate student instructors, the alignment with the seminar is expected to increase. The Science discipline's learning objective is focused towards research skills and in this context there is little alignment between the two objectives towards graduate student development.

There is a very limited teaching capacity for graduate students in the department in comparison with the other departments including the Science department of the GSI.

A learner-oriented approach is used as the learning theory in the seminar in university teaching complimented with active learning strategies that involve student engagement in the learning activities. This view carried through with the GSI from Science who identified elements of a learning theory to be more than lecturing, interactive and interesting for the students and that the objectives of the course are aligned with the evaluations. The GSI from Humanities did not address learning theories specifically, though there is evidence that another dimension is added to this participants learning theory that involves developing skills on top of the content knowledge specifically that of critical thinking and writing. The TA's again break down the learning theory in relation to their roles and responsibilities and that is to provide a sense of community through the use of classroom discussions.

The alignment of learning theories between the seminar and the academic disciplines has a stronger alignment across the different bodies but how each discipline individualizes their components changes the type of alignment that does exist. The seminar's learning theory is almost seen as an extreme view compared to what was expressed by the academic disciplines in that it takes a much broader approach incorporating the learning theory and pedagogy. The Humanities and Social Science disciplines are clearly aligned with the active learning approach

through their belief in offering a hands-on experience for their graduate students and provide faculty who can properly supervise the graduate students active participation in TAing. The Fine Arts discipline provides data that aligns more with the learner-orientation through discussion-oriented activities and that the seminar itself, which is a mandatory component of their GSI development process. The situated cognition that arises out of data, provided by the Science discipline, does align with seminar in university teaching in the sense that by actively participating in the processes of teaching, it does create a situated environment and the seminar does represent a form of a community of practice. The difference is intention. With only a few students interested in an academic career, the Science discipline focuses on a situated environment that reflects the career goals of the majority of the students and therefore places that environment in the research arena.

The alignment regarding the operationalizing technology is visible through Table 7. It needs to be pointed out that the GSI from Science did not address this element during the interview. It would not be possible to imply that this meant that there was no technologies used within the teaching of the course but how these technologies were used cannot be addressed. This element of alignment does represent a level of deep learning in that it requires the graduate students to apply what they have learned. This is seen to favour graduate students who participated as TA's in respect to computer media such as learning management systems and learning response systems. Though the latter is not addressed in the table, it is an item that is implemented in the seminar discussed by the TA's in developing a

process that allows for an informed use of using such technologies in the learning environment.

Table 7: Alignment of GSI development across the participants

Participant	Learning Objective	Learning Theory/ Pedagogy	Operationalizing Technology	Learning Taxonomy	Learning Outcomes
Seminar in University Teaching	Prepare graduate students for an academic teaching career	Learner oriented with active learning processes	- Readings, textbook - Learning management system - Aligned assignments, - Class discussion, peer review - Non-graded assignments and demonstrations	Biggs S/D Bloom RU/AAEC	*Expected:* - Successfully apply for jobs - Effective teaching at the tertiary level - Teaching dossier - Shift towards an Instructor-centre
Teaching Assistants for Seminar	- To build confidence and try things out - Design and deliver lessons with confidence	- Classroom discussions - Learn through the participation of the classroom	- Mentoring - Use facilitators instruments - Group feedback; assessment - Learning Management System - Textbook - Syllabus development	- Assess - Analyze, - Evaluate, - Hypothesis - Explain - Create	- LMS - Confidence - Critically reflect on teaching practices and provide alternatives - Improved teaching
GSI Humanities	Understand what it is to teach an entire course	*Did not discuss*	- Practice - Demonstrations of pedagogy - Perry's classification - Readings - TA experience	- Remembered - Applied - Reflected	- Confidence in Rubrics, LO, - Soliciting student feedback - Ability to work with a TA - Ambitious [relates to SET]
GSI Science	Prepare course to be taught	- More than lecture - Interactive and interesting - Aligned objectives and evaluations	*Did not discuss*	Create	Thought the course went well

Participant	Learning Objective	Learning Theory/ Pedagogy	Operationalizing Technology	Learning Taxonomy	Learning Outcomes
Faculty of Fine Arts	To be able to teach an undergraduate course with an understanding of undergraduate students diversity	Discussion oriented	- Seminar in University Teaching - Supervision by Faculty and Undergraduate Program Director - Undergraduate course	- Understanding - Apply	*Expected:* - How information processed in the classroom - Student diversity knowledge
Faculty of Humanities	Practice, training and being prepared to teach	Hands on experience, feedback	- Individual mentoring - TA & GSI experience - Single lectures - Grading	*Not discussed*	*Expected:* - Classroom dynamics - Student engagement - Interactive teaching strategies
Faculty of Science	Prepare graduate students to disseminate knowledge within a research discipline	- Content oriented - Situated cognition	- Individual& group mentoring (content) - Information seminars for LA & TA's - Research seminars - TA experience	- Describe - Explain	*Expected:* To present research, including unpopular topics, in a paced lecture with supporting technology
Faculty of Social Science	To provide beneficial TA experiences	A two way process between faculty and students	- GPD deals with TA positions - Faculty supervisors (not all) for TA's - Seminars on how to work with TA's	*Not discussed*	*Expected:* - To give students an edge when the apply for work - Best practices of teaching that capture student engagement

The alignment of the seminar with faculty needs to be addressed using a different approach. What needs to be looked at for alignment on this feature is if the process of development within the academic disciplines compliments the seminar towards producing the learning outcomes. The use of progressive learning experiences through presenting course content and moving from shared marking to full marking responsibilities of the graduate students compliments the seminar in university teaching. As the seminar provides best practices through readings, class discussion and practical assignments that build knowledge and skills in the progressive learning experiences offered by the academic disciplines. The role of supervising faculty and additional seminars and interactions with the Undergraduate Program Director (UPD) does not appear to conflict with the actions of either group. In one aspect, the seminar may be seen as exceeding the needs of the graduate students and academic disciplines by the implementation of a teaching dossier. This exceeding of needs also ties into the needs from the faculty participant from the Sciences. The knowledge and skills developed through the seminar go beyond what is expected and needed of this department's graduate students as the opportunities to apply what has been covered by the seminar is limited and are not necessary for the hiring process.

Biggs taxonomy on surface and deep learning along with Bloom's revised taxonomy are the two learning taxonomies into which the seminar covers. As Biggs taxonomy builds off of the foundation layer of surface learning, which are equivalent to Blooms views on remembering and understanding and deep learning

to that of analyzing applying evaluating and creating. The TA's within the focus group displayed deep learning characteristics, whether it was creating a rubric for assessment, evaluating the teaching approaches of another professor outside of the seminar, analyzing what was taking place and hypothesizing on strategies on how to implement a technology pedagogy were quite clear. The interviews with the GSI's did bring out both surface and deep learning where appropriate but did not bring out deep learning to the extent that was illustrated by the TA's. The deep knowledge illustrated by the GSI's involved creating a course, reflecting on practices and assessing how those practices worked and what steps could be taken to improve them in the future.

The levels of learning taxonomies were not clearly identified within the interviews with the academic departments. This produced the comment for the Social Sciences and Humanities to be labeled in Table 7 "not discussed." What did come out of the interviews from Fine Arts and Science were low and middle levels, the highest level being that of explaining content. The interviews and focus group provide insight that the levels of learning are spread out across the taxonomies. The graduate students are expected to create courses, assess student learning, explain content, apply teaching practices, understand their responsibilities and roles and remember numerous items that relate to their roles. So even if the interviews with faculty do not produce a clear level of alignment regarding learning taxonomies, the alignment exists.

The relationship of the learning outcomes are illustrated in an alignment

between the seminar and the graduate student participants regarding effective teaching. Though this term is not qualified through student participation, the confidence level of the participants to be effective teachers was raised by both GSI's. This was further supported by the GSI in the Humanities who solicited feedback from the students to determine if the main objectives of the lesson were being identified by the students. The TA's mentioned confidences as well and identified specific components that related to improved teaching. One of the key elements that was illustrated in the discussion was the ability to critically reflect on teaching practices and provide alternatives to the approach.

From the perspective of the faculty alignment is recognized through components of the seminar in university teaching. The two departments, Science and Fine Arts, that took the time to discuss the individual components covered in the seminar still had a primary interest in specific areas. The Fine Arts wanted GSI's to be able to understand how information was processed in a learning environment and student diversity. The Humanities desired outcomes of classroom dynamics through interactive teaching strategies and student engagement. The Social Science department echoed the Humanities regarding the best practices to capture student engagement and how much information the students can process during a lecture. These topics are covered under learning strategies and teaching strategies of the seminar along with best practices and the ability to develop lessons to capture student engagement are components within the seminar.

The learning outcomes from the Science department do align with those

found in the seminar in respect to knowledge of teaching. The specific focus is rather different and to determine if the two learning outcomes are complementary is problematic. The focus of lecturing to disseminate knowledge is not a focal point of the graduate seminar. Content knowledge and research is respectively the responsibility of the academic disciplines. Where there is alignment is on the structure of pacing a lecture with a pedagogy that benefits the audiences understanding. The seminar also explores how this can be complemented using technology.

Another learning outcome that is addressed by the Social Science department is to give an edge to their graduate students in the job market. This item was not mentioned specifically by the other academic disciplines. This is not to say that it was not considered as a learning outcome, the conversation or interview did not produce a context that highlighted this element. However, it was mentioned in other ways, the Humanities felt that learning to teach was an integral part of graduate studies. Furthermore, the Fine Arts Department has implemented a mandatory policy regarding the seminar for all graduate students with teaching contracts indicating a recognized need for these skills in future job applications. The Science department in contrast stated that knowledge of teaching practices would not come up during interviews for positions. The only place that knowledge of teaching would be evident is during the seminar portion of the hiring process, but again the focus is on content and technical terms.

What does not appear to be aligned with the seminar is the use of the

teaching dossier and successfully applying for teaching contracts. Not one of the participants discussed the item a teaching dossier. The one possibility where it might have been used was with the GSI in Humanities who applied for a teaching contract after taking the seminar. The GSI in science had the teaching contract prior to taking the seminar and therefore there was no need to have a teaching dossier to apply for the position. From the faculty perspective, the Science discipline specifically addressed hiring practices and made no mention of being concerned about a teaching dossier. The Fine Arts had graduate students take the course after receiving the contract and therefore there was again no need for the teaching dossier.

As seen with the alignment discussed earlier regarding learning objectives, there is a solid alignment between the objectives of graduate students with those of faculty. The exception being from the faculty participant in the Sciences. However, this alignment may not be out of context from their students as has been discussed earlier and the few students that have had pursuits for an academic career are known by the participant to have taken the seminar. The TA's objectives of designing and delivering lessons align with the experiences afforded to them by departments in most cases regarding the opportunity to present content in a course. The GSI's broader objective also aligns with experiences that are afforded to them. With the exception of generalizing about the GSI from Science as a faculty member was not interviewed from the same department and it is possible that the department's objectives are similar to that of the faculty participant from the

Sciences. The difference then is that the one department does provide for teaching opportunities for students that are interested in an academic career.

Chapter Five:

Discussion

Summary of Key Findings

The role and experience of a Teaching Assistant (TA) is the foundation in the development of a Graduate Student Instructor (GSI). With limited resources and opportunities to offer reserved courses the development of teaching and learning for most students will be as a TA. The effectiveness of the TA model in the Humanities played an effective role in building confidence and providing insight to some of the concerns discussed within the Social Science discipline regarding training. The TA responsibilities outlined by the focus group further clarifies what items of practice and responsibilities faculty can delegate that build confidence while working with a TA. The TA experience coupled with the seminar in university teaching and some of the practices used and discussed by the academic disciplines are used to create a map of development that can be quite beneficial in developing GSI's. This map is displayed in Figure 15.

Another key component that came out of the TA processes discussed, for the most part involved gradual progressions around presentations and grading. However, there is no reason these progressions cannot be applied to other components of GSI development at this level. When supported by feedback from faculty, the level of confidence in their abilities and of deep learning expressed during the focus group was quite high as observed in the TA's of the seminar.

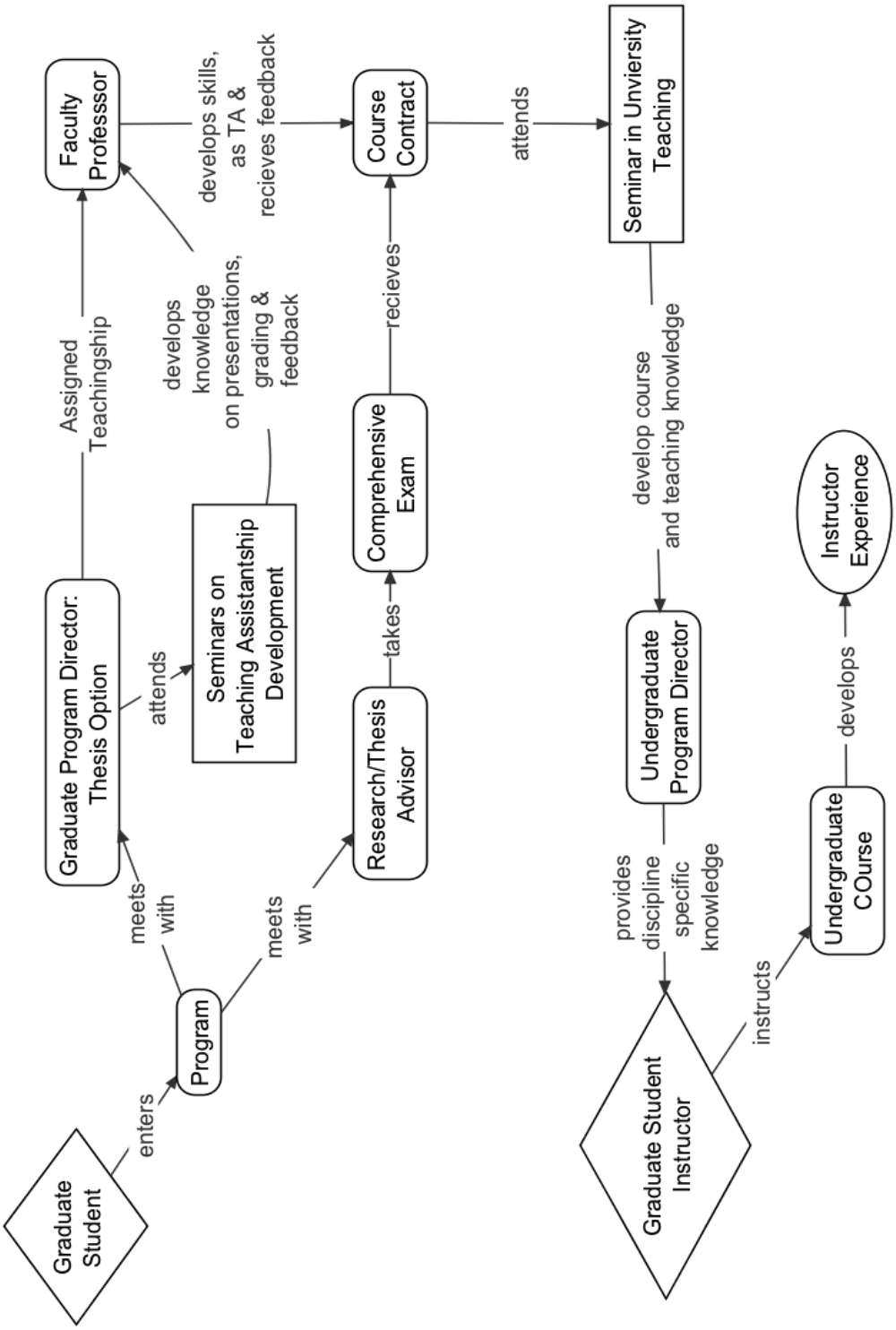

Figure 15: GSI map of best practices

The progression presentation component can be described as beginning with a 15-minute component of a class that builds over the term or seminar where it reaches the entire duration of a class. The grading of assignments progression was perceived to be a more gradual development. The movement form reviewing drafts and ungraded assignments with shared work with the professor to taking on the entire grading of the class was described in a way that it would require several courses before the full responsibility was handed over to the graduate student. This also might depend on the structure of assignments within the course and where the development of a rubrics and assessment strategies take place. How this relates to TA experiences outside of the seminar was not discussed. The progression of TA's facilitating group activities, even though it was not a specific link identified by the graduate student participants, to leading and then supervising class activities is another progression that complements the experiences that were provided.

This study found that leadership of a school-centred nature with the academy domain towards the development of GSI materializes in different ways. The environment produced in the Humanities department provided an experience that allowed for a natural desire for graduate students to partake in the seminar on university teaching. The structure of development for teaching assistants and the possibility of teaching undergraduate courses has created a self-initiative in at least one student. This can be expanded considering that the seminar is not a mandatory component to receive a teaching contract and that the information is passed on through the department administrators and not faculty. This department has a high

level of participation in the seminar. In this case the leadership for a school-centre within a department is cultural. It is possible that a recommendation to take the seminar exists as a copy of the email sent by the graduate administrator was not reviewed and not all faculty were interviewed.

The Fine Arts discipline has taken a completely different role of leadership by making the seminar mandatory for graduate students with teaching contracts. Providing faculty to supervise the courses that they have previously taught that are now under the responsibilities of GSI's further supports this leadership. The Social Science department demonstrates similar leadership as they placed a faculty member who had extensive training in teaching and learning, in comparison to the experiences that can be afford at the institution of study, to be responsible for developing the processes involved for developing TA's within the department.

The leadership within the Science department from the faculty perspective has a different structure involving the domains. There is a clear focus on research and an arguable orientation towards a teacher-center within the professor domain. There is no doubt that leadership is present within the faculty but from the data collected within this study the orientation of that leadership is not directed towards developing a school-centred focus on GSI development. This is understood through the view the vast majority of their students are not interested in academic careers and therefore do not spend resources structuring that component more deeply into their department. This student-centred approach towards their graduate students is seen to accommodate the needs of the students.

The GSI participant from the Sciences took an active role in creating a teaching contract for themself. By identifying a course that was in the course calendar but not yet offered shows leadership. Especially when coupled with the self-initiative to take the seminar and seek out the undergraduate program director for further information regarding the development of the course.

The data firmly supports the conclusion that the departments are developing their programs to reflect the needs for the majority of their students in relationship to the types of careers that the students are expecting to seek upon graduation. Because this study is biased towards instructional development of graduate students it is more easily identified that the one of the two Science departments that participated in the study may not provide the range of GSI development that is available in other academic disciplines. This could be problematic for the few graduate students who aim for academic careers from this academic discipline and have to compete for positions that do place a stronger focus towards the teaching component in the hiring process. They would then be in competition against students who may very well have training equivalent to or exceeding that demonstrated by the other academic disciplines involved in the study.

Discussion and applying findings of the research to practice

The TA's of the graduate seminar met the objective of the seminar regarding the production of a shift from a teacher-centred to an instructor-centred. As the TA's built confidence in teaching competencies they recognized the importance of how information is delivered in contrast to their previous experiences with lectures.

The Fine Arts, Humanities and Social Science departments regarding the type of graduate student instructor they wanted to produce supported this shift.

An element that can help graduate students move towards an instructor centred approach is through the feedback they receive regarding their development. TA's expressed that they would like to have formal feedback from the facilitators of the seminar. Though they did appreciate informal feedback, the role formal feedback could play as an effective part in the development of their teaching dossier and in apply for jobs outside of the university should be developed. To compliment this feedback, something that the TA's did not mention was receiving formal feedback from students through Student Evaluation of Teaching forms. Adding this component would give the TA's an introductory exposure to the process that all teaching faculty and graduate student instructors are subject to and another item to add to their teaching dossier.

In the discussion regarding technology by the TA's the input regarding best practices towards developing pedagogical knowledge is an important aspect and supported by Koehler and Mishra (2006). The participants mentioned distinct elements regarding technology that relate to their specific academic discipline. This supports that idea that the seminar is divided into sections regarding the different faculties. Adjusting the technology component of the seminar to addresses these issues and focus on what steps graduate students can incorporate into their teaching responsibilities is something worth considering.

The differences between the two GSI's regarding when they took the seminar, prior to and after receiving the contract, identifies an interesting element that needs to be considered. The GSI from Humanities felt that perhaps more could have been offered to address the development of different types of courses within the seminar but did not necessary specify how that could be accomplished within the time frame. The GSI from the Science used the seminar to develop the course they knew they would be teaching. A solution to the problem presented by the Humanities is to have GSI's take the seminar after they receive the contract as is being required by the Fine Arts. This, however, produces a conflict for the seminar as one if it's objectives is to provide the necessary skills and knowledge to successfully apply for a teaching contract. Something that becomes irrelevant for these students and may create a negative consequence regarding other components of the course, such as a teaching dossier for job applications as it was not necessary to gain the contract. This can be deducted by the observation that not one of the participants mentioned the need or role of a teaching dossier.

The faculty participant in the Sciences raised the issue that graduate students may be over exposed to the seminars that their department offers and that are mandatory for all TA's and LA's each semester. With this framework already established there is the possibility that a progression of teaching and learning competencies can be added as each graduate student repeats the seminar. The effectiveness of the progression would depend if the academic discipline also increased the responsibilities and opportunities for graduate students as TA's and

LA's. Something that should also be addressed is if it is standard hiring practices across the academic discipline in other institutions not to include teaching knowledge expectations.

Back to the literature and framework

When looking back to the holistic framework of the domains that construct the balance of the learning environments within a university there are several elements that can be discussed from this study. Beginning with the domain of the Academy Timperely's (2006) view towards the role leadership is important in the development of a school-centred approach. As mentioned earlier how different departments maintain a form of leadership it needs to be identified, specifically that of how individual professors play a leadership role. This role is in establishing the foundational framework of GSI's through the TA experience. Little (1993) expressed the point that how subject matter is taught and is assessed as the focus of the school-centre. The academic disciplines that are oriented towards an instructor-centered approach are also oriented towards a school-centred approach. In contrast of the Science department being more teacher-centred and with it a more institutional-centre approach to its department.

Historically speaking the free reign for professors to implement instructional practices within the learning environments that they are responsible for is being taking more responsibly than the era that Cohen (1998) described taking place after WWII. To argue against Brawer's (1990) findings about the quality of teaching that takes place at community colleges and the institution involved in this study can

only be rebutted in that there is potential for graduate students to change this pattern. This being that when they move into faculty positions at comprehensive university and other institutions they will be bringing a more developed practice of teaching than their predecessors. Including the ability to be strong supervisors and mentors to graduate students and TAs under their direction.

Within the domain of the Professor the approach to developing graduate student instructors still seems largely teacher-centred in respect to what is taking place from the academic departments. This does not quite fit with the definition provided by Virtanen and Linblom-Ylanne, (2009) or by Lammers and Murphy (2002). However, the context of a teacher-centre approach to teaching is how it relates to how graduate students are treated as TAs by a portion of the faculty. This was brought out specifically from the participant of the Social Science department regarding the range of quality in professors' supervision and addressed by Fine Arts department where it did not meet with a defined process for TA development. A professor who simply hands over assignments for a TA to mark without any guidance of what is expected in the grading and without inquiry into if the TA even knows how to grade and provide feedback to students identifies as a teacher-centre approach to GSI development.

From a historical stand point the range of quality of teaching has been problematic and the training of new faculty has been no different. Renowned professors exist today as they did during the EC but not much is known to what degree renowned teachers are members of the tenured faculty and not lecturers or

part-time faculty. Again the TAs from the seminar showed very strong levels of deep learning. If this characteristic can be spread to graduate students with strong research skills there is a potential that the new faculty will have a completely new orientation towards their teaching responsibilities with the potential to change the range of quality teaching that has been historically present.

The domain of the pupil is slightly different than what the literature propounds due to the fact that this study did not actually look at undergraduate students views towards GSI development and that the graduate students involved are not the same type of learner that the literature addresses. The seminar in university teaching follows along the lines of what Weimer (2002) expresses as a learning environment that orients towards a learner-centred approach. This approach does act to balance out the teacher-centred approach problems that arise out of the departments.

By using a learner-center approach to focus more on institutional-centre responsibilities of the professors can be possible. By allowing graduate students to take on more responsibilities as a TA during class hours through the progressions can free up time that professors would normal spend on lesson planning to use on other responsibilities such as research.

The conflict presented between the two GSIs on when the seminar should be taken or offered identifies a possible shift from a student-centre approach of the seminar to a more specific learner-centred approach. The optional enrolment of the seminar by graduate students illustrates that the students are taking responsibility

for their own learning. The difference here is that offering the course for personal development, as were the reasons why GSI from Humanities registered is student-centred. Offering the seminar after teaching contracts have been assigned then allows for the seminar to address the learning needs of all participants as their learning objectives are more defined and therefore a stronger learner-centred learning environment. How the conflict is addressed will also identify the instructor-centred aspect of the seminar by addressing graduate student learning regarding the expectations of the academic disciplines. This will also clarify the intentions of the university regarding whether it is taking an institutional or school-centred approach to the seminar.

An institutional-centre and teacher-centred did come out in one of the Science disciplines. This is not to say they did not have an instructor-centre developed, but it was quite clear that research and content knowledge was the primary concern of development and that graduate students did not receive considerable amount of experience to develop as a GSI. This is in particular to graduate students who would be seeking a career in the academic field and not in a research facility. The opportunity for these students to develop as GSI's are not on comparable grounds to that of the Humanities or Fine Arts. Even within the sciences there is a difference of opinion as one GSI from the Sciences did have the opportunity to be teach. An adjustment in the domains to recognize the pupil and a learner-centre to allow for additional responsibilities in GSI development is feasible considering the range of other academic disciplines that already incorporate this to

some degree. Finding an appropriate level of development that does not interfere with the learning of the other students in the department and does not interfere with the research focus is an element to be considered within the department.

There is a clear indication that faculty are aware of the importance of content, pedagogy and technology as distinct elements towards teaching undergraduates. Though it does not appear to be of detailed and specific knowledge necessarily for teaching involving a large range of teaching strategies. Content knowledge is by far the most important domain expressed by all four faculty participants. Whether it was expressing the importance of using correct technical terms and being able to field questions, to passing the comprehensive exams and having courses related to their specific areas of research interests.

It was unexpected that the Science discipline discussed the domains of Content, Pedagogy and Technology with a greater amount of detail than the other disciplines involved in the study. Considering that this discipline takes a more institution-centre approach in the academic domain and teacher-centre approach in the professor domain towards the development of GSI than the other disciplines in the study.

The importance of pedagogy knowledge is expressed in different ways. The Fine Arts made the seminar in university teaching mandatory and established a Fine Arts section, this allows for Pedagogy and Content to be combined. This also allows for the development of content to be learnt in relation to teaching rather than research, an important distinction raised by Shulman (1986).

The importance of content knowledge of the subject matter ties into to several items raised by different participants in the study. One component is that of rules regarding who is allowed to teach courses within the academic disciplines. One Science discipline rarely offers the opportunity for graduate students to teach and this may occur in other disciplines as well. Why this exists was not clearly identified and may relate to an element addressed within the Fine Arts, and that being only people holding PhD's are allowed to teach. By holding a PhD there is an assurance that the person is a subject matter expert as there is a rigorous process involved in attaining the degree. One component of that is the comprehensive exam, which is a criteria for the Social Science discipline of the faculty participant before a graduate student is given the opportunity to teach an undergraduate course. The exams does two things, it identifies the graduate student with possessing strong knowledge in their field of study and changes their status to a PhD candidate.

This becomes important when dealing with time management issues that were identified by both graduate student instructors and faculty. It cannot be determined by this study that a lack of content knowledge was a factor in time management issues. Evidence does suggest that it can be a problem because not all academic disciplines, by graduate students and faculty, identified that a prerequisite to teaching was the successful completion of the comprehensive exams and that not all students could be afforded the benefit of having a teaching

contract for a course in their specific field of study. This is supported by the GSI in Science and the Fine Arts faculty participants.

Teaching is a demanding task as identified by Boyer (1990) the Fine Arts faculty participant and the GSI in Humanities. Having a firm grasp of the content knowledge would facilitate time management, as the GSI would have to dedicate less time in developing lectures by researching unfamiliar material. Another component that would assist the time management issue is that of pedagogy knowledge. This would allow for less time to be spent on creating classroom activities and the development of assessed assignments. It can be argued that not having any pedagogical knowledge would reduce time spent on classroom activities as one would resort to a teacher-centred approach and the attention to developing alignment of learning objectives to assessment activities would not be considered. The logical conclusion is that a firm development of pedagogy knowledge is important as to little would increase time management problems and no knowledge would reduce the likely hood of an ideal learning environment. Making the seminar in university teaching a core component in the development of GSI's.

Personal Reflection

The current models do create alignment in several areas though there needs to be an a few changes to the structures that would provide more insight. With respect to a comment made by one of the faculty participants that not all professors are exemplary supervisors for GSI development a change in the seminars offered by

the TLD could lead to support what is not always present. It is also possible that by training TA's that professors may improve their own teaching through the interaction with a graduate student knowledgeable in teaching competencies.

The academic disciplines that offer training seminars on a regular basis should not be overlapped with a new program offered by the TLD. What should change is from what was brought forth from the GSI in Science who went to their UGP to develop they syllabus more specifically to their discipline. This was also seen to some extent in the Fine Arts, though most of their graduate students attend the seminar in university teaching that is led by a member of their own Faculty. What is different here is that even across the Sciences, Fine Arts and other disciplines each academic program is going to have it's own unique characteristics and customs that even a Faculty wide seminar would not be able to address in a 25 hour seminar.

From there it should be constructed in a general seminar for all graduate students as an introduction into the practices of university teaching that can be built upon responsibilities expected of Teaching Assistants. This would include presentation skills, how to provide feedback to students, how to use a rubric or an assessment tool, and advising students during office hours and by email. Seminars offered by the individual disciplines can the compliment this seminar by offering specific information related to their signature pedagogies.

The seminar in university teaching that is currently offered can continue to deal with students who are about to graduate and look for positions that involve

teaching or those graduate students who are contracted to teach within their department. The one concern about this item is that the development of a teaching dossier to apply for a job takes time away from focusing on items that these graduate students already need to provide quality learning experiences within their contracted courses. Perhaps this development can start in the introductory seminar where TA's can start building their teaching dossier and the second seminar adds and polishes the components that have already been developed and that was perhaps used in the application for the teaching contract.

This then allows the second seminar to focus on items that have been discussed as problematic by the participants. There will be more time to develop teaching alignment through learning objectives and assignments, specifically developing and design exams and assignments to be graded along with the designing and development of proper assessment tools and time management. This then can be coupled with meetings involving their Undergraduate Program Director to specifically detail content, pedagogy and technology to their specific academic discipline.

There should not be a restriction on the second seminar to only graduate students or those with a teaching contract. The reason for this is that, as mentioned by several faculty participants, is that there are a limited number of teaching opportunities in the form of courses. Therefore, an advanced TA, who has taken both seminars, can be offered the chance to develop assignments, rubrics and components for a course being offered by faculty. The only problematic side to this

is the number of hours a TA is allowed to offer due to contracts and unions. However, as the skill of the TA develops the amount of time spent on these items would reduce the number of hours spend on grading the assignments as they would have a stronger understanding of what is expected of the students. This would be similar to that of presentations. This does not exclude the idea that students may work beyond the number of contracted hours, however it is a customary practice for people to put in additional hours at their own expense to further their potential careers.

This construction would also provide grounds to reduce some the of the disturbances mentioned by informing TA's about grading practices to make up for faculty that do not know how to supervise.

The Teaching dossier could become a component in the process if it is developed in an introductory seminar. Outside of that the supervision and mentoring process by faculty could be used to help develop the dossier that was created during the seminar for future job applications. This would also support the knowledge foundation of the graduate in their job talks, depending on their academic discipline. The role of the seminar for graduate students who have a teaching contract versus those who in the future will be applying for one is hard to determine which it better suits. If the teaching dossier is not a fundamental part of granting teaching contracts then the seminar better suits to have students with a teaching contract so that they may focus on developing their the course that they are contracted to work. However, this is not to dismiss that opportunity of a student

who may not be considered for a teaching contract to take advantage of a course that would be available for a graduate to teach and develop a course and teaching dossier for that course. How the department would react to this depends on several things that are not involved in this study, but is still a point that needs to be considered as the seminar and department practices evolve.

Limitations and Future Research

The limitations of this study involve the biases of the researcher who has been involved in the professional development of graduate students through the seminar offered by the TLD. Limited funding did not allow for the triangulation of findings to be validated and future research would need to involve the role of researchers who are not a part of the professional development program to review the data and provide a level quality assurance regarding the interpretation of the findings.

The research in this study can also be strengthened by adding the following dimensions to the sample: faculty involved in GSI development and another faculty member from the same academic discipline who is not involved; a TA or GSI of the same academic discipline, one who has attended the seminar in university teaching and another who has not; and a random sampling of undergraduate students within the academic discipline. This selection applied to a larger number of academic disciplines would increase the understanding of academic development.

This could be further enhanced by some of the considerations that arose dealing with addressing university alignment. Even though the goal of the questions

was to allow participants to discuss GSI development in light of what they felt was important and with as little direction as possible from the interviewer the study did not perform as well as it could have in this area due to two reasons. The open-ended questions used to allow participants to speak freely about their views did not allow for a complete picture to be developed regarding alignment. As can be see in Table 7 the GSI from Humanities did not provide a detailed description that could illustrate a learning theory and the GSI from the Sciences did not provide enough information to identify the technologies used in the course other than the exam and perhaps areas where they would like to improve their teaching abilities. The expectations of the level of learning that the Humanities and Social Sciences desire for the graduate students was also not discussed enough to evaluate the alignment. This could be shaped in the future by scaffolding follow-up questions to allow for elaborations in those areas.

The second element that can create a deeper analysis of alignment is that there was only one academic discipline that had participants at both the faculty and graduate student level. This was to be expected in taking a maximal variation sampling, however the investigation regarding this variation was not part of this study.

Another approach would be a longitudinal study following several students within different academic programs as they develop as GSI's with a comparison between those who have gradual guided steps and those under less constructed GSI development. These additions would then allow for a research question to

address what areas of development are needed to create and or maintain the alignment between the learning objectives and outcomes of students, faculty and institution through the effective use of workshops, seminars and experience.

References

Aleman, A. M. M. (1998). The search for the great community: The multicultural community and its problems. *AERA conference,* 1-21.

Association of Universities and Colleges of Canada (2007). *Trends in higher education. Volume 2. Faculty*. Ottawa:.

Bieber, J., & Worley, L. (2006). Conceptualizing the academic life: Graduate students' perspectives. *Journal of Higher Education*, *77*(6), 1009-1035.

Biggs, J. (1996). Enhancing teaching through constructive alignment. *Higher education*, *32*(3), 347-364.

Biggs, J. (1999). *Teaching for quality learning at university: What the student does*. Philadelphia: Open University Press.

Biggs, J. (2001). The reflective institution: Assuring and enhancing the quality of teaching and learning. *Higher Education*, *41*(3), 221-238.

Biggs, J. (2003). Aligning Teaching and assessing to course objectives., 1-9. Retrieved from http://www.uac.pt/~jazevedo/proreitoria/docs/biggs.pdf

Biglan, A. (1973). Relationships between subject matter characteristics and the structure and output of university departments. *Journal of Applied Psychology*, *57*(3), 204.

Blackie, M., Case, J., & Jawitz, J. (2010). Student-centredness: the link between transforming students and transforming ourselves. *Teaching in Higher Education*, *15*(6), 637-646.

Boyer, E. L. (1990). *Scholarship Reconsidered: Perspectives of the professoriate*. Princeton: Carnegie Foundation for the Advancement of Teaching.

Brawer, F. (1990). Faculty Development: The Literature An ERIC Review. *Community College Review*, *18*(1), 50.

Brubacher, J. S., & Rudy, W. (1976). *Higher education in transition: A history of American colleges and universities, 1636-1976.* New York: Harper & Row.

Carnegie Foundation for Advancement of Teaching. (2010). Basic Classification Tables 2010. Retrieved June 25, 2011 from http://classifications.carnegiefoundation.org/resources/

Centra, J. (1978). Types of faculty development programs. *The Journal of Higher Education*, *49*(2), 151-162.

Clarke, D., & Hollingsworth, H. (2002). Elaborating a model of teacher professional growth. *Teaching and Teacher Education*, *18*, 947-967.

Cohen, A. M. (1998). *The shaping of American higher education: Emergence and growth of the contemporary system.* San Franscisco: Jossey-Bass Publishers.

Cohen, S. (1987). Instructional alignment: Searching for a magic bullet. *Educational Researcher*, *16*(8), 16.

Cole, N. (1990). Conceptions of Educational Achievement. *Educational Researcher*, *19*(3), 2-7. doi:10.3102/0013189X019003002

Cowley, W. (1953). A century of college teaching. *Improving College and University Teaching*, *1*(3), 3-10.

Creswell, J. W. (2008). *Educational Research: Planning, conducting, and evaluating quantitative and qualitative research* (3rd ed.). Upper Saddle River, New Jersey: Pearson, Merrill Prentice Hall.

Darling-Hammond, L., & McLaughlin, M. (1995). Policies that support professional development in an era of reform. *Phi Delta Kappan*, *76*(8), 597-604.

Decuir-Gunby, J., Marshall, P., & Mcculloch, A. (2011). Developing and Using a Codebook for the Analysis of Interview Data: An Example from a Professional Development Research Project. *Field Methods*, *23*(2), 136-155.

Dewey, J. (1971). My Pedagogic Creed. In J. A. Boydston (Ed.), *John Dewey the Early Works.* Carbondale: Southern Illinois Press.

Dewey, J. (1987). The Dewey school: Appendix 2. In J. A. Boydston (Ed.), *John Dewey the Latter Works* (Vol. 11). Carbondale: Southern Illinois Press.

Dewey, J. (1990). *The school and society/The child and the curriculum.* Chicago: University of Chicago Press.

Department of Educational Statistics. Retrieved June 25, 2011 from http://nces.ed.gov/programs/digest/2004menu_tables.asp

Feixas, M., & Zellweger, F. (2010). Faculty Development in Context: Changing Learning Cultures in Higher Education. In U. D. Ehlers & D. Schneckenberg (Eds.), *Changin Cultures in Higher Education.* Springer.

Ferdig, R. (2006). Assessing technologies for teaching and learning: understanding the importance of technological pedagogical content knowledge. *British Journal of Educational Technology*, *37*(5), 749-760.

Frederiksen, J., & Collins, A. (1989). A systems approach to educational testing. *Educational researcher*, *18*(9), 27.

Gardner, E. J. (1972). Ph.D. Degrees in a changing scene. In L. J. Kent & G. P. Springer (Eds.), *Graduate Education Today and Tomorrow* (pp. 39-51). Albuquerque: University of New Mexico Press.

Geiger, R. L. (1992). The historical matrix of American higher education. *History of Higher Education Annual*, *12*, 7-28.

Geiger, R. L. (1998). The ten generations of American higher education. In P. T. Altbach, R. Berhal, & P. Gumport (Eds.), *American Higher Education in the 21st Century* (pp. 38-70). Chicago: John Hopkins University Press.

Gibbs, G., & Coffey, M. (2004). The impact of training of university teachers on their teaching skills, their approach to teaching and the approach to learning of their students. *Active learning in higher education*, *5*(1), 87.

Golde, C. M., & Dore, T. M. (2004). The survey of doctoral education and career preparation: The importance of disciplinary contexts. In D. H. Wuff & A. E. Austin (Eds.), *Paths to the professoriate: Strategies for enriching the preparation of future faculty*. San Fransico: Josey-Bass.

Gurung, R. A. R., Chick, N. L., & Hayne, A. (Eds.). (2009). *Exploring signature pedagogies: Approaches to teaching discplinary habits of mind*. Sterling Virginia: Stylus Publishing.

Hartnett, R., & Katz, J. (1977). The education of graduate students. *The Journal of Higher Education*, *48*(6), 646-664.

Henson, K. T. (2003) Foundations for a learner-centered education: A knowledge base. *Education*, 124(1) pp. 5-16

Hofstader, R., & Smith, W. (1961). *American Higher Education: A documentary history* (1). Chicago: University of Chicago Press.

Hubball, H., Collins, J., & Pratt, D. (2005). Enhancing reflective teaching practices: Implications for faculty development programs. *The Canadian Journal of Higher Education*, *35*(3), 57-81.

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed Methods Research: A Research Paradigm Whose Time Has Come. *Educational Researcher*, *33*(7), 14-26.

Koehler, M., & Mishra, P. (2005). What happens when teachers design educational technology? The development of technological pedagogical content knowledge. *Journal of Educational Computing Research*, *32*(2), 131-152.

Krathwohl, D. (2002). A revision of Bloom's taxonomy: An overview. *Theory Into Pracitce*, *41*(4), 212-218.

Kreber, C. (2001). The scholarship of teaching and its implementation in faculty development and graduate education. *New directions for teaching and learning*, *2001*(86), 79-88.

Kuhn, T. S. (1996). *The structure of scientific revolutions* (3rd ed.). Chicago: The University of Chicago Press.

Lammers, W. J., & Murphy, J. J. (2002). A Profile of Teaching Techniques Used in the University Classroom: A Descriptive Profile of a US Public University. *Active Learning in Higher Education*, *3*(1), 54-67.

Leggett, M., & Bunker, A. (2006). Teaching portfolios and university culture. *Journal of Further and Higher Education*, *30*(3), 269-282.

Levinson-Rose, J., & Menges, R. (1981). Improving college teaching: A critical review of research. *Review of Educational Research*, *51*(3), 403.

Li, Y., Dong, M., & Huang, R. (2009). Toward a Semantic Forum for Active Collaborative Learning. *Educational Technology & Society*, 12 (4) pp. 71-86.

Little, J. (1993). Teachers' professional development in a climate of educational reform. *Educational evaluation and policy analysis*, *15*(2), 129.

Littlejohn, A., & Stefani, L. (1999). Effective use of communication and information technology: Bridging the skills gap. *Association for Learning Technology Journal*, 7 (2). pp. 66-76. ISSN 0968-7769

Marton, F.and Saljo, R. (1976). On Qualitative Differences in learning: I - outcome and process. *British Journal of Educational Psychology*, 46, 4-11.

McAnear, B. (1955). College founding in the American colonies, 1745-1775. *The Mississippi Valley Historical Review*, *42*(1), 24-44.

McDonough, K. (2006). Action research and the professional development of graduate teaching assistants. *The Modern Language Journal*, *90*(1), 33-47.

Medel-Anonuevo, C., Ohsako, T., & Mauch, W. (2001). Revisting lifelong learning for the 21st century., 1-32.

Namey, E., Guest, G., Thairy, L., & Johnson, L. (2007). Data reduction techniques for large qualitative data sets. *Handbook for Team-based Qualitative Research,* 137-162.

National Center for Educational Statistics. (2004). 2004 National Study of Postsecondary Faculty. Retrieved June 25 2011, from http://nces.ed.gov/dasolv2/tables/mainpage.asp

Prince, M. J. & Felder, R. M. (2006). Inductive teaching and learning methods: Definitions, comparisons, and research bases. *Journal of Engineering Education,* 95(2) pp. 123-138.

Saettler, P. (1990). *The evolution of American educational technology*. Englewood, Colorado: Libraries Unlimited.

Salomon, G. (1993). On the nature of pedagogic computer tools: The case of the Writing Partner. In *Computers as Cognitive Tools* (pp. 179-196). Hillsdale, New Jersy: Lawrence Erlbaum Assiciates, Publishers.

Saroyan, A., Dagenais, J., & Zhou, Y. (2009). Graduate students' conceptions of university teaching and learning: formation for change. *Instr Sci*, *37*(6), 579-600.

Seldin, P. (1981). Faculty development programs. *Journal of Management Education*, *6*(1), 17.

Seymour, D. (1993). *On Q: causing quality in higher educaiton*. Phoenix, Arizona: Oryx Press.

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, *15*(2), 4-14. Retrieved from http://www.jstor.org/stable/1175860

Sjöström, B., & Dahlgren, L. (2002). Applying phenomenography in nursing research. *Journal of advanced nursing*, *40*(3), 339-345.

Smith, C. V., & Cardaciotto, L. (2011). Is active learning like broccoli? Student perceptions of active learning in large lecture classes. *Journal of the Scholarship of Teaching and Learning*, 11(1) pp. 53-61.

Stes, A., Min-Leliveld, M., Gijbels, D., & Petegem, P. V. (2010). The impact of instructional development in higher education: The state-of-the-art of the research. *Educational Research Review*, *5*(1), 25-49.

Strang, P. (2000). Qualitative Research Methods in Palliative Medicine and Palliative Oncology: An Introduction. *Acta Oncologica*, *39*(8), 911-917.

Tewksbury, D. G. (1965). *The founding of American colleges and universities before the civil war.* New York: Archon Books.

Timperley, H. (2006). Learning Challenges Involved in Developing Leading for Learning. *Educational Management Administration & Leadership*, *34*(4), 546-563.

Trigwell, K., & Prosser, M. (2004). Development and use of the approaches to teaching inventory. *Educational Psychology Review*, *16*(4), 409-424.

Virtanen, V., & Lindblom-Ylänne, S. (2009). University students' and teachers' conceptions of teaching and learning in the biosciences. *Instructional Science*, *38*(4), 355-370.

Weimer, M. (2002). *Learner-centered teaching: Five key changes to practice.* San Francisco, California,: Josey-Bass.

Wetzel, K., Foulger, T. S., & Williams, M. K. (2009). The evolution of the required educational technology course. *Journal of Educational Computing Research*, *25*(2), 67-71.

Worley, L., & Bieber, J. (2006). Conceptualizing the academic life: Graduate students' perspectives. *The Journal of Higher Education*, *77*(6), 1009-1035.

Xu, J. (2003). Promoting school-centered professional development through teaching portfolios: A case study. *Journal of Teacher Education*, *54*(4), 347.

Appendices

Appendix A

Sample Questions for Teaching Assistant Focus Group

1. What is the general value that the GSUT espouses to the students taking the seminar
2. What was the most important element in the seminar for the students to learn
3. What was your particular strength in being part of the seminar?
4. How much time did you average per class taking on a teaching role (presenting material, directing activities)
5. What assignments and activities were you responsible for in providing feedback
    a. what criteria was established
6. What would you like to see adjusted to the current format of the seminar?
7. It is often stated that those who are involved in instructing are the one who learns the most from the class, is there any professional development that you felt you improved upon while teaching this seminar?
8. How do you use/see your skills as
    - collaborative learning
    - peer assessment
    - self-assessment

    use of technology

Appendix B

Sample Questions for Graduate Students Who Have Instructed

1. How has the Seminar benefited your teaching, (if you've taught prior to taking the seminar has anything changed)
2. What obstacles have you had within your role as instructor, prior and/or since taking the seminar?
3. Reflecting on your experiences instructing was the format of the seminar appropriate to your needs?
4. What is the next skill or item of knowledge that you would like to learn to improve your teaching?

Appendix C

Sample Interview Questions for Faculty Members

1. How important is it for graduate student to focus on teaching skills
2. Is there some one in the department that deals with training or guiding students to developing their skills (TA/Instructor)
3. What would be the most important item for a new instructor to be able to demonstrate within your department? (the use of technology)
4. What do you know about the graduate seminar's in university teaching offered by CTLS (is it important for graduate students and does you department recognize the certificate)
5. Is it more important for PhD or Master students to develop knowledge and skills regarding teaching at the Post-Secondary Level
6. Does your department offer reserved coursed for
    a. Masters (#)
    b. PhD (#)

    If so are they: electives; cores; required; other;

    Do these courses focus more on:
    Content; Student Learning; Discipline Specific Skills;

Appendix D

Sample of Evaluation form

	The Centre for Teaching and Learning Services aims to help graduate students achieve the outcomes listed below. *It is expected* that there will be no change in some outcomes. Still, it is helpful for us to know your responses regarding each. Please let us know how you would rate yourself on each item	Prior to this Seminar				
		1=Very Low	2=Low	3=Moderate	4=High	5=Very High
a.	Your ability to articulate your own teaching philosophy statement.	○	○	○	○	○
b.	Your knowledge regarding the best practices of university teaching.	○	○	○	○	○
c.	Your knowledge regarding how students learn.	○	○	○	○	○
d.	Your confidence in using a variety of teaching approaches and strategies.	○	○	○	○	○
e.	Your ability to plan a high quality lesson.	○	○	○	○	○
f.	Your confidence to deliver a lesson that captures the attention of students.	○	○	○	○	○
g.	Your ability to develop a course syllabus based on a concept map of the content.	○	○	○	○	○
h.	Your ability to develop a course syllabus based on a set of learning outcomes.	○	○	○	○	○
i.	Your ability to develop assignments that promote academic integrity among students.	○	○	○	○	○
j.	Your ability to develop a sense of community within a student learning environment	○	○	○	○	○
k.	Your confidence in using a variety of technologies to promote student learning	○	○	○	○	○
	Your interest in teaching at the post-secondary level.	○	○	○	○	○